

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

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2014/ELOG-280(ST)
2014/ED-1

February 26, 2014

Mr. Herman Tuiolosega
Office of Environmental Quality Control
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813-2437

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MAR 08 2014

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

14 FEB 26 PM 4:12

RECEIVED

Dear Director:

SUBJECT: Chapter 343, Hawaii Revised Statutes
Draft Environmental Assessment
Special Management Area Use Permit and
Shoreline Setback Variance

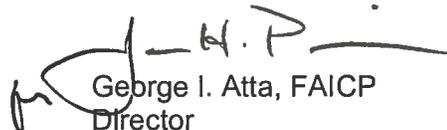
Project: Lee Residence and Seawall Reconstruction
Applicant: Kyoung-Su Im
Agent: Group 70 International, Inc. (Jeffrey Overton)
Location: 4465 and 4469 Kahala Avenue - Waialae Kahala
Tax Map Key: 3-5-3: 2 and 3
Request: Special Management Area Use Permit (SMP) and
Shoreline Setback Variance (SV)
Proposal: New Residence and Seawall Reconstruction within the 40-foot
shoreline setback.

We respectfully request publication of the Draft Environmental Assessment (DEA) in the next edition of The Environmental Notice. We anticipate a finding of no significant impact (AFNSI) for the proposed construction of a new residence and reconstruction of a seawall along Kahala Beach.

Enclosed is the completed OEQC Publication Form, two hard copies of the DEA and a pdf file on a compact disk. Simultaneously with this letter, these documents were also sent via electronic mail to your office.

If you have any questions, please contact Steve Tagawa of our staff at 768-8024.

Very truly yours,


George I. Atta, FAICP
Director

GIA:nw
Attachments

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

Project Name: Lee Residence and Seawall Reconstruction in the 40-foot shoreline setback
Island: Oahu
District: Waialae-Kahala
TMK: (1)3-5-3: 2 and 3
Permits: Special Management Area Use Permit and Shoreline Setback Variance
Approving Agency: Department of Planning and Permitting

City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813
Steve Tagawa, (808)768-8024

Applicant: Kyong-su Im, (808)258-7877
1608 Laukahi Street
Honolulu, Hawaii 96821

Consultant: Group 70 International, Inc.
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813
Jeff Overton, (808)523-5866

REC'D ENVIRONMENTAL
QUALITY CONTROL
14 FEB 26 P4:12

Status (check one only):

DEA-AFNSI

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

FEA-FONSI

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

FEA-EISPN

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

Act 172-12 EISPN

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

DEIS

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

FEIS

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

Section 11-200-23
Determination

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

Statutory hammer
Acceptance

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

Section 11-200-27
Determination

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

Withdrawal (explain)

Summary: The Applicant seeks a Shoreline Setback Variance (SSV) to remove an existing unauthorized seawall and rubble revetment along the 120-foot long makai boundary of the site, and construct a new vertical concrete seawall. The Applicant is working with the State Office of Conservation and Coastal Lands (OCCL) to determine a shoreline that OCCL would be willing to certify after the encroaching portions of the existing shore protection structure are removed.

The Applicant also seeks a Special Management Area Use Permit (SMP) to construct two dwellings and a garage/mechanical building. The two-story dwellings will have about 16,526 square feet and 6,691 square feet of floor area. The garage/mechanical building will have about 3,820 square feet of floor area.

Other improvements within the anticipated 40-foot shoreline setback area, are a concrete walkway, intergrated seawall stairway, and viewing platform. Fencewalls along both the right and left property boundaries, will also be the subject of the SSV.

The Department of Planning and Permitting has not issued the Applicant a Notice of Violation for the existing seawall and revetment which predate their acquisition of the site. A Zoning Adjustment for retaining wall height may also be required, as well as grading, stockpiling and building permits.

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

TMK (1) 3-5-003:002 & 003
Kāhala, O'ahu, Hawai'i

Draft Environmental Assessment

Applicant:

Mr. Kyong-su Im
1608 Laukahi Street
Honolulu, HI 96821

Approving Agency:

City and County of Honolulu
Department of Planning and Permitting
650 S. King Street
Honolulu, HI 96813

Prepared by:



Group 70 International, Inc.
Architecture • Planning & Environmental Services • Interior Design • Civil Engineering
Honolulu, Hawai'i

February 2014

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KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

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Draft Environmental Assessment

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A	Preliminary Engineering Report
B	Archaeological Inventory Survey
C	Cultural Impact Assessment
D	Coastal Assessment Study

1.0 INTRODUCTION

1.0 INTRODUCTION

This Draft Environmental Assessment (EA) was prepared in accordance with Hawaii Revised Statutes (HRS) Chapter 343, Revised Ordinances of Honolulu (ROH) Chapter 23 Shoreline Setbacks and ROH Chapter 25 in support of a Special Management Area (SMA) Permit application.

1.1 INFORMATION SUMMARY

Type of Document:	Environmental Assessment (EA)
Name of Proposed Action:	Kāhala Residence and Shoreline Structure
Applicant:	Mr. Kyong-su Im 1608 Laukahi Street Honolulu, HI 96821 Phone: 808-258-7877
Applicant's Agent:	Group 70 International, Inc. 925 Bethel Street, 5 th Floor Honolulu, HI 96813 Contact: Jeffrey H. Overton, AICP, LEED-AP Phone: 808-523-5866 x104
Approving Agency:	City and County of Honolulu Department of Planning and Permitting 650 S. King Street Honolulu, HI 96813
EA Trigger:	HRS 343-5(a)(3) Use within a Shoreline Setback Area ROH Chapter 23, Shoreline Setbacks ROH Chapter 25, Special Management Area
Site Location:	4465 & 4469 Kāhala Avenue, Kona District, Kāhala, O'ahu, Hawai'i (Figure 1-1)
Tax Map Key:	(1) 3-5-003: 002 and 003 (Figure 1-2)
Landowner:	Mr. Kun Hee Lee

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

Land Area:

LOT	Square Feet
18-B	17,349
18-B-1	1,750
19	17,332
19-A	1,873
*Shoreline Area	-2,351
TOTAL	35,953 SF

*The portion of land within the shoreline area is approximate and pending the certified shoreline.

State Land Use District: Urban District (*Figure 1-3*)

City & County of Honolulu
Zoning: R-7.5 Residential (*Figure 1-4*)

City & County of Honolulu
Primary Urban Center
Development Plan: Low-Density Residential

Special Design District: None

Special Management Area: Within SMA (*Figure 1-5*)

Flood Zone: Zone X (*Figure 2-X*)

Anticipated Determination: Finding of No Significant Impact (FONSI)

1.2 SITE LOCATION AND CHARACTERISTICS

The subject properties are located in Honolulu, east of Diamond Head in the Kāhala area, roughly at the intersection of Kala Place and Kāhala Avenue. The site consists of two adjacent parcels: TMK 3-5-003:002 located at 4469 Kāhala Avenue, and TMK 3-5-003:003 located at 4465 Kāhala Avenue. The parcels are owned by Mr. Kun Hee Lee. The site is bordered by the Pacific Ocean to the south and surrounded by low-density residential development on all other sides (*Figure 1-2 Topographic Survey Map*).

The site is primarily vacant and overgrown with grasses, weeds and limited vegetation. Remnants of the prior residential use include a partial stone tile walkway, patio area, and wooden deck platform. Several coconut palms exist on the property. There is a seawall structure separating the upland property from the shoreline area.

1.3 OVERVIEW OF THE PLANNED RESIDENTIAL USE

The owner is seeking to joint develop the two lots to construct two single-family residences, a garage, pool, driveway and new shoreline structure with landscaping. The total floor area of improvements will be approximately 27,037 square feet. Refer to *Figure 2-2 Site Plan*.

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

Prior to construction, the existing remnant structures (walkway, patio, deck, and seawall) will be removed.

1.4 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) was prepared in accordance with HRS 343 for use in a shoreline area and Chapter 25, Revised Ordinances of Honolulu in support of a Special Management Area (SMA) Permit application. The EA was also prepared to address use in the shoreline setback pursuant to ROH Chapter 23. The Draft EA will be published in the Office of Environmental Quality Control *Environmental Notice*, which will commence a 30-day public review period. The City and County of Honolulu Department of Planning and Permitting is the Approving Agency for the EA.

The Draft EA is presented in eight sections and includes the following: a summary description of the planned residential use; a list of necessary approvals; a description of the environmental setting; a section that identifies potential impacts and proposed mitigation measures on identified natural, cultural, and socioeconomic resources as well as existing infrastructure; a discussion of alternatives; a discussion of the relationship of the proposed action to State and County land use designations and regulations; the anticipated determination and justification; an updated list of agencies and organizations that participated in the pre-consultation phase of the Draft EA; and a list of references cited or used in preparing the EA.

After the 30-day review period of the Draft EA has concluded, public comments received will be considered and addressed to the extent feasible within the scope and evaluation of the proposed action. A Final EA will be prepared, highlighting document revisions based upon information received during the public comment period.

It is anticipated that DPP will issue a Finding of No Significant Impact (FONSI) upon acceptance of the Final EA.

1.5 PERMITS AND APPROVALS REQUIRED

Other approvals are required from the County and State to implement the proposed action, some of which include:

- Certified Shoreline Survey (DLNR)
- Conditional Use Permit Minor for Joint Development (DPP)
- Special Management Area Use Permit Major (DPP, Honolulu City Council)
- Shoreline Setback Variance Permit (DPP, Honolulu City Council)
- Building Permits (Buildings, Electrical, Plumbing), and Sidewalk/Driveway Work (DPP)

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

- Grading, Grubbing, Trenching and Stockpiling Permits (DPP)
- Sewer Connection Permits (DPP)
- Plan Approval (BWS)
- Plan Approval (HECO)
- Trenching Permit (DPP)
- Street Usage (DTS)
- Zoning Adjustment (Retaining Walls) (DPP)

1.6 AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONTACTED DURING THE PRE-CONSULTATION PROCESS

A Participant Letter with Pre-Consultation request was issued in January 2014 to initiate the environmental review process.

A list of agencies and other parties contacted during the EA pre-consultation period is provided in *Section 8.0* of this document. Additionally, *Section 8.0* provides a list of the individuals and agencies that received copies of the Draft and Final EA.

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment



FIGURE 1-1: PROJECT LOCATION

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment



FIGURE 1-2: TAX MAP KEY (3-5-003: 002 & 003)

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

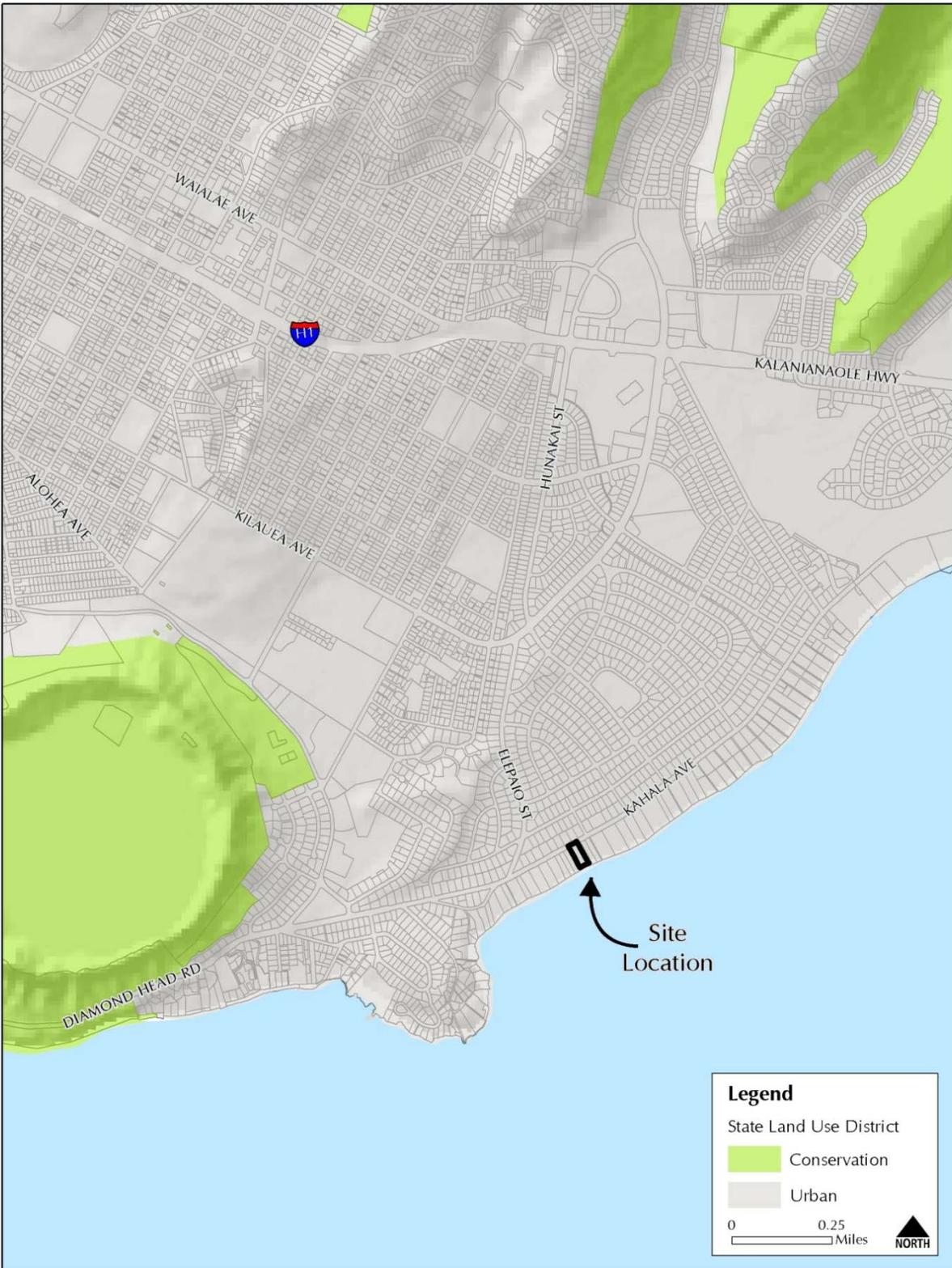


FIGURE 1-3: STATE LAND USE DESIGNATION MAP

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment



FIGURE 1-4: CITY AND COUNTY OF HONOLULU ZONING MAP

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

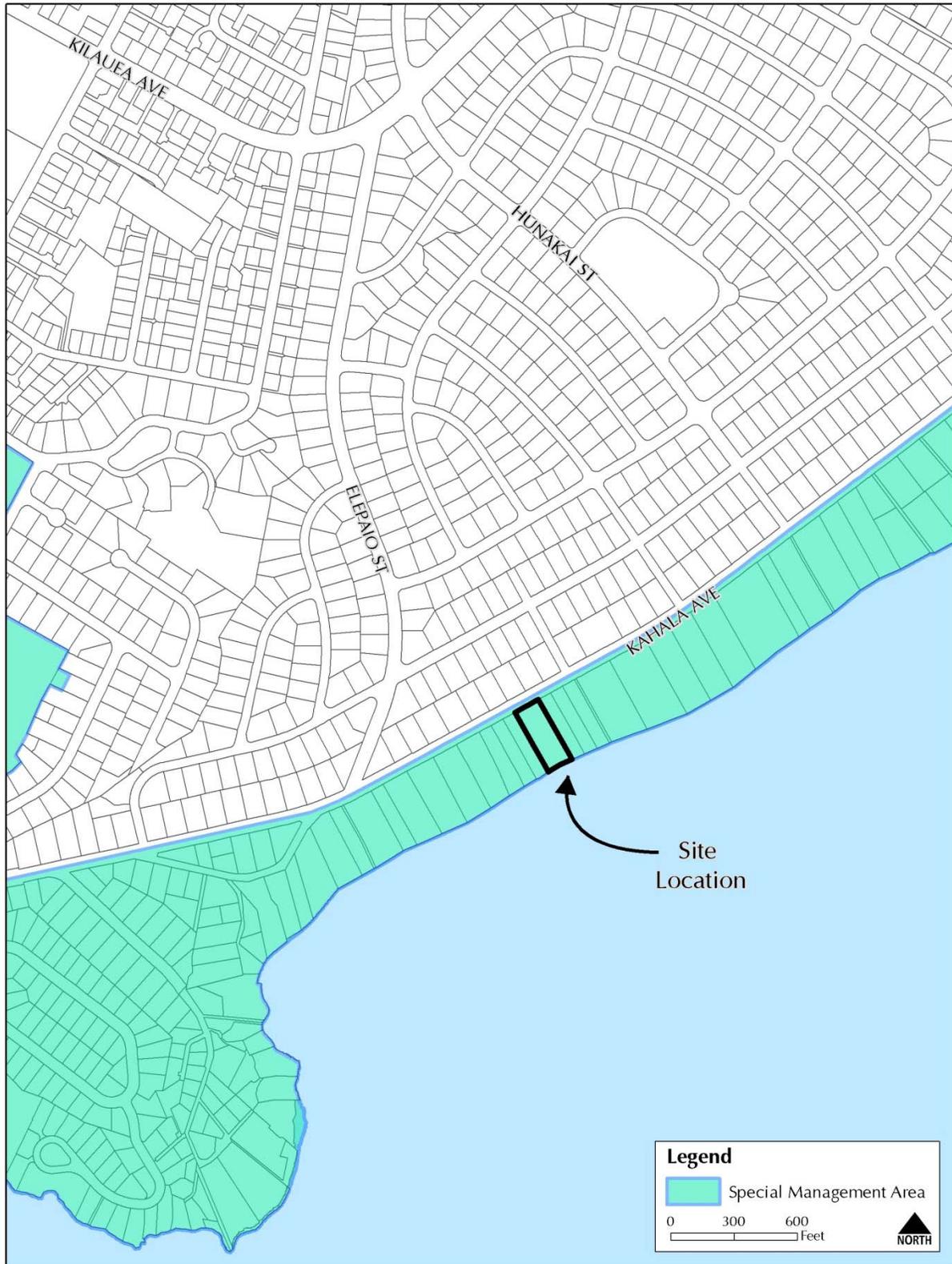


FIGURE 1-5: CITY AND COUNTY OF HONOLULU SPECIAL MANAGEMENT AREA MAP

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 EXISTING CONDITIONS AND SITE PREPARATION

The site is comprised of two adjacent parcels and is currently vacant. While previously developed with single family residences on each parcel, the existing dwelling structures have been demolished. A concrete pad, a partial stone tiled pathway and several coconut trees remain on Parcel 002 (Lot 18-B and 18-B-1). The remaining area of Parcel 002 and the whole of Parcel 003 (Lot 19 and 19-A) have limited ground cover with grass and weeds. Both parcels are protected by a shoreline structure (“seawall”) fronting the shoreline. Parcel 002 has a stacked boulder wall approximately 3-4 feet high with a stairway and wrought iron fence along the top and naupaka shrub. The seawall at Parcel 003 is a hollow tile wall approximately 3 feet high, built atop a grouted stacked rock wall approximately 2 to 3 feet high. There are no fences or shrubs along the top of the wall. The shoreline walls are in various stages of deterioration and will be removed and replaced. (*Figure 2-1 Topographic Survey Map.*) To prepare the site for construction, the remnants of prior structures on each lot will be removed and minor grading and leveling is required.

2.2 DESCRIPTION OF PROPOSED ACTION

The subject properties are vacant, with remnants of prior structures and the seawalls. The owner of the vacant lots will improve the site with a new residence, a cottage for staff quarters, a swimming pool, a garage, landscaping and a new shoreline structure. Each of these site components is described below. Please refer to *Figure 2-2 Site Plan*. *Table 2-1* presents a preliminary selected site program. The preliminary program is subject to final design.

Primary Residence

Construction on the site will be governed by development requirements such as lot coverage, setbacks and height restrictions and the rules of the Special Management Area and shoreline setback ordinance. The primary residence will be two stories in height and have a floor area of approximately 16,526 square feet. The residence building is designed to maintain an appropriate sense of scale with the surrounding area, and will not exceed the 25-foot height limit for the R-7.5 Residential District.

The primary residence is located on the makai portion of the site and outside of the 40-foot shoreline setback. The entrance on the mauka side leads into a great hall. To the west, an elevator provides access to the second floor. Makai of the receiving area are living and dining areas with views of the front lawn and ocean. The first floor also includes a bedroom, bath, kitchen, pantry and storage. The second story of the residence includes the master bedroom and bath, living area, dining area and fitness room. Other bedrooms are included on the second story.

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

Secondary Residence

A second residence is located on the northwest corner of the project area. This residence is two-stories, approximately 6,691 SF, and serves the dual purpose of providing guest quarters for visitors and living quarters for staff. The first floor includes living, dining, kitchen areas and three detached bedrooms. Master and secondary bedroom and baths are located on the second floor, with an additional three detached bedrooms.

Garage/MEP

A 3,820 SF garage/mechanical building is located on the northeast corner of the property. The first floor holds up to four vehicles and includes storage, maintenance space and a small mechanical room. The second story of the garage will house electrical, mechanical and plumbing systems for the primary residence. The second story roof will be open to the air to allow adequate ventilation for MEP systems.

Shoreline Structure and Property Boundary Walls

The subject properties both have an existing vertical shoreline structure extending approximately 60 feet across each lot, separating the upland area from the shoreline area. These are older shoreline structures that were constructed as unauthorized structures many decades ago. In order to correct this situation, the applicant will remove the existing unauthorized shoreline structures and reconstruct a legal conforming structure at the certified shoreline. This action will remove the existing CMU wall on Parcel 003 and a rock rubble revetment on Parcel 002. Following a series of consultation with DLNR, the shoreline survey application was submitted for certification in February 2014. The new shoreline structure will be a vertical poured-in-place concrete structure located at the certified shoreline. The mauka side of the structure will have granular backfill material wrapped with filter fabric. Refer to *Figure 2-9 Shoreline Structure*.

In addition to the reconstructed seawall, existing perimeter property boundary walls will be reconstructed on the Diamond Head, Koko Head, and mauka sides of the property. New wall construction will conform to construction standards and height regulations.

Landscaping and Pool

The physical development of the Kāhala coastline is dependent upon integrating the natural shoreline and built environment together. Key elements in this integration are the appropriate design, context, and materials used in developing the overall landscaping and exterior features of the area. There will be new landscaping along the perimeter of the property in natural rain gardens within the driveway, central area and in the makai area front lawn. Plant species will be chosen that are representative of the natural and cultural landscape. Exterior landscape features will be appropriate for the climate, and favor salt and wind-tolerant, native Hawaiian and introduced species including coconut palm, thornless hala, "queen emma" spider lily and beach naupaka at the makai areas. A combination of native Hawaiian and introduced plants such as plumeria, ginger, na'u (native gardenia) and fern will also be planted. Refer to *Figure 2-2*

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

Ground Level and Landscape Plan and *Figure 2-7 Plant Palette*. A pool and patio is planned in the open courtyard area between the two residences.

2.3 SPACE PROGRAM

A preliminary space program for the proposed action is shown below. Program elements are subject to change prior to submittal of building permit as the design is refined.

Table 2-1 Preliminary Space Program

MAIN RESIDENCE	SF
1st Floor <i>Living, Dining, Office, Kitchen, Hall etc.</i>	8,608
2nd Floor <i>Master bedroom, Bath, Fitness, Storage etc.</i>	7,918
TOTAL	16,526
SECOND RESIDENCE	SF
1st Floor <i>Living, Dining, Staff Rooms</i>	3,396
2nd Floor <i>Bedroom, Staff Rooms, Storage</i>	3,295
TOTAL	6,691
GARAGE/MECHANICAL/ELECTRICAL/PLUMBING	
1st Floor <i>Car Parking, Storage, MEP</i>	1,771
2nd Floor <i>MEP</i>	2,049
TOTAL	3,820
OVERALL TOTAL SF	27,037

2.4 LUO REQUIREMENTS

The proposed action will adhere to the development standards for R-7.5 Residential zoning as defined by the Land Use Ordinance (LUO). LUO development standards are shown below in *Table 2-2*:

KĀHALA RESIDENCE AND SHORELINE STRUCTURE

Draft Environmental Assessment

Table 2-2: Compliance with LUO Development Standards for R-7.5 District

LUO STANDARD	R-7.5 ZONE	PROJECT PLANS (all in Compliance)
Minimum Lot Area	7,500 sf	38,304 sf
Front Yard	10 ft.	10 ft.
Side Yard	5 ft.	5 ft.
Maximum Bldg. Area	50% of zoning lot	50% of zoning lot
Maximum Height	25 ft.	25 ft.
Multiple Homes on Lot (LUO Section 21-8.20A)	Max. of 8 dwellings on single zoning lot. Lot area must be equal or greater than minimum lot size for underlying zoning district, times the number of dwelling units.	Two homes proposed. (Five homes allowed.)

Source: LUO Table 21-3.2 Residential Districts Development Standards, Section 21-8.20A Housing-Multiple Dwelling Units on a single country or residential district zoning lot.

2.5 PROPERTY PROVISIONS

The Kahala Community Association (KCA) upholds the Declaration of Protective Provisions and Supplemental Declaration of Protective Provision originally connected to the Kāhala landholdings of Kamehameha Schools/Bishop Estate. KCA continues to provide oversight to renovation and new development to ensure that projects abide by these provisions. The subject residential action is subject to these provisions, which most notably limit development to one single family residence per lot of record. The proposed two residences comply with the applicable covenant.

2.6 SUSTAINABLE DESIGN

The building design and construction will incorporate sustainable design standards and practices. Design strategies will include incorporating natural lighting to illuminate interior spaces, energy-efficient mechanical and electrical systems to maximize energy savings, efficient plumbing systems to save water, Volatile Organic Compound (VOC)-free building materials and finishes to provide healthy interior environments. Buildings will incorporate architectural design features such as energy-efficient windows to decrease cooling loads on the building and increase interior thermal comfort levels.

2.7 PROJECT UTILITIES AND INFRASTRUCTURE

A Preliminary Engineering Report for the proposed action was completed by Group 70 International, Inc. and is provided as *Appendix A*. Overall existing conditions, impacts, and mitigation measures for utilities are discussed in *Section 3.0* of this document.

The existing project site has water and electric services, sewer connections, and solid waste collection services. The following section describes the physical characteristics of these site utilities.

2.7.1 Water

Existing potable water service is provided by the Board of Water Supply (BWS). A 6-inch diameter BWS water line is located in Kāhala Avenue directly fronting Parcels 002 and 003. This water line will serve the new buildings. Hydrant spacing and fire flow requirements will conform to BWS standards. A mechanical engineer will specify the fire protection system for the buildings.

2.7.2 Wastewater

The properties are currently being served by existing 6-inch sewer laterals connected to the City sewer system located in Kāhala Avenue. The on-site sewer system will consist of a gravity-flow lateral serving the residence. Sewer system components will comply with design standards of the City and County of Honolulu Department of Wastewater Management.

2.7.3 Drainage System

There are no existing storm drain systems either fronting the project parcels or on the site interior. Stormwater generated on-site infiltrates or sheet flows towards and onto Kāhala Avenue or the ocean. The proposed action will utilize infiltrative BMPs and sustainable design strategies to retain the stormwater generated by the 10-year 1-hour design storm event. The drainage system is described in more detail in *Section 3.8.3*.

2.7.4 Solid Waste Disposal

Solid waste from the project site will be collected curbside by the City and County of Honolulu Waste Management.

2.8 ACCESS, ROADWAYS, AND PARKING

A driveway off Kāhala Avenue provides vehicular access. The driveway is approximately 180 feet long, and ends in a cul de sac approximately in the middle of the property. A porte-cochere covers the cul de sac at the main entrance to the primary residence. The roadway width will be 20-ft. to accommodate fire trucks.

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A total of eight parking spaces will serve the residence. A garage will provide four covered parking stalls, with an additional four grass-paved parking spaces.

2.9 CONSTRUCTION CHARACTERISTICS

The proposed action requires removal of an existing shoreline structure and remnant deck and walkway materials from the site. The site will require some vegetation clearing, grubbing, minor grading and excavation (cut and fill), general construction, and landscaping.

2.10 SUMMARY OF PROJECTED COSTS

Total costs for the proposed action are estimated between \$25 and \$30 million. Seawall removal and reconstruction account for approximately \$350,000 to \$400,000 worth of that total cost.

2.11 SCHEDULE

The applicant will complete the Environmental Assessment, Special Management Area Permit, Shoreline Setback Variance and Conditional Use Permit/Joint Development Agreement during 2014. The Building Permit and other site development approvals are anticipated in early 2015. Construction will follow for approximately 22 months.

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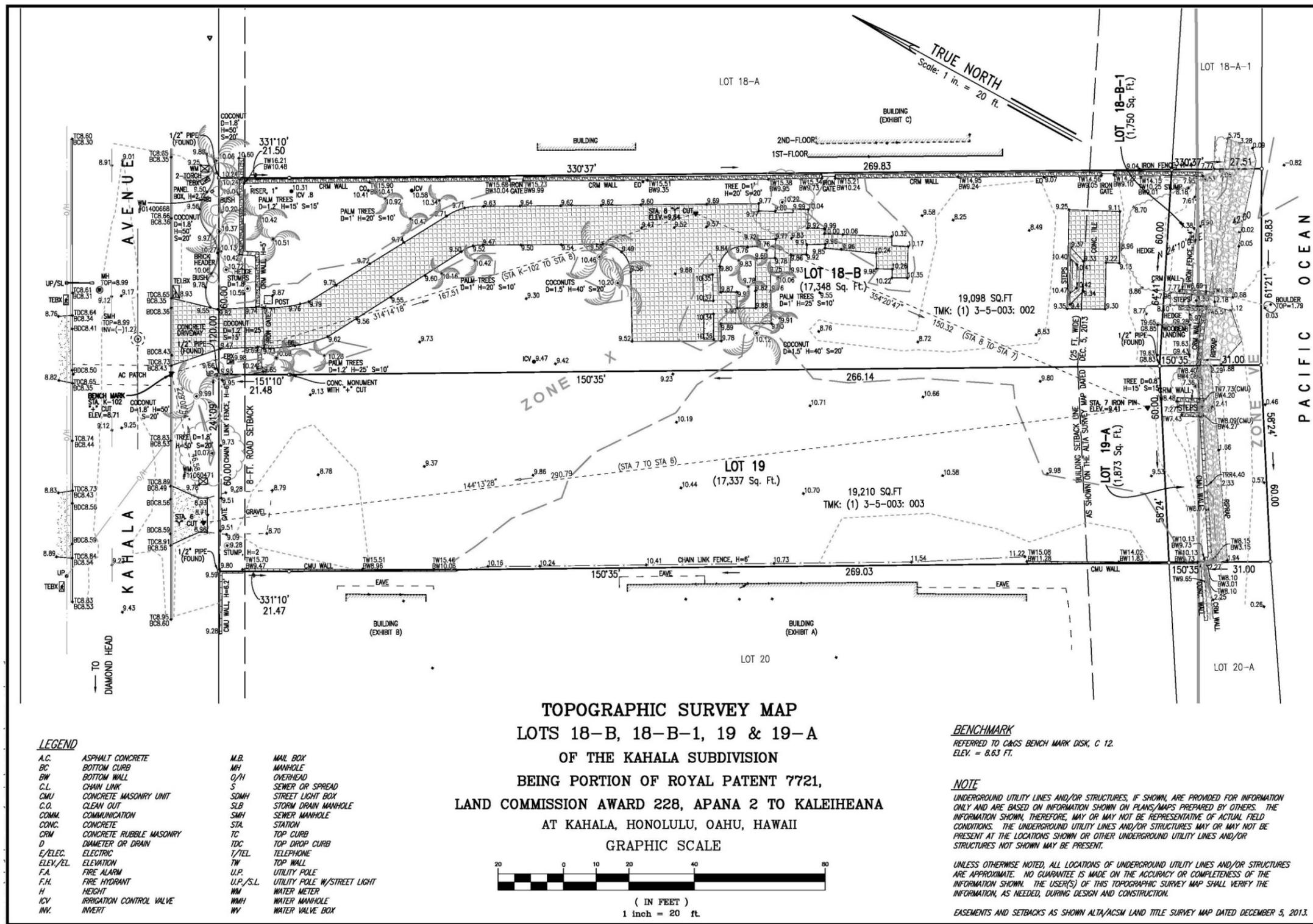


FIGURE 2-1: TOPOGRAPHIC SURVEY MAP (2/18/14)

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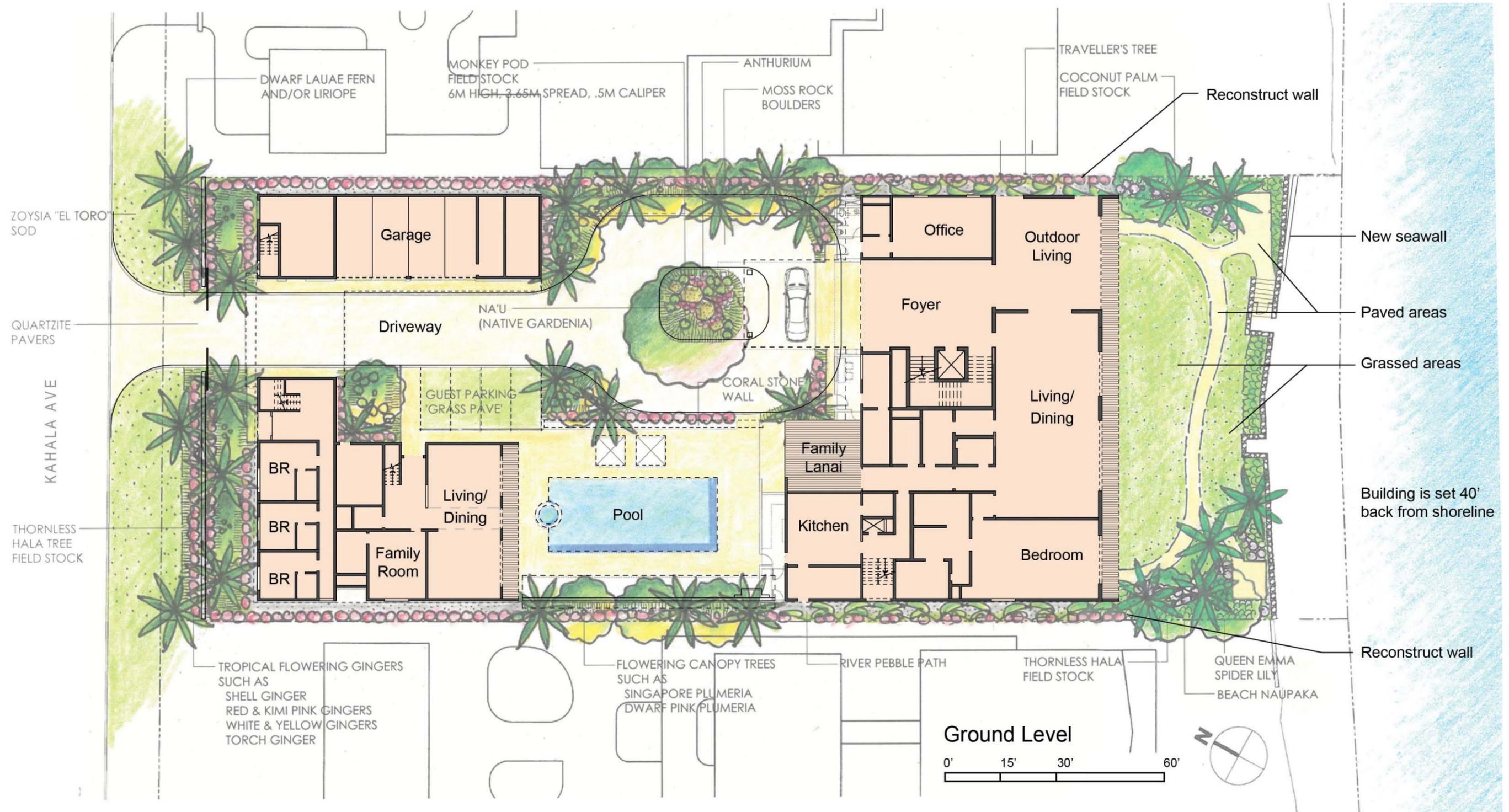


FIGURE 2-2: GROUND LEVEL AND LANDSCAPE PLAN (NOT TO SCALE) (2/7/14)

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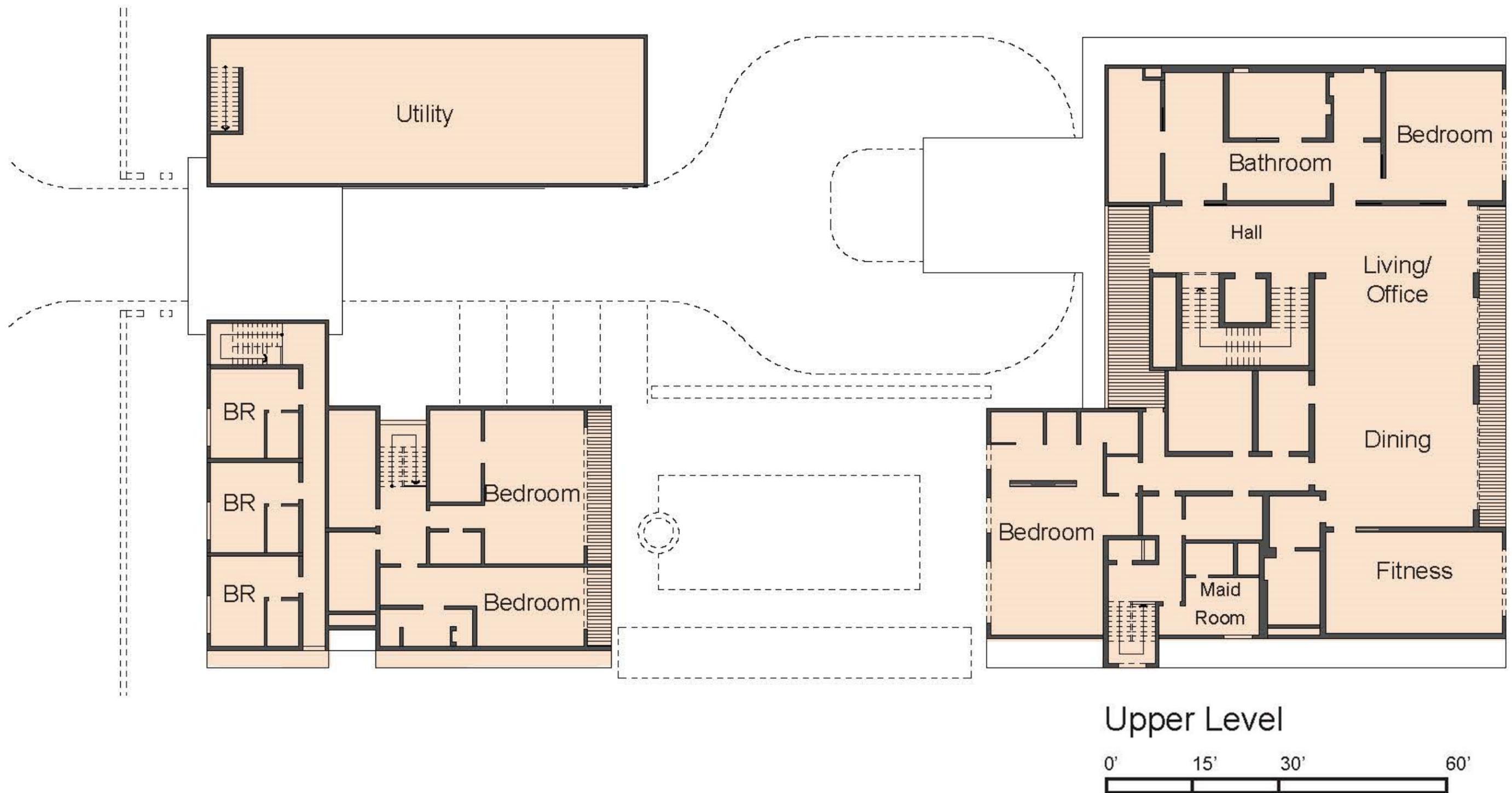


FIGURE 2-3: UPPER LEVEL PLAN (NOT TO SCALE) (2/7/14)

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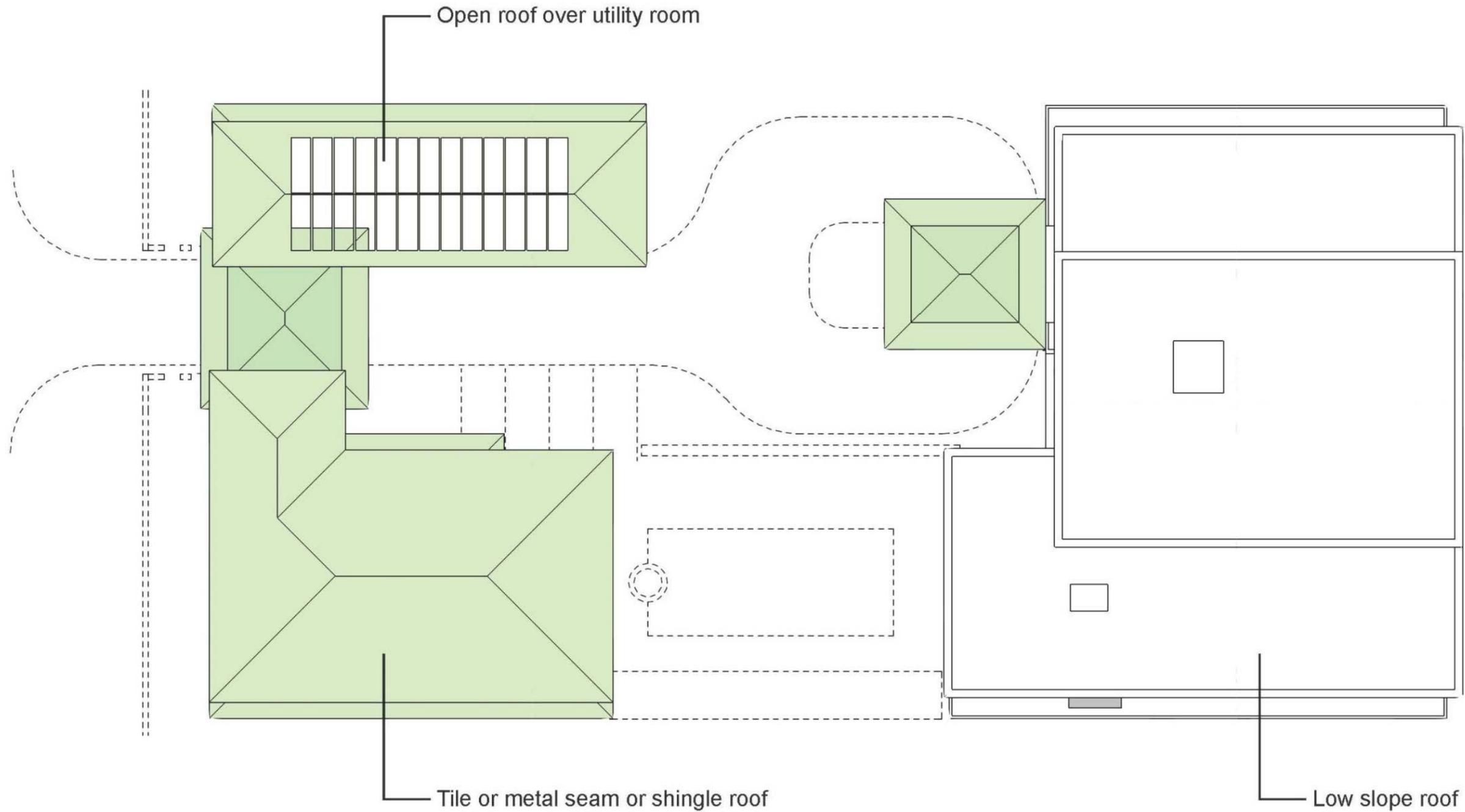


