Ms. Mary Alice Evans, Director
State of Hawaii
Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Dear Ms. Evans:

SUBJECT: Chapter 25, Revised Ordinances of Honolulu Final Environmental Assessment (EA)
Project: 4439 Kahala Avenue Single-Family Residence Project
Applicant: 4439 Kahala, LLC
Agent: G70 (Jeff Overton)
Location: 4439 Kahala Avenue - Kahala
Tax Map Key (TMK): 3-5-003: 007

With this letter, the Department of Planning and Permitting (DPP) hereby transmits the Final EA and Finding of No Significant Impact (FONSI) for the 4439 Kahala Single-Family Residence Project, located at 4439 Kahala Avenue in Kahala (TMK 3-5-003: 007), Oahu, for publication in the November 8, 2021, edition of The Environmental Notice.

The Final EA includes copies of public comments received and the corresponding responses from the Applicant that were received during the 30-day public comment period on the Draft EA and Anticipated FONSI.

Enclosed is an electronic copy of the completed publication form, the FONSI, and the Final EA document. We have uploaded an electronic copy of these documents to your online submittal site.
Should you have any questions, please contact Christi Keller, of our Zoning Regulations and Permits Branch, at (808) 768-8087, or via email at c.keller@honolulu.gov.

Very truly yours,

[Signature]

Dean Uchida
Director

Enclosures

cc: G70
Mr. Jeff Overton (without enclosures)
Project Name: 4439 Kahala Avenue Single-Family Residence Project

Applicable Law: Chapter 25, Revised Ordinance of Honolulu, Special Management Area (SMA)

Type of Document: Final Environmental Assessment (EA) and Finding of No Significant Impact (FONSI)

Island: Oahu

District: Council District 4; Primary Urban Center Development Plan Area

TMK: (1) 3-5-003:007

Permits Required: SMA Use Permit; Building Permits; Grading, Grubbing, and Stockpiling Permits; Sewer Connection Permit; Board of Water Supply Plan Approval; Hawaiian Electric Company Plan Approval; Street Usage

Applicant or Proposing Agency: 4439 Kahala LLC
Contact: Janice J. Lau
janjlau@gmail.com
(808) 545-1700
125 Merchant Street, Suite 200
Honolulu, Hawaii 96813

Approving Agency or Accepting Authority: City and County of Honolulu
Department of Planning and Permitting
Christi Keller
c.keller@honolulu.gov
(808) 768-8087
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Consultant: G70
Contact: Jeffrey Overton, Principal
jeff@g70.design
(808) 523-