FIGURE 2-4: ROOF PLAN (NOT TO SCALE) (2/7/14)

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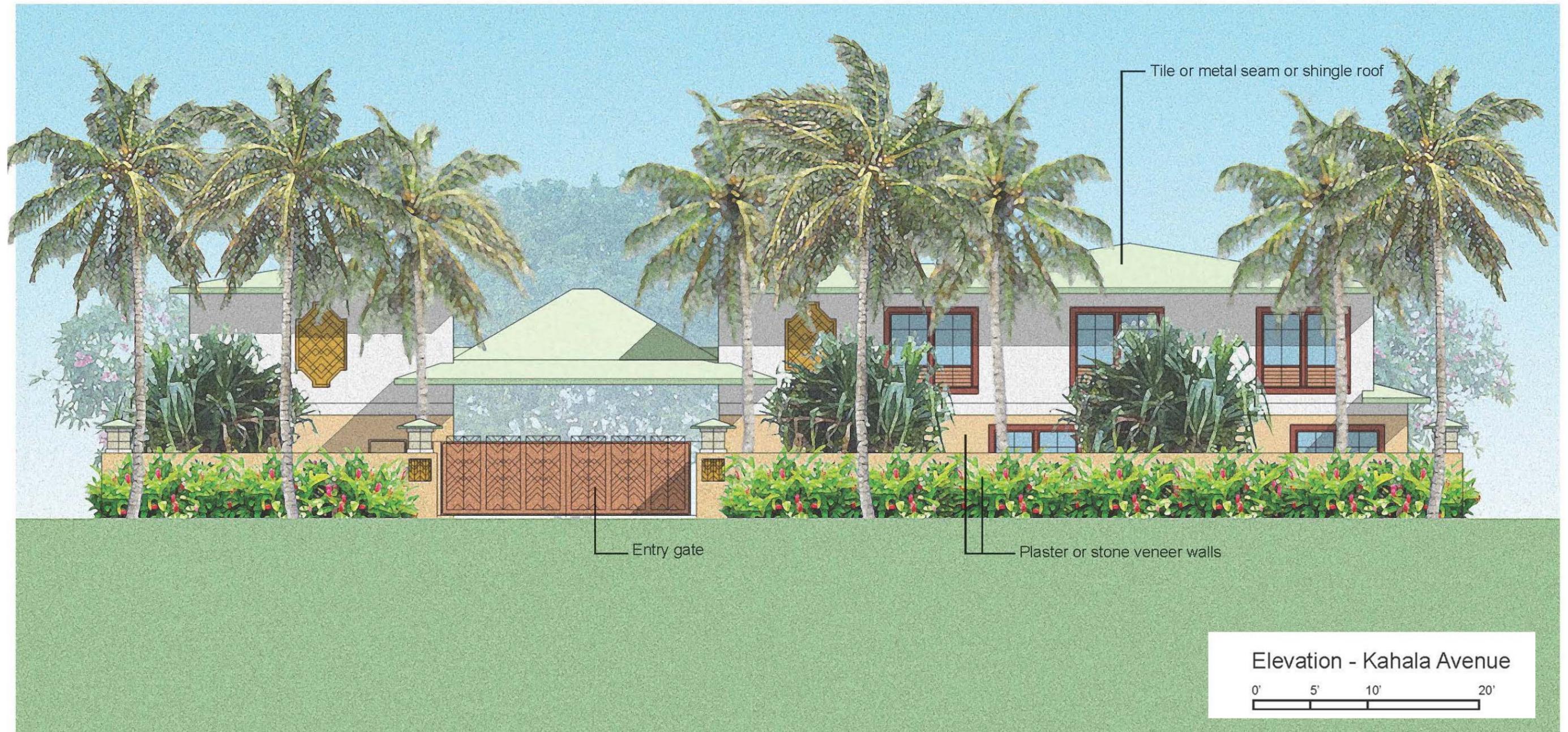


FIGURE 2-5: ELEVATION – KĀHALA AVENUE (NOT TO SCALE) (2/7/14)

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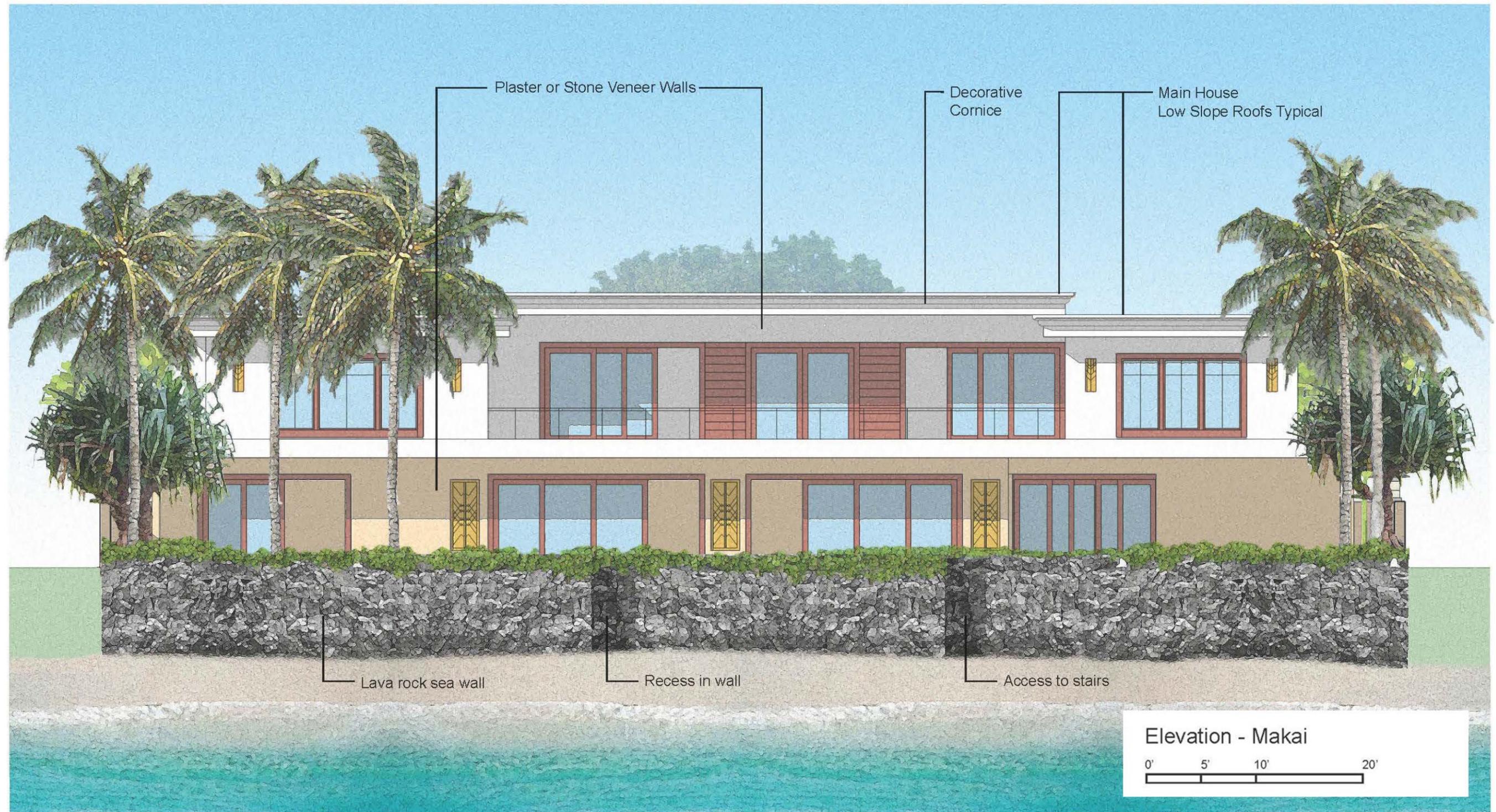


FIGURE 2-6: ELEVATION – MAKAI (NOT TO SCALE) (2/7/14)

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coconut palm



monkeypod tree



thornless hala



traveller's tree



singapore plumeria



dwarf singapore plumeria



"queen emma" spider lily



shell ginger



red ginger



"kimi" pink ginger



white ginger



yellow ginger



torch ginger



na'u (native gardenia)



anthurium



dwarf lau'e fern



green liriopu



beach naupaka

FIGURE 2-7: PLANT PALETTE

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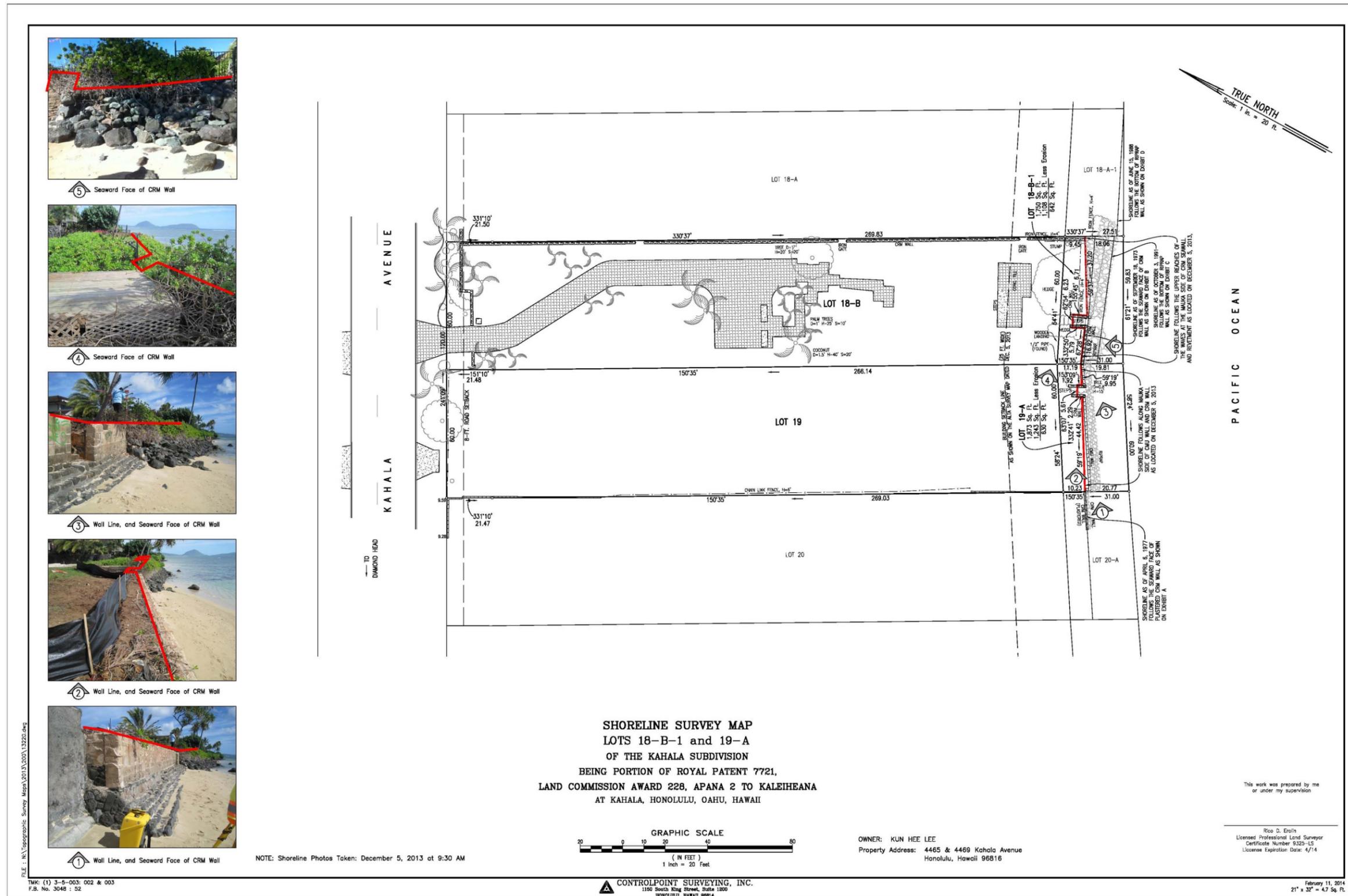
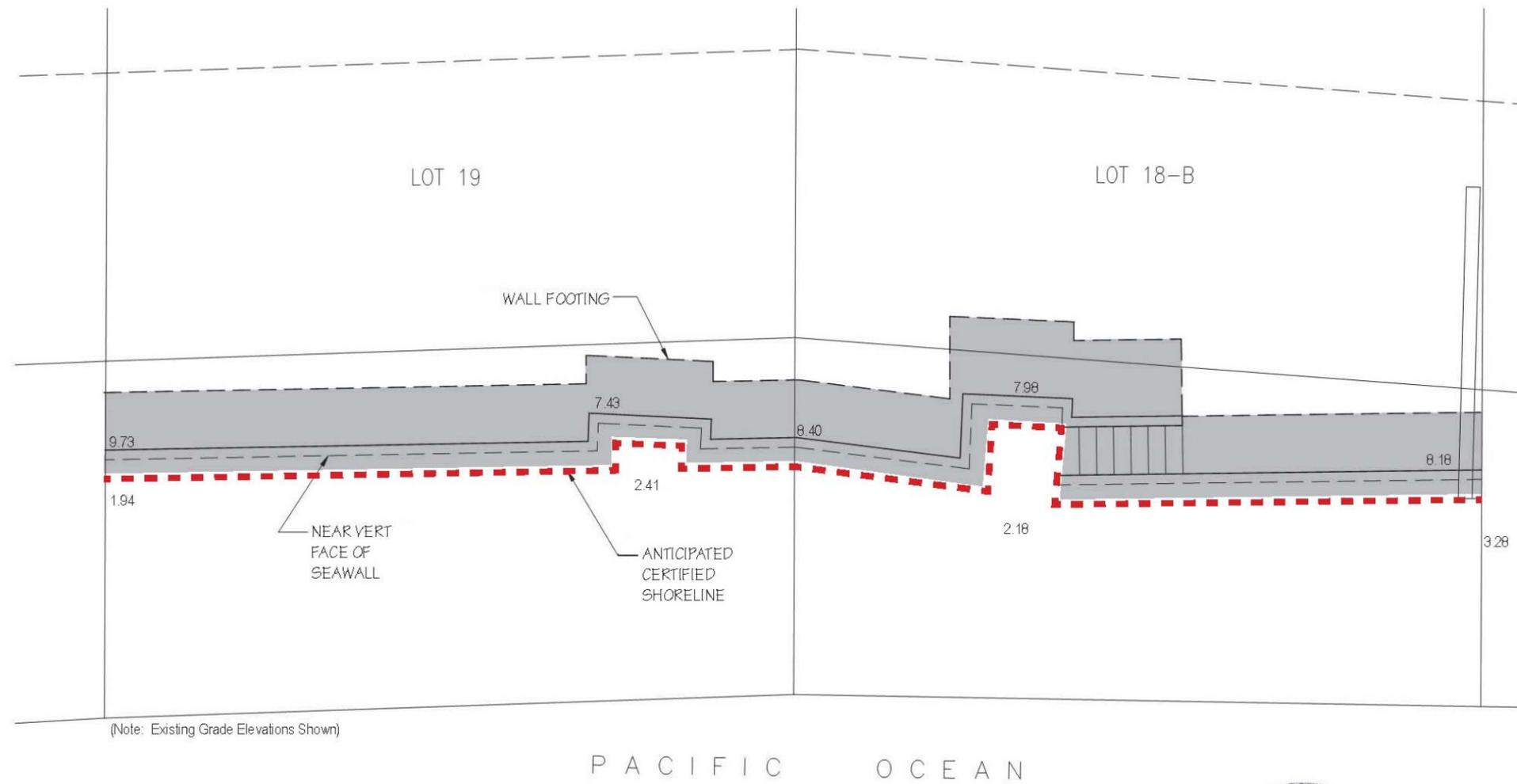


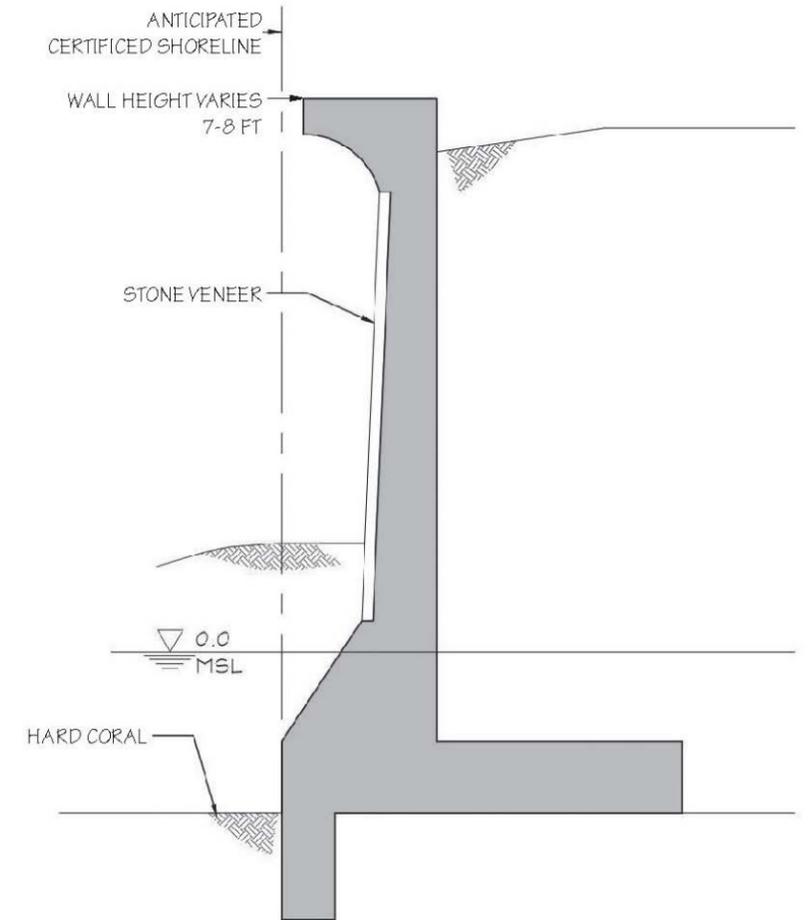
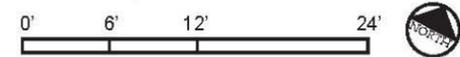
FIGURE 2-8: PROPOSED CERTIFIED SHORELINE (2/12/14)

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Wall Layout Plan



Reinforced Concrete Seawall - Section View

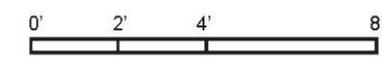


FIGURE 2-9: PRELIMINARY SHORELINE STRUCTURE: PLAN AND SECTION VIEWS (NOT FOR CONSTRUCTION) (2/26/14)

3.0 DESCRIPTION OF THE ENVIRONMENTAL SETTING, POTENTIAL IMPACTS AND MITIGATION MEASURES

3.0 DESCRIPTION OF THE ENVIRONMENTAL SETTING, POTENTIAL IMPACTS, AND MITIGATION MEASURES

This section describes the existing environmental setting and identifies possible impacts of the new residence and shoreline structure. Strategies to mitigate those potential impacts are also identified.

3.1 TOPOGRAPHY

Existing Conditions

The terrain within the property is unevenly graded, and a small embankment separates the project site creating gentle slopes in multiple directions, with the center and west side of the site at the highest elevation at approximately 12 feet above mean sea level (MSL). The site was previously graded to slope toward Kāhala Avenue (to the north), towards the ocean (southeast), and to the south west. Elevations range from 9 to 12 feet along the top of the seawall, to roughly eight feet near Kāhala Avenue. Stormwater runoff generally sheet flows in these directions, towards Kāhala Avenue or towards the ocean. See *Figure 2-1: Topographic Survey Map*.

Potential Impacts and Mitigation Measures

No substantial changes to the site's topography will be made. Excavation and grading will be required during the construction process. Best Management Practices will be implemented pursuant to the required Grading Permit to mitigate potential soil erosion and fugitive dust during grading and excavation.

3.2 SOILS & GEOLOGICAL CONDITIONS

Existing Conditions

The Kāhala beach area lies between Leahi and Koko Head. Soil types within the project site are identified in the U.S. Department of Agriculture, Natural Resources Conservation Service (formerly known as the Soil Conservation Service), Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i, and Lāna'i, State of Hawai'i, (August 1972). As depicted in *Figure 3-2*, the site consists of Beaches (BS) and Jaucus Sand (JaC), 0 to 15 percent slopes. BS areas consist of light colored sands from seashells and coral. Beach areas have no farming value. JaC soil permeability is rapid but runoff is very slow. The water erosion hazard is slight but wind erosion is a severe hazard in places where the soil is not anchored by vegetation.

Potential Impacts and Mitigation Measures

The proposed residential use will not change the overall soil composition at the site. Grading and leveling will redistribute soil on the site. Earth moving activities during construction (e.g., grading, clearing, excavation) have potential to affect air quality through fugitive dust and water quality through storm water runoff, addressed in *Section 3.6 Air Quality* and *Section 3.8.3 Storm Drainage*. Best management practices will be implemented as described in these sections to mitigate potential adverse impacts.

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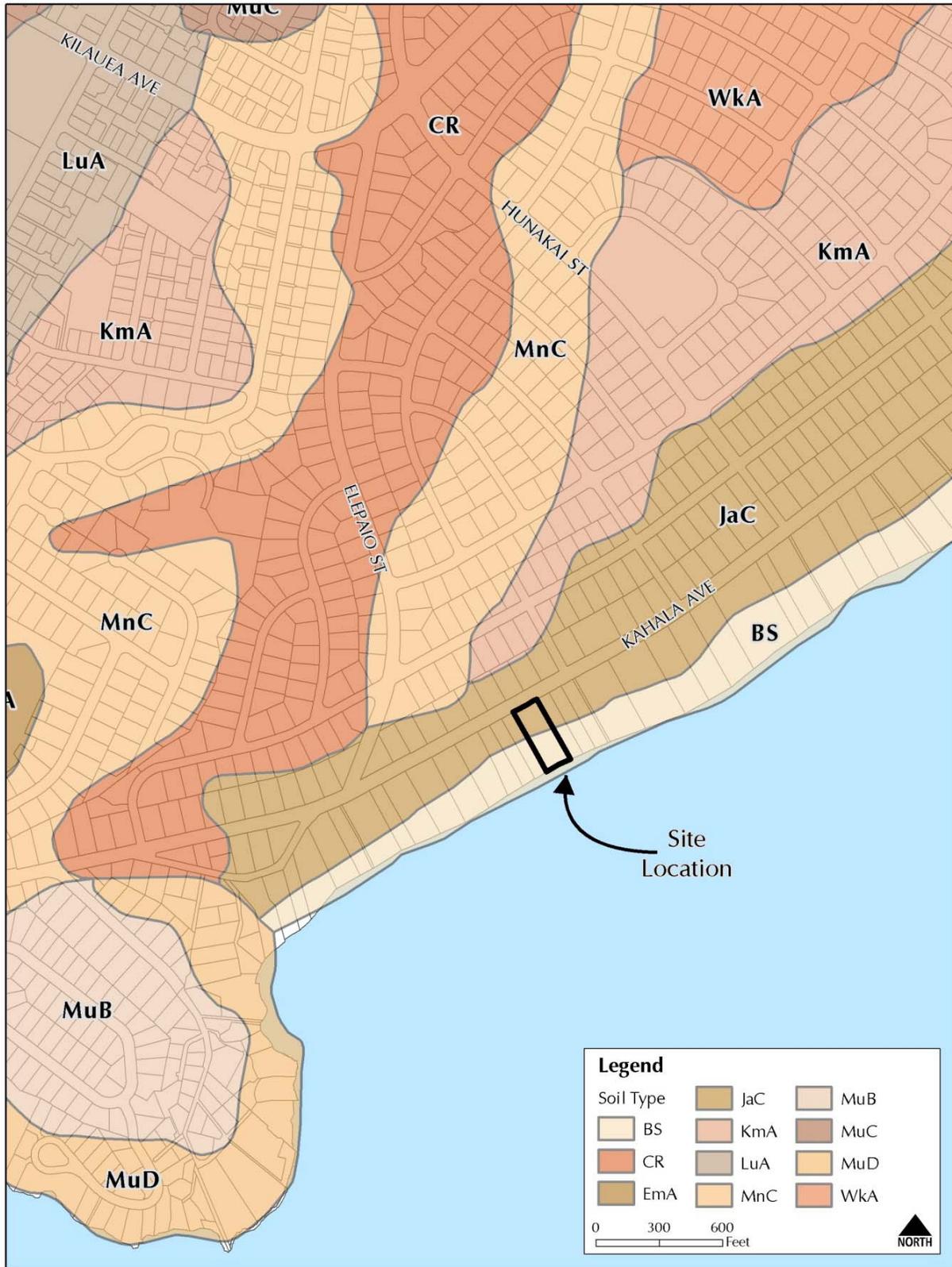


FIGURE 3-1: USDA NRCS SOILS MAP

3.3 CLIMATE

Existing Conditions

Climate on O‘ahu can be characterized as having low day-to-day and month-to-month variability. Differences in the climates of various areas are generally attributable to the island’s geologic formation and topography creating miniature ecosystems ranging from tropical rain forests to dryer plains along with corresponding differences in temperature, humidity, wind, and rainfall over short distances (Dept. of Geography, 1998). Annual and daily variation in temperature depends to a large degree on elevation above sea level, distance inland, and exposure to trade winds.

Winds are predominantly “trade winds” from the east-northeast except for occasional periods when “Kona” storms may generate strong winds from the south, or when the trade winds are weak and land breeze to sea breeze circulations develop. Wind speeds typically vary between about 5 and 20 miles per hour providing relatively good ventilation much of the time. Lower velocities (less than 10 mph) occur frequently and the usual northeasterly trade winds tend to break down in the Fall giving way to more light, variable wind conditions through the Winter and on into early Spring.

The project area’s temperatures generally have small seasonal variations between the warmest months (August and September) and the coolest months (January and February). Daily maximum temperatures usually run from the low-80’s in winter to the low-90’s in summer, while daily minimum temperatures run from the mid-60’s to the low-70’s, respectively. Average monthly temperatures in nearby Waikiki were between 72 and 81 degrees Fahrenheit.

Rainfall in general is highly variable depending upon elevation and location with respect to the tradewinds. The Diamond Head area is one of the drier areas on O‘ahu, with an average annual rainfall of about 25 inches. Most of the rainfall occurs during winter storms usually taking place from October through April.

Potential Impacts and Mitigation Measures

The proposed action will have no effect on climate conditions, and therefore no mitigation measures are required.

3.4 NATURAL HAZARDS

Existing Conditions

Based on the Federal Emergency Management Agency’s *Flood Insurance Rate Map, FIRM Community Panel No. 15003C0370F*, effective November 30, 2004, the project area is located in “Zone X”. As depicted in *Figure 3-2*, the flood Zone X designation indicates the area is outside of the 0.2% annual chance floodplain. The adjacent coastal area is located in the VE zone, indicating an area along the coast subject to inundation by the 1-percent-annual-chance flood event with additional hazards due to storm-induced velocity wave action. No hurricanes have significantly impacted the project area in recent history; however, the potential for tropical storms to cause future damage cannot be dismissed.

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Earthquakes, landslides, volcanic eruptions and explosions can all cause a series of large waves called tsunamis. Hawai'i is susceptible to tsunamis from earthquakes in the Pacific Rim of Fire which encompasses most of the Pacific Ocean. However, the most frequent impacts occur from local earthquakes like the 1976 Halapē quake, or quakes occurring off Japan, the Aleutian Chain or South America. The project area is located within the City and County of Honolulu tsunami evacuation zone.

The majority of earthquakes in Hawai'i are directly related to volcanic activity on the Island of Hawai'i. The entire City and County of Honolulu lies in a seismic zone designated as 2A. Under the International Building Code (IBC) seismic provision, a Zone 2A area could experience seismic activity between .75 and .10 of the earth's gravitational acceleration (g-force).

Potential Impacts and Mitigation Measures

The site is located outside of the 0.2% annual chance floodplain and well away from stream courses. Although the site is secure from stream flooding as well as coastal inundation, the adjacent makai coastal area has a slight chance for flooding and storm-induced waves. A reconstructed shoreline structure will provide a physical barrier between the residence and the ocean. To prevent ponding or localized flooding resulting from storm run-off, existing drainage infrastructure will be maintained. New site infrastructure will be designed and constructed to meet applicable standards.

In the event of a tsunami, occupants will need to evacuate the property to avoid risk of tsunami inundation.

All construction will conform to relevant building codes to mitigate the risk of wind and seismic damage.

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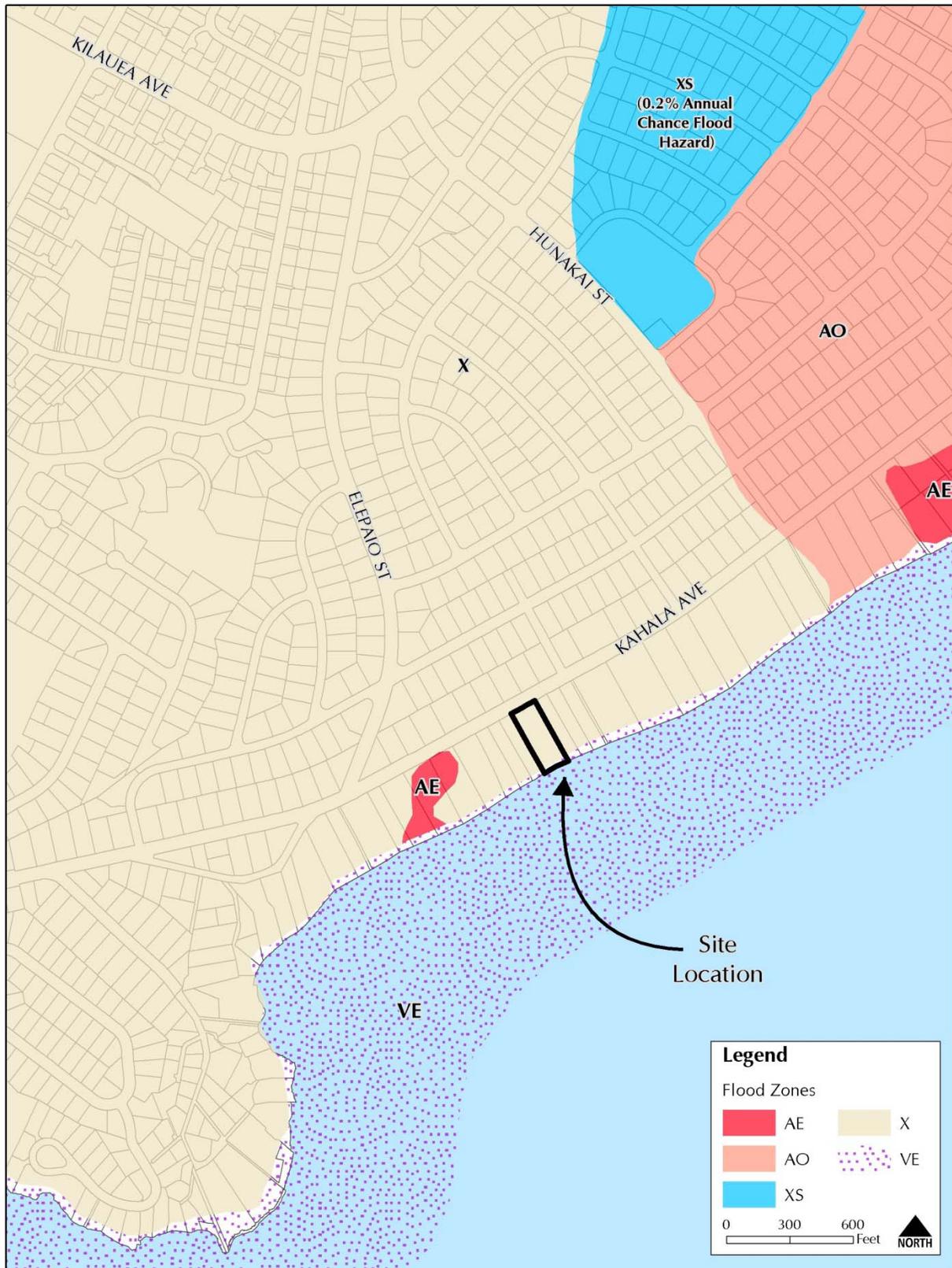


FIGURE 3-2: FEMA FLOOD INSURANCE RATE MAP

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FIGURE 3-3: TSUNAMI ZONE

3.5 FLORA AND FAUNA

Existing Conditions

The ground surface of the property has been completely disturbed with development and structures for many decades. Both parcels support remnants of modern landscaping vegetation, such as grass lawns, coconut and other palms, mango trees, a variety of flowering trees. A collection of shrubs and weeds have sprouted since the lots have been vacant. Most of these plants grow in fill topsoil that was imported to cover calcareous sands that occur naturally on both parcels. No fauna or avian species were observed during a site visit, however, it is expected that common rodent and avian species can be found on the site.

Potential Impacts and Mitigation Measures

There are several mature trees located on the parcels that will be removed prior to construction. The City and County of Honolulu oversees the protection of exceptional trees in accordance with Revised Ordinances of Honolulu, Chapter 41, Article 13 Protective Regulations for Exceptional Trees. The statute includes the Register of Exceptional Trees on O'ahu. There are no exceptional trees on the properties. The site will be landscaped to include non-invasive indigenous, Polynesian-introduced, and introduced species. Drought-tolerant species will be used, wherever possible, to minimize irrigation requirements and water needs. (See *Figure 2-7: Plant Palette*). There are no anticipated adverse impacts to the area's wildlife or habitat. The development and operation of the residential improvements are not expected to result in adverse effects to plant or animal species.

3.6 AIR QUALITY

Existing Conditions

As required by the Clean Air Act of 1970 (as amended in 1977 and 1990), National Ambient Air Quality Standards (NAAQS) were established by the U.S. Environmental Protection Agency (USEPA) for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide, sulfur dioxide (SO₂), lead, ozone (O₃), particulate matter smaller than 10 microns (PM₁₀), and particulate matter smaller than 2.5 microns (PM_{2.5}). Ambient air is defined as the "general outdoor atmosphere, external to buildings, to which the general public has access." These standards then define the maximum levels of these pollutants allowed with an adequate margin of safety in order to ensure and to protect the public's health and welfare.

The State Department of Health (DOH), Clean Air Branch (CAB) has established the State Ambient Air Quality Standards (SAAQS). The DOH-CAB regularly samples ambient air quality at monitoring stations throughout the State and annually publishes this information. On O'ahu, there are six monitoring stations. The closest station to the project site is located in Downtown Honolulu on the roof of the DOH (Kīna'u Hale) building (1250 Punchbowl Street), which measures SO₂, O₃, PM₁₀, PM_{2.5}.

Consistent trade winds regularly blow from a northeasterly direction, creating conditions for excellent air quality over the islands because the prevalent wind directions moves generated air pollutants on land to the southwest out to the open ocean. Present air quality in the project area is mostly affected by motor vehicles, with carbon monoxide being the most abundant of the

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pollutants emitted. Carbon monoxide is a colorless, odorless, tasteless gas under atmospheric conditions and is produced by the incomplete combustion of carbon fuel.

The State and Federal standards for carbon monoxide are set at 9 parts per million (ppm) and 35 ppm in one hour, respectively. The closest monitoring station on Punchbowl Street shows that the concentrations of carbon monoxide are below the State (9 ppm) and Federal (35 ppm) standards with an annual mean of 0.4 ppm (DOH 2012).

Potential Impacts and Mitigation Measures

There will be two types of short-term air quality impacts that will result from construction of the residence and shoreline structure: 1) fugitive dust generation and 2) on-site/off-site emissions from moving construction equipment and commuting construction workers. Air quality monitoring can be implemented, if needed, to ensure compliance with State Ambient Air Quality Standards. Strict compliance with State and County pollution control requirements, such as dust-watering programs and covering dirt-hauling trucks will mitigate fugitive dust from construction activities. On-site and off-site emissions from construction equipment and workers can be controlled, through the use of properly maintained equipment and standard construction work hours.

3.7 NOISE

Existing Conditions

The primary source of existing noise levels at the project site is traffic on Kāhala Avenue. The ambient noise levels around the subject parcels are typically consistent with noise levels found in urbanized residential areas.

Potential Impacts and Mitigation Measures

In the long-term, the residential use will not result in an increase in ambient noise levels in the area. Significant amounts of noise will, however, be generated during the short-term construction period and may impact existing residents in the neighborhood. Construction activities will be monitored by the State to comply with the provisions of the regulations for community noise control. The contractor will be required to obtain a noise permit if the noise levels from construction activities are expected to exceed the allowable levels. Heavy vehicles traveling to and from the property will comply with the State's administrative rules for vehicular noise control.

3.8 UTILITIES AND INFRASTRUCTURE

Group 70 International, Inc. (Group 70) prepared a preliminary engineering report for the proposed action in February 2014 (*Appendix A*).

3.8.1 Water System

Existing Conditions

Existing water lines servicing the area include:

- A 6-inch diameter Board of Water Supply (BWS) cast iron (CI) water line in Kāhala Avenue directly fronting Parcels 002 and 003, which appear to serve each property.

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- A 12-inch diameter BWS CI water line in Elepaio Street approximately 800 feet west of the site and connecting to the 6-inch in Kāhala Ave.
- A 6-inch diameter BWS CI water line in Kala Place approximately 170 feet east of the site and connecting to the 6-inch in Kāhala Ave.
- A 6-inch diameter BWS CI water line in Uliuli Street approximately 750 feet east of the site and connecting to the 6-inch in Kāhala Ave.

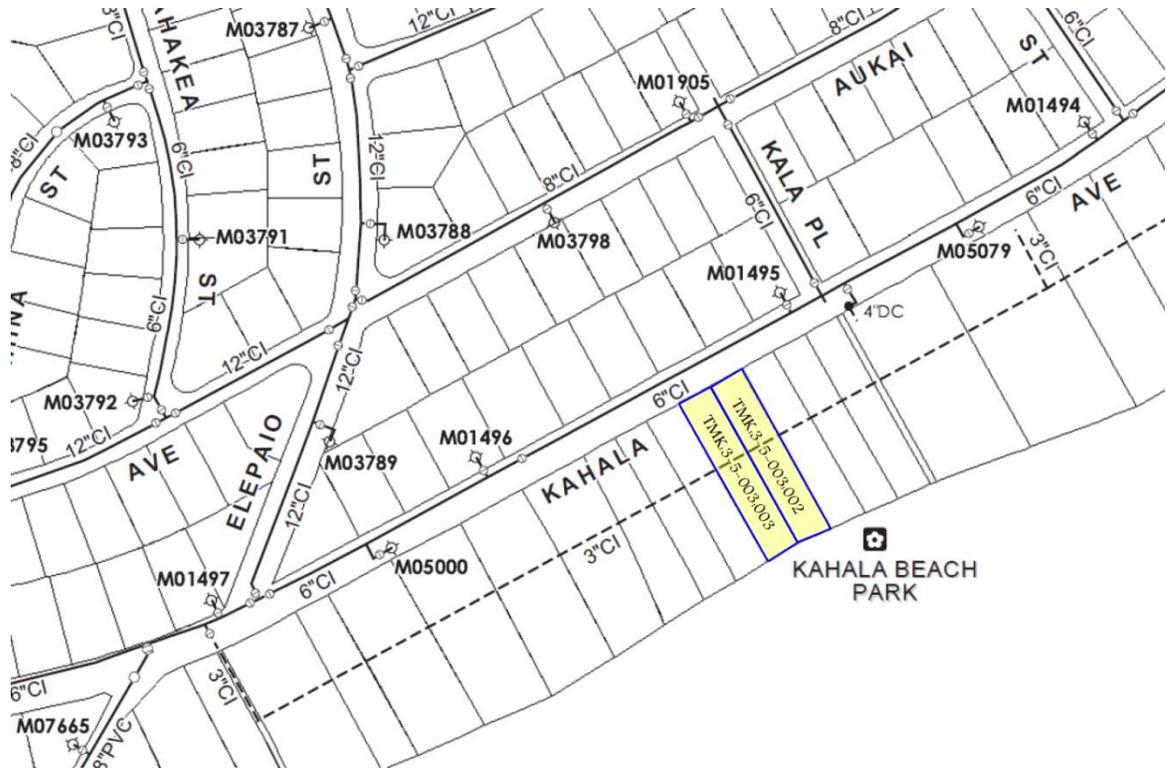


FIGURE 3-4: EXISTING BWS WATER DISTRIBUTION MAP (NOT TO SCALE)

The Board of Water Supply (BWS) distribution maps, record drawings and consultation indicate that Parcels 002 and 003 are both immediately served by the 6-inch CI line in Kāhala Avenue. Parcel 002 is served by a 1-1/2-inch Type “C” single service lateral, with a 1-inch water meter (Premise ID# 1055406; Meter ID# 014-00668). Parcel 003 appeared to be served by a 2-inch Type “D” single service lateral with a 1-1/2-inch water meter (Premise ID# 1055405), but the meter has been removed by the BWS due to inactivity at the property.

The 6-inch diameter water main located in Kāhala Avenue fronting the site serves multiple fire hydrants spaced approximately 300 to 600 feet apart along Kāhala Avenue around the site. There do not appear to be fire hydrants directly fronting or adjacent to the two parcels. There is one fire hydrant (M-01495) within the vicinity of the subject properties at the northwest corner of the Kala Place and Kāhala Avenue intersection, approximately 170 feet east of the site. Hydrant M-10496 is located west of the site on Kāhala Avenue.

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Potential Impacts and Mitigation Measures

Parcel 002 is currently served by an existing BWS 1-inch water meter that is connected to the BWS water main in Kāhala Avenue, and may be utilized for the proposed development. Parcel 003 was previously served by an existing BWS 1-1/2-inch water meter that was connected to the BWS water main in Kāhala Avenue before it was removed. BWS may be approached to reinstall the meter for utilization at this property. Water meters and laterals would likely remain in place, but may also need to be relocated and/or reconstructed at the property line depending on the site plan, should any improvements conflict with the existing meter location.

Existing fire hydrants located on Kāhala Avenue fronting the subject parcels will likely satisfy the fire protection requirements. However, due to the length of the existing parcels, portions of the property appear to be beyond 150-feet of Kāhala Avenue and available fire access. Fire apparatus access road will be provided for the buildings when any portion of the facility or exterior wall of the first story of the building is located more than 150 feet from a fire apparatus access, as measured by an approved route around the exterior of the building or facility. County-approved water supply that is capable of supplying the required fire flow or fire protection to all facilities and buildings within the project's premises will be provided. On-site fire hydrants and mains will be provided when any portion of the facility or building is in excess of 150 feet from a water supply on a fire apparatus access road. Civil and construction drawings will be submitted to the Honolulu Fire Department for review and approval during building permitting period. To address the potential need for additional fire water supply, fire access requirements will be further addressed during subsequent entitlements (SMA, Building Permit).

If existing fire hydrants are determined to be inadequate, fire sprinkler services may need to be included as part of the building design to satisfy the fire protection requirements. It is suggested that a 6-inch detector check meter be installed and may need to be reviewed and approved by BWS.

With proposed mitigation measure, no significant impacts to water systems are anticipated.

3.8.2 Wastewater

Existing Conditions

A City 18-inch diameter vitrified clay pipe (VCP) sewer main flows east along Kāhala Avenue. This sewer line flows into the Kāhala Sewage Pump station located approximately 1 mile east of the properties. The 18-inch sewer main serves residential properties on both the mauka and makai side of Kāhala Avenue.

Sewer service for Parcel 003 is through a 6-inch VCP sewer lateral along the property's Kāhala Avenue frontage. Sewer service for Parcel 002 is through a 6-inch VCP sewer lateral located on the property's Kāhala Avenue frontage, but per HoLIS, appears to combine with the neighboring property's (TMK 3-5-003:035) 6-inch VCP sewer lateral prior to discharge to the 18-inch main in Kāhala Avenue.

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FIGURE 3-5: EXISTING SEWER INFRASTRUCTURE (HOLIS) (NOT TO SCALE)

Potential Impacts and Mitigation Measures

The properties are currently being served by existing 6-inch sewer laterals connected to the City sewer system located in Kāhala Avenue. At least one, if not both of the sewer laterals, may be utilized by the development, based upon the expected fixture unit count and peak flow from the development. Projected sewer demand shall be provided by the mechanical engineer.

A Sewer connection application has been submitted and approved for both parcels for a residential dwelling. The sewer connection license (2013/SCA-0911) will be used during the building permit process as proof of obtaining approval to connect to the City sewer system.

On-site sewer systems will consist of the lateral serving the residence only and will flow by gravity. A sewer cleanout at the sewer lateral should be installed.

The City sewer system is anticipated to have capacity to serve the residential use. No significant wastewater impacts are anticipated.

3.8.3 Storm Drainage

Existing Conditions

The existing properties are currently undeveloped as existing improvements have been removed or abandoned. Existing stormwater runoff flow patterns for the lots will generally be maintained as able, with portions of the parcels flowing into Kāhala Avenue and the remaining portions flowing towards the ocean. Proposed site grading will direct runoff away from structures and door openings to reduce potential stormwater flooding. However, site grading, excavation, fill, and the construction of new structures and pavements will also modify the existing drainage patterns and increase the amount of stormwater runoff generated within the property (due to increased impervious areas). As a result, proposed on-site drainage improvements will be designed per the City and County of Honolulu, Department of Planning

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and Permitting, *Rules Relating to Storm Drainage Standards* (Effective January 1, 2000 with subsequent amendments effective May 1, 2011 and June 1, 2013). Design values will be obtained from various design plates, tables and charts in the City and County of Honolulu's *Rules Relating to Storm Drainage Standards* (Effective January 1, 2000 with subsequent amendments effective May 1, 2011 and June 1, 2013).

Probable Impacts and Mitigation Measures

It is expected that after grading and construction of on-site structures and pavements, runoff quantities will increase due to an increase in impervious surfaces. Pervious pavements and landscaped areas will be used to increase pervious areas on-site to minimize the increase in stormwater runoff. Runoff quantities will be determined after design has been finalized.

A subsurface drainage pipe system will likely be installed to collect roof runoff via downspouts from the residential structure along with floor drains and area drains located at graded low points within the development, including the open pool deck area, driveways, and landscaped areas. The piped system will convey stormwater runoff towards infiltrative BMPs located on-site, and may include and not limited to infiltration trenches or basins, subsurface infiltration chambers under the driveways or parking areas, rain gardens, or other stormwater quality facilities. Other downspouts located along the perimeter may utilize downspout disconnections with rain gardens to collect and retain/infiltrate stormwater.

Due to the unavailability of existing storm drain systems fronting the parcels, it is assumed that the majority of existing stormwater generated on-site infiltrates or sheet flows towards and onto Kāhala Avenue or the ocean. Therefore, downstream capacity of receiving systems and waters is unlikely to be affected by the residential use.

Infiltrative BMPs and sustainable design strategies will be used to retain the stormwater generated by the 10-year 1-hour design storm event, including the expected slight increase in runoff quantities over existing conditions. Although the residential use is not required to implement stormwater quality BMPs in accordance with the City and County's *Rules Relating to Storm Drainage Standards*, it is the goal to reduce the pollution associated with stormwater runoff from development. Proposed infiltrative BMPs for retention and stormwater quality facilities are described in detail below:

- **Infiltration Basin**

Infiltration basin is a shallow impoundment with no outlet, where storm drain runoff is stored and infiltrates through the basin invert and into the soil matrix. Treatment and removal of suspended pollutants/sediment occurs as water infiltrates instead of being conveyed to the public storm drain system. Typically, these basins are used when existing soil percolation rates are high. The location of the basins would be integrated in the landscape and maintenance would be minimal.

- **Infiltration Trench or Chamber System**

Infiltration trenches consist of subsurface gravel storage areas through which stormwater is retained and infiltrated. Proprietary chamber systems utilize storage within underground pipes in lieu of fully filled gravel trenches. Treatment and removal of suspended pollutants/sediment occurs as water infiltrates instead of being conveyed to the public

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storm drain system. Typically, these trenches or chambers also contain a pre-treatment system. They can be more difficult to maintain as they are larger structures and are beneath grade. However, they are utilized where on-site space is at a premium because they can be located underground beneath driveways and parking areas.

- **Pervious Pavements (Paver System)**

Previous pavers collect stormwater runoff through the compacted sand joints in the paver system. Runoff infiltrates through the joints and into a gravel layer under the pavement, where runoff can be stored and infiltrated instead of being conveyed to the public storm drain system. Pollutants and sediment are removed from the runoff as it infiltrates through the sand and gravel layers. The joints should be cleaned periodically to remove surface pollutants and sediment and to maintain the capacity of the pervious paver system. Pervious paver costs may be slightly higher than typical pavement, but in general are not prohibitive.

- **Bioretention Planter (Rain Garden) / Biofiltration Planter (Planter Box)**

These planters utilize natural treatment processes through which stormwater is conveyed to the planter, and is filtered by an organic mulch layer and sandy soil suitable for plantings. The runoff can then be stored and infiltrated in a gravel layer at the bottom for infiltration, or conveyed to a storm drain system if infiltration is not allowed. Stormwater is also taken up by the plants and evapotranspiration. These BMPs are well suited for treating both the roof downspouts and at-grade parking areas where grade allows.

- **Enhanced Swale or Biofiltration Swale (vegetated swale)**

Enhanced swales are similar to the bioretention planters in terms of design, and contain layers of organic mulch, sandy soil for planting, and a bottom gravel layer for infiltration or conveyance. However, the swale has a slope (instead of being flat like a planter). Biofiltration swales rely on surface flow of runoff along the planted swale during which pollutants are removed, in lieu of infiltration through media (mulch/sandy soil), and tend to contain simple vegetation.

Such facilities will mitigate the increase in runoff, and will reduce runoff quantities entering Kāhala Avenue. The BMPs will also improve water quality as pollutants and sediments are retained and treated on-site instead of being discharged to Kāhala Avenue and directly and/or indirectly to the ocean fronting the property. The proposed BMPs will have overflow systems to bypass runoff volumes and flows from larger storm events.

With the inclusion of BMPs and LID techniques, no significant stormwater impacts are anticipated.

3.8.4 Roadways

Existing Conditions

Kāhala Avenue is the main access road running parallel to the coastline in the east-west direction that serves the majority of the beach front houses from Diamond Head to the Waialae Country Club in Kāhala. The two-lane roadway is under the jurisdiction of, and maintained by, the City and County of Honolulu. The existing 60 foot right-of-way (ROW) consists of 15 foot

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wide grassed shoulders and 6 inches high concrete and/or rock curbs on both sides, as well as a 12-foot wide west bound lane and an 18-foot wide east bound lane with permitted parking. The posted speed limit is 25 miles per hour (MPH) in both directions. The roadway is primarily used for residential traffic, but also serves as access to the Waialae Country Club and the Kāhala Hotel which are located at the east end of Kāhala Avenue approximately a mile away.

Various documents of record indicate an 8 foot wide future road widening setback along the street frontage for both parcels. Discussions with the Department of Planning and Permitting (DPP), Traffic Review Branch (TRB) confirmed that there are no future plans to widen Kāhala Avenue beyond the existing right-of-way. Although there are no future plans for frontage improvements such as sidewalks and additional landscaping, if required, TRB said that the existing 15 foot shoulder would be utilized. Further investigation will be required to determine the validity of the setback.

Probable Impacts and Mitigation Measures

Access to the property will be provided by a new 20-foot to 22-foot wide concrete drop driveway along Kāhala Avenue. The driveway will provide access to an interior courtyard and parking area, as well as a vehicular drop-off and turnaround area in front of the main residence entryway. Surface parking for guests and staff will also be provided.

Sustainability and Low Impact Development (LID) design strategies are proposed for the site and reflect the goal for promoting stewardship in Hawai'i's unique environment. Permeable pavements such as pavers or grasscrete products may be used for the driveway surfaces which increase stormwater infiltration and percolation while still providing an aesthetic enhancement over typical concrete or asphalt pavements. Reducing runoff from the site and promoting infiltration mimics existing drainage patterns and prevents runoff and pollutants / sediment from entering the storm drain system, and at this particular location, the adjacent oceanfront waters.

Improvements to Kāhala Avenue are not expected. As previously mentioned, an 8 foot wide future road widening setback exists along the street frontage for both parcels, but discussions with Traffic Review Branch (TRB) confirmed that there are no future plans to widen Kāhala Avenue. However, the residence design and layout will minimize the scope of improvements within the road widening setback should future plans require widening of Kāhala Avenue.

No impacts to roadway systems are anticipated.

3.9 ELECTRICAL AND COMMUNICATIONS

Existing Conditions

The property is currently served by HECO overhead power lines along Kāhala Avenue and overhead telecommunication lines by various providers.

Electrical service for the site is provided by Hawaiian Electric Company (HECO). Hawaiian Telcom and Sprint provides telephone and long distance service.

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An existing utility pole is located along the property frontage (makai side) on Kāhala Avenue, which appears route overhead 12 kV electrical and telecom lines that branch off of the main overhead lines on the mauka side of Kāhala Avenue.

Potential Impacts and Mitigation Measures

The residential use will add demand for electrical and communication services, since the parcels are currently not being utilized. Adequacy of existing electrical and telephone service to the Kāhala Avenue area was not examined in this report and will be verified with HECO and Telcom companies during design. Electrical and communications systems at this Kāhala location should be assessed by an electrical engineer to provide the design team with detailed information on systems availability and capacities. Service capacity to the Kāhala Avenue area for electrical and communications are anticipated to be adequate.

Off-site improvements required to provide the additional services will be the responsibility of each service provider, respectively. Required connections to the services systems will be coordinated with the respective service providers.

An existing utility pole is located along the project's frontage on Kāhala Avenue, on the makai side of the street, which previously served the previous residence. The pole appears to be located directly at the lot line between Parcels 002 and 003, but within the public right of way (ROW). The pole may be removed or relocated during the joint development of the parcels, as the pole may be located within the driveway area. The removal or relocation of the pole will be determined when the site layout is finalized. Coordination with HECO and other utility pole users is required. If necessary, coordinate removal or relocation of utility pole with HECO and others.

Electrical and communications service providers are anticipated to support the residential use. With the implementation of proposed mitigation measure, no significant impact is anticipated.

3.10 PUBLIC FACILITIES AND SERVICES

This section discusses the project's probable impact on public facilities and services of the project site and surrounding area.

3.10.1 Educational Facilities

Existing Conditions

KCC, an element of the University of Hawai'i (UH) System, is located west of the parcels. A number of other public and private elementary, middle and high schools are located throughout the neighboring communities.

Potential Impacts and Mitigation Measures

The residential action will have no educational impacts.

3.10.2 Police

Existing Conditions

The project site is located in District 7 of the Honolulu Police Department, and is served from the main police station on Beretania Street. Private security guard services may provide additional protection.

Potential Impacts and Mitigation Measures

This project should have minimal impact on the police department's operations or ability to provide adequate protection services to the surrounding community. District 7 police protection, combined with on-site private security guards, should be adequate for the proposed project. No adverse impacts or mitigation are anticipated.

3.10.3 Fire

Existing Conditions

Primary fire protection to the area is provided by fire stations located in both Waikīkī and Kaimukī, each approximately 5-7 minutes away from the site.

Potential Impacts and Mitigation Measures

This project is expected to have minimal impact on the Fire Department's operations or ability to provide fire protection services to the area and surrounding community. The planned structures will be designed to meet fire and building code requirements. Appropriate design plans will also be coordinated with the Fire Department for their review during the design phase.

3.10.4 Medical Emergencies

Existing Conditions

Numerous major hospitals and clinics are located in relative proximity to the residential site. The nearest emergency hospital, Kapi'olani Medical Center is located approximately 4 miles from the project site taking an average response time of 8-10 minutes.

Potential Impacts and Mitigation Measures

The proposed action will not impact the handling of medical emergencies. The Kapi'olani Medical Center will continue to function in its present locations and will be accessible to the area. No mitigation is proposed.

3.11 SOLID WASTE MANAGEMENT

Existing Conditions

Solid waste is collected on a weekly basis by the City and County of Honolulu Waste Management Division.

Potential Impacts and Mitigation Measures

No mitigation is proposed but recycling programs should reduce overall levels of generation.

3.12 ARCHAEOLOGICAL RESOURCES

Existing Conditions

In February 2014, an *Archaeological Assessment of Two Lots in Kahala* was completed by Scientific Consulting Services (SCS). This study was designed to address archaeological site types and locations and to identify, if possible, a comprehensive report of known cultural resources and historic properties and to provide recommendations as related to the State of Hawai'i's historic review process. The submittal and study are included as *Appendix B* in this EA.

Previous Archaeological Research in the Vicinity

SCS examined past research within the vicinity of the subject parcels to assess site types that may potentially be encountered. The numerous archaeological sites recorded in the area consist mainly of human burials identified during construction activities, as well as cultural remains relating to both prehistoric and historic time periods.

Results of Archaeological Assessment

A Field Inspection was conducted on January 13 to 14, 2014 by SCS Archaeologist Guerin Tome, B.A. under the overall guidance of Robert L. Spear, Ph.D. (Principal Investigator). Pedestrian survey was conducted across 100 percent of the property. No Pre-Contact or Historic structures were identified during the pedestrian survey.

Limited subsurface testing was conducted during the current Archaeological Inventory Survey in order to identify human alteration, archaeological features, and associated artifacts in subsurface contexts. Ten subsurface test trenches (ST-1 through ST-10) were mechanically excavated during the current survey (Figure). All excavations produced negative results.

The pedestrian survey and subsurface testing revealed three modern structures associated with modern habitation. No cultural or historic sites or features were identified in the property. Several of the test trenches encountered buried A-Horizon soils, but no cultural material was discovered. An old ceramic insulator was identified whose provenance could not be determined. The cultural material identified during the subsurface testing was confined to modern rubbish (wire, plastic bags, glass sherd and ceramic sherd) and modern construction debris (PVC pipe sections, red brick, concrete bricks, and fragments of red brick). One sub-adult faunal bone (possible avian) was identified in a layer of fill. Refer to *Appendix B* for testing results.

Potential Impacts and Mitigation Measures

Based on the historic use of the project area as well as the results of previous archaeological studies in the vicinity of the property, it was determined that potential site types might include pre-Contact or Historic habitation features related to the sites location on the shoreline, and that burials might be found during excavations on the property.

Although no cultural or historic sites were identified during the current survey and subsurface testing, there is potential for inadvertent discoveries of historic or cultural sites during construction. Given the findings of previous archaeological work documented in the area (e.g., human burials and cultural deposits), Archaeological Monitoring is recommended for future ground disturbance activities associated with construction.

With the lack of historic and cultural properties identified on the site and implementation of Archaeological Monitoring during construction, significant impacts to on-site archaeological and historic resources are not anticipated.

3.13 CULTURAL PRACTICES AND RESOURCES

Existing Conditions

A *Draft Cultural Impact Assessment for Two Lots in Kahala* was completed by SCS in February 2014 and is included as *Appendix C*. The project requires compliance with the State of Hawai'i environmental review process under Chapter 343, HRS, which requires consideration of a proposed project's effect on traditional cultural practices. Through document research and cultural consultation efforts, the report provided preliminary information that was applicable to the assessment of the proposed action and its potential impacts to cultural practices.

Hawaiian organizations, agencies and community members have been and continue to be contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O'ahu Island Burial Council (OIBC), Hawaiian Civic Club, Kumu Hula Victoria Holt-Takamine and other community members and cultural organizations.

The noteworthy findings and applicable recommendations from this study include the following:

- (1) Cultural community consultations were sought for this study, including government agency or Hawaiian cultural community organization representatives, or individuals such as long-time area residents and cultural practitioners. Kūpuna (elders) and/or kama'āina (native born) were contacted, as available, to obtain direct commentary.

The results of the cultural consultation process identified concerns about the possibility of inadvertent discoveries of Hawaiian artifacts or iwi (human remains) during the construction phase of the proposed action. However, this concern that is one common to any proposed development on the island as the potential for unknown discoveries always exist. The history of the project area does suggest that there is potential for such discoveries in this area. One of the informants mentioned that a hālau has used Kahala beaches for hi'uwai (water purification) practices and off-shore night fishing has been observed in the general area.

Potential Impacts and Mitigation Measures

Background research and community consultation indicates that the proposed project will have minimal to no impacts to Hawaiian cultural beliefs, practices, resources (historic and/or cultural properties) sites, and traditions. Any existing cultural practices that occur in the area will not be affected as public access to the shoreline area will not be impacted. It is recommended that project personnel be alerted as to the potential for inadvertent cultural finds. If iwi or cultural resources are found during the ground disturbance and construction phases of this proposed project, cultural and lineal descendants of the area and appropriate agencies (e.g.

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SHPD, OHA, OIBC) will be notified and consulted in regard to preparation of appropriate mitigation plans, including a burial treatment plan.

The findings of the ongoing community consultation effort as well as an assessment of potential cultural impacts and recommended mitigation measures will be presented in the final Cultural Impact Assessment and the Final EA.

3.14 COASTAL ASSESSMENT

In support of the EA and SMA permit for the property and seawall reconstruction, Sea Engineering conducted a coastal assessment of the project shoreline, included in *Appendix D*. The coastal assessment addresses Office of Environmental Quality Control (OEQC) guidelines for assessing shoreline alteration projects, including: a detailed description of the existing shoreline and coastal processes; historical shoreline erosion rates; site maps; oceanographic setting; coastal hazards; description of improvements; and alternative.

Existing Conditions

The shoreline at this property is characterized by a wide fringing limestone reef flat over 850 feet in width. The reef flat widens to about 1500 feet at the eastern end of Kāhala Beach. Water depths on the reef flat range from 1 foot near the shoreline to 2 to 3 feet along the seaward margin. The fringing reef flat provides substantial protection to the shoreline from storm waves. During typical conditions, little wave energy reaches the shoreline. Very little sand has accumulated along the shore in this area, existing as small pockets that are mostly covered during higher tide levels. There is little evidence of active sand transport along the shoreline. Basalt boulders and cobbles exist intermittently in this area – they are probably derived from the lava flow that forms the headland at Black Point. Aerial photographs indicate that there is little sand present on the reef flat or further offshore. In general, there appears to be very little sand available in the region for beach building processes.

Shoreline History

The erosion history of Kāhala has been analyzed with aerial photographs by the U.H. Coastal Geology Group (2010). The U.H. Coastal Geology Group compared the low water mark digitized from 8 aerial photographs between 1949 and 2005, and a National Ocean Survey topographic survey chart (T-sheet) from 1925. In the project vicinity, only photographs 1967, 1971, 1975, 1996 and 2005 were used in the analysis. The results of this study for the property vicinity are presented in *Figure 3-6*. Historical shoreline positions from each photograph and the T-sheet were measured every 66 ft (20 m) along the shoreline, as denoted by the yellow transect lines in *Figure 3-6*. The shoreline positions were used to calculate annual shoreline change rates.

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FIGURE 3-6: HISTORICAL SHORELINE CHANGE ANALYSIS (UH COASTAL GEOLOGY GROUP)

(Yellow lines indicate transect locations spaced 66 ft apart. Red bar graph indicates annual erosion rate calculated for each transect location. White lines through bar graph represent 1 foot per year erosion rate increments.)

The subject property corresponds to Transects 320, 321, and 322. The study indicates that the shoreline was eroding at a rate of approximately 1 foot per year at this location. The erosion rate was calculated only to the time that seawall first appeared at the site and fixed the shoreline position.

Potential Impacts and Mitigation Measures

The project shoreline is located in the middle of a 2,500-foot long segment of shoreline extending east of Black Point. This section of coastline is entirely hardened by vertical seawalls, and the occasional interspersed revetment. There is no sand beach along this stretch of shoreline, only occasional small patches of sand that are mostly covered during higher tide levels. A wide, shallow fringing reef flat significantly limits wave energy reaching the shoreline, and there was no evidence of active sand transport. Removal of the existing non-permitted seawall and revetment and replacement with an engineered seawall located approximately five feet further inland, is therefore not expected to alter existing conditions at the site or have negative impacts on the environment.

3.15 VISUAL RESOURCES

Existing Conditions

The site is located in Kāhala, along the shoreline approximately mid-way between Diamond Head Crater and the Kāhala Hotel. Residential uses are located adjacent to the site on three sides, with the ocean on the fourth. *Figure 1-2* provides an aerial perspective of the general area.

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The project site is not located within a Special District and does not interfere with significant mauka-makai or East-West views, as designated by the City and County of Honolulu Primary Urban Center Development Plan.

The site is presently vacant and shielded from view by fencing along Kāhala Avenue frontage. There are no existing ocean views from Kāhala Avenue. The accompanying photos provide visual perspectives of the existing conditions of the project site, and immediate vicinity. *Figure 3-7* is an aerial photo with a key to photos that show views and existing land uses and *Figures 3-8* and *3-9* provide a selection of site photos. The site is surrounded by luxury residential areas.

Potential Impacts and Mitigation Measures

The proposed action will involve construction of two residences on two jointly developed lots. *Figures 2-5 and 2-6* present two elevations of how the proposed action will look once constructed from Kāhala Avenue and from the shoreline area. The conceptual elevations show that the project will be similar in height, scale, massing and design to surrounding residential uses.

The proposed action will conform to design controls established by the LUO including the 25 foot height limit. Construction will be set back 40-foot from the shoreline in accordance with Revised Ordinances of Honolulu Chapter 23 Shoreline Setbacks. Landscaping will be used to improve the visual character of the project site from pedestrian and roadway perspectives along Kāhala Avenue.

The proposed action will meet the design controls established by the LUO and applicable policies. Prominent public vantage points will be maintained and the residential character of Kāhala will be preserved. Accordingly, significant adverse impacts on visual resources are not anticipated.

3.16 POTENTIAL CUMULATIVE AND SECONDARY IMPACTS

Cumulative effects are impacts which result from the incremental effects of an activity when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertake such other actions. The proposed action is consistent with applicable development plans and policies. The applicant will seek a Shoreline Setback Variance/Special Management Area permit and will adhere to the applicable terms and conditions of approval tied to these permits.

Construction activities during the proposed project may generate direct employment in construction-related industries. The removal of the shoreline structure and existing encroachment in the shoreline area will offer a secondary beneficial impact of restoration of natural shoreline area. Over the long-term, no cumulative impacts are anticipated from residential activities.

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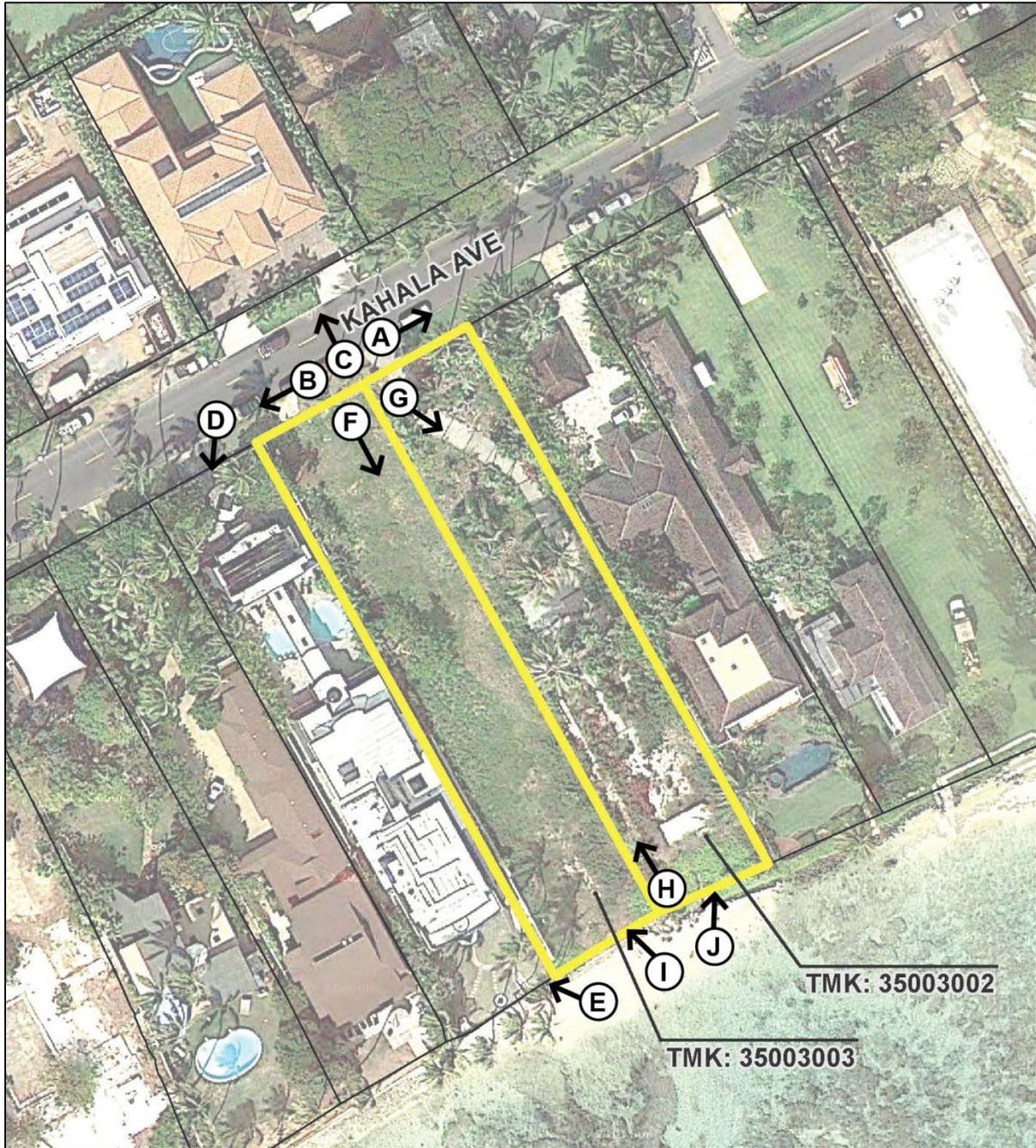


FIGURE 3-7: VIEW ANALYSIS PHOTO KEY

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A. Kāhala Avenue looking east from site



B. Kāhala Avenue looking west from site



C. Residential character – across Kāhala Avenue



D. Residential character – 4461 Kāhala Avenue



E. Residential character – from shoreline area



F. Project site – looking makai

FIGURE 3-8: SITE PHOTOS

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Figure 3-9 Site Photos

4.0 ALTERNATIVES TO THE PROPOSED ACTION

4.0 ALTERNATIVES TO THE PROPOSED ACTION

This Environmental Assessment evaluates reasonable alternatives to the proposed action described in *Section 2.0*. Alternative sites were not considered as the landowner owns the parcels under consideration in this EA.

4.1 ALTERNATIVE A – NO-ACTION ALTERNATIVE

The “no-action” is the baseline against which all other alternatives are measured. “No-action” refers to the future site and program conditions that will likely result should the proposed project not proceed.

Under this alternative construction of the proposed residential use would not occur and the anticipated improvements to the subject parcels would be foregone. Under existing R-7.5 Residential District zoning and Land Use Ordinance Section (LUO) 21-8.20A Multiple Homes on Lot, a maximum of five single family dwellings could be allowed on the joint developed lots. Only one residence per lot is allowed under the recorded covenants for these properties. (See *Table 2-2 Compliance with LUO Development Standards for R-7.5 District*)

There would be no development related impacts under the no-action alternative. The existing shoreline structure would eventually fail and expose the property to ocean erosion and unauthorized access. Selection of the no-action alternative would not achieve the objectives of the residential use as outlined in Chapter 2. Additionally, this alternative would result in underutilization of the sites for their intended uses under existing R-7.5 zoning and the covenant provisions.

4.2 ALTERNATIVE B – ONE RESIDENCE

The development of one residence with the reconstructed seawall was considered as an alternative action. Construction of only a smaller residence (less than 7,500 sf) would result in approximately two-thirds of the area (sf) proposed for the action described in *Section 2.0*. While this alternative would result in a smaller scale action, it would only slightly reduce environmental impacts in comparison to the proposed action. Alternative B would not accommodate the owner’s requirements for the new residential uses as allowed under existing land use controls. For these reasons, Alternative B was rejected. (It is also noted that an SMA use permit and EA would not be required for the development of a residence of less than 7,500 sf.)

4.3 ALTERNATIVE C – REVETMENT

The shoreline structure that will be built to replace the existing seawall is a vertical poured in place concrete structure. Alternatively, the structure could be designed as a sloping rock revetment. This design allows for greater wave energy dissipation. However, the revetment design would require much greater land area due to the angular design. Revetments are typically recommended for shorelines with a wide sandy beach. The subject site has little to no beach area and very little wave energy. In addition, a sloping revetment would interfere with lateral beach access, as evidenced by the existing rip rap material extending in to the ocean. The revetment design was not selected for this location.

5.0 APPLICABLE LAND USE PLANS AND POLICIES

5.0 PLANS AND POLICIES

In this chapter, the proposed action's consistency with applicable land use policies set forth in the State Land Use Law, State Coastal Zone Management Program, City and County of Honolulu General Plan, Primary Urban Center Development Plan, Land Use Ordinance and Special Management Area are discussed.

5.1 HAWAI'I STATE LAND USE DISTRICT BOUNDARIES

The State of Hawai'i Land Use Law regulates the classification and uses of lands in the State to accommodate growth and development, and to retain the natural resources in the area. All State lands are classified by the State Land Use Commission, as Urban, Rural, Agricultural, or Conservation, with consideration given to the General Plan of the County.

Discussion:

The location of the proposed action includes lands that are designated Urban District. The Hawai'i State Plan, Chapter 205-2 (b) Hawai'i Revised Statutes, states that:

"Urban districts shall include activities or uses as provided by ordinances or regulations of the county within which the urban district is situated."

The proposed action is consistent with this Statute, as the proposed land uses are consistent with City and County of Honolulu General Plan, Primary Urban Center Development Plan, and Land Use Ordinance, as discussed below.

5.2 HAWAI'I COASTAL ZONE MANAGEMENT PROGRAM

The Coastal Zone Management Act of 1972 (16 USC Section 1451), as amended through Public Law 104-150, created the coastal management program and the National Estuarine Research Reserve system. The coastal states are authorized to develop and implement a state coastal zone management program. Hawai'i Coastal Zone Management (CZM) Program received federal approval in the late 1970's. The objectives of the State's Hawai'i Coastal Zone Management (CZM) Program, Section 205A-2, HRS, are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic and cultural values and recreational opportunities. The objectives of the program are also to reduce coastal hazards and to improve the review process for activities proposed within the coastal zone. Each county is responsible for designating a Special Management Area (SMA) that extends inland from the shoreline. Development within this SMA is subject to County approval to ensure the proposal is consistent with the policies and objectives of the Hawai'i CZM Program

The site is within the SMA as delineated by the City and County of Honolulu.

Described below are the seven objectives of the Hawai'i CZM Program and an assessment of the action's impacts relative to the State's CZM objectives and policies. The specific City and County SMA policies are also discussed in *Section 5.10*.

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RECREATIONAL RESOURCES

Objective: Provide Coastal Recreational Opportunities Accessible to the Public

- (A) *Improve coordination and funding of coastal recreation planning and management.*
- (B) *Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:*
- *Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*
 - *Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*
 - *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
 - *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
 - *Encouraging expanded public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value;*
 - *Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;*
 - *Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, artificial reefs for surfing and fishing; and*
 - *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use Commissions, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of section 46-6.*

The proposed impact would have no impact on coordination and funding of coastal recreation planning and management.

The proposed action includes removal of an unauthorized shoreline structure out of the State shoreline area and reconstruction of a new, authorized shoreline structure outside of the State jurisdiction. The proposed action will comply with State CZM guidelines and improve public coastal recreational opportunities.

The proposed action will be constructed and operate in accordance with State and federal water quality regulations. Storm water and sewer management systems will be maintained and new infrastructure will be constructed to meet applicable standards. The sewer systems have adequate capacity to address the anticipated load from the action. There are no septic tanks, leach fields, or injection wells proposed. There will be no discharge points into coastal waters.

HISTORIC RESOURCES

Objective: Protect, Preserve and, Where Desirable, Restore Those Natural and Man-Made Historic and Pre-Historic Resources in the Coastal Zone Management Area that are Significant in Hawaiian and American History and Culture

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- (A) *Identify and analyze significant archaeological resources.*
- (B) *Maximize information retention through preservation of remains and artifacts or salvage operations; and*
- (C) *Support state goals for protection, restoration, interpretation and display of historic resources.*

An *Archaeological Assessment Report* (SCS, February 2014) was conducted to assess the potential for locating archaeological resources at this site. The study did not identify evidence of archaeological remains at the site. The site area has undergone extensive disturbances from previous development. Consistent with the archeological investigation, the cultural assessment (SCS, February 2014) determined the site does not possess culturally significant resources. The report recommends archaeological monitoring during construction.

SCENIC AND OPEN SPACE RESOURCES

Objective: Protect, Preserve and, Where Desirable, Restore or Improve the Quality of Coastal Scenic and Open Space Resources

- (A) *Identify valued scenic resources in the coastal zone management area;*
- (B) *Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*
- (C) *Preserve, maintain and where desirable, improve and restore shoreline open space and scenic resources; and*
- (D) *Encourage those developments which are not coastal dependent to locate in inland areas.*

As described in *Section 3.15*, the action will not affect vistas or scenic resources.

The proposed action is consistent with the County General Plan, Primary Urban Center Development Plan, and Zoning regulations. The residential uses will blend into the surrounding urban residential neighborhood. The scale and size of the action are appropriate to the site meet the design controls established in the LUO. The facility will not exceed 25 feet in height and will not interfere with existing prominent public vantage points from which significant public views of Diamond Head and the ocean exist. Therefore, the proposed action will not have any impacts on scenic resources. Perimeter landscaping on the site will serve as a visual buffer to surrounding residential areas.

COASTAL ECOSYSTEMS

Objective: Protect Valuable Coastal Ecosystems from Disruption and Minimize Adverse Impacts on all Coastal Ecosystems

- (A) *Improve the technical basis for natural resource management;*
- (B) *Preserve valuable coastal ecosystems of significant biological or economic importance;*
- (C) *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*

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- (D) *Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.*

The action will not affect coastal ecosystems or natural resource management. During construction and operation, all storm water will be retained onsite. Infiltrative BMPs and sustainable design strategies will be used for on-site retention of stormwater generated by the 10-year 1-hour design storm event. Operations will comply with State and federal water quality standards.

ECONOMIC USES

Objective: Provide Public or Private Facilities and Improvements Important to the State's Economy in Suitable Locations

- (A) *Concentrate in appropriate areas the location of coastal dependent development necessary to the state's economy;*
- (B) *Ensure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and*
- (C) *Direct the location and expansion of coastal dependent development to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*
- *Utilization of presently designated locations is not feasible;*
 - *Adverse environmental effects are minimized; and*
 - *Important to the State's economy.*

The action is consistent with State and County plans and land regulations and will not result in any adverse social, visual, and environmental impacts in the coastal zone management area.

COASTAL HAZARDS

Objective: Reduce Hazard to Life and Property From Tsunami, Storm Waves, Stream Flooding, Erosion and Subsidence.

- (A) *Develop and communicate adequate information on storm wave, tsunami, flood, erosion, and subsidence hazard;*
- (B) *Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;*
- (C) *Ensure that developments comply with requirements of the Federal Flood Insurance Program; and*
- (D) *Prevent coastal flooding from inland projects.*

The site is within FIRM zone X indicating an area outside of the 0.2% annual chance floodplain (Figure 3-2). The site is located within the tsunami evacuation zone (Figure 3-3). The site is not located in a coastal floodplain or storm wave action zone. To prevent ponding or localized flooding resulting from storm run-off, new on-site infrastructure will be constructed to meet

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applicable standards. A new shoreline structure will be constructed to protect the property from potential wave action associated with coastal hazards.

MANAGING DEVELOPMENT

Objective: Improve the Development Review Process, Communication, and Public Participation in the Management of Coastal Resources and Hazards

- (A) *Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;*
- (B) *Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements; and*
- (C) *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their lifecycle and in terms understandable to the general public to facilitate public participation in the planning and review process.*

This EA communicates the potential short and long-term impacts of the action on the environment. Procedurally, this EA conforms to HRS Chapter 343. The Office of Environmental Quality Control (OEQC) publishes notice of the EA availability for public review. The public is allowed 30-days to submit comments on the EA. During pre-consultation agencies and organizations were consulted and will continue to be informed throughout the planning process. In addition, the planning process will include a presentation to the Wai'alaie-Kāhala Neighborhood Board No. 3 and plan review with the Kahala Community Association.

5.3 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE GUIDELINES

The purpose of the LUO is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the County General Plan and development plans. The LUO is also intended to provide reasonable development and design standards. These standards are applicable to the location, height, bulk and size of structures, yard areas, off-street parking facilities, and open spaces, and the use of structures and land for agriculture, industry, business, residences or other purposes (Revised Ordinance for the City and County of Honolulu, Chapter 21).

Discussion:

The subject property is designated as “R-7.5: Residential” zone by the City and County of Honolulu (Figure 1-4). The action is not located within a Special District and is not subject to these additional design control standards. The design meets the R-7.5 standards as defined in the LUO. See Section 2.4 for discussion of compliance with LUO standards.

5.4 SPECIAL MANAGEMENT AREA

The site area is located within the Special Management Area (SMA) (Figure 1-6), which was established to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai'i. The action will comply with the requirements of the SMA. An SMA Approval application will be submitted to the City and County of Honolulu Department of Planning and Permitting.

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Special controls on development within this area are necessary to avoid permanent loss of valuable resources. The review guidelines of Section 25-3.2 of the Revised Ordinances of Honolulu (ROH) are used by the Department of Planning and the City Council for the review of developments proposed in the Special Management Area (SMA). These guidelines are derived from Section 205A-26 HRS. The consistency of the proposed action with the guidelines is discussed below.

(1) All Development in the Special Management Area shall be subject to reasonable terms and conditions set by the council in order to ensure that:

- *Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;*
- *Adequate and properly located public recreation areas and wildlife preserves are reserved;*
- *Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources; and*
- *Alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation or failure in the event of earthquake.*

Discussion:

The closest public access to the beach area in front of the site is located approximately 180 feet east of the parcels, across from Kala Avenue. The proposed action will not adversely affect access to any public shoreline or recreation area. The existing public beach area will be improved through the removal of unauthorized seawall and revetment materials.

No wildlife preserves or public areas are affected by the action.

Wastewater will flow to the City and County of Honolulu operated sewer system. Proposed improvements to the existing sewer will be carried out subject to the approval of the City and County of Honolulu, Department of Planning and Permitting, Wastewater Branch. The design of the sewer system will be in accordance with the "Design Standards of the City and County of Honolulu's Department of Wastewater Management.

Solid waste will be handled and disposed of by the City and County of Honolulu Waste Management.

Alterations to the land and vegetation will not adversely affect coastal areas or recreational resources. The action will implement required permit conditions and best management practices. The action is a redevelopment of an existing residential lot. The action will not increase the potential hazard risk associated with flooding, landslides, erosion, siltation or earthquake. The design and construction will meet or exceed County building standards.

(2) No development shall be approved unless the council has first found that:

- *The development will not have any substantial, adverse environmental or ecological effect except such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interests. Such adverse effect shall include, but not be limited to,*

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the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and the elimination of planning options;

- *The development is consistent with the objectives and policies set forth in Section 25-3.2 and area guidelines contained in Section 205A-26, Hawai'i Revised Statutes; and*
- *The development is consistent with the County General Plan, Development Plans, Zoning and subdivision codes and other applicable ordinances.*

Discussion:

No substantial adverse environmental or ecological direct, indirect or cumulative impacts are anticipated from the action. The action is consistent with applicable plans and policies of the State of Hawai'i and the City and County of Honolulu.

(3) The Council Shall Seek to Minimize, Where Reasonable:

- *Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;*
- *Any development which would reduce the size of any beach or other area usable for public recreation;*
- *Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach;*
- *Any development which would substantially interfere with or detract from the line of sight toward the sea from the State highway nearest the coast; and*
- *Any development which would adversely affect water quality, existing areas of open water free of visible structure, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.*

Discussion:

There will be no adverse impact to public accesses, public beaches or recreation areas. The action will positively impact public access to State shoreline areas through removal of unauthorized seawall and revetment structures. The action will have no adverse impacts on areas of open water, potential fisheries, fisheries, wildlife habitat, or agricultural land. The action will adhere to LUO height and size restrictions and would be similar in size and scale to existing residential development in the vicinity of the action. The action would not adversely limit the line of sight to the ocean from the nearest State highway.

5.5 CITY AND COUNTY OF HONOLULU - PRIMARY URBAN CENTER DEVELOPMENT PLANS

The Primary Urban Center Development Plan (PUCDP) by the City and County of Honolulu Department of Planning and Permitting establishes policy to shape the growth and development of the PUC over the next 20 years. The planning goal of the PUCDP is to enhance the livability of the PUC while accommodating a moderate amount of growth. The PUCDP establishes the region's role in O'ahu's development pattern by establishing policies in the following areas:

- Natural, historic, cultural and scenic resources
- Parks and recreation areas

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- Lower- and higher-density residential neighborhoods
- Commercial and visitor industry facilities
- Military installations, transportation centers and industrial areas
- Design of streets and buildings
- Neighborhood planning
- Transportation networks and systems

Discussion:

The PUCDP serves to guide development on a neighborhood and regional scale, and the policies are not applicable to a small-scale residential development. The site is designated Lower Density Residential on the PUCDP Land Use Map (Figure 5-1). The residential action is consistent with the PUCDP Land Use Map.

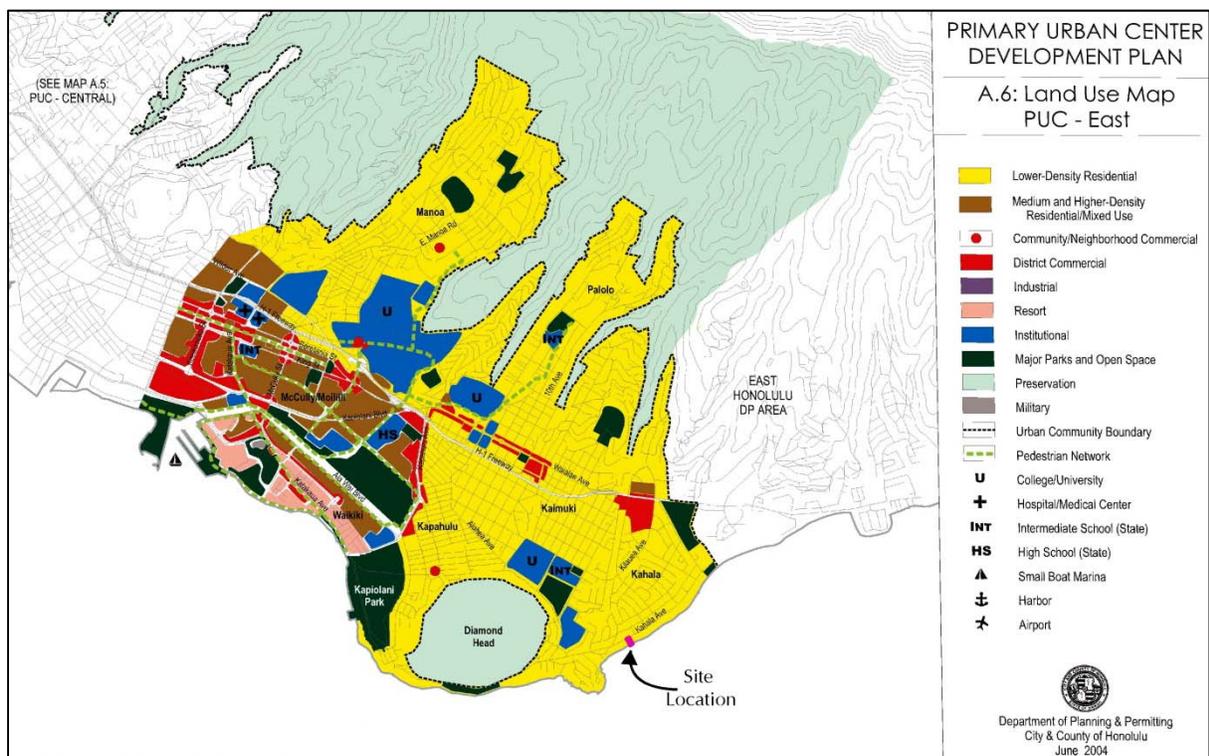


Figure 5-1 Primary Urban Center Development Plan Map Department of Planning and Permitting City and County of Honolulu, June 2004.

5.6 KAHALA COMMUNITY ASSOCIATION

The Kahala Community Association (KCA) is charged with upholding the Declaration of Protective Provisions and Supplemental Declaration of Protective Provision originally connected to the Kāhala landholdings of Kamehameha Schools/Bishop Estate. KCA continues to provide oversight to renovation and new development to ensure that projects abide by these provisions. A discussion of the proposed action in relation to the protective provisions is provided below.

Protective Provision: Use

Provision states that each residential lot should be occupied by one single-family residence for residential uses only, with the exception of outbuildings. Structures also shouldn't be used as a tenement, rooming, or apartment houses or be connected with any business.

The proposed action will include construction of two single-family residences on two lots. The lots will be jointly developed, as they have a single owner. The property will be used for residential purposes only. Residential space has been provided for the owner's personal staff, and will not be used as rental or apartment units. Commercial business will not be conducted on the property and the property will not be utilized by commercial employees. The proposed action is in compliance with the KCA Protective Provision regarding use.

Protective Provision: Subdivision and Consolidation

Provisions prohibit the existing residential lots from being subdivided or consolidated to create additional residential lots. The proposed action will not further subdivide or consolidate the existing residential lot. The two adjacent lots will be jointly developed, as they have the same owner.

Protective Provision: Setback Lines

Provisions enforce compliance with any existing setbacks. The proposed action will comply with all existing setback lines.

Protective Provision: Repair and Maintenance

Provisions require that buildings and residential lots be properly repaired and maintained. The property owner will provide regular building and grounds maintenance to preserve the attractive residential character of the area.

Protective Provision: Landscaping

Provisions require well-maintained landscaping along street frontages. Landscape architects Walters, Kimura, Motoda designed a landscape plan for the property which includes green lawn, Hala trees and tropical flowering ginger plants along the Kāhala Avenue frontage. The landscape will be regularly maintained to preserve the attractiveness of the property and views from Kāhala Avenue.

Discussion

As discussed above, the proposed action conforms with the protective provisions tied to the land. All design plans will undergo design review with KCA to ensure the action meets Kāhala community standards.

6.0 FINDINGS SUPPORTING ANTICIPATED DETERMINATION

6.0 FINDINGS SUPPORTING ANTICIPATED DETERMINATION

6.1 ANTICIPATED DETERMINATION

After reviewing the significance criteria outlined in Chapter 343, Hawai'i Revised Statutes (HRS), and Section 11-200-12, State Administrative Rules, Contents of Environmental Assessment, the proposed action has been determined to not result in significant adverse effects on the natural or human environment. A Finding of No Significant Impact (FONSI) is anticipated.

6.2 REASONS SUPPORTING THE ANTICIPATED DETERMINATION

The potential impacts of the residential improvements have been fully examined and discussed in this Draft Environmental Assessment. As stated earlier, there are no significant environmental impacts expected to result from the proposed action. This determination is based on the assessments as presented below for criterion (1) to (13).

(1) *Involve an irrevocable loss or destruction of any natural or cultural resources.*

The archaeological and cultural landscapes have been documented in studies conducted specifically for the project area. As detailed in *Section 3.12 and 3.13* of this report, the project does not involve any known loss or destruction of existing natural or cultural resources. The only specific area of concern is the unknown potential for the inadvertent discovery of subsurface historical or cultural resources, including the unknown possibility of iwi kūpuna (ancestral remains).

Given the potential for an inadvertent find, archaeological monitoring is recommended during demolition and construction. If any cultural, historic, or archaeological resources are unearthed or ancestral remains are inadvertently discovered, the State Department of Land and Natural Resources (DLNR), State Historic Preservation Division (SHPD), the O'ahu Island Burial Council representative and participating interests from lineal descendents and individuals will be notified. The treatment of these resources will be conducted in strict compliance with the applicable historic preservation and burial laws.

No threatened or endangered species would be impacted by the proposed action.

(2) *Curtail the range of beneficial uses of the environment.*

The proposed activities will not curtail the range of beneficial uses of the environment. Existing uses conform to existing land use designations. The project would actually increase beneficial uses of the parcels, replacing vacant, untended land with a residential use, seawall and landscaping.

There will be no impact on public access to the shoreline and no significant change in lateral access along the shore. There will be no impact to fishing on the reef flat seaward of the project site.

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- (3) *Conflict 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 does not conflict 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. State waters will not be impacted in any way.

- (4) *Substantially affects the economic or social welfare of the community or State.*

The project would have no adverse social or economic impact to the state. Short-term economic benefits anticipated during construction will include direct, indirect, and induced employment opportunities and multiplier effects but not at a level that would generate significant economic expansion. The seawall will have some positive economic impact to the applicant by preventing erosion and loss of land.

- (5) *Substantially affects public health.*

The project is consistent with existing land uses and is not expected to affect public health, except in beneficial ways mentioned in item (4) above. However, there will be temporary short-term impacts to air quality emanating from possible dust emissions and temporary degradation of the acoustic environment in the immediate vicinity resulting from construction equipment. Construction-related impacts of noise, dust, and emissions will be mitigated by compliance with the State Department of Health Administrative Rules.

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

The approval will not have substantial secondary impacts, such as population changes or affects on public facilities.

- (7) *Involves a substantial degradation of environmental quality.*

The project will have no significant adverse environmental impacts nor will it degrade environmental quality. It will not degrade water quality, nor impact marine flora and fauna. The proposed seawall is visually consistent with the existing protected shore on both sides of the project site.

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

The project would not involve cumulative impacts and is not a precursor for other future actions.

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

The project area does not contain identified rare, threatened or endangered species or habitat. No impact is anticipated.

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

General temporary impacts associated with construction have been identified in this EA. Mitigation measures which are outlined in this EA will be applied during the on-going construction activity. No debris, petroleum products, or other construction-related substances or materials will be allowed to flow, fall, leach or otherwise enter the coastal waters. Best Management Practices will be adhered to during construction to minimize environmental pollution and damage. There will be some additional noise above ambient during construction resulting from equipment operation (trucks, back hoe, concrete operations). No detrimental long-term impacts to air, water, or acoustic quality are anticipated with the proposed residential action.

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

The proposed seawall may be subject to prevailing wave conditions at the shoreline, particularly during summer season high surf or Kona storms. The seawall will provide erosion and storm wave protection. The seawall will not alter erosion or coastal processes because it is in the middle of 2,500 feet of shoreline hardened by vertical seawalls and the occasional revetment.

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

The site is only visible from Kāhala Avenue and the public shoreline. The residence will not exceed 25 feet in height will have a no effect on public views of Diamond Head or other scenic view planes. Landscaping will enhance views from Kāhala Avenue.

(13) *Require substantial energy consumption.*

The action will increase power consumption from the island's electrical grid. However, energy-saving measures such as a selection of energy-efficient systems for air-conditioning, lighting and water heating will help to reduce consumption.

6.3 SUMMARY

Based on the above findings, the residential action does not have significant socio-economic or environmental impacts. The Environmental Assessment recommends mitigation measures to alleviate impacts when such impacts are identified.

The action is consistent with the Hawai'i State Land Use District Boundaries; the Hawai'i Coastal Zone Management Plan, the City's General Plan and Development Plan; the City's Zoning Ordinance, and Special Management Area regulations.

7.0 LIST OF REFERENCES

7.0 LIST OF REFERENCES

- City and County of Honolulu, Planning Department, 1992. General Plan for City and County of Honolulu.
- City and County of Honolulu, Department of Planning and Permitting, April 2003. Land Use Ordinance.
- City and County of Honolulu, Department of Planning and Permitting, June 2004. Primary Urban Center Development Plan.
- U.S Department of Agriculture, Soil Conservation Service, August 1972. Soil Survey of Islands of Kaua'i, O'ahu, Maui, Moloka'i and Lāna'i, State of Hawai'i. Prepared in cooperation with the University of Hawai'i Agricultural Experiment Station.
- Group 70 International, Inc., February 2014. Preliminary Engineering Report for Kahala Residence.
- Rider Levett Bucknall, January 2014. 4465/4469 Kahala Avenue Residence Construction Cost Estimate.
- Scientific Consulting Services, February 2014. An Archaeological Assessment of Two Lots in Kahala.
- Scientific Consulting Services, February 2014. A Cultural Impact Assessment for Two Lots in Kahala.
- Sea Engineering, Inc., February 2014. Coastal Assessment for 4465 and 4469 Kahala Avenue.
- State of Hawai'i, Department of Business, Economic Development, and Tourism, OSP, Coastal Zone Management Program (1996). Hawai'i's Coastal Nonpoint Pollution Control Program Management Plan, Volume I.
- State of Hawai'i, Department of Health (September 2013). State of Hawai'i Annual Summary 2012 Air Quality Data.

7.1 GEOGRAPHICAL INFORMATION SYSTEMS DATA

All maps produced using GIS are based on source data available from the Federal Government, State of Hawai'i and County of Hawai'i resources.

Aerial Imagery

Google Earth Aerial Imagery, 2013.

Agricultural Lands of Importance to the State of Hawai'i (ALISH)
State Department of Agriculture, 1977 (Original).

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DFIRM/Flood Hazard Zones
FEMA 2011

Land Ownership
City and County of Honolulu, July 2013

Land Study Bureau (LSB) Detailed Land Classification
State of Hawai'i Office of Planning, December, 2012

Parks
City and County of Honolulu, July 2013

Street Centerline (Roads)
City and County of Honolulu, July 2013

Soils
U.S. Department of Agriculture, Natural Resources Conservation Service, 2002

Special Management Area
Office of Planning, State of Hawai'i, October, 2009

State Land Use District
Office of Planning, State of Hawai'i, July, 2013

Tax Map Key
City and County of Honolulu, July, 2013

Tsunami Evacuation Zone
City and County of Honolulu, August, 2010

Zoning
City and County of Honolulu, July 2013

8.0 AGENCIES AND PARTIES CONSULTED

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8.0 AGENCIES AND PARTIES CONSULTED

Table 8-1 lists the agencies, organizations, and individuals who were contacted during the planning process. Copies of the written comment letters and responses are included in this section.

Table 8-1: Agencies and Parties Consulted

DISTRIBUTION	EA Pre-Consultation (1/24/14)	EA Pre-Consultation Comments Received	Receiving Draft EA	Comments Received	Receiving Final EA/FONSI
A. Federal Agencies or Affiliates					
U.S. Army Corps of Engineers, Honolulu District			X		
B. State Agencies					
DBEDT, Office of Planning			X		
Department of Health (DOH)			X		
Department of Land and Natural Resources (DLNR)			X		
DLNR, State Historic Preservation Division			X (HC)		
DLNR, Office of Conservation and Coastal Land (OCCL)	X		X		
Office of Environmental Quality Control			X		
Office of Hawaiian Affairs (OHA)			X		
University of Hawai'i, Environmental Center			X		
C. City and County of Honolulu					
Board of Water Supply			X		
Department of Planning and Permitting (DPP), Land Use Approval Branch	X		X		
Honolulu Police Department			X		
Honolulu Fire Department			X		
Wai'alaie-Kāhala Neighborhood Bd. No. 3 (Chair Arnie Brady)	X		X		
D. Elected Officials					
State House Rep. Bertrand Kobayashi (District 19)			X		
State Senator Sam Slom (District 9)			X		

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DISTRIBUTION	EA Pre-Consultation (1/24/14)	EA Pre-Consultation Comments Received	Receiving Draft EA	Comments Received	Receiving Final EA/FONSI
Councilmember Stanley Chang (Council District 4)			X		
Councilmember Ikaika Anderson, Chair, Zoning and Planning Committee			X		
E. Libraries					
Hawai'i State Library			X		
Kaimuki Public Library			X		
F. Organizations, Individuals					
Kahala Community Association	X		X		

APPENDIX A
PRELIMINARY ENGINEERING REPORT

PRELIMINARY ENGINEERING REPORT

FOR

KAHALA RESIDENCE

Kahala, Oahu, Hawai'i
TMK: (1) 3-5-003:002 & 003

February 2014

APPLICANT:
Mr. Kyong-Su Im



THIS WORK WAS PREPARED
BY ME OR UNDER MY SUPERVISION

SIGNATURE
EXPIRATION DATE: 4-30-14

Prepared by:



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2.5	WATER (DOMESTIC AND FIRE PROTECTION)
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1.0 INTRODUCTION

1.1 OVERVIEW

The Kahala Residence is a planned residential property, located on two adjacent parcels of undeveloped land in Kahala, Honolulu, Oahu, Hawaii. The two parcels, TMK 3-5-003:002 and 3-5-003:003, combine to form an area of approximately 38,308 square feet. The parcels are currently zoned R-7.5 and are located within the Primary Urban Center.

The existing properties are located on Kahala Avenue and its northern boundaries fronts Kahala Avenue, its southern boundaries fronts the Pacific Ocean, and its western and eastern boundaries are adjacent to existing residential lots. **Refer to Figure 1 – Location Map, and Figure 2 – New Residences TMK Map.**

The existing properties will not require a zone change for the parcels, but each parcel will remain separate and a Conditional Use Permit (CUP) for Joint Development Agreement (JDA) will be processed to support the site. The CUP JDA will allow the landowner(s) to develop the combined parcels as one parcel, with the ability to construct structures crossing the joint property boundaries. This would allow a much larger building footprint and offers more flexibility in the design and layout of the new residence.

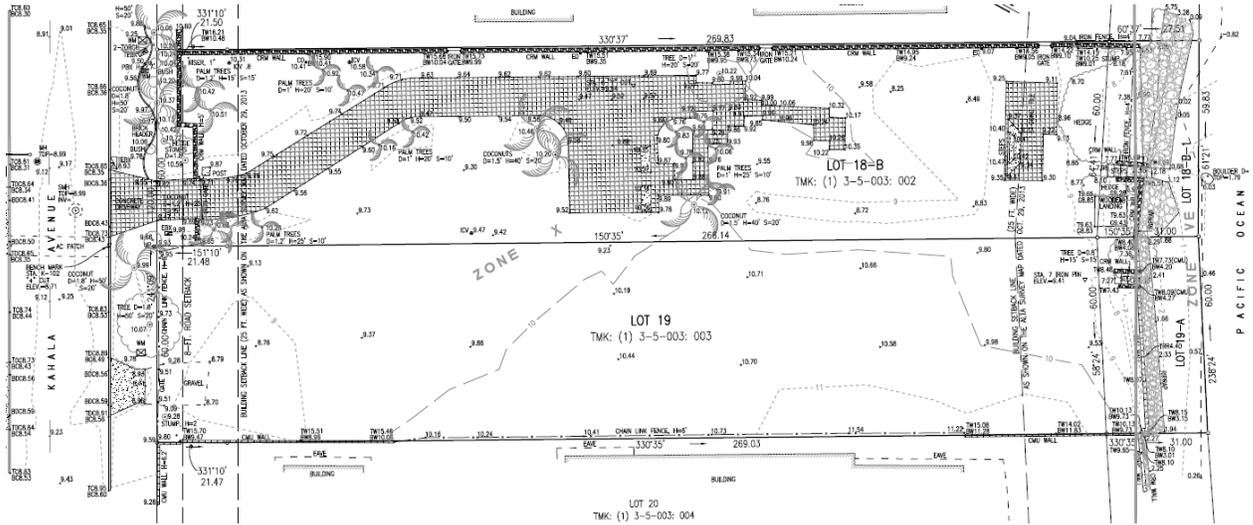
The purpose of this Preliminary Engineering Report is to describe the existing and new civil infrastructure and utilities that will serve the residential property. In addition, this report will also evaluate the adequacy of the existing infrastructure and will describe or detail anticipated improvements which may be required for the new residence.

1.2 EXISTING CONDITIONS

The existing properties are comprised of two adjacent parcels and are currently vacant. While previously developed with single family residences on each parcel, the existing dwelling structures have been demolished and only a concrete pad, a partial stone tiled pathway and some coconut trees remain on Parcel 002 (lot 18-B and 18-B-1). The remaining area of Parcel 002 and the whole of Parcel 003 (lot 19 and 19-A) are covered in bare soil and sand with some patches of grass. Both parcels contain different types of seawalls of varied heights along the shoreline. Parcel 002 has a stacked boulder wall approximately 3-4 feet high with a 3-foot high wrought iron fence on the top and is overgrown with Naupaka. Parcel 003 contains a hollow tile wall approximately 3 feet high on a grouted stacked rock wall approximately 2-3 feet high. There are no fences or shrubberies along the top of the wall. The conditions of the walls are in various stages of deterioration and needs to be assessed by a structural engineer to determine if it is structurally sound to remain.

The terrain within the existing properties is unevenly graded, and a small embankment separates the site creating gentle slopes in multiple directions, with the center and west side of the site at the highest elevation at approximately 12 feet above mean sea level (MSL). The property generally slopes to the roadway to the north, towards the southeast, and to the south west, as elevations range from 12 feet to 9 feet along the top of the sea walls, to about 8 feet near Kahala Ave. Stormwater runoff generally sheet flows in these directions, towards Kahala

Ave. or towards the ocean.



New Residences Topographic Survey (N.T.S.)

Soils are classified as Jaucus Sand (JaC) on the mauka half of the parcels and Beaches (BS) on the makai half of the parcels. Both classifications consist of mostly calcium carbonate with very low water capacity. Rainfall averages in the Kahala area are about 27 inches per year. Additionally, the subject parcels are located within Flood Zone X, outside of the FEMA designated 100-year floodplain. **Refer to Figure 3 – Soils Map, and Figure 4a and 4b – Flood Zone Maps.**

2.0 EXISTING INFRASTRUCTURE

2.1 ROADWAYS

Kahala Avenue is the main access road running parallel to the coastline in the east-west direction that serves the majority of the beach front houses from Diamond Head to the Waialae Country Club in Kahala. The two-lane roadway is under the jurisdiction of, and maintained by, the City and County of Honolulu. The existing 60-ft wide right-of-way (ROW) consists of 15-ft wide grassed shoulders and 6" high concrete and/or rock curbs on both sides, as well as a 12-ft wide west bound lane and an 18-ft wide east bound lane with permitted parking. The posted speed limit is 25 miles per hour (MPH) in both directions. The roadway is primarily used for residential traffic, but also serves as access to the Waialae Country Club and the Kahala Mandarin Hotel which are located at the east end of Kahala Avenue approximately a mile away.

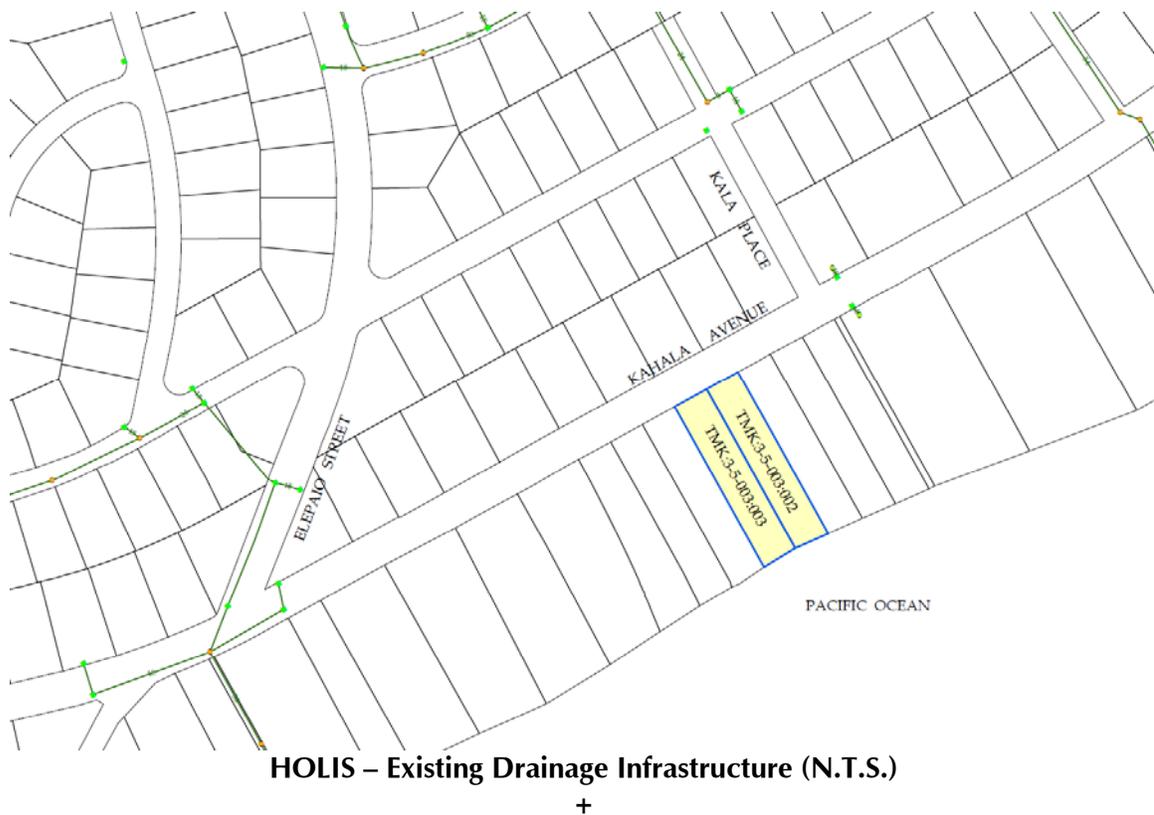
Various record documents indicate an 8-ft wide future road widening setback along the street frontage for both parcels. Discussions with the Department of Planning and Permitting (DPP), Traffic Review Branch (TRB) confirmed that there are no future plans to widen Kahala Avenue beyond the existing right-of-way. Although there is no future plans for frontage improvements such as sidewalks and additional landscaping for the area, if required, TRB said that the existing 15-ft wide shoulder would be utilized. Further investigation will be required to determine the validity of the setback.

2.2 DRAINAGE

The existing properties are relatively flat and appear to primarily slope toward Kahala Ave. and/or toward the ocean. However, due to the uneven topography as well as the undeveloped nature of the properties, the majority of the stormwater runoff generated within the properties generally remains on the properties in localized depressions and percolates into the ground during the smaller storm events. Excess runoff from larger storm events sheet flows towards Kahala Avenue or the ocean and over the existing sea walls.

There are no records of City storm drain systems directly fronting the existing properties. It is unknown whether private storm drain systems may exist within Kahala Avenue fronting the existing properties and would need to be researched and verified.

Two curb inlet (modified) catch basins are located a few hundred feet east of the existing properties which appear to collect stormwater runoff conveyed within Kahala Ave. Per the City and County Honolulu Land Information System (HoLIS), each catch basin is connected to an 18-inch reinforced concrete pipe (RCP) segment that then connects to a stormwater outfall structure at the coastline, where stormwater is discharged to the ocean. The two catch basins would appear to collect and convey a portion of the stormwater generated on the existing properties which flow towards and makes its way into Kahala Avenue.



2.3 FLOOD ZONE

Based on the 2011 Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), the majority of the two parcels within the residential property are in Flood Zone X, outside of the 100-year floodplain. However, small southerly portions of both parcels are located within Flood Zone VE (EL 12), land within the 100-year coastal flood zone having a calculated inundation of up to the base flood elevation (BFE) indicated, which is 12 feet above mean sea level, with additional hazards due to storm-induced velocity wave action.

Development of the properties within the flood hazard zones will need to conform to government regulations including FEMA regulations and the City Land Use Ordinance (LUO). There are several alternatives for the development to comply with the flood hazard district regulations such as: flood proofing for structures, anchoring of foundations, and elevating the building's lower floor above the base flood elevation. For building permits and other administrative actions, compliance is generally outlined in the regulations. For discretionary approvals such as CUP JDA, approval may be subject to agency review and approval. **Refer to Figures 4a and 4b – Flood Zone Maps.**

2.4 SEWER

A City 18-inch diameter vitrified clay pipe (VCP) sewer main flows east along Kahala Avenue. This sewer line flows into the Kahala Sewage Pump station located approximately 1 mile east of the properties. The 18-inch sewer main serves residential properties on both the mauka and makai side of Kahala Avenue.

Sewer service for Parcel 003 is through a 6-inch VCP sewer lateral along the property's Kahala Avenue frontage. Sewer service for Parcel 002 is through a 6-inch VCP sewer lateral located on the property's Kahala Avenue frontage, but per HoLIS, appears to combine with the neighboring property's (TMK 3-5-003:035) 6-inch VCP sewer lateral prior to discharge to the 18-inch main in Kahala Avenue.

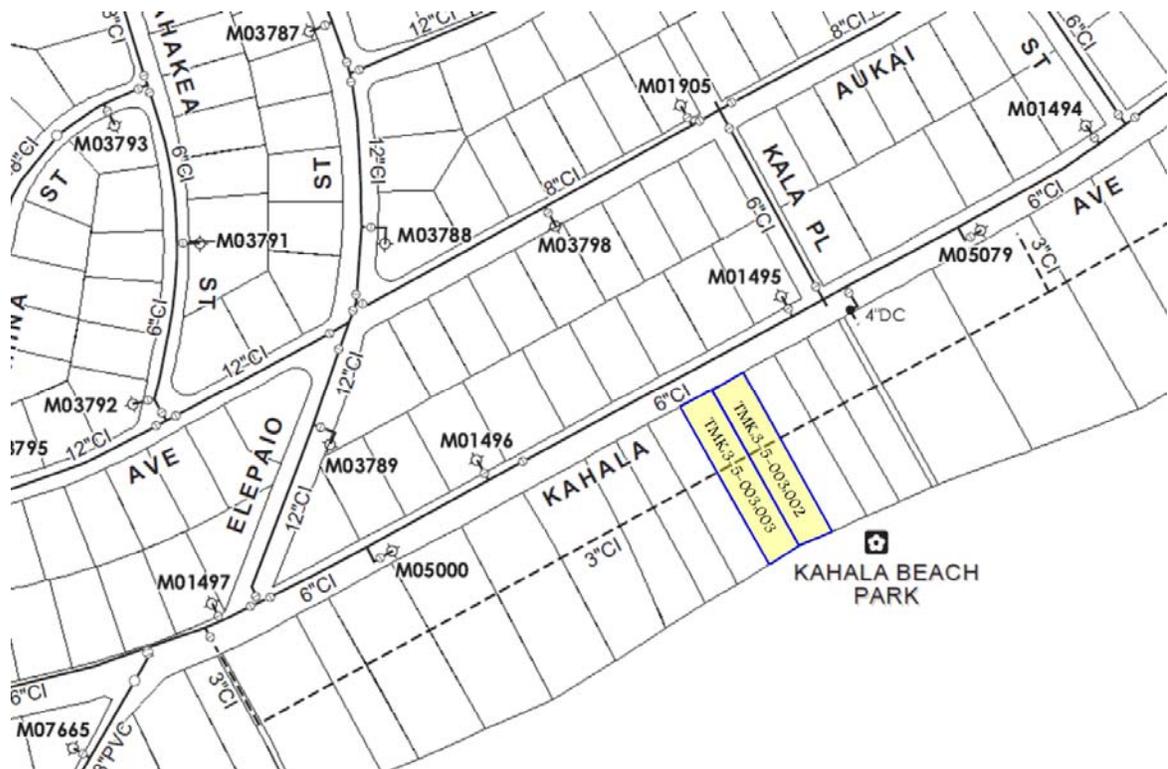


HOLIS – Existing Sewer Infrastructure (N.T.S.)

2.5 WATER (DOMESTIC AND FIRE PROTECTION)

Existing water lines servicing the area include:

- A 6-inch diameter Board of Water Supply (BWS) cast iron (CI) water line in Kahala Avenue directly fronting Parcels 002 and 003, which appear to serve each property.
- A 12-inch diameter BWS CI water line in Elepaio Street approximately 800 feet west of the site and connecting to the 6-inch in Kahala Ave.
- A 6-inch diameter BWS CI water line in Kala Place approximately 170 feet east of the site and connecting to the 6-inch in Kahala Ave.
- A 6-inch diameter BWS CI water line in Uliuli Street approximately 750 feet east of the site and connecting to the 6-inch in Kahala Ave.



BWS Water Distribution Map (N.T.S.)

The Board of Water Supply (BWS) distribution maps, record drawings and consultation indicate that Parcels 002 and 003 are both immediately served by the 6-inch CI line in Kahala Avenue. Parcel 002 is served by a 1-1/2-inch Type “C” single service lateral, with a 1-inch water meter (Premise ID# 1055406; Meter ID# 014-00668). Parcel 003 appeared to be served by a 2-inch Type “D” single service lateral with a 1-1/2-inch water meter (Premise ID# 1055405), but the meter has been removed by the BWS due to inactivity at the property. Water lateral sizes are based upon the corresponding meter size for a single service lateral from the Board of Water Supply’s *Water System Standards*, dated 2002.

The 6-inch diameter water main located in Kahala Avenue fronting the existing properties serves multiple fire hydrants spaced approximately 300 to 600 feet apart along Kahala Avenue around the parcels. There do not appear to be fire hydrants directly fronting or

adjacent to the existing properties. There is one fire hydrant (M-01495) within the vicinity of the existing properties at the northwest corner of the Kala Place and Kahala Avenue intersection, approximately 170 feet east of the site. Hydrant M-10496 is located west of the site on Kahala Ave.

The BWS has suspended fire flow tests on fire hydrants as a water conservation measure, but has provided calculated water pressures at the two above referenced hydrants. Static water pressures were determined to be 73 psi and residual pressures (with a flow of 1000 gpm) to be 50 psi. Pressures shall be verified by on-site pressure gauge readings.

There appears to be an existing 3-inch CI water line that runs in the east-west direction parallel to shore, through the majority of coastline properties within the area, and the 3-inch line appears to bisect both Parcels 002 and 003, per the available BWS Distribution Maps. The line connects to the 6-inch CI line in Kahala Avenue at various points. Per discussions with the BWS-Service Engineering Section, further research confirmed that the 3-inch line is no longer in service and the portions within the existing properties can be removed during construction.

2.6 ELECTRIC, TELEPHONE, AND CABLE

Available aerial imagery indicates existence of above-ground electrical/telcom in the general area as summarized below.

Street Name	Kahala Avenue
Existing Electrical / Telecom	O/H 12kV O/H Telecom
Location	Across the street from subject parcels (mauka side of Kahala Ave.)
Existing Structures	An existing utility pole is located along the subject parcel's frontage (makai side) on Kahala Avenue, which appears route O/H electrical/telecom lines that branch off of the main O/H lines on the mauka side of Kahala Ave.

Electrical and communications systems at this Kahala location should be assessed by an electrical engineer to provide the design team with detailed information on systems capacities.

3.0 PLANNED INFRASTRUCTURE IMPROVEMENTS

3.1 ROADWAYS

Access to the properties will be provided by a new 20-ft to 22-ft wide concrete drop driveway along Kahala Avenue. The driveway will provide access to an interior courtyard and parking area, as well as a vehicular drop-off and turnaround area in front of the main residence's entryway. Surface parking for guests and staff will also be provided. The exact layout of the interior driveways on the residence will be determined during design, and depending on the chosen layout, certain design criteria and requirements will be applied for the driveway widths and dimensions, parking area dimensions, turning radii, and grades or slopes.

Sustainability and Low Impact Development (LID) design strategies are anticipated for the residential properties and reflect the owners's goal for promoting stewardship in Hawaii's unique environment. Permeable pavements such as pavers or grasscrete products may be used for the driveway surfaces which increase stormwater infiltration and percolation while still providing an aesthetic enhancement over typical concrete or asphalt pavements. Reducing runoff from the properties and promoting infiltration mimics existing drainage patterns and prevents runoff and pollutants / sediment from entering the storm drain system, and at this particular location, the adjacent oceanfront waters.

Improvements to Kahala Avenue are not expected. As previously mentioned, an 8-ft wide future road widening setback exists along the street frontage for both parcels, but discussions with Traffic Review Branch (TRB) confirmed that there are no future plans to widen Kahala Avenue. However, the residence design and layout will minimize the scope of improvements within the road widening setback should future plans require widening of Kahala Avenue.

3.2 DRAINAGE

The existing properties are currently undeveloped as existing improvements have been removed or abandoned. Existing stormwater runoff flow patterns for the lots will generally be maintained as able, with portions of the parcels flowing into Kahala Avenue and the remaining portions flowing towards the ocean. The future grading will direct runoff away from structures and door openings to reduce potential stormwater flooding. However, site grading, excavation, fill, and the construction of new structures and pavements will also modify the existing drainage patterns and increase the amount of stormwater runoff generated within the property (due to increased impervious areas). As a result, the following drainage improvements within the properties will be recommended, and will be design based upon the following criteria:

3.2.1 DESIGN CRITERIA

City and County of Honolulu, Department of Planning and Permitting, *Rules Relating to Storm Drainage Standards* (Effective January 1, 2000 with subsequent amendments effective May 1, 2011 and June 1, 2013).

Recurrence Interval:

- For drainage areas of 100 acres or less, T_m (recurrence interval) = 10 year based on 1-hour storm, unless otherwise specified.

Runoff Quantity:

- Rational Method – For drainage area of 100 acres or less, the Rational Method along with the accompanying reference plates, tables, and charts, or latest revision thereof, shall be used to determine quantities of flow rate.
- For drainage areas where downstream capacities are inadequate to accommodate the post-development condition runoff quantity calculated, runoff quantities shall be limited to pre-development conditions and rates.

Stormwater Quality:

- For projects with a disturbed area of greater than one (1) acre, specific criteria for stormwater quality improvements based upon the City and County’s recently amended *Rules Relating to Storm Drainage Standards* must be met (Category A2). The combined area of this residential site is 38,308 square feet, or 0.88 acres, and therefore **not subject** to the City and County’s stormwater quality requirements.

- For projects with parking lots and driveways greater than 10,000 square feet in area, specific criteria for stormwater quality improvements based upon the City and County’s recently amended *Rules Relating to Storm Drainage Standards* must be met (Category B). The planned driveways and parking lots will be less than 10,000 square feet in area, and therefore **not subject** to the City and County’s stormwater quality requirements

- However, sustainability and Low Impact Development (LID) design strategies, as shown in the City and County’s *Rules Relating to Storm Drainage Standards*, are anticipated for the site and reflect the owners’s goal for promoting stewardship in Hawaii’s unique environment. Even though not required, this residential site will implement stormwater quantity and quality control Best Management Practices (BMP’s) where able.

- For a retention based water quality control treatment system, the required retention volume to be retained is based on the amount of runoff volume that would be produced from a design rainfall depth of 1 inch. The formula $WQFV=C \times 1'' \times A \times 3630$ is used to calculate the water quality volume.

- For a flow-through based water quality control treatment system, the required flow rate for flow-through treatment is based on the amount of runoff that would be produced from a peak rainfall intensity of 0.4 inches per hour. The formula $WQFR=C \times 0.4'' \times A$ is used to calculate the water quality flow rate.

3.2.2 HYDROLOGY METHOD

Since the total on-site drainage area is less than 100 acres, the hydrologic calculations for the existing conditions at the subject parcels are based on the Rational Method, $Q=CIA$. Design values will be obtained from various design plates, tables and charts in the City and County of Honolulu’s *Rules Relating to Storm Drainage Standards* (Effective January 1, 2000 with subsequent amendments effective May 1, 2011 and June 1, 2013).

Q=CIA

- Where:
- Q = Peak Runoff Flow Rate (cubic feet per second)
 - C = Coefficient of Runoff
 - I = Rainfall intensity in inches per hour (in/hr)
 - A = Total drainage area (acres)

3.2.3 HYDROLOGY & HYDRAULICS

It is expected that after grading and construction of on-site structures and pavements, runoff quantities will increase due to the increase in impervious surfaces. Pervious pavements and landscaped areas will be used to increase pervious areas on-site to minimize the increase in stormwater runoff. Runoff quantities calculated using the Rational Method above will be determined after design has been finalized.

A subsurface drainage pipe system will likely be installed to collect roof runoff via downspouts from the residential structure along with floor drains and area drains located at graded low points within the development, including the open pool deck area, driveways, and landscaped areas. The piped system will convey stormwater runoff towards infiltrative BMPs located on-site, and may include and not limited to infiltration trenches or basins, subsurface infiltration chambers under the driveways or parking areas, rain gardens, or other stormwater quality facilities. Other downspouts located along the perimeter may utilize downspout disconnections with rain gardens to collect and retain/infiltrate stormwater.

Due to the unavailability of existing storm drain systems fronting the existing properties, it is assumed that the majority of existing stormwater generated within the properties infiltrates or sheet flows towards and onto Kahala Avenue or the ocean. Therefore, downstream capacity of receiving systems and waters is unlikely to be affected by the residential use.

However, infiltrative BMPs and sustainable design strategies will be used to retain the stormwater generated by the 10-year 1-hour design storm event, including the expected slight increase in runoff quantities over existing conditions. Such facilities will mitigate the increase in runoff, and will reduce runoff quantities entering Kahala Avenue. The BMPs will also improve water quality as pollutants and sediments are retained and treated on-site instead of being discharged to Kahala Avenue and directly and/or indirectly to the ocean fronting the property. All future BMPs will have overflow systems to bypass runoff volumes and flows from larger storm events. BMPs are described in detail below:

3.2.4 RETENTION SYSTEMS AND STORMWATER QUALITY FACILITIES

Infiltrative BMPs for the subject parcels will mitigate the peak flow rates and runoff volumes leaving the properties. Additionally, although the residential use is not required to implement stormwater quality BMPs in accordance with the City and County's *Rules Relating to Storm Drainage Standards*, it is the goal to reduce the pollution associated with stormwater runoff from new residence.

The following retention and stormwater quality facilities, with brief descriptions, may be used on-site:

- **Infiltration Basin**

Infiltration basin is a shallow impoundment with no outlet, where storm drain runoff is stored and infiltrates through the basin invert and into the soil matrix. Treatment and removal of suspended pollutants/sediment occurs as water

infiltrates instead of being conveyed to the public storm drain system. Typically, these basins are used when existing soil percolation rates are high. The location of the basins would be integrated in the landscape and maintenance would be minimal.

- **Infiltration Trench or Chamber System**

Infiltration trenches consist of subsurface gravel storage areas through which stormwater is retained and infiltrated. Proprietary chamber systems utilize storage within underground pipes in lieu of fully filled gravel trenches. Treatment and removal of suspended pollutants/sediment occurs as water infiltrates instead of being conveyed to the public storm drain system. Typically, these trenches or chambers also contain a pre-treatment system. They can be more difficult to maintain as they are larger structures and are beneath grade. However, they are utilized where on-site space is at a premium because they can be located underground beneath driveways and parking areas.

- **Pervious Pavements (Paver System)**

Pervious pavers collect stormwater runoff through the compacted sand joints in the paver system. Runoff infiltrates through the joints and into a gravel layer under the pavement, where runoff can be stored and infiltrated instead of being conveyed to the public storm drain system. Pollutants and sediment are removed from the runoff as it infiltrates through the sand and gravel layers. The joints should be cleaned periodically to remove surface pollutants and sediment and to maintain the capacity of the pervious paver system. Pervious paver costs may be slightly higher than typical pavement, but in general are not prohibitive.

- **Bioretention Planter (Rain Garden) / Biofiltration Planter (Planter Box)**

These planters utilize natural treatment processes through which stormwater is conveyed to the planter, and is filtered by an organic mulch layer and sandy soil suitable for plantings. The runoff can then be stored and infiltrated in a gravel layer at the bottom for infiltration, or conveyed to a storm drain system if infiltration is not allowed. Stormwater is also taken up by the plants and evapotranspiration. These BMPs are well suited for treating both the roof downspouts and at-grade parking areas where grade allows.

- **Enhanced Swale or Biofiltration Swale (vegetated swale)**

Enhanced swales are similar to the bioretention planters in terms of design, and contain layers of organic mulch, sandy soil for planting, and a bottom gravel layer for infiltration or conveyance. However, the swale has a slope (instead of being flat like a planter). Biofiltration swales rely on surface flow of runoff along the planted swale during which pollutants are removed, in lieu of infiltration through media (mulch/sandy soil), and tend to contain simple vegetation.

- **Green Roof**

Green roofs contain a relatively thin layer of soil and plantings on top of a roof, and may be a pre-engineered system or built in structurally with the roof design. Green roofs reduce impervious areas, reducing stormwater volume and flow. Additional stormwater is removed through the plants and evapotranspiration.

However, they tend to be more maintenance intensive and require higher up-front costs in the roof and plumbing design. However, this BMP is suited for sites with large roof areas.

3.3 FLOOD HAZARD MANAGEMENT

Development within the existing 100-year flood zones as indicated in the FEMA FIRM will play an important role in the plan for lot development. Chapter 21, Section 21-9.10 of the City LUO, includes the regulations for development activity within a flood hazard district. LUO requirements including flood elevation certificates may be required by DPP during the building permit processing. We recommend that the building be placed outside of and above the regulatory base flood elevation

3.4 SEWER

The existing properties are currently being served by existing 6-inch sewer laterals connected to the City sewer system located in Kahala Avenue. At least one, if not both of the sewer laterals, may be utilized by the planned residence, based upon the expected fixture unit count and peak flow from the residence. The required sewer demand shall be provided by the mechanical engineer.

A Sewer connection application has been submitted and approved for both parcels for two residential dwellings. The sewer connection license (2014/SCA-0065) will be used during the building permit process as proof of obtaining approval to connect to the City sewer system. If required, a wastewater system facility charge will be assessed and payment will be due as part of the building permit requirements.

Sewer systems on the properties will consist of the lateral serving the residences only and will flow by gravity. Sewer cleanouts at the sewer lateral connections should be installed.

3.5 WATER (DOMESTIC AND FIRE PROTECTION)

Parcel 002 currently served by an existing BWS 1-inch water meter that is connected to the BWS water main in Kahala Avenue, and may be utilized for the residential properties. Parcel 003 was previously served by an existing BWS 1-1/2-inch water meter that was connected to the BWS water main in Kahala Avenue before it was removed. BWS may be approached to reinstall the meter for utilization by this residence. Water meters and laterals would likely remain in place, but may also need to be relocated and/or reconstructed at the property line depending on the new site layout, should any improvements conflict with the existing meter location.

Existing fire hydrants located on Kahala Avenue fronting the subject parcels will likely satisfy the fire protection requirements for the CUP JDA. However, due to the length of the existing parcels, portions of the property appear to be beyond 150-feet of Kahala Avenue and available fire access. Fire access through the private property may need to be reviewed and approved as part of the CUP JDA requirements.

If existing fire hydrants are determined to be inadequate, fire sprinkler services may need to be included as part of the building design to satisfy the fire protection requirements. It is suggested that a 6" detector check meter be installed and may need to be reviewed and approved by the BWS.

3.6 ELECTRIC, TELEPHONE, AND CABLE

The existing properties are currently served by HECO overhead power lines along Kahala Avenue and overhead telecommunication lines by various providers. Adequacy of existing electrical and telephone service was not examined in this report and would need to be verified. Electrical and communications systems at this Kahala location should be assessed by an electrical engineer to provide the design team with detailed information on systems availability and capacities.

An existing utility pole is located along the property's frontage on Kahala Avenue, on the makai side of the street, which appeared to serve the previous residences. The pole appears to be located directly at the lot line between Parcels 002 and 003, but within the public right of way (ROW). The pole will be removed or relocated during the joint development of the parcels, as the pole may be currently located within the new driveway as determined by the site layout and architect. The removal or relocation of the pole will be determined when the site layout is finalized and related impacts to both options are reviewed and accepted by the owner. Coordination with HECO and other utility pole users would be required.

Off-site improvements required to provide the additional services will be the responsibility of each service provider, respectively. Required connections to the services systems will be coordinated with the respective service providers.

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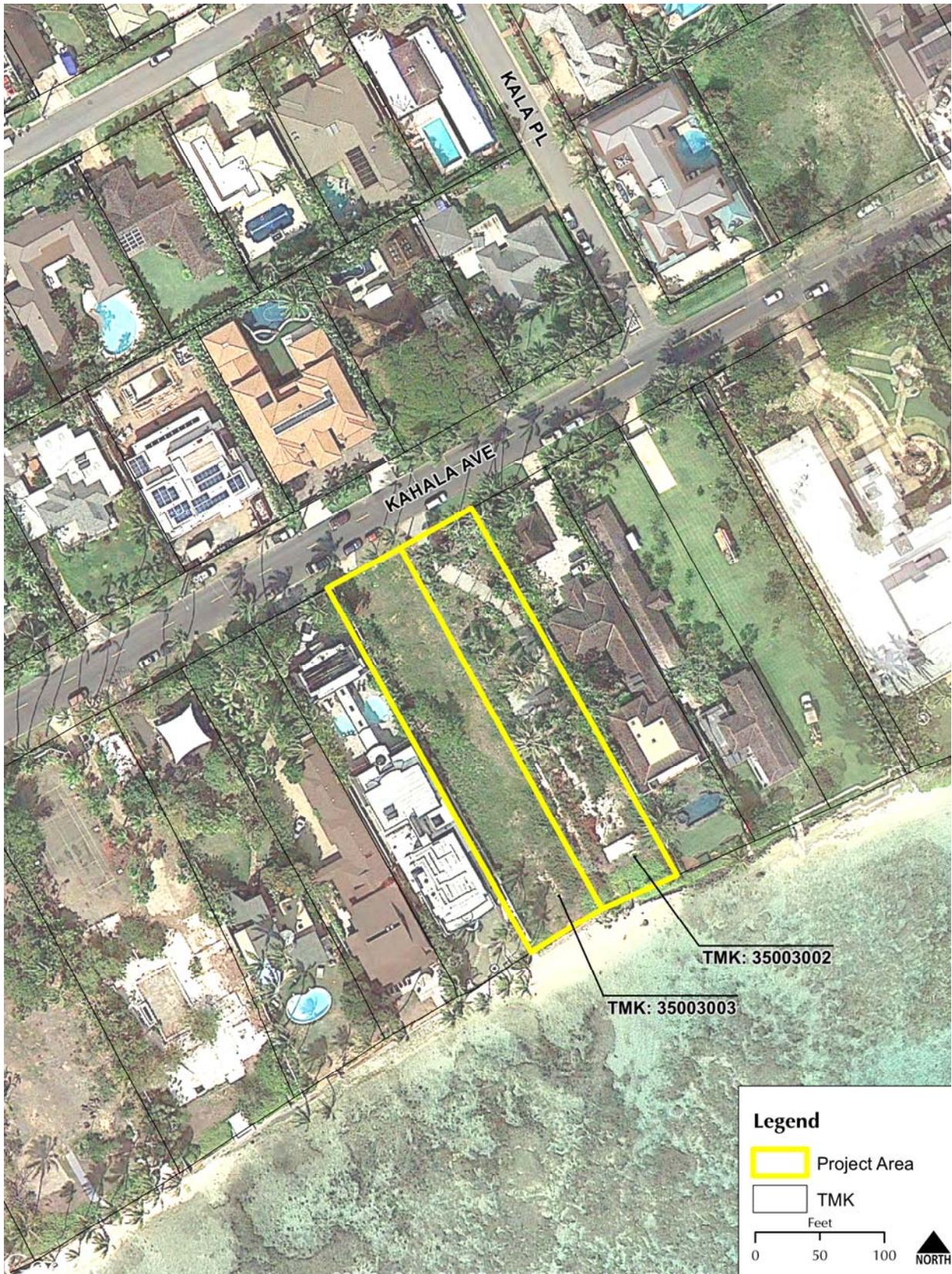


Figure 2: New Residence's TMK Map (N.T.S.)

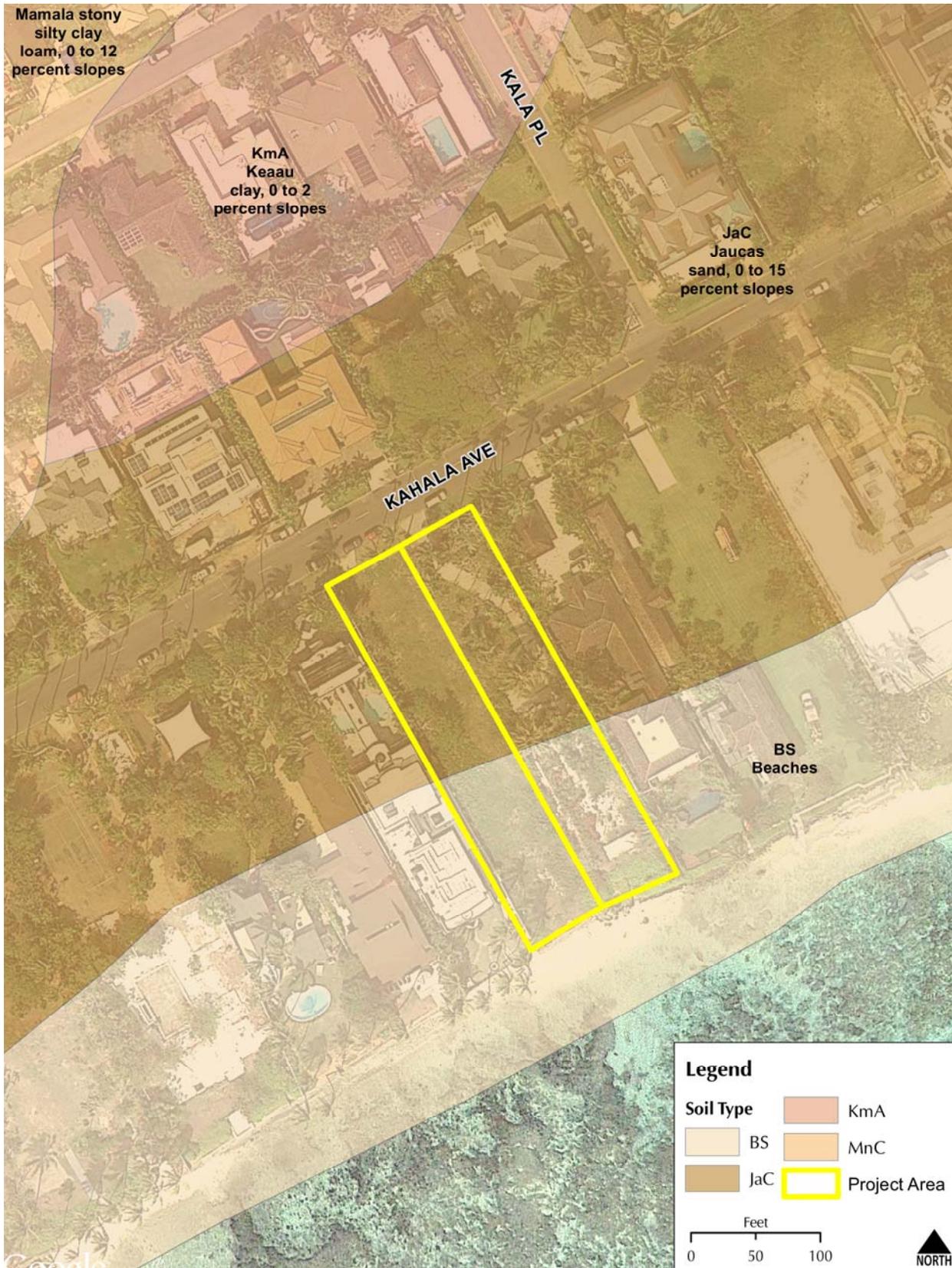


Figure 3: Soils Map (N.T.S.)

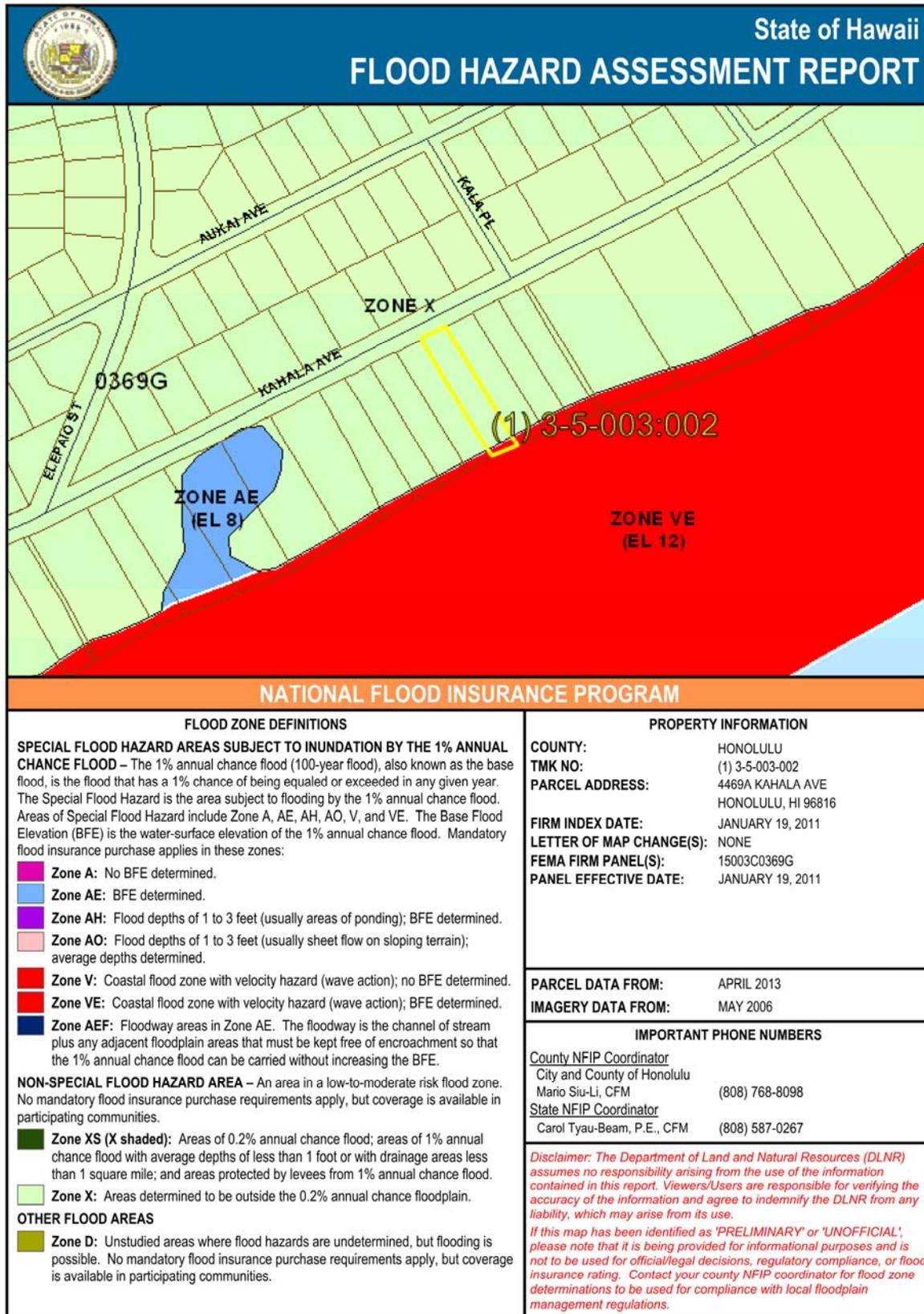


Figure 4a: Flood Zone Map (N.T.S.) – Source: <http://gis.hawaiiinfip.org/fhat/>

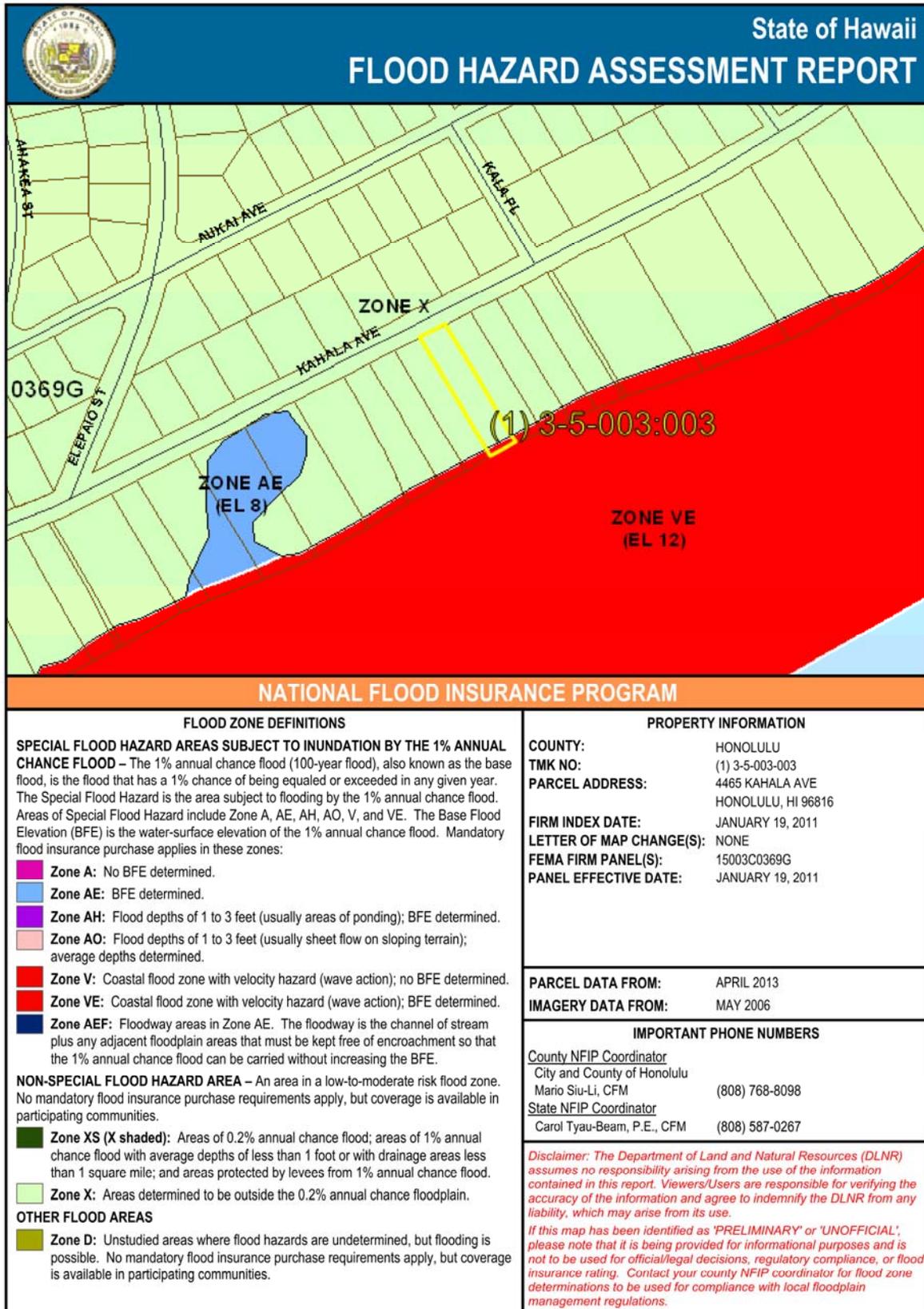


Figure 4b: Flood Zone Map (N.T.S.) – Source: <http://gis.hawaiiinfip.org/fhat/>

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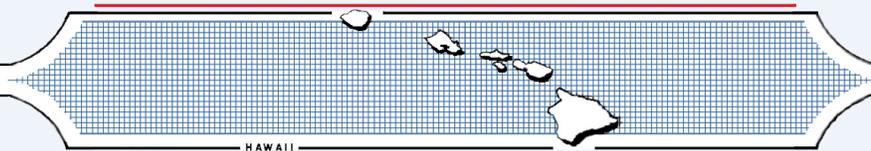
APPENDIX B
ARCHAEOLOGICAL INVENTORY SURVEY

**AN ARCHAEOLOGICAL ASSESSMENT OF
TWO LOTS IN KAHALA,
WAIKĪKĪ AHUPUA`A, KONA (HONOLULU) DISTRICT,
ISLAND OF O`AHU, HAWAI`I
[TMK (1) 3-5-003:002 and 003]**

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ABSTRACT

At the request of Group 70 International, Scientific Consultant Services, Inc. conducted an archaeological inventory survey (AIS) of two adjacent waterfront parcels at 4465/4469 Kahala Avenue in Waikīkī Ahupua`a, Kona District, O`ahu Island, Hawai`i (TMK (1) 3-5-003:002 and 003).

Based on the historic use of the project area as well as the results of previous archaeological studies in the vicinity of the project area, it was determined that potential site types in the project area might include pre-Contact or Historic habitation features related to the sites location on the shoreline, and that there was a high probability that burials might be found during excavations in the project area. While the pedestrian survey and subsurface testing revealed three modern structures associated with modern habitation, no cultural or historic sites or features were identified in the project area. A buried former A-Horizon was present in several of the test trenches but no cultural material was discovered with it. With the exception of a single ceramic insulator whose provenance could not be determined, all of the cultural material identified during the subsurface testing was confined to modern rubbish (wire, plastic bags, glass sherd and ceramic sherd) and modern construction debris (PVC pipe sections, red brick, concrete bricks, and fragments of red brick). One sub-adult faunal bone was identified in a layer of fill.

Although no cultural or historic sites were identified during the current survey and subsurface testing, Archaeological Monitoring is recommended for future ground disturbance in the project area, given the findings of previous archaeological work documented in the area (e.g., human burials and cultural deposits).

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INTRODUCTION

At the request of Group 70 International, Scientific Consultant Services, Inc. conducted an archaeological inventory survey (AIS) of two adjacent waterfront parcels at 4465/4469 Kahala Avenue in Waikīkī Ahupua`a, Kona District, O`ahu Island, Hawai`i (TMK (1) 3-5-003:002 and 003) (Figures 1 and 2).

The goals of the AIS were to conduct thorough archival and background research of the project area and vicinity, surface reconnaissance including mapping and recording of all identified sites, and limited subsurface testing. While Inventory Survey-level investigations were completed, this report is being written as an Archaeological Assessment because no sites were found in accordance with HAR §13-275-5(b)(5), which states " Results of the survey shall be reported either through an archaeological assessment, if no sites were found, or an archaeological survey report which meets the minimum standards set forth in chapter 13-276."

PROJECT AREA DESCRIPTION AND ENVIRONMENTAL SETTING

The survey area consists of two adjacent ocean-front residential parcels totaling 0.8795 acres, and identified on tax maps as TMK (1) 3–5–003:002 and 003. They are located in the traditional ahupua`a of Waikīkī. The project area is bounded by Kahala Avenue to the northwest, residences to the southwest and northeast, and the sea to the southeast. At the time of the survey structures in the project area included a paved driveway along the northeast side of parcel 002, a cement and tile deck at the southern end of parcel 002, and a wooden deck at the southern end of parcel 003, as well as modern wire fences and/or basalt-and-concrete or concrete block walls on all four sides of the project area..

Project area elevations are approximately 3 m A.M.S.L. with an annual precipitation of 20 to 30 inches along this portion of the leeward coast (Giambelluca *et al.*, 2012). Both parcels support remnants of modern landscaping vegetation, such as grass lawns, coconut and other palms, mango trees, a variety of flowering trees and shrubs, and weeds that have sprouted since the lots have been vacant. Most of these plants grow in fill topsoil that was imported to cover calcareous sands that occur naturally on both parcels. In places where topsoil was not applied, soils classified as Jaucas sand (excessively drained sands that occur as narrow strips adjacent to the ocean) have developed. The nearest drainage is Kapakahi Stream, located more than 1.5 km to the northeast of the project area.

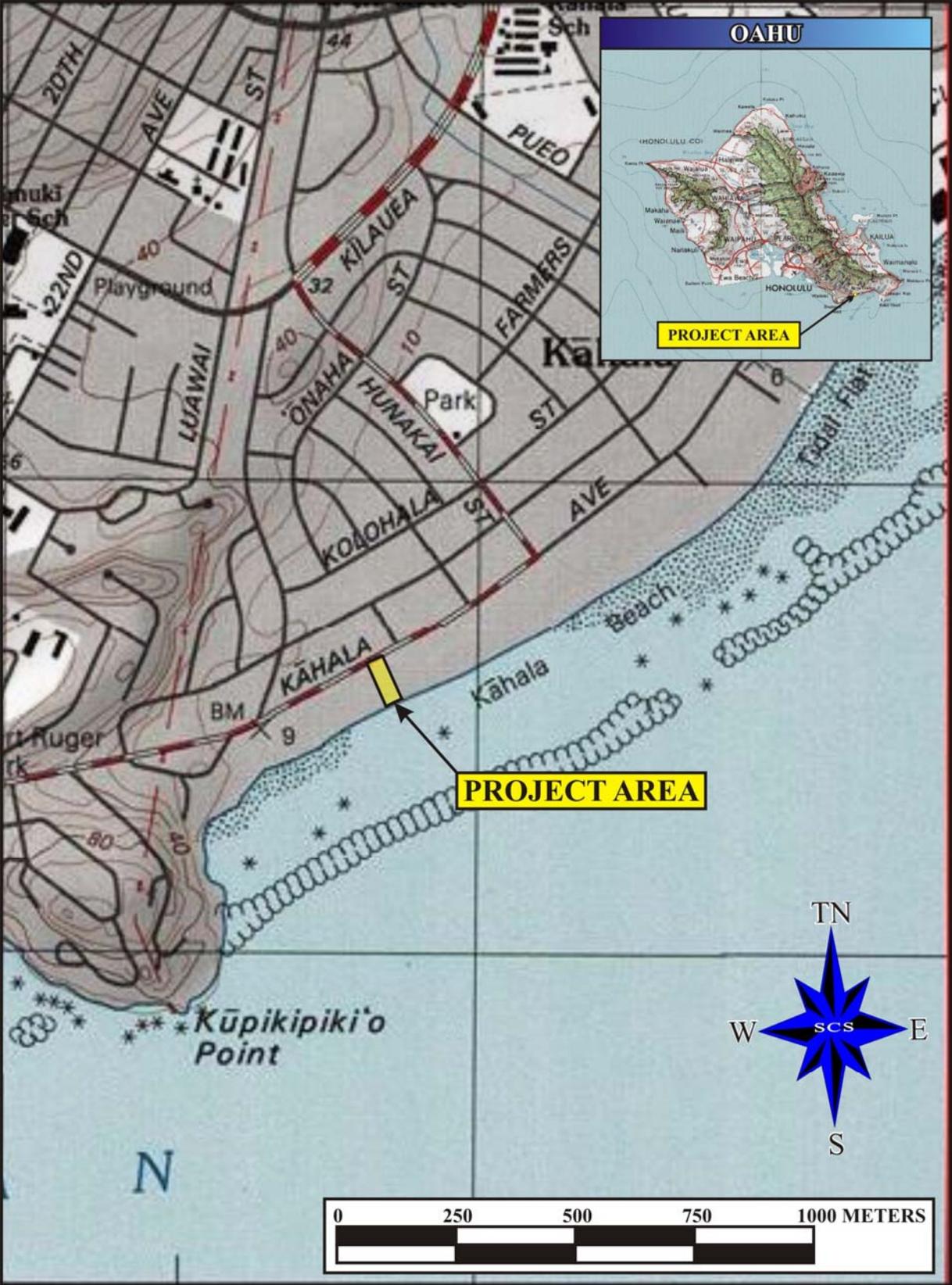


Figure 1: Portion of USGS Map (Honolulu Quadrangle) Showing Location of Project Area.

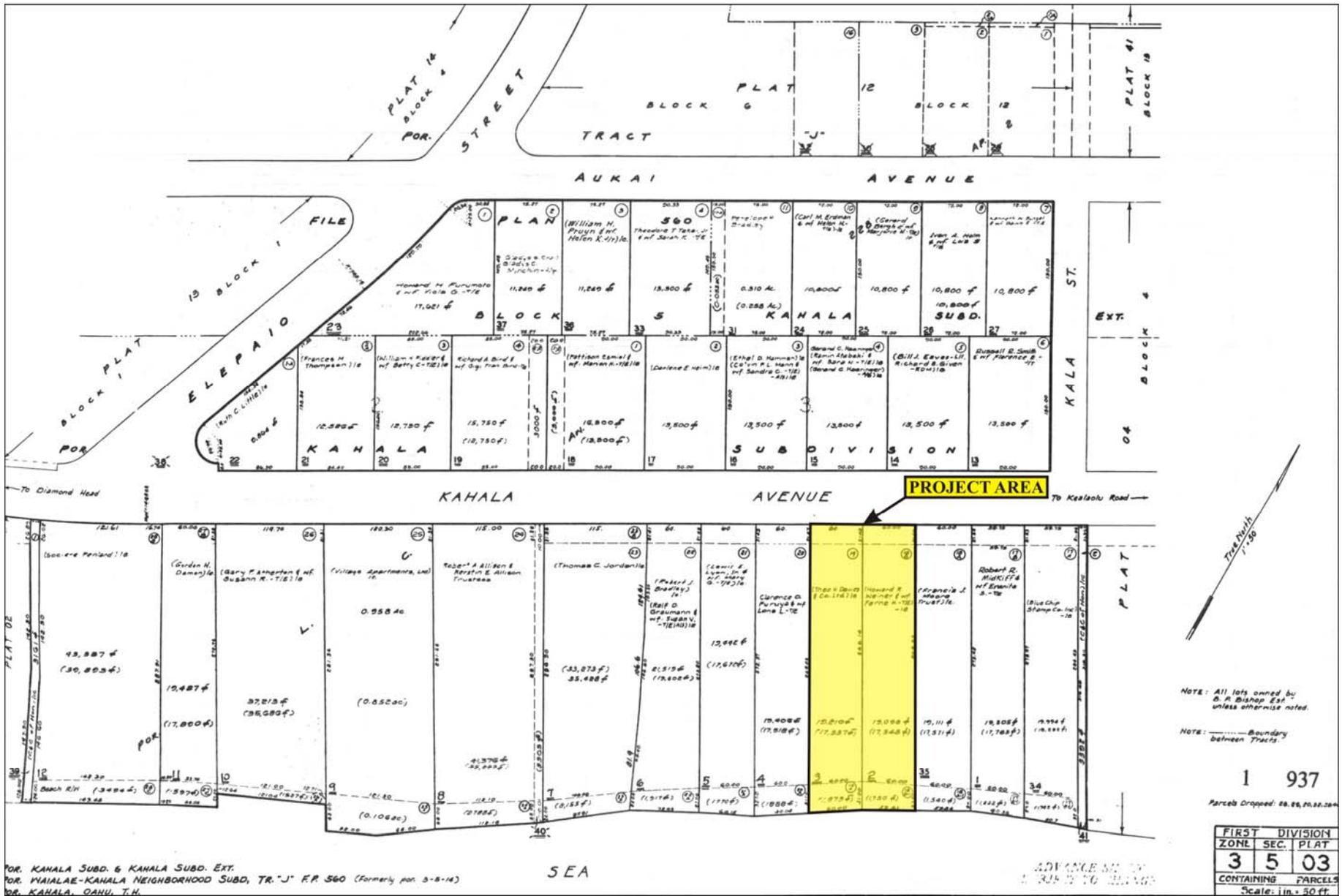


Figure 2: Tax Map Key (1) 3-5-03 Showing Location of Project Area.

CULTURAL AND HISTORIC BACKGROUND

TRADITIONAL SETTING

Recent re-evaluation of radiocarbon dates suggests O`ahu Island was first settled between A.D. 850 and 1100 by Polynesians sailing most likely from central East Polynesia (Kirch 2011:24). Archaeological settlement pattern data indicates that the initial colonization and occupation of the Hawaiian Islands first occurred on the windward shoreline areas of the main islands, with populations eventually settling into drier leeward areas at later periods (Kirch 1985). Coastal settlement was still dominant, but populations began exploiting and living in the upland (*kula*) zones. Greater population expansion to inland areas began about the A.D. Twelfth Century, but continued through the Sixteenth Century.

As the Hawaiian culture developed, land became 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. His 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 they, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land (Kirch and Sahlins 1992 vol.1:25).

In general, several terms, such as *moku*, *ahupua`a*, *ili* or *ili`āina* were devised to describe various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*), which 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. As the Polynesian economy was based on agricultural production and marine exploitation, as well as animal husbandry and utilizing forest resources, this situation ideally allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *ili`āina*, or *ili*, were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which the *ili* were located (*ibid*: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). Oral history notes that the division of O`ahu's lands into districts (*moku*) and sub-districts was solidified by the *ali`i nui*, Mā`ili-kūkahi during the early part of the 16th century (Kamakau 1991:53-56). O`ahu contained six districts including Wai`anae, `Ewa, Waialua, Ko`olauloa, Ko`olaupoko, and Kona at the time of contact.

Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-

coastal reaches and in the uplands. On the southeast coast of O‘ahu, taro cultivation was confined to valleys with streams or springs that would water the terraces. The staple crop in Wai‘alae and Wailupe valleys was sweet potatoes, which were planted in the valleys, on hillsides, and in the coastal strip (Handy 1940:155-6).

HISTORIC SETTING

Early western visitors to O‘ahu described the southeast coast as well-cultivated and well-populated. In 1789 Captain Nathaniel Portlock anchored in Maunalua Bay to take on fresh water, which was brought to the ship in calabashes. Portlock described the coastal setting:

...the bay all around has a beautiful appearance, the low land and vallies being in a high state of cultivation, and crowded with plantations of taro, sweet potatoes, sugar cane, &c., interspersed with a great number of cocoa-nut trees, which renders the prospect truly delightful. (Portlock 1789:73-4)

In 1828 Levi Chamberlain toured southeastern O‘ahu, including Wai‘alae:

...a grove of plam trees and a number of branching kou trees, among which stand the grass huts of the natives, having a cool appearancve, overshadowed by the waving tops of the cocoanuts, among which the trade winds sweep unobstructed. (Chamberlain 1956:28-9)

In 1865 Henry Willis Baxley described the region:

Further along the shore, the few hamlets of Waialae are seen nestled in a grove. And a short distance beyond, the grass huts of Wailupe cluster near the high hill of Mauna Loa, from the southern foot of which a ridge extends still further southwardly to the bold and lofty cape named Coco Head, the eastern boundary of the beautiful bay of Waialae, of which Diamond Head, already described, forms the western. (Baxley 1865:124)

The Māhele (1848-1851)

In the 1840s, a drastic change in the traditional land tenure resulted in a division of island lands and a system of private ownership based on Western law. Once Article IV of the Board of Commissioners to Quiet Land Titles was passed in December 1845, the legal process of private land ownership was begun. The land division, called the Māhele, began in 1848. The lands of the kingdom of Hawai‘i were divided among the king (crown lands), the *ali‘i* and *konohiki*, and the government. The *ili* of Wai‘alae Iki was awarded to Abner Pākī, the father of Bernice Pauahi Bishop, and the *ili* of Wai‘alae Nui was awarded to Victoria Kamamalu, granddaughter of Kamehameha.

The project area is located within the land of Kanewai, which was awarded to Kalaiheana as Land Commission Award (LCA) 228:2 during the Māhele. Kalaiheana was a kahu to Liholiho

and participated in the 1824 invasion of Kaua‘i [Kamakau 1992:220, 268]. According to John ‘I‘i’s testimony in the LCA, Kalaiheana received the lands after Kamehameha’s conquest of O‘ahu.

Kalaiheana’s land, called Kanewai, is at Waikiki. It has some leles in Manoa— Keapuapu, Holoawalu [Kaloalu in N. T.], Pakui, and the lele of Pahoa at Waikiki; and the sea of Kahala. It was the land of Keeaumoku at Waikiki, adjoining the north side of Kalaepohaku. This land became his upon the victory of Kamehameha I at the Battle of Nuuanu, also Waialua, as was the custom of granting lands to the chiefs at the time. When the peleleu [fleet of large canoes] came, the land passed from Keeaumoku to Papa and Kalaiheana, and all the leles were also conveyed. From thence came this acquisition and there was no deterrent until the year 1841. For the first time, an edge of Kahala was taken for Wai‘alae. And in the year 1846 another portion was taken for Kalaepohaku, in the month of May, or perhaps June. (Native Register vol.2, pg1, cited at Waihona Aina)

When Kalaiheana died in 1855, the ili of Kanewai was bequeathed to John ‘I‘i as the Guardian of Victoria [Kamamalu]. According to ‘I‘i, Kalaiheana had claimed “...Kanewai before the Land Commission but as I understand not in his own right but as possession of the land under Kamamalu.” Victoria Kamamalu was granted the ahupua‘a of Wai‘alae Nui as LCA 7713, as the heir to her mother, Kinau, who had inherited the lands of Ka‘ahumanu. Bernice Pauahi Bishop subsequently inherited Kamamalu’s land.

Wai‘alae Ranch

In the 1850s Captain John Ross leased 300 acres from the Kamehameha family for a ranch, where he raised cattle. In 1887 Daniel Isenberg purchased the lease to Wai‘alae Ranch from the Bishop Estate and planted vast fields of alfalfa in Wai‘alae for the development of a dairy ranch, the Wai‘alae Ranch Company, which by 1924 was the largest dairy in Honolulu. Isenberg sold the property in the 1920s (Hitch and Kuramoto 1981:36). In July 1927, the Isenberg ranch home, near the mouth of Wai‘alae Stream, became the club house for the Wai‘alae Golf Course (Honolulu Star Bulletin, August 25, 1934).

Niu Plantation

In the 1881 edition of Thomas Thrum’s *Hawaiian Almanac and Annual*, a single sugar plantation was listed in the district of Wai‘alae, the Niu Plantation. This plantation is not listed in subsequent annuals, suggesting that the plantation was short-lived. An attempt to grow pineapple in the 1920s was also short-lived.

Wai‘alae Golf Course

In 1925 the Territorial Hotel Company 250 acres from the Bishop Estate for the construction of Wai‘alae Golf Course. The course was built to cater to wealthy tourists but local residents could also use the course by paying an annual fee (Hitch and Kuramoto 1981:42). After the stock market crash of 1929 some of the local members were persuaded to manage the course as a private club. In the 1960s the golf course was redesigned to make room for the construction of the Kahala Hilton Hotel, the Kahala apartments, and the Kai Nani subdivision along the coastal side of the property.

Residential Development

In the 1920s, Wai‘alae gradually developed into a suburb of Honolulu, spreading eastward along Wai‘alae Road (now Kalaniana‘ole Highway) and mauka into Wai‘alae Iki and Ainakoa. Beginning in the 1920s, a series of improvements were made to Wai‘alae Road, as part of the development of Kalaniana‘ole Highway. Farming continued in the area into the 1930s; in 1938 more than 50 pig farms were operating in the vicinity of Farmers Road and Kahala Avenues. At the same time the beachfront along Kahala Avenue was being developed with homes (Honolulu Advertiser, December 20, 1938). In the 1940s and 1950s the Bishop Estate subdivided and leased individual residential sites across Kahala. By 1956 Wailupe Fishpond, to the east of the project area, had been filled in to provide more land for subdivision development (Clark 1977:36-7).

PREVIOUS ARCHAEOLOGICAL RESEARCH

An examination of past research within the vicinity of the project area has been utilized to assess site types that may potentially be encountered during the course of the project. The numerous archaeological sites recorded in the area consist mainly of human burials identified during construction activities, as well as cultural remains relating to both prehistoric and historic time periods.

Few archaeological surveys have been conducted in Wai‘alae Nui and Wai‘alae Iki. Most of the archaeological work in the area was initiated by the inadvertent discovery of human remains during construction activities.

In McAllister's report on his 1930s survey of the archaeological features of O‘ahu, only one site is mentioned for Wai‘alae. An informant told him that there was once a heiau called

Kaunua Kahekili in Wai`alae Iki; McAllister noted that the heiau had been almost completely destroyed.

Site 55, Kaunua Kahekili Heiau, Wai`alae Iki. Punahoa of Keahia says that Kaunua Kahekili was a very large heiau. It was located on the top of the ridge which divides Wailupe and Wai`alae, on the highest and most pronounced knoll. The site was formerly planted in pineapples, but now the heiau is overgrown with high grass and weeds and the pineapples are on the sloping ground which surrounds it. Many large rocks embedded in the earth are all that remain of the structure. (McAllister 1933:71)

Lloyd Soehren (1967) of the Bishop Museum excavated a test unit in a cave, called the Wai`alae shelter cave (State Site 50-80-14-2503), in 1967 on Kuana Street. Marine shell food remains, traditional Hawaiian artifacts, and historic artifacts were recovered, including a fish hook, an octopus lure, a coral file, copper tubing and bottle glass dating from the 1880s to 1920s (cf. Kennedy 1991).

Joseph Kennedy in 1991 conducted a surface survey of a 7.5-acre parcel occupied by facilities for the Star of the Sea Church-School complex located mauka and adjacent to Kalaniana'ole Highway. Two lava tubes and six caves were found, but they did not contain any cultural material. No other surface features were found.

Paul Cleghorn and Lisa Anderson (1992) conducted a surface survey of a 6.4-acre parcel in Kapakahi Gulch, mauka of the end of Luinakoa Street. No surface features were found.

David Chaffee and Robert Spear (1994) conducted an assessment of the surface features along a 1,100-meter-long corridor of the Wiliwilinui Trail Alignment on Wai`alae Iki Ridge. The only feature found was a World War II concrete and metal bunker, which was given the SIHP (State Inventory of Historic Places) site designation number 50-80-14-4811.

In 2001 and 2002, (Bush and Hammatt 2002) monitored the installation of a gas main (Hammatt and Bush 2001) and a water main from 'Ainakoa Avenue to West Hind Drive. The majority of the project corridor was within a zone of coral outcrop that has since been covered by eroded soil and fill layers. The main trenching line was found to be composed primarily of fill materials associated with different phases in the development of the highway. No cultural material (except modern trash) was encountered during installation of the gas main, but pockets of sand were noted. One horseshoe and one poi pounder fragment were collected during

installation of the water main. Basalt boulders found in one area were thought to possibly be part of the wall of former Wailupe Fishpond.

Jones and Hammatt (2003) monitored improvements to the water system at Black Point. Monitors were on-site during all excavations in areas thought to have Jaucas sand. The actual area that contained Jaucas sands was much smaller than predicted, but the excavations for the water system were generally shallow (less than 50 centimeters deep), and it was determined that strata of undisturbed sand were probably still undisturbed at a deeper level. No subsurface features were found.

In 2008 Cultural Surveys Hawaii an Archaeological Literature Review and Field-Check for the proposed Wai`alae Country Club Master Plan Project conducted (O`Hare et al. 2008). In addition the same group also produced a Cultural Impact Evaluation for the Country Club Master Plan as well (Spearing et al. 2008).

Archaeological Monitoring was conducted in the Wai`alae Country Club project area parcels for an electrical switchgear installation/ air conditioning replacement project (Wilson and Spear 2009). All excavations associated with this project were monitored, noting the subsurface strata consisted of a single uniform stratigraphy, the vast majority of which was previously disturbed though landscaping and building construction. No cultural deposits or significant historic properties were identified.

BURIALS

Many mid-nineteenth century visitors to the islands visited a large area of exposed bones in sand on the eastern side of Diamond Head or Black Point, in Waikīkī Ahupua`a. These tourists, including the writer Mark Twain, speculated that either these graves were the remains of warriors killed in one of Kamehameha's battles or the interment site for Hawaiians who died in one of the many epidemics that swept the islands in the years after contact with Westerners and Asians. From the early traveler's accounts, this large dune cemetery was probably in the `ili of Wai`alae Nui in the Kahala beach area. Several visitors to the cemetery noted that they rode or drove around Black Point, but had not yet reached the coconut groves of the `ili of Wai`alae Iki, within the current project area. Although it does not seem that the dense concentration of bones found in Kahala extends to the project area, it is likely that some burials were interred in the Wai`alae Iki shore, wherever the sand was deep enough for a shallow pit (Spearing et al. 2008).

During construction at a property at 4505 Kahala Avenue, human bones were found by the construction crew and the SHPD was notified. Annie Griffin (1987) visited the site and disinterred the skeleton, which consisted of a primary burial of a young-to-middle aged female placed in a semi-flexed position. A subsequent examination of the remains by Lee and Pietrusewsky (1988) of the University of Hawai'i determined that there was a second burial intrusive with the first, which consisted only of the lower limb bones of a young male adult. Both burials were assigned to State Site 50-80-14-3725.

During the excavation of a swimming pool on a property at 1013 Waiholo Street, the SHPD was informed of the discovery of human bones by the medical examiner's office (Bath and Griffin 1988). The burial was in a flexed position. A subsequent examination of the remains by Douglas and Pietrusewsky (1988) of the University of Hawai'i determined the bones were of a female, approximately 35 years old. The burial was designated State Site 50-80-14-3760.

Contractors at a construction site at 4745 Aukai Avenue reported the discovery of human bones to the SHPD in 1989 (Bath 1989). A previously disturbed partial burial was found and disinterred. A subsequent examination of the remains by Bradley and Pietrusewsky (1989a) of the University of Hawai'i determined the bones were of a single adult male, 40 to 45 years old. The burial was designated State Site 50-80-14-4126.

Human bones were identified during the excavation of a house foundation at 4585 Kahala Avenue and reported to the SHPD in 1989 (Kawachi 1989). The burial was disturbed by the construction, but the contractor's description indicated that the burial may have been in a flexed position. The skull and upper third of the body was missing. A subsequent examination of the remains by Bradley and Pietrusewsky (1989b) of the University of Hawai'i determined the bones were of a female, approximately 25 to 35 years old. The burial was designated State Site 50-80-14-4065.

In 1995, human bones found during the excavation of an elevator shaft for a house at 4433 Kahala Avenue were reported to the SHPD (Jourdan 1995). The bones (Burial 1) were determined to be likely from an ash and charcoal cultural layer 60 to 95 centimeters below the ground surface. The burial was disinterred and later reinterred. The burial and the cultural layer were designated State Site 50-80-14-5320.

In 1997, additional burial recovery work was carried out at 4433 Kahala Avenue (Erkelens and Tomonari-Tuggle 1997). Back dirt piles were screened and the loose soil was

removed from the elevator shaft. When the walls of the shaft were cleaned, the profile of a fire pit and the profile of a burial pit were noted. A second burial was found in the burial pit and additional elements of this burial were found in the back dirt piles. A backhoe excavated a 4 by 2.5-m block around Burial 2 and a third burial was uncovered. Burial 1 was identified as the skeleton of a 30-35 year old male. A shell button and two porcelain beads in the back dirt probably belong to this individual. Burial 2 was identified as the skeleton of a 20-25 year old female. Burial 3 was identified as a 3-year old child, probably the child of the female (Burial 2). A square-cut nail was found with this burial. Due to the presence of historic artifacts, the burials were determined to be of Polynesian or Asian ethnicity, buried in the nineteenth century. All three burials were disinterred and reinterred elsewhere on the property. All three burials at the site are considered part of State Site 50-80-14-5320.

In April of 1999, a local resident brought several bones that he collected from a cave to a forestry worker. The SHPD was notified and Sara Collins and Muffett Jourdane (1999) inspected the cave, which was located mauka of the end of Luinakoa Street (Aina Koa Subdivision) on Wai`alae Nui Ridge. They reported that bones were scattered over the cave floor and probably represented the bones of just one individual. No other cultural remains were found in the cave. The cave and burial were designated SIHP #50-80-14-5743.

During the excavation of a utility line at 4773 Kahala Avenue in 2003, human bones were inadvertently exposed. T. S. Dye & Colleagues were contracted to conduct further investigation of the find (Putzi and Dye 2003). The remains of five individuals, a cultural layer, and several traditional Hawaiian artifacts were recovered from the excavation and from the back dirt piles. The burials were probably of Hawaiian ancestry based on the presence of the traditional artifacts. The burials and the cultural layer were designated SIHP #50-80-14-6632.

In 2003, archaeologists from Haun and Associates (Haun and Henry 2003) conducted a surface survey of the 8-acre Wai`alae 180 Reservoir Replacement project site near the Kalani High School Athletic Field, mauka of Kalaniana'ole Highway. Two caves with human remains were found. The caves were designated State Site 50-80-14-5938 and 50-80-14-6351. The floor of each cave was bare lava. Several bones were found at State Site 50-80-14-5938, including five crania; only one skeletal element, an infant cranium, was found at Site 6351. No historic material was found at the cave, so the archaeologists determined that the remains were probably Hawaiians buried in the pre-contact or early post-contact periods.

Human skeletal remains were found at 4577 Kahala Avenue in 2006 during excavation of a sewer line. T. S. Dye & Colleagues (Dye 2005a, b; Dye 2006) were contracted to recover all bones from the trench and the back dirt piles. One in situ burial and one disturbed burial were found within a cultural layer. The remains were disinterred and reinterred on the same parcel. The burials and the cultural layer were designated State Site 50-80-14-6762.

In 2006, Pacific Consulting Surfaces (Collins and Clark 2006) conducted extensive Phase I subsurface testing at three parcels, 4415, 4423, and 4433 Kahala Avenue. Fifty-one test units were excavated, covering the majority of the project area. Human remains had been previously found at 4433 Kahala Avenue in the 1990s (Jourdan 1995; Erkelens and Tomonari-Tuggle 1997). Collins and Clark (2006) reported on two sand cultural layers, the upper layer believed to be associated with historic period habitation and the lower sand layer associated with traditional Hawaiian habitation.

The second phase of this project was carried out in 2007 (Dye and Jourdan 2007). During this phase, the 1997 re-interment site was relocated and marked on the surface. Twenty shovel tests were excavated in areas not covered by the Phase I project. Controlled block excavations were placed adjacent to shovel test pits which contained one or more of the two sand layers identified by Collins and Clark (2006). The work indicated that the possible two cultural layers were actually "a single old land surface, or paleosol, upon which a variety of historic-period artifacts had been deposited" (Dye and Jourdan 2007:32).

In March of 2007, the SHPD (Chinen 2007a) was notified that human skeletal remains had been found during construction a new house and swimming pool at 4565 Kahala Avenue. The bones were dispersed around the property's backyard. The SHPD determined that a qualified archaeological consultant would need to screen back dirt piles and conduct block excavations at the site to try to determine the original location of the burial and to test if other burials were present. CSH (Tulchin and Hammatt 2007) excavated 25 test units but the original location of the burial could not be determined. They did recover additional skeletal remains from the back dirt piles. Following the test excavations, a CSH archaeologist monitored the remainder of construction related excavations in the project area. On April 25, May 15 and July 11, 2007 additional human skeletal remains were observed (Chinen 2007b). These were determined to be from the same burial as that found in March. The SHPD assumed jurisdiction over the inadvertent discoveries and determined to relocate the remains. The burial was designated site SIHP #50-80-14-6927.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Wai`alae Country Club Clubhouse upgrade between February 1 to May 31, 2011 (Dagher et al. 2013). Two archaeological sites were recorded; State Site 50-80-14-7206 was a human burial, with a partially intact burial pit, and State Site 50-80-14-7207 was comprised of an in situ human burial (Feature 1) and a pit feature of indeterminate function (Feature 2). The burials were found to be in association with a former A-horizon identified as a cultural layer.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Wai`alae Country Club Annex Building Project between April 22 to December 30, 2013 (Pestana and Spear, in prep.). Five human burials (Burial 1 to Burial-5) and twelve subsurface features (including one animal burial, four burial pits, and seven pit features of indeterminate function) were recorded.

POTENTIAL SITE TYPES TO BE ENCOUNTERED

Based on the historic use of the project area as well as the results of previous archaeological studies in the vicinity of the project area, it is likely that potential site types in the project area might include pre-Contact or historic habitation features related to the sites location on the shoreline. Given the proximity of the ocean and the number of burials found along Kahala Avenue (13 reported burials, at 4433, 4506, 4565, 4577, 4585, and 4773 Kahala Avenue, as well as the thirty individuals recovered from the Wai`alae Golf Course), there is a high probability that burials might be found during excavations in the project area

METHODS

PEDESTRIAN SURVEY

The Field Inspection was conducted on January 13 to 14, 2013 by SCS Archaeologist Guerin Tome, B.A. under the overall guidance of Robert L. Spear, Ph.D. (Principal Investigator). Pedestrian survey was conducted across 100 percent of the property. No Pre-Contact or Historic structures were identified during the pedestrian survey.

In addition to modern wire fences and/or basalt and concrete or concrete block walls on all four sides of the project area, three structures (a wooden deck, a concrete and tile deck or lanai, and a cast concrete driveway/pedestrian walkway) were identified during the pedestrian survey. Based on the construction materials, style, and on engravings in the concrete, all three of these structures were determined to be of modern construction.

The first structure consisted of a wooden deck constructed of milled lumber, approximately 3.0 m long and 2.82m wide, located in the southern corner of the project area (Figure 3).

The second structure consisted of a concrete deck covered with tiles, approximately 9.2 m long by 4.79 m wide, located in the eastern corner of the project area. Two wide, shallow steps were located at the northwest edge of the deck. At the north corner of the deck, the concrete edge was engraved "LC/A" and "4/64" (Figure 4, Figure 5).

The third structure consisted of a driveway and pedestrian walkway, constructed of concrete paving stones, along the northeast side of the project area (Figure 6, Figure 7). Two steel-reinforced concrete block curbstones, 2.43 m long by 0.9m wide and 0.19m high, lie atop the driveway pavers to separate the driveway and parking area from the walkway extension. In the northwest corner of the northeast curbstone the concrete is engraved "Erin 4/28/04" (Figure, Figure).



Figure 3. Photograph of wooden deck in southern corner of project area, view to southeast.



Figure 4: Photograph of cement and tile deck in eastern corner of project area, viewed to northeast. Note the two wide, shallow steps on the northwest edge of the deck.



Figure 5: Photograph of the concrete edge at the northern corner of the deck, engraved "LC/A" and "4/64."



Figure 6: Photograph of driveway along northeast side of project area, viewed to Southeast.



Figure 7: Photograph of the concrete pedestrian walkway along the northeast edge of the project area, viewed to northwest.



Figure 8: Photograph of two reinforced concrete curbstones. Note the engraving on the surface of the near curbstone, next to the north arrow.



Figure 9: Photograph of engraved date, "Erin 4/28/04" on concrete curbstone.

SUBSURFACE TESTING

Limited subsurface testing was conducted during the current Archaeological Inventory Survey in order to identify human alteration, archaeological features, and associated artifacts in subsurface contexts. Ten subsurface test trenches (ST-1 through ST-10) were mechanically excavated during the current survey (Figure). All excavations produced negative results. A description of each Test Trench is presented below. The GPS locations for ST-1 through ST-10 are presented in Table 2.

Table 1: Test Trench GPS Locations

Test Trench No.	Easting	Northing
ST-1	0625818	2351543
ST-2	0625803	2351548
ST-3	0625801	2351546
ST-4	0625791	2351560
ST-5	0625789	2351558
ST-6	0625781	2351568
ST-7	0625788	2351581
ST-8	0625786	2351588
ST-9	0625773	2351588
ST-10	0625771	2351603

TEST TRENCH 1 (ST-1)

Test Trench-1 (ST-1) 10.2 m long by 0.8 m wide and 1.5 m deep) was placed just north of and parallel to the northwest edge of the concrete and tile deck in the southeast corner of the project area. (see Figure 10). ST-1 contained three culturally sterile stratigraphic layers which are described below (Figure 11, Figure 12).

Layer I

Layer I (0-30 cmbs) consisted of loose mottled brownish yellow (10YR 6/6, dry) silty sand, very pale brown (10YR 7/4, dry) sand, and very pale brown (10YR 7/3, dry) sand with grass and tree roots. As the lower boundary was solid, Layer I was interpreted as local fill. Layer I was culturally sterile.

Layer II

Layer II (30-60 cmbs) consisted of loose, pale brown (10YR 6/3, dry) loamy sand with grass and tree roots. Layer II was interpreted as a natural stratum. As the layer's lower boundary was diffuse, Layer II was interpreted as a natural stratum. Layer II was culturally sterile.

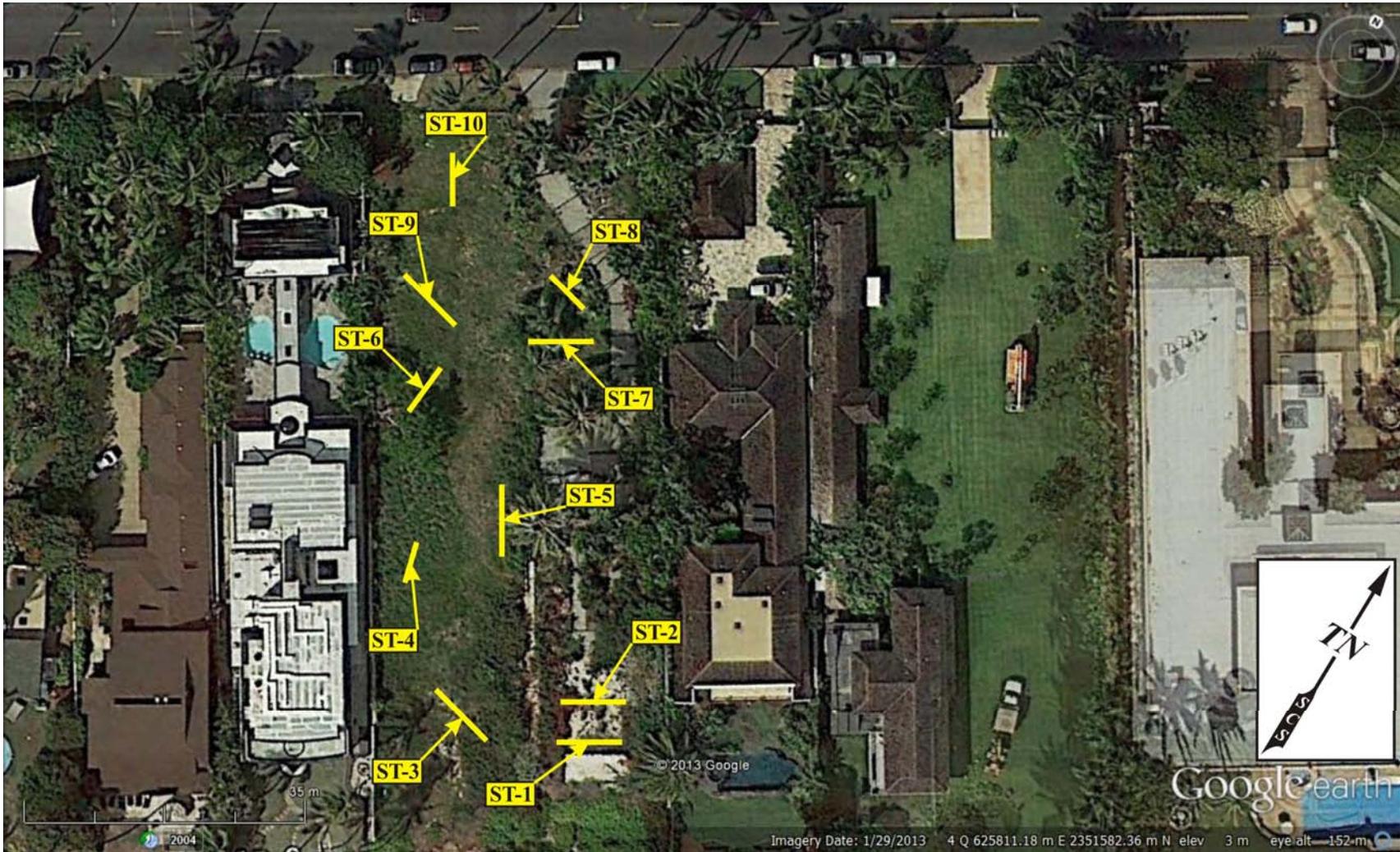


Figure 10: Aerial photograph (source: Google Earth) showing the location of test trenches ST-1 through ST-10.

Layer III

Layer III (60-150 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer III was interpreted as a natural stratum. Layer III was culturally sterile. Excavation of ST-1 was terminated at 150 cmbs because the sidewall collapsed.

TEST TRENCH 2 (ST-2)

Test Trench-2 (ST-2) 10.3 m long by 0.8 m wide and 1.2 m deep) was placed northwest of and parallel to ST-1, at the southeast end of the pedestrian walkway along the northeast edge of the project area (see Figure 10). ST-2 contained two stratigraphic layers which are described below (Figure 11, Figure 13).

Layer I

Layer I (0-10 cmbs) consisted of loose light yellowish brown (10YR 6/4, dry) silty sand with grass and tree roots. As the lower boundary was solid, Layer I was interpreted as local fill. A ceramic insulator (2 cm in diameter and 5.2 cm long) and a single sub-adult faunal (most likely dog) bone were indentified in the spoils pile from Layer I . The insulator was collected for dating and laboratory analysis.

Layer II

Layer II (10-120 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-2 was terminated at 120 cmbs because the sidewall collapsed.

TEST TRENCH 3 (ST-3)

Test Trench-3 (ST-3) 10.1 m long by 0.8 m wide and 1.35 m deep) was placed southwest of ST-1, oriented East-West (see Figure 10). ST-3 contained five stratigraphic layers which are described below (Figure 14, Figure 15).

Layer I

Layer I (0-10 cmbs) consisted of semi-loose brown (7.5YR 4/4, dry) silty sand with grass roots. As the lower boundary was solid, Layer I was interpreted as local fill. Multiple red bricks and concrete bricks were observed in this layer but none showed diagnostic features so no bricks were collected.

Layer II

Layer II (10-25 cmbs) consisted of loose brown (7.5YR 5/4, dry) silty sand with grass roots. Layer II was interpreted as local fill. One concrete brick was observed in this layer but not collected.

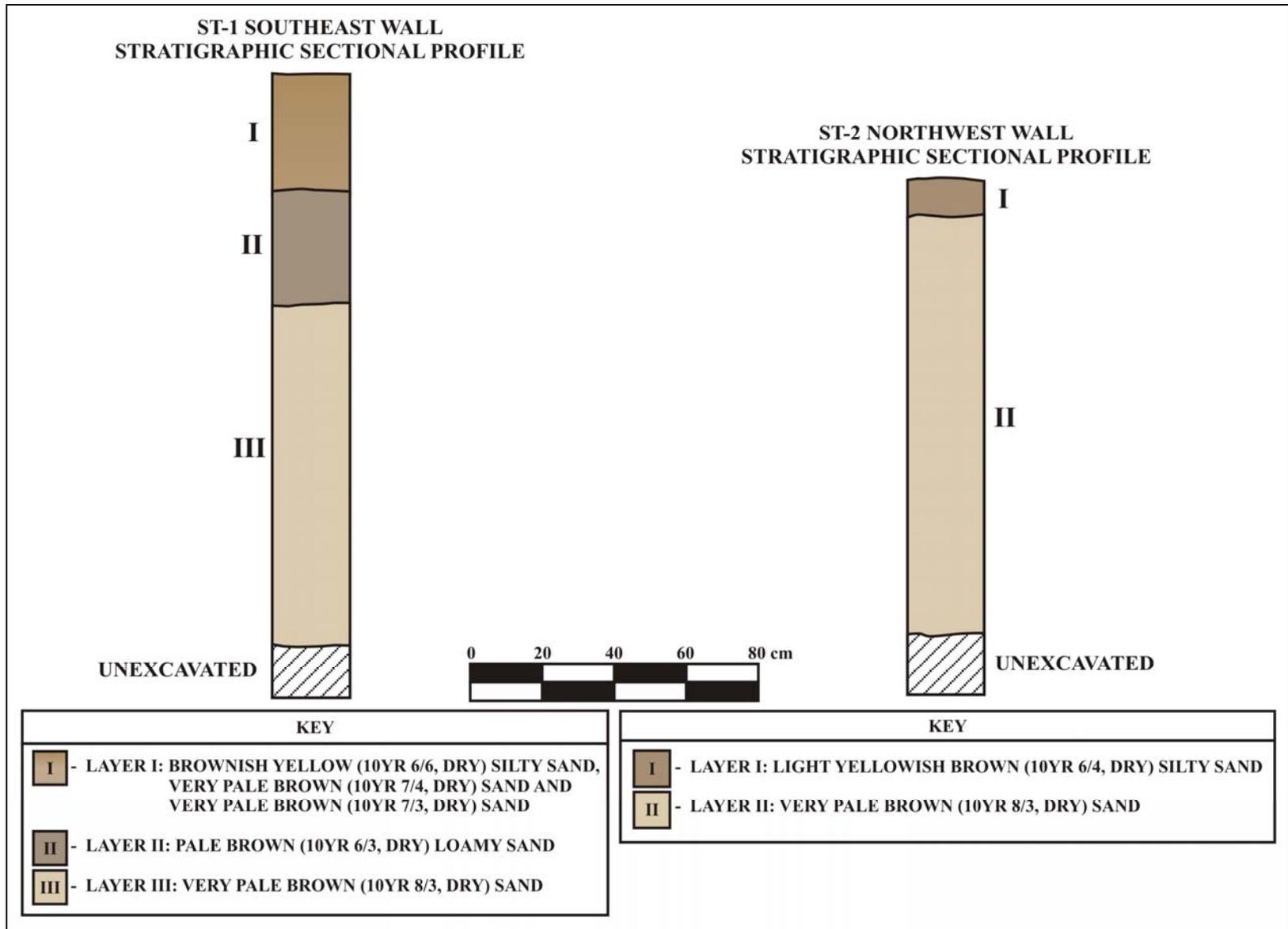


Figure 11: Stratigraphic profiles for Test Trenches ST-1 and ST-2.



Figure 12: Photograph of Southeast sidewall of ST-1 showing the stratigraphic profile.



Figure 13: Photograph of the Northwest sidewall of ST-2 showing the stratigraphic profile.

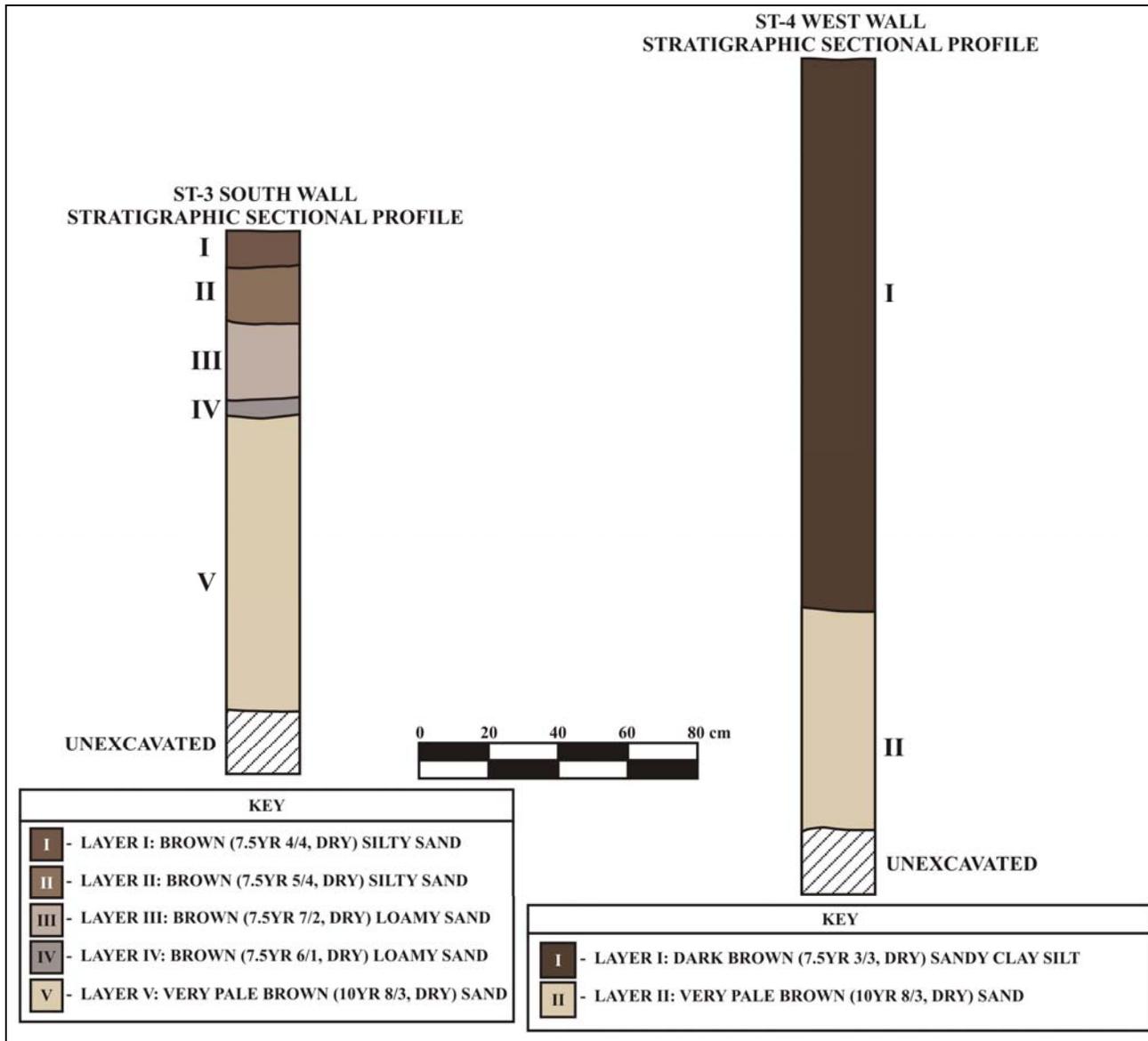


Figure 14: Stratigraphic profiles for Test Trenches ST-3 and ST-4.



Figure 15: Photograph of the South sidewall of ST-3 showing the stratigraphic profile.

Layer III

Layer III (25-46 cmbs) consisted of loose, pinkish gray (7.5YR 7/2, dry) loamy sand with tree roots. As the layer's lower boundary was diffuse, Layer III was interpreted as a natural stratum with a diminishing organic content. Layer III was culturally sterile.

Layer IV

Layer IV (46-50 cmbs) consisted of loose gray (7.5YR 6/1, dry) loamy sand with tree roots. Layer IV contained more organic content than Layer III which explained its darker color. No cultural material was observed in Layer IV. Due to the heavier loam content (in comparison to Layer III) Layer IV was interpreted as the initial, natural former A-Horizon in ST-3.

Layer V

Layer II (50-135 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-3 was terminated at 135 cmbs because the sidewall collapsed.

TEST TRENCH 4 (ST-4)

Test Trench-4 (ST-4) 6.1 m long by 0.8 m wide and 2.1 m deep) was placed northwest of ST-3, oriented Southeast-Northwest, near the southwest edge of the project area (see Figure 10). ST-4 contained two stratigraphic layers which are described below (Figure 14, Figure 16).

Layer I

Layer I (0-150 cmbs) consisted of compact dark brown (10YR 6/4, dry) silty sandy clayey silt with grass roots and limestone chunks. Cultural material observed in this layer included black plastic shreds (such as garbage bag material), white plastic (grocery bags), sections of white PVC pipe, ferrous metal wire, red brick fragments, a bottle glass sherd, and a whiteware ceramic sherd. As the lower boundary was solid, Layer I was interpreted as imported fill. The glass and ceramic sherds were collected for laboratory analysis.

Layer II

Layer II (150-210 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-4 was terminated at 120 cmbs because the sidewall collapsed.



Figure 16: Photograph of the West sidewall of ST-4 showing the stratigraphic profile.

TEST TRENCH 5 (ST-5)

Test Trench-5 (ST-5) 9.1 m long by 0.8 m wide and 2.0 m deep) was placed north of ST-4 in the center of the project area, oriented Southeast-Northwest (see Figure 10). ST-5 contained four stratigraphic layers which are described below (Figure 17, Figure 18).

Layer I

Layer I (0-10 cmbs) consisted of semi-loose, dark brown (10YR 3/3, dry) sandy clayey silt with grass and tree roots. As the lower boundary was solid, Layer I was interpreted as imported fill. Red brick fragments were observed in this layer but not collected.

Layer II

Layer II (10-60 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. As the layer's lower boundary was diffuse, Layer II was interpreted as a natural stratum. Layer II was culturally sterile.

Layer III

Layer III (60-80 cmbs) consisted of loose, brown (10YR 5/3, dry) loamy sand with tree roots. No cultural material was observed in Layer III. Based on the layer's loamy content and diffuse lower boundary, Layer III was interpreted as a natural former A-Horizon.

Layer IV

Layer IV (80-200 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer IV was interpreted as a natural stratum. Layer IV was culturally sterile. Excavation of ST-5 was terminated at 200 cmbs because the sidewall collapsed.

TEST TRENCH 6 (ST-6)

Test Trench-6 (ST-6) 6.3 m long by 0.8 m wide and 1.8 m deep) was placed northwest of ST-4, oriented North-South (see Figure 10). ST-6 contained five stratigraphic layers which are described below (Figure 17, Figure 19).

Layer I

Layer I (0-10 cmbs) consisted of compact, dark reddish brown (5YR 3/3, moist) sandy clayey silt with grass roots. As the lower boundary was solid, Layer I was interpreted as imported fill. Layer I was culturally sterile.

Layer II

Layer II (10-30 cmbs) consisted of compact, dark brown (10YR 3/3, moist) sandy clayey silt sand with few grass roots. As the lower boundary was solid, Layer II was interpreted as imported fill. Layer II was culturally sterile.

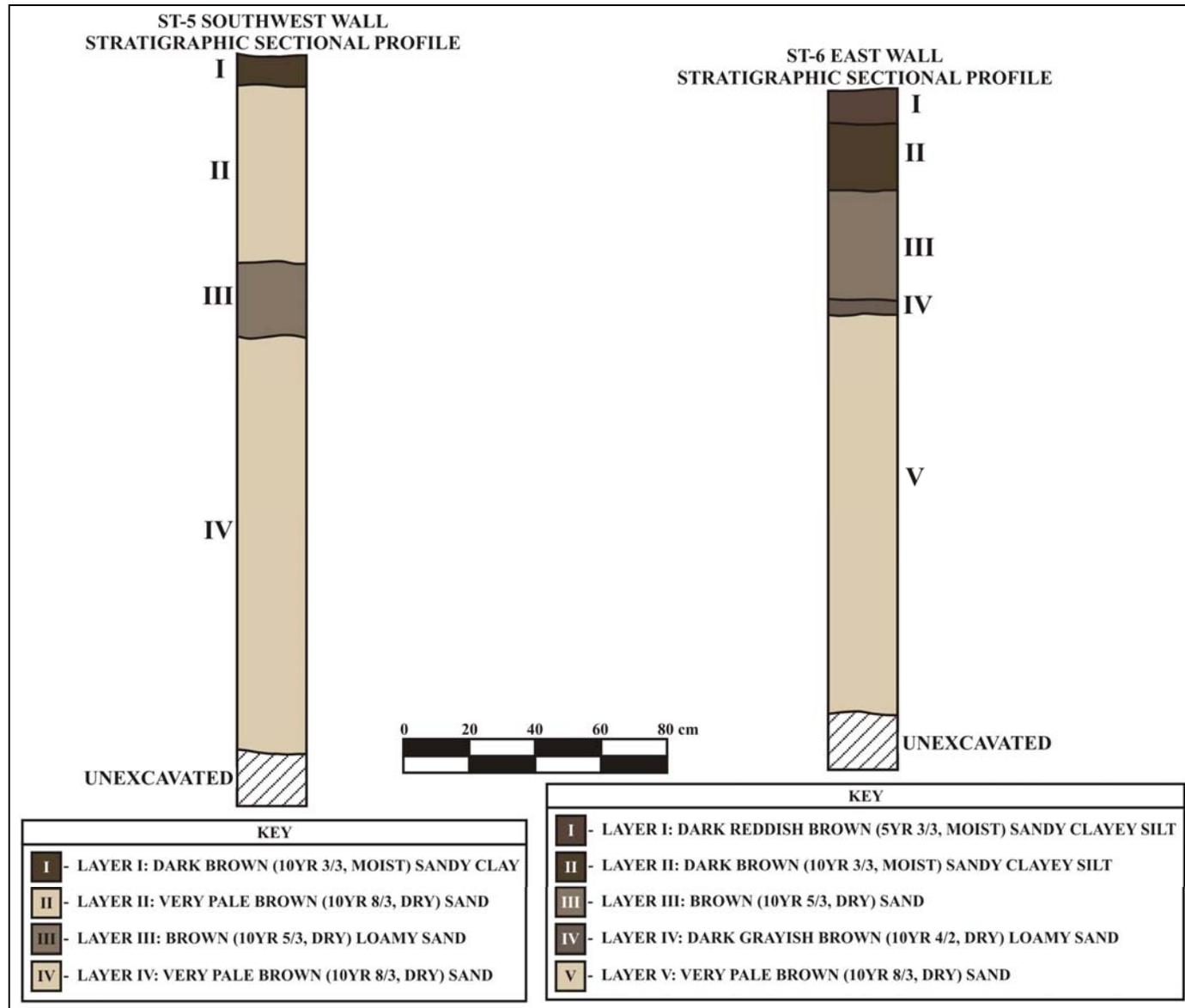


Figure 17: Stratigraphic profiles for Test Trenches ST-5 and ST-6.



Figure 18: Photograph of the Southwest sidewall of ST-5 showing the stratigraphic profile.



Figure 19: Photograph of the East sidewall of ST-6 showing the stratigraphic profile.

Layer III

Layer III (30-60 cmbs) consisted of loose, brown (10YR 5/3, dry) sand with few tree roots. As the layer's lower boundary was wavy but solid, Layer III was interpreted as local fill. Layer III was culturally sterile.

Layer IV

Layer IV (60-70 cmbs) consisted of loose, dark grayish brown (10YR 4/2, dry) loamy sand with few tree roots. As the layer's lower boundary was diffuse, Layer IV was interpreted as a natural stratum and a former A-Horizon. No cultural material was observed in Layer IV.

Layer V

Layer V (70-180 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer V was interpreted as a natural stratum. Layer V was culturally sterile. Excavation of ST-3 was terminated at 180 cmbs because the sidewall collapsed.

TEST TRENCH 7 (ST-7)

Test Trench-7 (ST-7) 6.8 m long by 0.8 m wide and 1.6 m deep) was placed northwest of ST-2, oriented Southwest-Northeast, near the driveway that ran along the northeast edge of the project area (see Figure 10). ST-7 contained two stratigraphic layers which are described below (Figure 20, Figure 21).

Layer I

Layer I (0-20 cmbs) consisted of compact, dark brown (10YR 3/3, moist) sandy clayey silt with few grass roots. As the lower boundary was solid, Layer I was interpreted as imported fill. Layer I was culturally sterile.

Layer II

Layer II (20-160 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-7 was terminated at 160 cmbs because the sidewall collapsed.

TEST TRENCH 8 (ST-8)

Test Trench-8 (ST-8) 6.2 m long by 0.8 m wide and 1.9 m deep) was placed northwest of ST-7, oriented East-West, near the driveway that ran along the northeast edge of the project area (see Figure 10). ST-8 contained two stratigraphic layers which are described below (Figure 20, Figure 22).

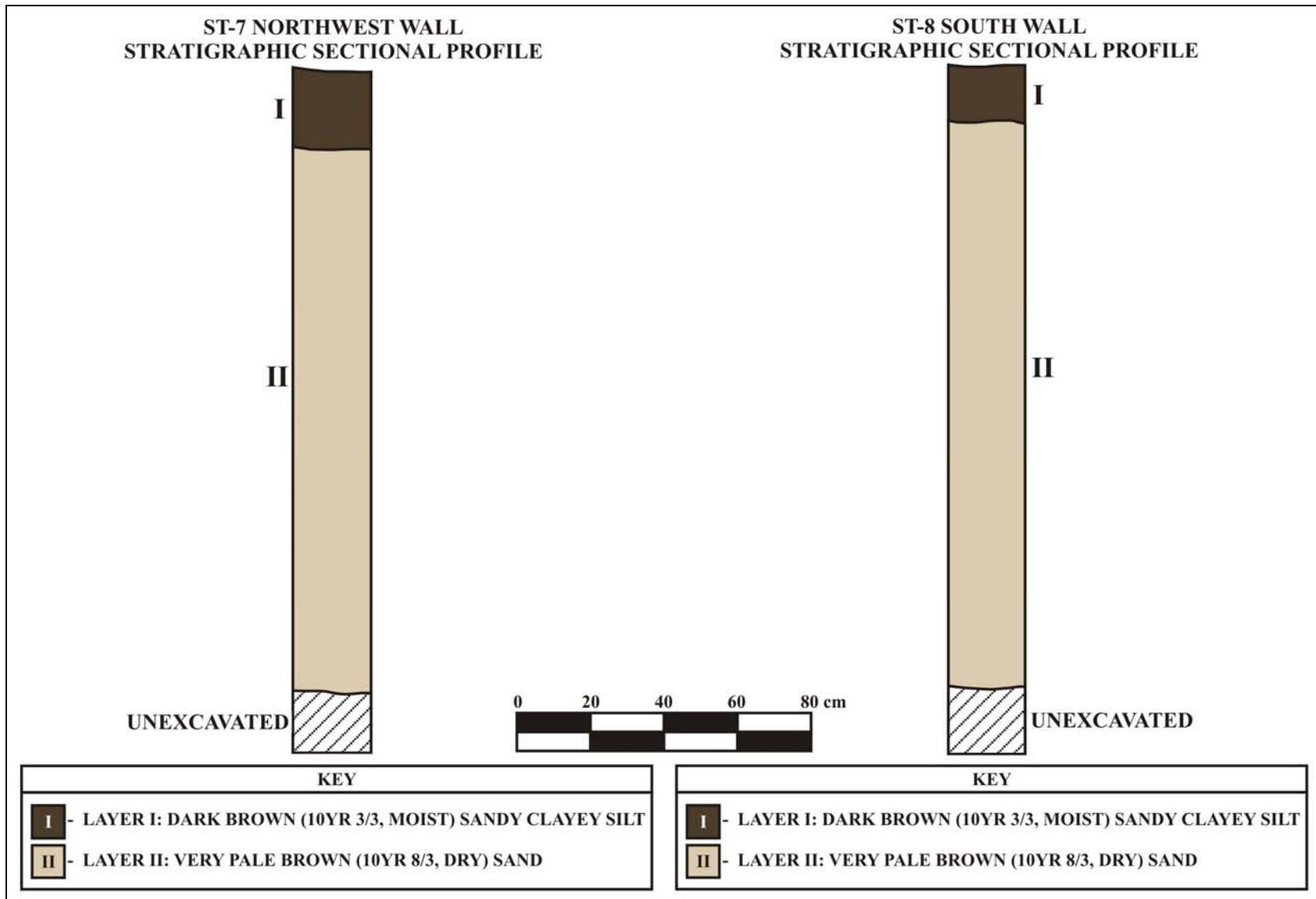


Figure 20: Stratigraphic profiles for Test Trenches ST-7 and ST-8.



Figure 21: Photograph of the Southeast sidewall of ST-7 showing the stratigraphic profile.



Figure 22: Photograph of the Southwest sidewall of ST-8 showing the stratigraphic profile.

Layer I

Layer I (0-15 cmbs) consisted of compact, dark brown (10YR 3/3, moist) sandy clayey silt with few grass roots. As the lower boundary was solid, Layer I was interpreted as imported fill. A concrete brick was observed in the layer but not collected.

Layer II

Layer II (15-190 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-7 was terminated at 190 cmbs because the sidewall collapsed.

TEST TRENCH 9 (ST-9)

Test Trench-9 (ST-9) 5.3 m long by 0.8 m wide and 2.0 m deep) was placed northwest of ST-6, oriented East-West, near the southwest edge of the project area (see Figure 10). ST-9 contained two stratigraphic layers which are described below (Figure, Figure).

Layer I

Layer I (0-30 cmbs) consisted of compact, dark brown (10YR 3/3, moist) sandy clayey silt with few grass roots. As the lower boundary was solid, Layer I was interpreted as imported fill. A concrete brick was observed in the layer but not collected.

Layer II

Layer II (30-200 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer II was interpreted as a natural stratum. Layer II was culturally sterile. Excavation of ST-7 was terminated at 160 cmbs because the sidewall collapsed.

TEST TRENCH 10 (ST-10)

Test Trench-10 (ST-10) 5.3 m long by 0.8 m wide and 1.9 m deep) was placed northwest of ST-9, oriented Northwest-Southeast, near the northwest corner of the project area (see Figure 10). ST-10 contained three stratigraphic layers which are described below (Figure, Figure).

Layer I

Layer I (0-25 cmbs) consisted of semi-compact, dark brown (7.5YR 3/3, dry) sandy clayey silt mottled with very pale brown (10YR 8/4, dry) sand. Grass and tree roots were present. As the lower boundary was solid, Layer I was interpreted as imported fill. Concrete bricks were observed in the layer but not collected.

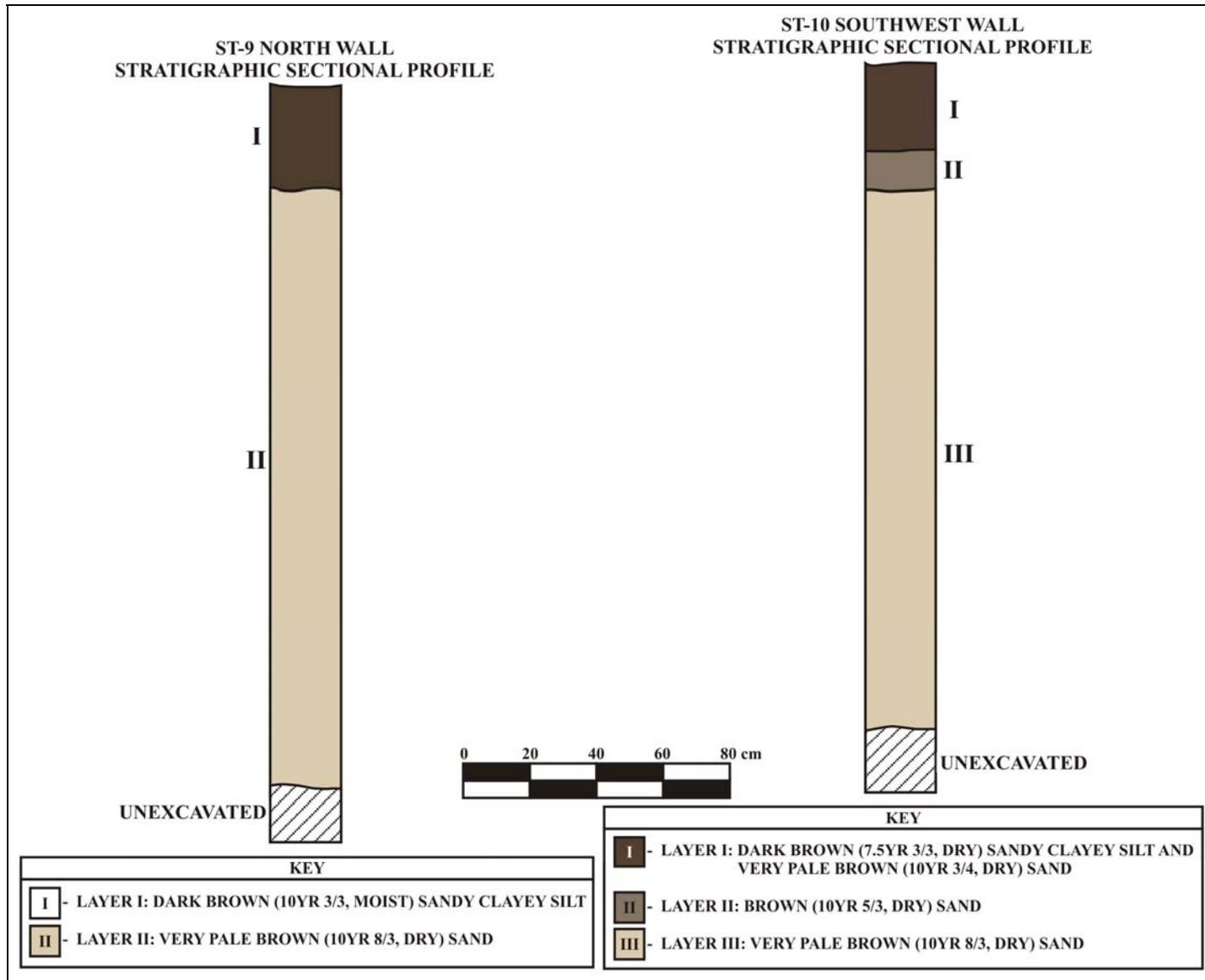


Figure 23: Stratigraphic profiles for Test Trenches ST-9 and ST-10.



Figure 24: Photograph of the North sidewall of ST-9 showing the stratigraphic profile.



Figure 25: Photograph of the Northeast sidewall of ST-10 showing the stratigraphic profile.

Layer II

Layer II (25-35 cmbs) consisted of loose brown (10YR 5/3, dry) sand with tree roots. As the layer's lower boundary was diffuse, Layer II was interpreted as a former A-Horizon. Layer II was culturally sterile.

Layer III

Layer III (35-190 cmbs) consisted of loose, very pale brown (10YR 8/3, dry) sand. Layer III was interpreted as a natural stratum. Layer III was culturally sterile. Excavation of ST-7 was terminated at 190 cmbs because the sidewall collapsed.

ARTIFACT ANALYSIS

Three artifacts were collected for analysis; after cleaning in the laboratory the ceramic and glass sherds did not contain any diagnostic features. Analysis of the ceramic insulator (Figure) indicated that it was a porcelain "knob and tube" insulator commonly used from the 1880s until the 1940s. Based on its location (in a layer of fill sediment) it could not be determined whether the insulator was associated with a previous structure in the project area or if it had been introduced with the fill sediment.



Figure 26: Ceramic "knob and tube" insulator found in Layer I of ST-2.

CONCLUSION

Based on the historic use of the project area as well as the results of previous archaeological studies in the vicinity of the project area, it was determined that potential site types in the project area might include pre-Contact or Historic habitation features related to the sites location on the shoreline, and that there was a high probability that burials might be found during excavations in the project area

While the pedestrian survey and subsurface testing revealed three modern structures associated with modern habitation, no cultural or historic sites or features were identified in the project area. A buried former A-Horizon was present in several of the test trenches but no cultural material was discovered with it. With the exception of a single ceramic insulator whose provenance could not be determined, all of the cultural material identified during the subsurface testing was confined to modern rubbish (wire, plastic bags, glass sherd and ceramic sherd) and modern construction debris (PVC pipe sections, red brick, concrete bricks, and fragments of red brick). One sub-adult faunal bone was identified in a layer of fill.

RECOMMENDATIONS

Although no cultural or historic sites were identified during the current survey and subsurface testing, Archaeological Monitoring is recommended for future ground disturbance in the project area, given the findings of previous archaeological work documented in the area (*e.g.*, human burials and cultural deposits).

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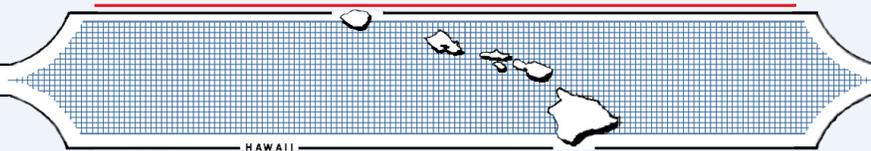
APPENDIX C
CULTURAL IMPACT ASSESSMENT

**A CULTURAL IMPACT ASSESSMENT FOR
TWO LOTS IN KAHALA
WAIKĪKĪ AHUPUA`A, KONA (HONOLULU) DISTRICT,
ISLAND OF O`AHU, HAWAII
[TMK (1) 3-5-003:002 and 003]**

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INTRODUCTION

At the request of Group 70, International, Scientific Consultant Services, Inc. (SCS), has prepared a Cultural Impact Assessment (CIA) for the proposed Hawai`i Project, located on two adjacent waterfront parcels at 4465/4469 Kahala Avenue in Waikīkī Ahupua`a, Kona District, O`ahu Island, Hawai`i [TMK (1) 3-5-003:002 and 003] (Figures 1 through 3).

The Constitution of the State of Hawai`i clearly states the duty of the State and its agencies is to preserve, protect, and prevent interference with the traditional and customary rights of Native Hawaiians. Article XII, Section 7 (2000) requires the State to “protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by *ahupua`a* tenants who are descendants of Native Hawaiians who inhabited the Hawaiian Islands prior to 1778.” In spite of the establishment of the foreign concept of private ownership and western-style government, Kamehameha III (Kauikeaouli) preserved the peoples traditional right to subsistence. As a result in 1850, the Hawaiian Government confirmed the traditional access rights to Native Hawaiian *ahupua`a* tenants to gather specific natural resources for customary uses from undeveloped private property and waterways under the Hawaiian Revised Statutes (HRS) 7-1. In 1992, the State of Hawai`i Supreme Court, reaffirmed HRS 7-1 and expanded it to include, “native Hawaiian rights...may extend beyond the *ahupua`a* in which a Native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner” (Pele Defense Fund v. Paty, 73 Haw.578, 1992).

Act 50, enacted by the Legislature of the State of Hawai`i (2000) with House Bill (HB) 2895, relating to Environmental Impact Statements, proposes that:

...there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii’s culture, and traditional and customary rights... [H.B. NO. 2895].

Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs and practices, and resources of Native Hawaiians as well as other ethnic groups. Act 50 also requires state agencies and other developers to assess the effects of proposed land use or shore line developments on the “cultural practices of the community and State” as part of the HRS Chapter 343 (2001) environmental review process.

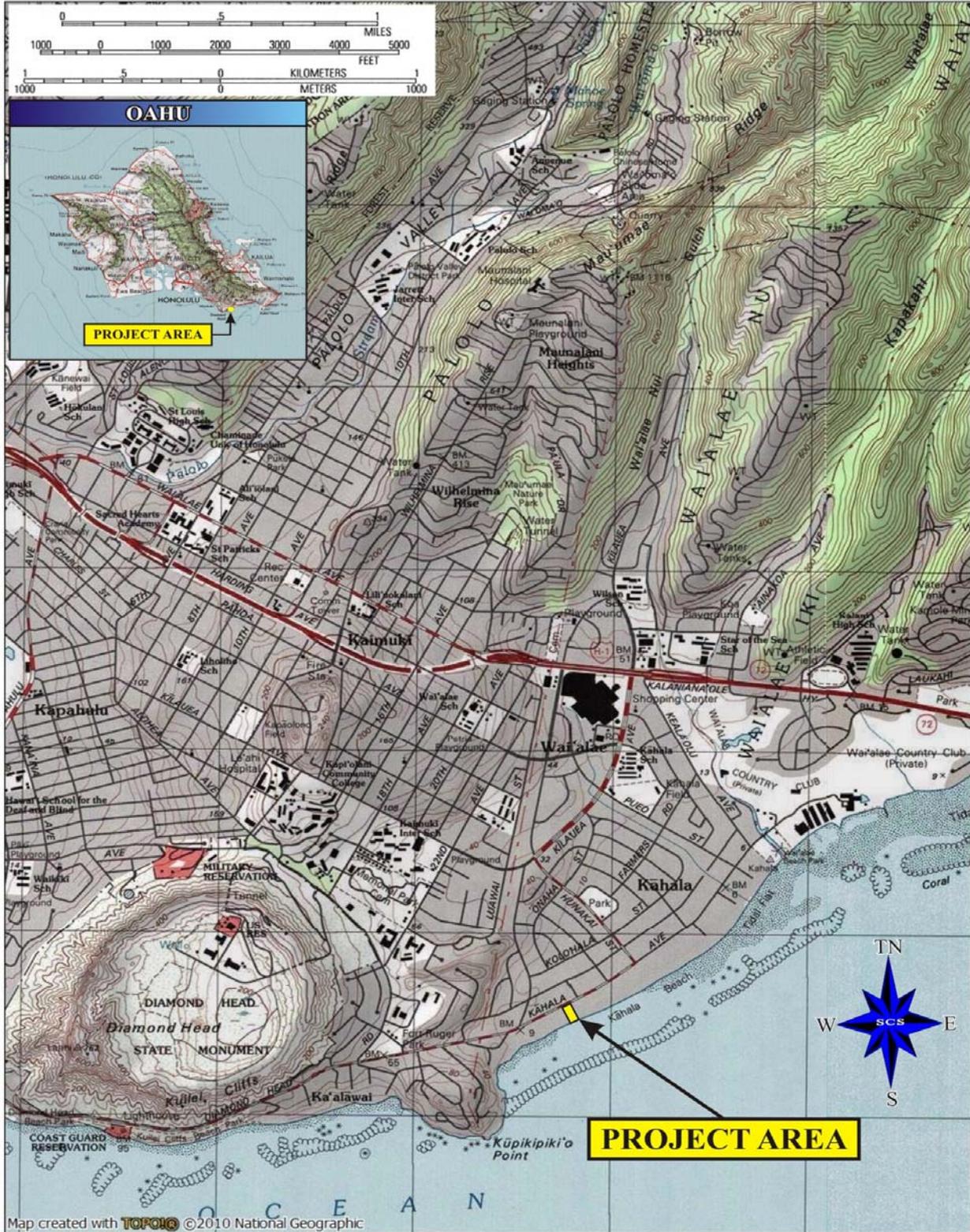


Figure 1: USGS Quadrangle (Honolulu 1998) Map Showing Project Area Location.

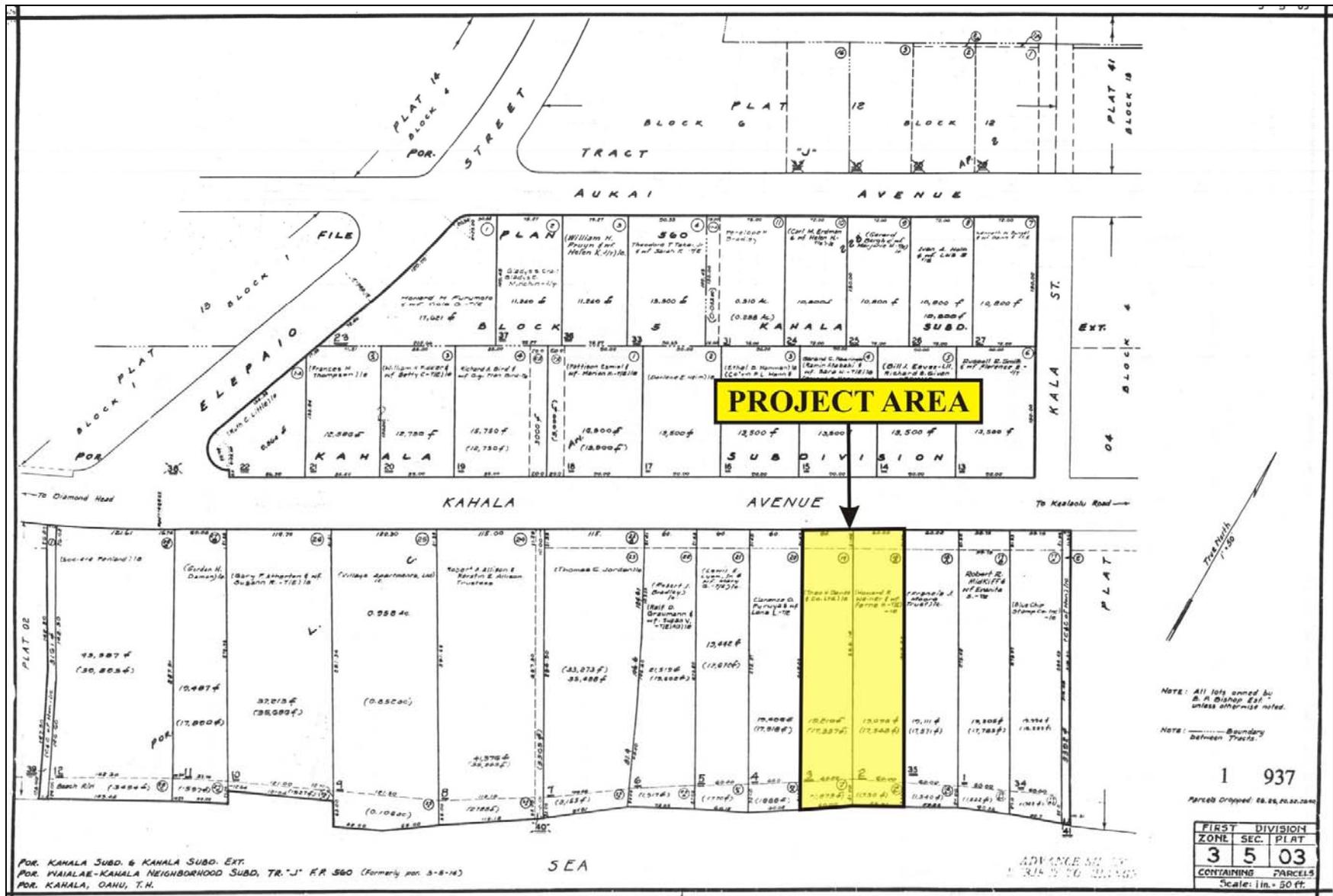


Figure 2: Tax Map Key [TMK: (1) 3-5-003] Showing Project Area Location.



Figure 3: Google Earth Image (2014) Showing Project Area Location.

It also re-defined the definition of “significant effect” to include “the sum of effects on the quality of the environment including actions impacting 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 A, copies of the posted legal notice and Affidavit are presented in Appendix B, responses to the inquiries are presented in Appendix C, and the information release forms are presented in Appendix D. 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.

ENVIRONMENTAL SETTING

PROJECT AREA DESCRIPTION AND ENVIRONMENTAL SETTING

The area of interest consists of two adjacent ocean-front residential parcels totaling 0.8795 acres, and identified on tax maps as TMK (1) 3-5-003:002 and 003. The subject properties are located in the traditional *ahupua`a* of Waikīkī, bounded by Kahala Avenue to the northwest, residences to the southwest and northeast, and the sea to the southeast. At the time of the survey structures in the project area included a paved driveway along the

northeast side of parcel 002, a cement and tile deck at the southern end of parcel 002, and a wooden deck at the southern end of parcel 003, as well as modern wire fences and/or basalt-and-concrete or concrete block walls on all four sides of the project area.

Project area elevations are approximately 3 meters above mean sea level (amsl) with an annual precipitation of 20 to 30 inches along this portion of the leeward coast (Giambelluca *et al.*, 2012). Both parcels support remnants of modern landscaping vegetation, such as grass lawns, coconut and other palms, mango trees, a variety of flowering trees and shrubs, and weeds that have sprouted since the lots have been vacant. Most of these plants grow in fill topsoil that was imported to cover calcareous sands that occur naturally on both parcels. According to Foote *et al.* (1972: 48-49, Sheet Map 63), in places where topsoil was not applied, soils classified as Jaucas Sand (JaC), have developed. Jaucas sands consist of excessively drained sands that typically occur as narrow strips adjacent to the ocean. The nearest drainage is Kapakahi Stream, located more than 1.5 km to the northeast of the project area.

TRADITIONAL SETTING

Recent re-evaluation of radiocarbon dates suggests O`ahu Island was first settled between A.D. 850 and 1100 by Polynesians sailing most likely from central East Polynesia (Kirch 2011:24). Archaeological settlement pattern data indicates that the initial colonization and occupation of the Hawaiian Islands first occurred on the windward shoreline areas of the main islands, with populations eventually settling into drier leeward areas at later periods (Kirch 1985). Coastal settlement was still dominant, but populations began exploiting and living in the upland (*kula*) zones. Greater population expansion to inland areas began about the A.D. Twelfth Century, but continued through the 16th Century.

As the Hawaiian culture developed, land became 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. His 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 they, distributed smaller parcels to lesser chiefs. The *maka`āinana* (commoners) worked the individual plots of land (Kirch and Sahlins 1992 vol.1:25).

In general, several terms, such as *moku*, *ahupua`a*, *`ili* or *`ili`āina* were devised to describe various land sections. A district (*moku*) contained smaller land divisions (*ahupua`a*), which 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. As the Polynesian economy was based on agricultural production and marine exploitation, as well as animal husbandry and utilizing forest resources, this situation ideally allowed each *ahupua`a* to be self-sufficient by supplying needed resources from different environmental zones (Lyons 1875:111). The *`ili `āina*, or *`ili*, were smaller land divisions next in importance to the *ahupua`a* and were administered by the chief who controlled the *ahupua`a* in which the *ili* were located (*ibid*: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). Oral history notes that the division of O`ahu's lands into districts (*moku*) and sub-districts was solidified by the *ali`i nui*, Mā`ili-kūkahi during the early part of the 16th century (Kamakau 1991:53-56). O`ahu contained six districts including Wai`anae, `Ewa, Waialua, Ko`olauloa, Ko`olaupoko, and Kona at the time of contact.

Large scale or intensive agricultural endeavors were implemented in association with habitation. Coastal lands were used for settlement and taro was cultivated in near-coastal reaches and in the uplands. On the southeast coast of O`ahu, taro cultivation was confined to valleys with streams or springs that would water the terraces. The staple crop in Wai`alae and Wailupe valleys was sweet potatoes, which were planted in the valleys, on hillsides, and in the coastal strip (Handy 1940:155-6).

HISTORIC SETTING

Early western visitors to O`ahu described the southeast coast as well-cultivated and well-populated. In 1789 Captain Nathaniel Portlock anchored in Maunalua Bay to take on fresh water, which was brought to the ship in calabashes. Portlock described the coastal setting:

...the bay all around has a beautiful appearance, the low land and vallies being in a high state of cultivation, and crowded with plantations of taro, sweet potatoes, sugar cane, &c., interspersed with a great number of cocoa-nut trees, which renders the prospect truly delightful. (Portlock 1789:73-4)

In 1828 Levi Chamberlain toured southeastern O`ahu, including Wai`alae:
...a grove of palm trees and a number of branching kou trees, among which stand the grass huts of the natives, having a cool appearance, overshadowed by the waving tops of the cocoanuts, among which the trade winds sweep unobstructed (Chamberlain 1956:28-9)

In 1865 Henry Willis Baxley described the region:

Further along the shore, the few hamlets of Waialae are seen nestled in a grove. And a short distance beyond, the grass huts of Wailupe cluster near the high hill of Mauna Loa, from the southern foot of which a ridge extends still further southwardly to the bold and lofty cape named Coco Head, the eastern boundary of the beautiful bay of Waialae, of which Diamond Head, already described, forms the western boundary (Baxley 1865:124).

According to Pukui *et al.* (1989; 220), Handy and Handy (1972: 483), and Handy (1940 in Sterling and Summers 1978:275), Wai`alae Ahupua`a takes its name from a spring which is located above Kalaniana`ole Highway. This stone-lined spring is said to feed a stream which provided water to agricultural terraces in the area. A glimpse of the traditional lifestyle of Wai`alae Nui is provided by J.K. Mokumaia (in Sterling and Summers 1978:276) who states:

Many people lived along the shores and they worked at farming and fishing. Plants grew. There were taro patches, tobacco, sweet potatoes, bananas, and sugar cane. There were many konohikis in former days. Paki was Waialae-nui's konohiki of fishing... There were ever so many people on the shores when these chiefs came to spend a while with the common people.

There was the spring that Kamalu use to bathe in....

There were two springs, one is on the summit of Waialae-nui... These appear to be good sites, there is much water, but its beauty of the time of the konohiki is gone. Now the kapu is freed and the kapu places are trodden underfoot.

The Māhele (1848-1851)

In the 1840s, a drastic change in the traditional land tenure resulted in a division of island lands and a system of private ownership based on Western law. While it is a complex issue, many scholars believe that in order to protect Hawaiian sovereignty from foreign powers, Kamehameha III (Kamehameha III) was forced to establish laws changing the traditional Hawaiian economy to that of a market economy (Kuykendall 1938, Vol. I:145; Daws 1977:111; Kelly 1983:45; Kame`eleihiwa 1992:169-70, 176; Kelly 1998:4). The Māhele of 1848 divided Hawaiian lands between the king, the chiefs, the government, and began the process of private ownership of lands. The subsequently awarded parcels were called Land Commission Awards (LCAs). Once lands were thus made available and private ownership was instituted, the *maka`āinana* (commoners), if they had been made aware of the procedures, were able to claim the plots on which they had been cultivating and living. These claims did not include any previously cultivated but presently fallow land, `okipu`u (forest clearing 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).

Once Article IV of the Board of Commissioners to Quiet Land Titles was passed in December 1845, the legal process of private land ownership was begun. The land division, called the Māhele, began in 1848. The lands of the kingdom of Hawai'i were divided among the king (crown lands), the *ali'i* and *konohiki*, and the government. The *ili* of Wai'ālae Iki was awarded to Abner Pākī, the father of Bernice Pauahi Bishop, and the *ili* of Wai'ālae Nui was awarded to Victoria Kamamalu, granddaughter of Kamehameha.

The project area is located within the land of Kānewai, which was awarded to Kalaiheana as Land Commission Award (LCA) 228:2, during the Māhele. Kalaiheana was a *kahu* (guardian) to Liholiho and participated in the 1824 invasion of Kaua'i (Kamakau 1991:220, 268). According to the testimony of John Papa ʻĪī in the Native Register, Kalaiheana received the lands after Kamehameha's conquest of O'ahu:

Kalaiheana's land, called Kanewai, is at Waikiki. It has some leles in Manoa—Keapuapu, Holoawalu [Kaloalu in N. T.], Pakui, and the lele of Pahoia at Waikiki; and the sea of Kahala. It was the land of Keeaumoku at Waikiki, adjoining the north side of Kalaepohaku. This land became his upon the victory of Kamehameha I at the Battle of Nuuanu, also Waialua, as was the custom of granting lands to the chiefs at the time. When the peleleu [fleet of large canoes] came, the land passed from Keeaumoku to Papa and Kalaiheana, and all the leles were also conveyed. From thence came this acquisition and there was no deterrent until the year 1841. For the first time, an edge of Kahala was taken for Wai'ālae. And in the year 1846 another portion was taken for Kalaepohaku, in the month of May, or perhaps June. (Native Register vol.2, pg1, cited in Waihona ʻAina 2014)

When Kalaiheana died in 1855, the *ili* of Kānewai was bequeathed to John ʻĪī as the guardian (*kahu*) of Victoria (Kamamalu). According to ʻĪī, Kalaiheana had claimed Kānewai before the Land Commission, "... but, not in his own right but as possession of the land under Kamamalu." Victoria Kamamalu was granted the *ahupua'a* of Wai'ālae Nui as LCA 7713, as the heir to her mother, Kinau, who had inherited the lands of Ka'ahumanu. Bernice Pauahi Bishop subsequently inherited Kamamalu's land.

Waialae Ranch

In the 1850s Captain John Ross leased 300 acres from the Kamehameha family for a ranch, where he raised cattle. In 1887, Daniel Isenberg purchased the lease to Wai`alae Ranch from the Bishop Estate. Isenberg subsequently planted extensive fields of alfalfa in Wai`alae for the development of a dairy ranch, the Waialae Ranch Company. By 1924, the Waialae Ranch Company was the largest dairy in Honolulu. Isenberg sold the property in the 1920s (Hitch and Kuramoto 1981:36). In July 1927, the Isenberg ranch home, near the mouth of Wai`alae Stream, became the club house for the Wai`alae Golf Course (Honolulu Star Bulletin, August 25, 1934).

Niu Plantation

In the 1881 edition of Thomas Thrum's (1881) *Hawaiian Almanac and Annual*, a single sugar plantation was listed in the district of Wai`alae, the Niu Plantation. This plantation is not listed in subsequent annuals, suggesting that the plantation was short-lived. An attempt to grow pineapple in the 1920s was also short-lived.

Waialae Golf Course

In 1925 the Territorial Hotel Company 250 acres from the Bishop Estate for the construction of Wai`alae Golf Course. The course was built to cater to wealthy tourists but local residents could also use the course by paying an annual fee (Hitch and Kuramoto 1981:42). After the stock market crash of 1929 some of the local members were persuaded to manage the course as a private club. In the 1960s the golf course was redesigned to make room for the construction of the Kahala Hilton Hotel, the Kahala apartments, and the Kai Nani subdivision along the coastal side of the property.

Residential Development

In the 1920s, Wai`alae gradually developed into a suburb of Honolulu, spreading eastward along Wai`alae Road (now Kalaniana`ole Highway) and *mauka* into Wai`alae Iki and `Ainakoia. Beginning in the 1920s, a series of improvements were made to Waialae Road, as part of the development of Kalaniana`ole Highway. Farming continued in the area into the 1930s; in 1938 more than 50 pig farms were operating in the vicinity of Farmers Road and Kahala Avenues. At the same time the beachfront along Kahala Avenue was being developed with homes (Honolulu Advertiser, December 20, 1938). In the 1940s and 1950s the Bishop Estate subdivided and leased individual residential sites across Kahala. By 1956 Wailupe Fishpond, to the east of the project area, had been filled in to provide more land for subdivision development (Clark 1977:36-7).

PREVIOUS ARCHAEOLOGICAL RESEARCH

The numerous archaeological sites recorded in the area consist mainly of human burials identified during construction activities, as well as cultural remains relating to both prehistoric and historic time periods.

Few archaeological surveys have been conducted in Wai`alae Nui and Wai`alae Iki. Most of the archaeological work in the area was initiated by the inadvertent discovery of human remains during construction activities.

In the early 1930s, John G. McAllister conducted an archaeological survey of the island of O`ahu, under the auspices of the Bernice Pauai Bishop Museum. During the survey, Punahoa, an informant, told McAllister (1933) Kaunua Kahekili Heiau (McAllister's Site 55). Although the *heiau* had been destroyed by the time of McAllister's survey, Punahoa described the *heiau* as a large structure which had been "...located on top of the ridge which divides Wailupe and Waialae, on the highest and most pronounced knoll. The site was formerly planted in pineapples, but now the heiau is overgrown with high grass and weeds and the pineapples are on the ground sloping around it. Many large rocks embedded in the earth are all that remains of the structure" (McAllister 1933: 71).

In 1967, the Bishop Museum excavated a test unit the Wai`alae shelter cave (State Site 50-80-14-2503), on Kuana Street. Marine shell food remains, traditional Hawaiian artifacts, and historic artifacts were recovered, including a fish hook, an octopus lure, a coral file, copper tubing and bottle glass dating from the 1880s to 1920s (Lloyd Soehren 1967 in Kennedy 1991).

Joseph Kennedy (1991) conducted a surface survey of a 7.5-acre parcel occupied by facilities for the Star of the Sea Church-School complex located mauka and adjacent to Kalaniana`ole Highway. Two lava tubes and six caves were found, but they did not contain any cultural material. No other surface features were found.

Paul Cleghorn Consulting, conducted a surface survey of a 6.4-acre parcel in Kapakahi Gulch, mauka of the end of Luinakoa Street (Cleghorn and Anderson 1992). No surface features were found.

Scientific Consultant Services, Inc., conducted an assessment of the surface features along a 1,100-meter-long corridor of the Wiliwilinui Trail Alignment on Wai`alae Iki Ridge

(Chaffee and Spear 1994). During the survey, a World War II concrete and metal bunker (State Site 50-80-14-4811) was identified.

In 2001 and 2002, Cultural Surveys Hawai`i, Inc. conducted archaeological monitoring during the installation of a gas main and a water main from `Ainakoa Avenue to West Hind Drive (Bush and Hammatt 2002). The majority of the project corridor was within a zone of coral outcrop that has since been covered by eroded soil and fill layers. The main trenching line was found to be composed primarily of fill materials associated with different phases in the development of the highway. No cultural material (except modern trash) was encountered during installation of the gas main, but pockets of sand were noted. One horseshoe and one *poi* pounder fragment were collected during installation of the water main. Basalt boulders found in one area were thought to possibly be part of the wall of former Wailupe Fishpond.

Subsequently, Cultural Survey's Hawai`i, Inc. conducted archaeological monitoring during improvements to the water system at Black Point (Jones and Hammatt (2003). Monitors were on-site during all excavations in areas thought to have Jaucas sand. The actual area that contained Jaucas sands was much smaller than predicted, but the excavations for the water system were generally shallow (less than 50 centimeters deep), and it was determined that strata of undisturbed sand were probably still undisturbed at a deeper level. No subsurface features were found.

Cultural Surveys Hawai`i Inc. conducted an archaeological literature review and field inspection for the proposed Wai`alae Country Club Master Plan Project conducted (O`Hare *et al.* 2008). In addition the same group also produced a Cultural Impact Evaluation for the Country Club Master Plan as well (Spearing *et al.* 2008).

Scientific Consultant Services, Inc. conducted archaeological monitoring of the Waialae Country Club during the installation of electrical switchgear installation and replacement of air conditioning facilities (Wilson and Spear 2009). The excavations associated with this undertaking revealed subsurface strata consisting of a single uniform stratigraphy, the vast majority of which was previously disturbed though landscaping and building construction. No cultural deposits or significant historic properties were identified.

In 2013, Scientific Consultant Services, Inc. conducted an archaeological inventory survey of the subject properties (Hazlett and Spear 2014, in prep.). During the survey, no historic properties were identified.

BURIALS

Many mid-nineteenth century visitors to the islands visited a large area of exposed bones in sand on the eastern side of Diamond Head or Black Point, in Waikīkī Ahupua`a. These tourists, including the writer Mark Twain, speculated that either these graves were the remains of warriors killed in one of Kamehameha's battles or the interment site for Hawaiians who died in one of the many epidemics that swept the islands in the years after contact with Westerners and Asians. From the early traveler's accounts, this large dune cemetery was probably in the `ili of Wai`alae Nui in the Kahala beach area. Several visitors to the cemetery noted that they rode or drove around Black Point, but had not yet reached the coconut groves of the `ili of Wai`alae Iki, within the current project area. Although it does not seem that the dense concentration of bones found in Kahala extends to the project area, it is likely that some burials were interred in the Wai`alae Iki shore, wherever the sand was deep enough for a shallow pit (Spearing et al. 2008).

During construction at a property at 4505 Kahala Avenue, human skeletal remains were inadvertently identified by a construction crew and reported to the State Historic Preservation Division (SHPD). The SHPD archaeologists disinterred the skeletal remains, which was determined to consist of the primary interment of a young-to-middle aged female which had been interred in a semi-flexed position (Griffin 1987). A subsequent examination of the remains by the University of Hawai`i, Mānoa, determined that there was a second burial intrusive with the first, which consisted only of the lower limb bones of a young male adult (Lee and Pietruszewsky 1988). The burial site was subsequently designated State Site 50-80-14-3725

During the excavation of a swimming pool on a property at 1013 Waiholo Street, human skeletal remains were inadvertently discovered. The SHPD archaeologists disinterred the remains and determined the remains represented a single individual in a flexed position (Bath and Griffin 1988). A subsequent examination of the remains by the University of Hawai`i determined the bones were of a female, approximately 35 years old (Douglas and Pietruszewsky 1988). The burial site was subsequently designated State Site 50-80-14-3760.

In 1989, contractors at a construction site located at 4745 Aukai Avenue reported the inadvertent discovery of human skeletal remains to the SHPD. The State Historic Preservation Division archaeologist determined the partial remains represented a single individual which had been previously disturbed (Bath 1989). A subsequent examination of the remains by the University of Hawai`i, Mānoa, determined the bones were of a single adult male, 40 to 45 years

old (Bradley and Pietrusewsky 1989a). The burial was subsequently designated State Site 50-80-14-4126.

In 1989, Human skeletal remains inadvertently identified during the construction excavations for a house foundation at 4585 Kahala Avenue were reported to the SHPD (Kawachi 1989). The burial was disturbed by the construction, but the contractor's description indicated that the burial may have been in a flexed position. The skull and upper third of the body was missing. A subsequent examination of the remains by the University of Hawai'i, Mānoa, determined the bones were of a female, approximately 25 to 35 years old (Bradley and Pietrusewsky 1989b). The burial was subsequently designated State Site 50-80-14-4065.

In 1995, human skeletal remains were inadvertently encountered during the excavation of an elevator shaft for a house at 4433 Kahala Avenue. The burial (later designated as Burial 1) was determined to be likely associated with an ash and charcoal cultural layer 60 to 95 centimeters below the ground surface (Jourdane 1995). The burial was disinterred and later reinterred. The burial and the cultural layer were designated State Site 50-80-14-5320.

In 1997, additional burial recovery work was carried out at 4433 Kahala Avenue (Erkelens and Tomonari-Tuggle 1997). Back dirt piles were screened and the loose soil was removed from the elevator shaft. When the walls of the shaft were cleaned, the profile of a fire pit and the profile of a burial pit were noted. A second burial was found in the burial pit and additional elements of this burial were found in the back dirt piles. A backhoe excavated a 4 by 2.5-m block around Burial 2 and a third burial was uncovered. Burial 1 was identified as the skeleton of a 30-35 year old male. A shell button and two porcelain beads in the back dirt probably belong to this individual. Burial 2 was identified as the skeleton of a 20-25 year old female. Burial 3 was identified as a 3-year old child, probably the child of the female (Burial 2). A square-cut nail was found with this burial. Due to the presence of historic artifacts, the burials were determined to be of Polynesian or Asian ethnicity, buried in the nineteenth century. All three burials were disinterred and reinterred elsewhere on the property. All three burials at the site are considered part of State Site 50-80-14-5320.

In April of 1999, a local resident collected human skeletal remains from a cave to a located *mauka* of the end of Luinakoa Street (Aina Koa Subdivision) on Wai`alae Nui Ridge. The State Historic Preservation Division archaeologists were notified and determined that the human skeletal elements were distributed across the cave floor and were likely to represent one

individual (Collins and Jourdane 1999). No other cultural remains were found in the cave. The cave and burial were designated State Site 50-80-14-5743.

During the excavation of a utility line at 4773 Kahala Avenue in 2003, human skeletal remains were inadvertently encountered. T. S. Dye & Colleagues were contracted to conduct further investigation of the find (Putzi and Dye 2003). The remains of five individuals, a cultural layer, and several traditional Hawaiian artifacts were recovered from the excavation and from the back dirt piles. The burials were probably of Hawaiian ancestry based on the presence of the traditional artifacts. The burials and the cultural layer were designated State Site 50-80-14-6632.

In 2003, Haun and Associates Inc. conducted a surface survey of the 8-acre Waialae 180 Reservoir Replacement project site located near the Kalani High School Athletic Field, *mauka* of Kalaniana'ole Highway (Haun and Henry 2003). During the survey, two caves containing human skeletal remains were identified (State Site 50-80-14-5938 and 50-80-14-6351). The human skeletal elements identified and designated as State Site 50-80-14-5938, included five crania, suggesting 5 individuals were represented. A single human infant cranium, was encountered at Site 6351. As no evidence of historic cultural materials were present, the burials were interpreted to be Native Hawaiian associated with the late pre- or early post-Contact Period.

Human skeletal remains were inadvertently identified at 4577 Kahala Avenue in 2006 during excavation of a sewer line. The remains were interpreted to represent a single *in situ* burial and a single previously disturbed burial encountered within a cultural layer (Dye 2005a, b; Dye 2006). The burials and the cultural layer were designated State Site 50-80-14-6762.

In 2006, Pacific Consulting Services conducted extensive Phase I subsurface testing at three parcels located at 4415, 4423, and 4433 Kahala Avenue (Collins and Clark 2006). Fifty-one test units were excavated, covering the majority of the project area. Human skeletal remains had been previously encountered at 4433 Kahala Avenue in the 1990s (Jourdane 1995; Erkelens and Tomonari-Tuggle 1997). Collins and Clark (2006) reported on two sand cultural layers, the upper layer believed to be associated with historic period habitation and the lower sand layer associated with traditional Hawaiian habitation.

The second phase of this project was carried out in 2007 (Dye and Jourdane 2007). During this phase, the 1997 re-interment site was relocated and marked on the surface. Twenty shovel tests were excavated in areas not covered by the Phase I project. Controlled block excavations were placed adjacent to shovel test pits which contained one or more of the two sand

layers identified by Collins and Clark (2006). The work indicated that the possible two cultural layers were actually "a single old land surface, or paleosol, upon which a variety of historic-period artifacts had been deposited" (Dye and Jourdan 2007:32).

In March of 2007, the SHPD (Chinen 2007a) was notified that human skeletal remains had been found during construction a new house and swimming pool at 4565 Kahala Avenue. The bones were dispersed around the property's backyard. The SHPD determined that a qualified archaeological consultant would need to screen back dirt piles and conduct block excavations at the site to try to determine the original location of the burial and to test if other burials were present. CSH (Tulchin and Hammatt 2007) excavated 25 test units but the original location of the burial could not be determined. They did recover additional skeletal remains from the back dirt piles. Following the test excavations, a CSH archaeologist monitored the remainder of construction related excavations in the project area. On April 25, May 15 and July 11, 2007 additional human skeletal remains were observed (Chinen 2007b). These were determined to be from the same burial as that found in March. The SHPD assumed jurisdiction over the inadvertent discoveries and determined to relocate the remains. The burial was designated site SIHP #50-80-14-6927.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Wai`alae Country Club Clubhouse upgrade between February 1 to May 31, 2011 (Dagher *et al.* 2013). Two archaeological sites were recorded; State Site 50-80-14-7206, a human burial, with a partially intact burial pit, and State Site 50-80-14-7207, comprised of a single *in situ* human burial (Feature 1) and a pit feature of indeterminate function (Feature 2). The burials were found to be in association with a former A-horizon identified as a cultural layer.

Scientific Consultant Services, Inc. conducted Archaeological Monitoring for the Wai`alae Country Club Annex Building Project between April 22 to December 30, 2013 (Pestana and Spear, in prep.). The archaeological monitoring led to the identification of two sites : State Sites 50-80-14-7206 and 50-80-14-7207. State Site 50-80-14-7206 (Burial 1), located on TMK: (1) 3-5-023:038, consisted of a partial set of human skeletal remains encountered in the excavation for the Waialae Country Club Clubhouse's footing expansion excavation. State Site 50-80-14-7207, located on TMK: (1) 3-5-023:003, consisted of two subsurface features represented by a human burial (Subsurface Feature 1, Burial 1) and a pit (Subsurface Feature 2) of indeterminate function.

CONSULTATION

Consultation was sought from the Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Ms. Hinaleimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council; Manu Boyd, President; Hawaiian Civic Club; and Victoria Holt-Takamine, Kumu Hula.

In addition, a Cultural Impact Assessment Notice was published on January 8, 9 and 12, 2014, in *The Honolulu Star-Advertiser*, and in the February 2014 issue of the OHA newspaper, *Ka Wai Ola* (Lisa E. Asato, personal; communication) (see Appendix B). 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.

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 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 two adjacent waterfront parcels at 4465/4469 Kahala Avenue in Waikīkī Ahupua`a, Kona District, O`ahu Island, Hawai`i [TMK (1) 3-5-003:002 and 003].

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 (2014).

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 suggestion for 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). As indicated by the lack of responses received from the community, the project area has not been, and is not currently, used for traditional cultural purposes.

Based on the above research and the lack of comments received from the community, it is reasonable to conclude that, pursuant to Act 50, the exercise of native Hawaiian rights, or any ethnic group, related to traditional cultural practices including, gathering, access, cultivation, the use of traditional plants, *oli* (chanting) and *ha`a* (dancing), canoe building, making traditional tools (i.e., *poi* pounders, *poi* boxes), and surfing will be not impacted by the proposed "Hawai`i Project" to be located on two adjacent waterfront parcels at 4465/4469 Kahala Avenue in Waikīkī Ahupua`a, Kona District, O`ahu Island, Hawai`i [TMK (1) 3-5-003:002 and 003].

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APPENDIX A: LETTERS OF INQUIRY

Mr. William Ho`ohuli
94-1067 Leomana Place
Waipahu, Hawai`i 96797

January 3, 2014

Dear Mr. Ho`ohuli:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to a proposed "Hawaii Project", located on approximately 0.90 acres of land within Waialae `Ili, Waikīkī Ahupua`a, Honolulu (Kona) District, O`ahu Island [TMK: (1) 3-5-003:002 and 003] (Figures 1 and 2).

Scientific Consultant Services is in the process of conducting an Archaeological Inventory of the TMK: (1) 3-5-003: 002 and 003, in their entirety (c. 0.90 acres) in order to determine the presence of archaeological historic properties.

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs... The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by individuals, such as yourself.

Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (2)

Cc: Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Ms. Hinaleimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council; Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula

Manu Boyd, President
Hawaiian Civic Club
P.O. Box 1513
Honolulu, Hawai`i 96806

January 3, 2014

Dear: President Boyd:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to a proposed "Hawaii Project", located on approximately 0.90 acres of land

within the `ili of Waialae Iki, Waikīkī Ahupua`a, Honolulu (Kona) District, O`ahu Island [TMK: (1) 3-5-003:002 and 003] (Figures 1 and 2).

Scientific Consultant Services is in the process of conducting an Archaeological Inventory of the TMK: (1) 3-5-003: 002 and 003, in their entirety (c. 0.90 acres) in order to determine the presence of archaeological historic properties.

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs... The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural which support such cultural beliefs...

We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the Hawaiian Civic Club.

Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (2)

Cc: Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian; Ms. Hinalaimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council

Dr. Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
737 Iwilei Road, Suite 200
Honolulu, Hawai`i 96817

January 3, 2014

Dear Dr. Crabbe:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to a proposed "Hawaii Project", located on approximately 0.90 acres of land within the `ili of Waialae Iki, Waikīkī Ahupua`a, Honolulu (Kona) District, O`ahu Island [TMK: (1) 3-5-003:002 and 003] (Figures 1 and 2).

Scientific Consultant Services is in the process of conducting an Archaeological Inventory of the TMK: (1) 3-5-003: 002 and 003, in their entirety (c. 0.90 acres) in order to determine the presence of archaeological historic properties.

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to

traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the Office of Hawaiian Affairs.

Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (2)

Cc: Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Ms. Hinaleimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council; Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member

Ms. Hinaleimoana K.K. Wong-Kalu, Chair
O`ahu Island Burial Council
C/O Kawika Farm
State Historic Preservation Division
Burial Sites Program
601 Kamokila Blvd., Room 555
Kapolei, Hawai`i 96707

January 3, 2014

Dear: Chairperson Hinaleimoana K.K. Wong-Kalu

In compliance with the State of Hawai'i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to a proposed "Hawaii Project", located on approximately 0.90 acres of land within the `ili of Waialae Iki, Waikīkī Ahupua`a, Honolulu (Kona) District, O`ahu Island [TMK: (1) 3-5-003:002 and 003] (Figures 1 and 2).

Scientific Consultant Services is in the process of conducting an Archaeological Inventory of the TMK: (1) 3-5-003: 002 and 003, in their entirety (c. 0.90 acres) in order to determine the presence of archaeological historic properties.

According to the *Guidelines for Assessing Cultural Impacts* (Office of Environmental Quality Control, Nov. 1997):

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We are asking you for any information that you or other individuals have which might contribute to the knowledge of traditional cultural activities that were, or are currently, conducted in the vicinity of the proposed undertaking. We are also asking for any information pertaining to traditional cultural activities or traditional rights which may be impacted by the proposed undertaking. The results of the cultural impact assessment are dependent on the response and contributions made by organizations, such as the O`ahu Island Burial Council.

Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist
Enclosures (2)

Cc: Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian

Dear:

In compliance with the State of Hawai`i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment (CIA) pertaining to a proposed "Hawaii Project", located on approximately 0.90 acres of land within the `ili of Waialae Iki, Waikīkī Ahupua`a, Honolulu (Kona) District, O`ahu Island [TMK: (1) 3-5-003:002 and 003] (Figures 1 and 2).

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Senior Archaeologist
Enclosures (2)

Vincent H. Rodrigues, Cultural Historian
State Historic Preservation Division
Department of Land and Natural Resources Maui Office Annex
130 Mahalani Street
Wailuku, Hawai'i 96791

January 3, 2014

Dear Mr. Rodrigues:

In compliance with the State of Hawai'i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement Law and in accordance with the State of Hawai'i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai'i on November 19, 1997, Scientific Consultant Services, Inc. (SCS) is in the process of preparing a Cultural Impact Assessment

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Cathleen Dagher
Senior Archaeologist
Enclosures (2)

Cc: Ms. Hinalaimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council; Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs

Mrs. Victoria Holt-Takamine
victoria@hawaii.edu

January 3, 2014

Dear Mrs. Takamine:

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Senior Archaeologist
Enclosures (2)

Cc: William Ho`ohuli, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Ms. Hinaleimoana K.K. Wong-Kalu, Chair, O`ahu Island Burial Council; Manu Boyd, President; Hawaiian Civic Club

APPENDIX B: LEGAL NOTICE

AFFIDAVIT OF PUBLICATION

IN THE MATTER OF
SCS Proj 1513 Hawaii Project CIA

}
}
}
}
}
}

STATE OF HAWAII)
) SS.
City and County of Honolulu }

Doc. Date: JAN 13 2014	# Pages: 1
Notary Name: Patricia K. Reese	First Judicial Circuit
Doc. Description: Affidavit of Publication	
<i>Patricia K. Reese</i> Notary Signature	JAN 13 2014 Date



Information requested by Scientific Consultant Services, Inc. (SCS) on cultural resources and traditional, previously or on-going, cultural activities in the vicinity of the proposed "Hawaii Project", located on approximately 0.90 acres of land within the ʻili of Waialae Iki, Waikīkī Ahupuaʻa, Honolulu (Kona) District, Oʻahu Island [TMK: (1) 3-5-003-002 and 003]. Please respond within 30 days to Cathleen Dagher at (808) 597-1182.
(S4590573 1/8, 1/9, 1/12/14)

Rose Rosales being duly sworn, deposes and says that she is a clerk, duly authorized to execute this affidavit of Oahu Publications, Inc. publisher of The Honolulu Star-Advertiser and MidWeek, that said newspapers are newspapers of general circulation in the State of Hawaii, and that the attached notice is true notice as was published in the aforementioned newspapers as follows:

Honolulu Star-Advertiser 3 times on:
01/08, 01/09, 01/12/2014

Midweek Wed. 0 times on:

_____ times on:

And that affiant is not a party to or in any way interested in the above entitled matter.

PR

Rose Rosales

Subscribed to and sworn before me this 13th day

of January A.D. 2014
Patricia K. Reese

Patricia K. Reese, Notary Public of the First Judicial Circuit, State of Hawaii

My commission expires: Oct 07 2014



Ad # 0000590573

LN: _____

Information requested by Scientific Consultant Services, Inc. (SCS) on cultural resources and traditional, previously or on-going, cultural activities in the vicinity of the proposed "Hawaii Project", located on approximately 0.90 acres of land within the ʻili of Waialae Iki, Waikīkī Ahupuaʻa, Honolulu (Kona) District, Oʻahu Island [TMK: (1) 3-5-003:002 and 003]. Please respond within 30 days to Cathleen Dagher at (808) 597-1182.

APPENDIX C: FOLLOW-UP LETTERS

Mr. William Ho`ohuli
94-1067 Leomana Place
Waipahu, Hawai`i 96797

February 6, 2014

Dear Mr. Ho`ohuli:

This is our follow-up letter to our January 3, 2014 letter, which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Enclosed are maps showing the proposed project area. Please contact me at the Scientific Consultant Services, Honolulu, office at (808) 597-1182 or via e-mail (cathy@scshawaii.com) with any information or recommendations concerning this Cultural Impact Assessment.

Sincerely yours,

Cathleen Dagher
Senior Archaeologist

Cc: Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula

Manu Boyd, President
Hawaiian Civic Club
P.O. Box 1513
Honolulu, Hawai`i 96806

February 6, 2014

Dear President Boyd:

This is our follow-up letter to our January 3, 2014 letter, which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Sincerely yours,

Cathleen Dagher
Senior Archaeologist

Cc: Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member; Dr. Kamana`opono M. Crabbe, Chief Executive Officer, State of Hawai`i Office of Hawaiian Affairs; Vincent H. Rodrigues, Cultural Historian

Dr. Kamana`opono M. Crabbe, Chief Executive Officer
Office of Hawaiian Affairs
737 Iwilei Road, Suite 200
Honolulu, Hawai`i 96817

February 6, 2014

Dear Dr. Crabbe:

This is our follow-up letter to our January 3, 2014 letter, which was in compliance with the statutory requirements of the State of Hawai`i Revised Statute (HRS) Chapter 343 Environmental Impact Statements Law, and in accordance with the State of Hawai`i Department of Health's Office of Environmental Quality Control (OEQC) Guidelines for Assessing Cultural Impacts as adopted by the Environmental Council, State of Hawai`i, on November 19, 1997.

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Cathleen Dagher
Senior Archaeologist

Cc: Vincent H. Rodrigues, Cultural Historian, State Historic Preservation Division; Manu Boyd, President; Hawaiian Civic Club; Victoria Holt-Takamine, Kumu Hula; William Ho`ohuli, community member

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Cc:

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State Historic Preservation Division
Department of Land and Natural Resources Maui Office Annex
130 Mahalani Street
Wailuku, Hawai'i 96791

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Mrs. Victoria Holt-Takamine
victoria@hawaii.edu

February 6, 2014

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APPENDIX D
COASTAL ASSESSMENT STUDY

**Coastal Assessment for
4465 and 4469 Kahala Avenue**
Honolulu, Hawaii

February, 2014



Prepared for:
Group 70, International
925 Bethel Street, 5th Floor
Honolulu, HI 96813

Prepared by:
Sea Engineering, Inc.
Makai Research Pier
41-305 Kalaniana'ole Hwy
Waimanalo, HI 96795



Job No. 25405



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1. INTRODUCTION

This coastal engineering assessment has been prepared as part of a project to replace the existing, non-permitted shoreline structures at Parcels 4465 and 4469 Kahala Avenue, on the south shore of Oahu. The project site is located east of Diamond Head between Elepaio St. and Kala Pl. The regional location of the project is shown in Figure 1-1. Figures 1-2 and 1-3 are aerial photographs of the site.

The project site is approximately one mile east of Diamond Head Beach Park, and approximately 1,600 feet east of the Black Point. The lots are located on Kahala Beach, a 2-mile reach bordered by Black Point on the west and Wailupe Peninsula on the east. While much of Kahala Beach has a narrow sand beach, the western portion, including the project site, has only isolated sandy areas, and is mostly characterized by bare reef and rocks fronting the properties. All of the properties in the region are fronted by seawalls. Figure 1-4 is a photograph of the project shoreline. Property 4465 has a vertical seawall 6 feet high consisting of grouted tile blocks on top of a stepped CRM base. Property 4469 to the east has a rock revetment. Neither structure is permitted, and the property owner desires to remove them and replace them with a properly engineered wall located behind the certified shoreline.

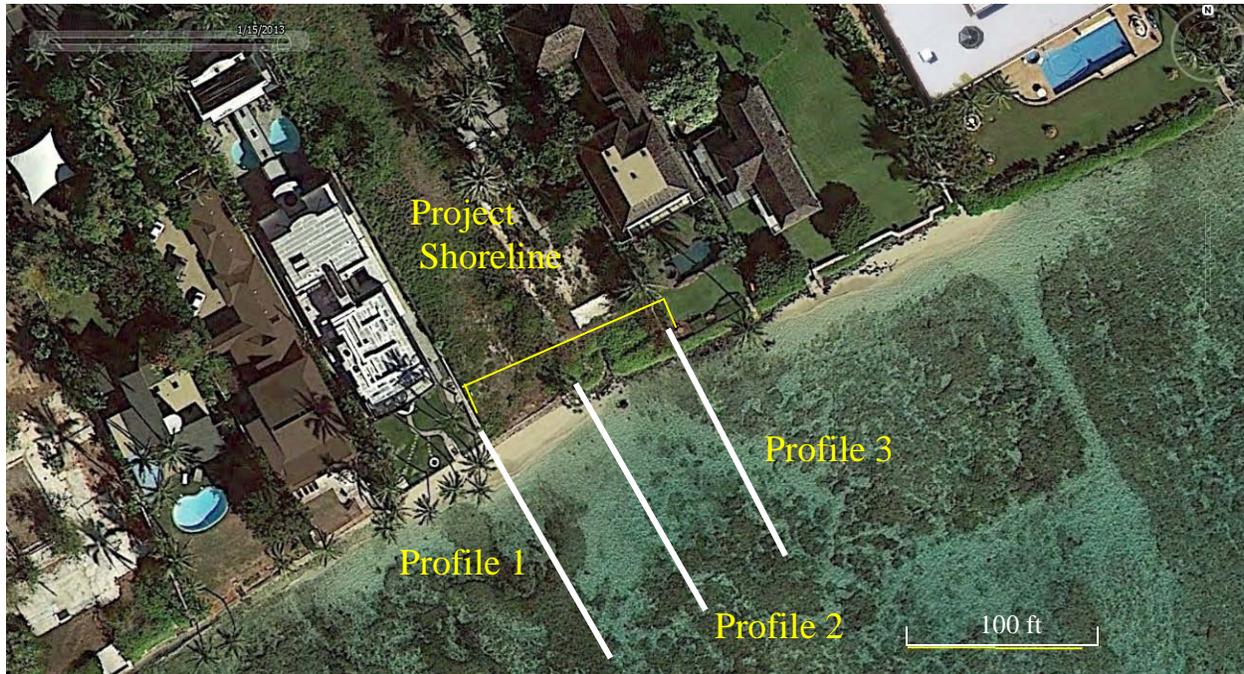
In support of SMA permit for the property and seawall re-construction, Sea Engineering was contracted to complete a coastal assessment of the project shoreline. This coastal assessment addresses Office of Environmental Quality Control (OEQC) guidelines for assessing shoreline alteration projects, including: a detailed description of the existing shoreline and coastal processes; historical shoreline erosion rates; site maps; oceanographic setting; coastal hazards; description of improvements; and review of alternatives.



Figure 1-1 Project location on the island of Oahu



Figure 1-2 Aerial photograph of the project site (Google Earth)



**Figure 1-3 Aerial photograph of project site (2) showing the project reach and profile location
(from Google Earth)**



Figure 1-4 Existing walls and narrow beach fronting 4465 and 4469 Kahala Ave. properties

2. PROJECT SITE DESCRIPTION

2.1 Shoreline Description

Appendix A presents the topographic survey map of the project site. The lots, at addresses 4465 and 4469 Kahala Avenue (TMK 3-5-003:003&002), are each 270 feet deep, with a shoreline frontage of 60 feet. The land elevation ranges from 8 to 10 feet. The seaward margin of the western lot is a vertical seawall, rising from the beach to an elevation of approximately 8 feet. The wall consists of a CRM base with a stepped face, supporting a vertical face of grouted tile blocks (Figure 2-1). The eastern lot is fronted by a rock revetment 10 to 15 feet wide and rising to an elevation of 7 feet (Figure 2-2). A narrow sand beach is present in front of the walls during lower tide levels; during higher tides, wave uprush reaches the base of the walls and there is little dry beach (Figure 2-3).

The adjoining property to east is protected by a revetment (Figure 2-4) and the adjoining property to the west is protected by a vertical seawall (Figure 2-5). A sandy beach is not present in front of either of these properties. To the west, vertical seawalls line the shoreline the entire distance to Black Point, over 1200 feet, and there is little or no sandy beach. Similarly, to the east, the shoreline is hardened by protective seawalls for at distance of 1100 feet, and a there is no sand beach. Beyond this, a narrow sand beach extends to the Kahala Resort and Hotel.

The project shoreline is characterized by a wide fringing limestone reef flat over 850 feet in width (Figure 1-2). The reef flat widens to about 1500 feet at the eastern end of Kahala Beach. Water depths on the reef flat range from 1 foot near the shoreline to 2 to 3 feet along the seaward margin. The fringing reef flat provides substantial protection to the shoreline from storm waves. During typical conditions, little wave energy reaches the shoreline, and there are no notable currents. Very little sand has accumulated along the shore in this area, existing as small pockets that are mostly covered during higher tide levels. There is little evidence of active sand transport along the shoreline. Basalt boulders and cobbles exist intermittently in this area – they are probably derived from the lava flow that forms the headland at Black Point. Aerial photographs indicate that there is little sand present on the reef flat or further offshore. In general, there appears to be very little sand available in the region for beach building processes.



Figure 2-1 Seawall along western lot



Figure 2-2 Rock revetment fronting eastern lot



Figure 2-3 Narrow sand beach at project site



Figure 2-4 Revetment protecting adjoining property to the east



Figure 2-5 Vertical seawall protection property to the west

2.2 Beach Profiles

Three beach profiles were taken at the project site, at either end and at the middle of the property shoreline, extending approximately 175 to 200 feet offshore of the coastal structures. The locations of the profiles are shown in Figure 1-3. The profiles are shown in Figure 2-6. The profiles show the CRM/tile seawall rises to an elevation of 8 feet at the western end of the property and 6 feet for a short segment adjoining the revetment. The revetment rises to an elevation of 5 to 6 feet; the revetment crest is obscured by thick naupaka. Thin sand extends only 20 feet seaward of the structures at Profiles 1 and 3, and approximately 100 feet seaward of Profile 2. The sand is typically a few inches or less in thickness. The limestone reef flat has a typical relief less than 1.0 foot. The reef flat elevation generally ranges from about -2.0 to -3.0 feet msl at 50 feet offshore, and grades to a more consistent -2.0 feet msl by 200 feet offshore.

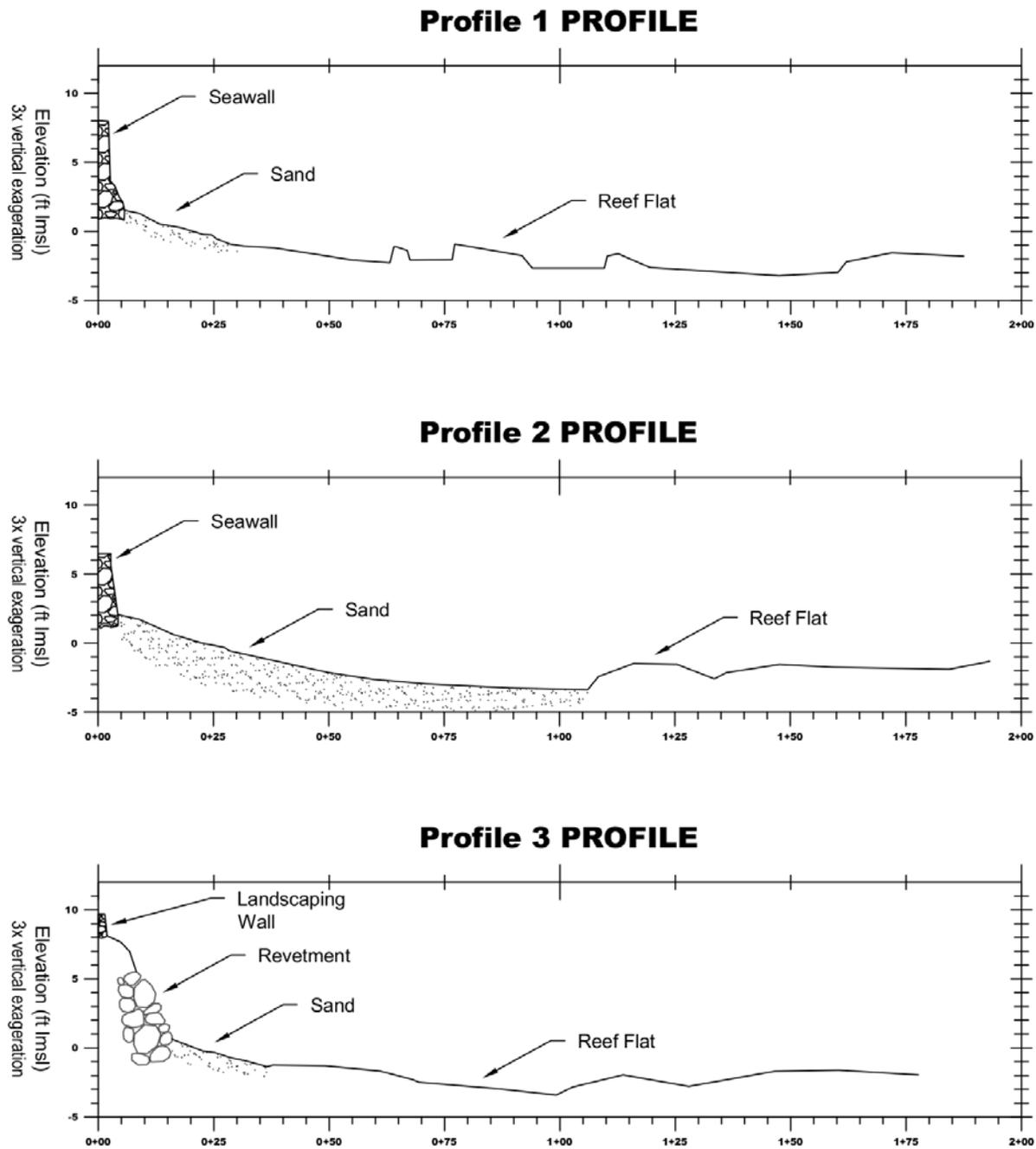


Figure 2-6 Beach profiles

2.3 Shoreline History

The erosion history of Kahala has been analyzed with aerial photographs by the U.H. Coastal Geology Group (2010). The U.H. Coastal Geology Group compared the low water mark digitized from 8 aerial photographs between 1949 and 2005, and a National Ocean Survey topographic survey chart (T-sheet) from 1925. In the project vicinity, only photographs from 1967, 1971, 1975, 1996 and 2005 were available and adequate quality for use in the analysis.



The results of this study for the project vicinity are presented in Figure 2-7. Historical shoreline positions from each photograph and the T-sheet were measured every 66 ft (20 m) along the shoreline, as denoted by the yellow transect lines in Figure 2-7. The shoreline positions were used to calculate annual shoreline change rates.

The project site corresponds to Transects 320, 321, and 322. The study indicates that the project shoreline was eroding at a rate of approximately 1 ft/yr. The erosion rate was calculated only to the time that seawalls first appeared at the site and fixed the shoreline position. Seawalls at the project site were presumed to have been built prior to the late 1980s.



Figure 2-7 Historical shoreline change analysis (UH Coastal Geology Group). Yellow lines indicate transect locations spaced 66 ft apart. Red bar graph indicates annual erosion rate calculated for each transect location. White lines through bar graph represent 1ft/yr erosion rate increments.

2.4 Biology

The following description of the flora and fauna on the fringing reef flat off Kahala Beach is from Aecos (1979):

The inner reef flat off Kahala Beach is dominated by algae, which cover around 40% of hard bottom areas. Seventeen species are noted, with *Acanthophora spicifera*, *Dictyota acutiloba*, *Dictyota Liagora* (sp.), and *Lyngbya majuscula* most abundant. *Halimeda discoidea*, *Liagora* (sp.), *Hypnea cervicornis*, and *Laurencia* (sp.) are common. Two of the more popular edible seaweeds, *Gracilaria burspastoris* and *G. coronipifolia*, occur in low abundance. Corals contribute less than one percent bottom cover, although coral cover increases and algal cover decreases seaward across the reef. *Pocillopora damicornis* is the most commonly encountered species. Only eight species of fishes are recorded on the shallow reef platform. *Stethojulis balteata* and *Acanthurus triostegus* are the most often encountered species. Large fishes, especially surgeonfishes, are abundant along the reef face. Seaward of the reef margin, coral cover reaches 30%, with *Porites lobata* the dominant form present.

2.5 Coastal Use

Despite the inhospitable substrate, the reef flat fronting Kahala Beach is used by wading fishermen, seaweed collectors, and spearfishermen. There are surfing breaks at the edge of the reef flat in the general vicinity (at Black Point and Hunakai Road), but not directly off the project site. The area in front of the project site is not typically used for sunbathing or swimming as there is little sand beach and the water is shallow.

3. OCEANOGRAPHIC SETTING

3.1 General Description

Kahala Beach is located on the south shore of the island of Oahu. It is primarily a residential area, with one beach front hotel, the Kahala Resort and Hotel, located approximately one mile east of the project site. The region is a relatively flat coastal plain, elevated approximately 6 to 8 feet above mean sea level (MSL) at the shoreline. Kahala Beach is separated from the beaches in the vicinity of Diamond Head by the rocky peninsula of Black Point. Also known by the Hawaiian name *Lae o Kupikipiki o*, Black Point is a headland formed by a relatively young basaltic lava flow.

3.2 Oceanographic Conditions

3.2.1 Wind

The prevailing winds are the northeast tradewinds, which wrap around the east side of the island and blow side-onshore in the project area. The tradewinds are typically present 80 percent of the time during the summer season from April to November, with wind speeds of 10 to 20 mph. During the winter months there is a general weakening of the tradewind system and the occurrence of southerly and westerly winds (Kona winds) due to both frontal systems passing through the islands and local low-pressure systems.

3.2.2 Waves

The general Hawaiian wave climate can be described by four primary wave types: 1) tradewind waves generated by the prevailing northeast winds; 2) North Pacific swell produced by mid-latitude low pressure systems; 3) southern swell generated by mid-latitude storms of the southern hemisphere; 4) Kona storm waves generated by local low pressure storm systems. In addition, the islands are affected by waves generated by nearby tropical storms and hurricanes.

Tradewind waves occur throughout the year, but the other wave types have seasonal distributions. North Pacific swell and Kona storm waves typically occur from October through March during the northern hemisphere winter. Conversely, southern swell typically occurs from April through September during the southern hemisphere winter. Hurricanes and tropical storms are also summer and fall phenomena. The project coastline faces south-southeast and is directly exposed to southern swell and Kona storm waves. The site is obliquely exposed to tradewind waves that wrap around the island from the east, and completely sheltered by the island from most north Pacific swell.

Tradewind waves result from the strong and steady tradewinds blowing from the northeast quadrant over long fetches of open ocean. Typical deepwater tradewind waves have periods of 5 to 10 seconds and heights of 3 to 10 feet.

Southern swell is generated by storms in the southern hemisphere and is most prevalent during the summer months. These waves are typically long and low, with periods of 12 to 20 seconds and deepwater wave heights of 2 to 6 feet. Southern swell is fairly common, occurring nearly 25 percent of the time during a typical year. They approach the Kahala area directly, and represent the greatest source of wave energy reaching the project site.



Kona storm waves occur at random intervals during the winter months, and approach from the sector south through west. The site can therefore be directly exposed to this wave type. Some winter seasons have several Kona storms; others have none. Wave heights are dependent upon the storm intensity, but deepwater heights can exceed 15 feet.

The infrequent offshore passage of hurricanes can generate large waves that affect the west coast of Hawaii. Many recorded tropical storms and hurricanes have approached the Hawaiian islands during the past 35 years. Most of these storms passed well to the south of the islands, but there have been notable exceptions. Hurricane Nina (1957) passed within 200 miles of the islands, Dot (1959) passed over Kauai, Iwa (1982) passed within 30 miles of Kauai, and Iniki (1992) passed directly over Kauai. These hurricanes generated waves that affected the entire island chain. For example, although the largest waves from Hurricane Iwa directly impacted Kauai, the estimated deepwater wave height off the west coast of Hawaii was 14 feet. In the event that a large hurricane passes near the coast, model hurricane scenarios predict deepwater wave heights over 30 feet.

3.2.3 Nearshore Wave Heights

As deepwater waves propagate toward shore, they begin to encounter and be transformed by the ocean bottom. The process of *wave shoaling* generally steepens the wave and increases the wave height. The phenomenon of *wave refraction* will cause wave crests to bend and may locally increase or decrease the wave heights. *Wave breaking* occurs when the wave profile shape becomes too steep to be maintained. This typically occurs when the ratio of wave height to water depth is about 0.8, and is a mechanism for dissipating the wave energy.

The wide and shallow fringing reef flat that fronts Kahala Beach forces larger waves to break far offshore. The waves that reach the shoreline are limited by the water depth, so that larger waves will reach the shoreline during high water level conditions.

3.2.4 Tides

The tides in Hawaii are semi-diurnal with pronounced diurnal inequalities; i.e. two tidal cycles per day with unequal water level ranges. The following tide levels have been established for the Honolulu area by the National Ocean Service:

Tide Level	Feet (MSL)
Highest Water (2/14/1967)	2.4
Mean Higher High Water	0.9
Mean Sea Level	0.0 (Reference Datum)
Mean Lower Low Water	-0.8
Lowest Water (4/30/1911)	-2.2

4. COASTAL HAZARDS

4.1 Hurricanes

Tropical cyclones originate over warm ocean waters, and they are considered hurricane strength when they generate sustained wind speeds over 64 knots (74mph). Hurricanes form near the equator, and in the central North Pacific usually move toward the west or northwest. During the primary hurricane season of July through September, Hurricanes generally form off the west coast of Mexico and move westward across the Central Pacific. These storms typically pass south of the Hawaiian Islands, and sometimes have a northward curvature near the islands. Late season hurricanes follow a somewhat different track, forming south of Hawaii and moving north toward the islands. Two hurricanes have actually passed through the Hawaiian islands in the past 25 years: Hurricanes Iwa in 1982, and Iniki in 1992, both passing near or over the island of Kauai. These storms caused high surf and wave damage on the south and west shores of all the islands.

The *Windward Oahu Hurricane Vulnerability Study* (Sea Engineering, 1990) indicates that a theoretical model hurricane approaching from the south to southwest could result in deepwater waves 34 feet high with periods of 13 seconds.

4.2 Still Water Level Rise

Storms and large waves produce storm surge and wave setup that results in elevated water levels at the shoreline. During prevailing, annual conditions this water level rise can be on the order of a foot above the tide level. However, during extreme events, the still water level rise can be significantly greater. During Hurricane Iniki, water level in Honolulu Harbor rose approximately 1.5 feet above normal levels. An extreme wave condition can raise the water level on the order of 2.5 feet or more.

4.3 Tsunami

The south shore of Oahu area was inundated by the tsunamis of 1946, 1952, 1957, and 1960 with flood heights of 5, 3, 4, and 6 feet, respectively (Loomis, 1976). These measurements were off the Aina Haina area, about 3 miles east of the project site.

4.4 Flood Insurance Rating

The National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA) produces maps identifying flood hazards and risks. Figure 4-1 shows the flood hazard map for the project properties. The map indicates that the properties are rated as Flood Zone X. Zone X is an area determined to be outside of the 0.2% annual chance floodplain. The map indicates that the reef flat offshore is rates as Zone VE (elevation 12). This designates an area along the coast subject to the 1% flood event and velocity wave action. The flood elevation is 12 feet.

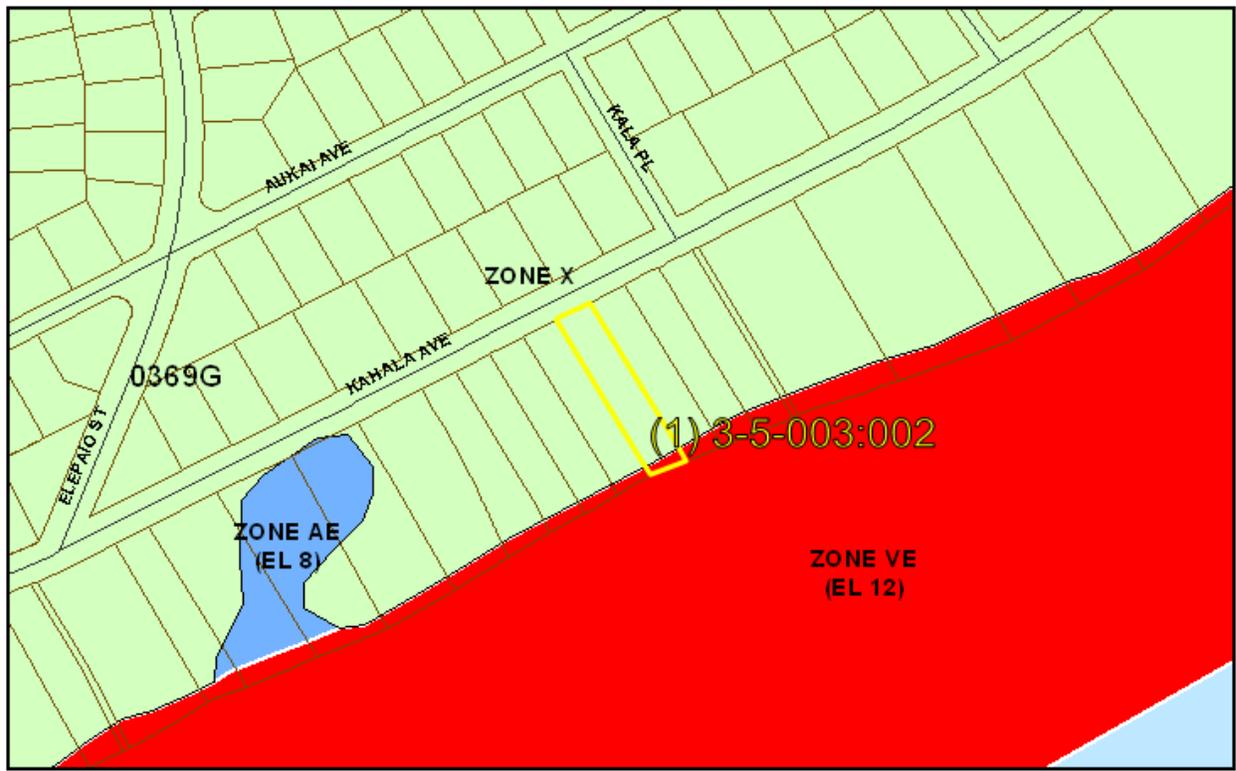


Figure 4-1 Flood hazard designation for the project site

5. PROJECT PLAN

The project plan is to remove the non-permitted revetment and seawall currently located along the project shoreline, and replace these structures with a properly engineered seawall located behind the certified shoreline. Figure 5-1 presents a cross-section showing the seawall design, while Figure 5-2 shows the lot plan with the wall location and certified shoreline position. The proposed wall is a CRM gravity seawall founded on solid non-erodable limestone substrate located at the approximate water line. The seawall will rise to an elevation between +8.0 and +10.5 feet MSL, and will tie into the existing vertical seawall to the west, and the revetment to the east. The wall will be located approximately 5 feet inland of the present wall location.

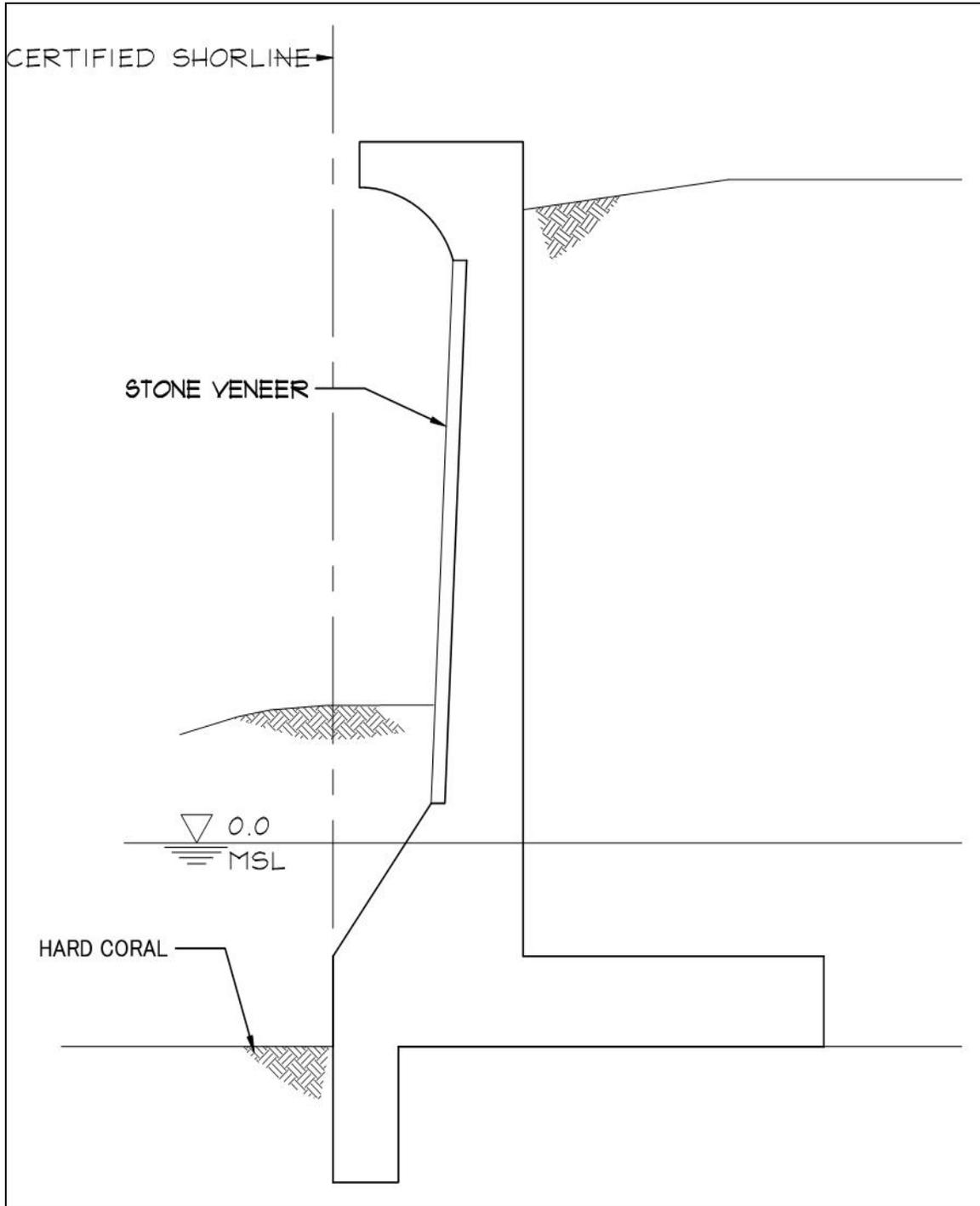


Figure 5-1 Wall cross-section

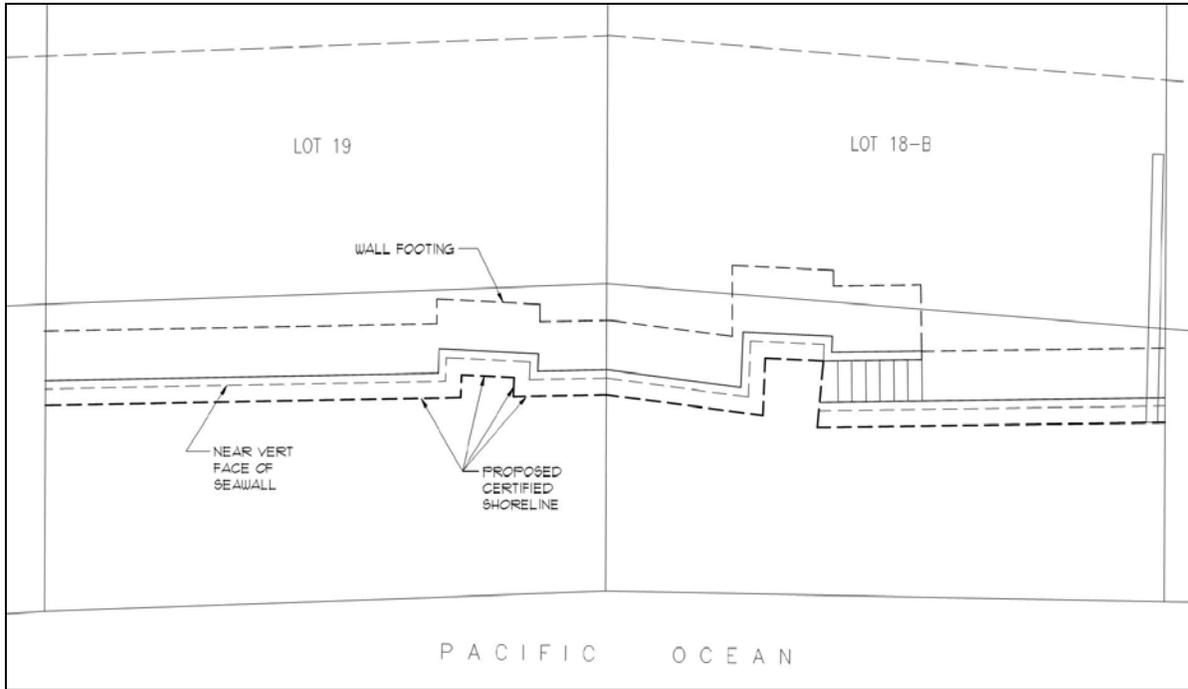


Figure 5-2 Proposed shoreline location for certification and seawall location

6. ALTERNATIVES CONSIDERED

Alternatives to the proposed seawall repair include no action, structure removal, a sloping rock revetment, geotextile sand-filled bags, or the preferred alternative of a seawall.

6.1 No-Action

The no-action alternative involves leaving the existing non-permitted structures in place. Permits for any development plans for the property would be contingent on acquisition of a Certified Shoreline from the State. A Certified Shoreline, however, cannot be obtained until the unpermitted status of the structures is resolved. This alternative would therefore require that the properties remain undeveloped, or that after-the-fact permits be obtained for the structures. Obtaining an after-the-fact-permit is an uncertain and complex process that would entail the following:

- Initiating a violation procedure with the State to start an official process for dealing with the legal status of the structures, either through After-The-Fact permits or removal;
- Coordination with the State on a certified shoreline location;
- Portions of the existing structures would likely be determined to be encroaching on State land due to shoreline location, and thus might require an easement for the encroachment; and
- Certification of the design of the existing structures by a registered profession engineer.

Successful completion of this process is highly uncertain. It is entirely possible that the existing structures are not certifiable by a professional engineer, or that an After-The-Fact permit will not be granted in the Conservation District, or that the encroachment is not resolvable, eventually requiring removal and replacement of the structures.

6.2 Beach Nourishment

There appears to be a general lack of sand both at the shoreline and offshore at the project site. With sand available, it is possible that beaches would form naturally in the area. However, sand placed locally on the beach at the project site would be part of a large regional system, and is unlikely to stay in front of the project site unless accompanied by groin structures to minimize sand movement. Beach nourishment in this area is conceivable only on a grand scale as part of a larger regional effort.

Finding an appropriate source of beach sand has become a significant problem for beach nourishment projects in the Hawaiian Islands. Beach nourishment is therefore not a practical solution for the project.

6.3 Structure Removal

This alternative would consist of removing the non-permitted structures, and allowing the shoreline to erode and reach an equilibrium position. A major problem with this alternative is that it would leave the adjoining seawall to the west, and revetment to the east, exposed to flank erosion and probable failure. The property owners would be liable for this damage. Another problem is that removal of the walls will result in release of dirt and fill material into nearshore waters as the bank erodes. The primary benefit of this alternative is that a small beach might be maintained within this shoreline reach. The assumption is that there is sufficient sand available to develop a beach in this

location. At this time, there is only enough sediment for a small, intermittent, wet sand patch fronting one of the structures.

6.4 Revetment

A revetment is a sloping, un-cemented structure built of wave resistant material. The most common method of revetment construction is to place an armor layer of stone, sized according to the design wave height, over an underlayer and filter designed to distribute the weight of the armor layer and to prevent loss of fine shoreline material through voids in the revetment. Properly designed and constructed rock revetments are durable, flexible, and highly resistant to wave damage. One major advantage of revetments is that the rough porous rock surface and relatively flat slope of the structure will tend to absorb wave energy, reduce wave reflection, and help to promote accretion of sand on a sandy beach.

Revetments in Hawaii are typically built on a 1.5-2 horizontal to 1 vertical slope to ensure stability. Conditions at the project site would call for a revetment to extend from about +7 feet to about -1 foot. This would require a horizontal footprint of least 12 feet.

A rock revetment would require demolition of the existing sea wall and revetment, and replacement with a properly designed revetment located entirely behind the newly certified shoreline. The revetment would require excavation into the limestone substrate for placement of the revetment toe. A sloping revetment would have to be inset into the property, causing loss of useable land, and would be difficult to interface with adjacent vertical seawall. In addition, future Certified Shorelines would likely be located well within the structure, creating encroachments onto State land for structures originally built on private property. This creates additional bureaucratic and financial burdens after completion of the project.

6.5 Sand Bags

In recent years, the state and counties have granted permission for property owners to place large geotextile sandbags on the beach fronting their property as emergency measures to prevent erosion. While they are expedient, they are several reasons why they are not appropriate as a long-term solution at the project site:

- They are aesthetically un-pleasing.
- They become slippery with algae growth under repeated inundation and are therefore hazardous.
- They are difficult to fill and place, especially in the quantity needed at this site.
- They require beach quality sand as fill material, which is difficult to find in sufficient quantities to construct a sand bag structure.
- Like a revetment, they need to be stacked on a slope, and would therefore require a broad footprint.
- They are susceptible to vandalism and are, at best, a temporary solution.

Placing bags in front of the existing wall would require encroachment on State land.



6.6 Preferred Alternative – Seawall

A seawall is a vertical or sloping concrete or concrete-rock-masonry wall used to protect the land from wave damage and erosion. A seawall, if properly designed and constructed, is a proven, long lasting, and relatively low maintenance shore protection method. Seawalls also have the advantage of requiring limited horizontal space along the shore. Seawalls are not flexible structures, and their structural stability is dependent on the stability of their foundations. Vertical seawalls armor the entire shoreline west of the project site to Black Point. To the east, there is a short segment of revetted shoreline, followed by several hundred feet of primarily vertical seawalls.

Seawalls tend to reflect incoming waves rather than absorb them. This characteristic makes them a less attractive erosion solution on many sandy shorelines as the reflected waves can scour the sand in front of the walls. However, there is little or no sand beach for at least 1000 feet to either side of the project site, along a shoreline that is entirely armored primarily by vertical seawalls. Removal of the existing non-permitted structures, and construction of a properly designed seawall located 5 feet inland should not alter the environment or change coastal processes at the site in any way.

7. PROJECT IMPACTS

The project shoreline is located in the middle of a 2500-foot long segment of shoreline extending east of Black Point. This section of coastline is entirely hardened by vertical seawalls, and the occasional interspersed revetment. There is no sand beach along this stretch of shoreline, only occasional small patches of sand that are mostly covered during higher tide levels. A wide, shallow fringing reef flat significantly limits wave energy reaching the shoreline, and there was no evidence of active sand transport. Removal of the existing non-permitted seawall and revetment and replacement with an engineered seawall located approximately 5 feet further inland, is therefore not expected to alter existing conditions at the site or have negative impacts on the environment.

Impacts are further addressed in terms of the following significance criteria as presented in *A Guidebook for the Hawaii State Environmental Review Process*, prepared by the State Office of Environmental Quality Control, 1997.

- (1) *“Irrevocable commitment to loss or destruction of any natural or cultural resource.”* There are no significant flora or fauna which would be lost due to removal of the non-permitted structures and construction of a new seawall. No threatened or endangered species would be impacted by the project. No known cultural resources are located on the property.
- (2) *“Curtails the range of beneficial uses of the environment.”* There will be no impact on public access to the shoreline. There will be no significant change in lateral access along the shore. There will be no impact to fishing on the reef flat seaward of the project site.
- (3) *“Conflicts with the state’s long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS.”* State waters will not be impacted by the project in any way.
- (4) *“Substantially affects the economic or social welfare of the community or state.”* The project would have no adverse social or economic impact to the state. The seawall will have some positive economic impact to the applicant by preventing erosion and loss of land.
- (5) *“Substantially affects public health.”* The project has no adverse public health impacts.
- (6) *“Involves substantial secondary impacts.”* The project will have no impact on public services or facilities.
- (7) *“Involves a substantial degradation of environmental quality.”* The project will have no significant adverse environmental impacts nor will it degrade environmental quality. It will not degrade water quality, nor impact marine flora and fauna. The proposed seawall is visually consistent with the existing protected shore on both sides of the project site.
- (8) *“Has cumulative impacts.”* The seawall would be a stand-alone project, with no cumulative impacts or commitment for larger actions.
- (9) *“Substantially affects a rare, threatened, or endangered species or its habitat.”* The affected environment will be unchanged by the project.



- (10) *“Detrimentially affects air or water quality or ambient noise levels.”* No debris, petroleum products, or other construction-related substances or materials will be allowed to flow, fall, leach or otherwise enter the coastal waters. All construction material will be free of contaminants or pollutants. Best Management Practices will be adhered to during construction to minimize environmental pollution and damage. There will be some additional noise above ambient during construction resulting from equipment operation (trucks, back hoe, concrete operations).
- (11) *“Affects or is likely to suffer damage by being in an environmentally sensitive area such as a flood plain, tsunami zone, beach or erosion prone area, or coastal waters.”* The seawall may be subject to prevailing wave conditions at the shoreline, particularly during summer season high surf or Kona storms. The seawall will provide erosion and storm wave protection. The seawall will not alter erosion or coastal processes because it is in the middle of 2500 feet of shoreline hardened by vertical seawalls and the occasional revetment.
- (12) *“Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.”* Project site scenery will remain unchanged.
- (13) *“Requires substantial energy consumption.”* No significant energy would be expended by construction of the revetment, nor would it entail any long-term commitment to energy use.



8. REFERENCES

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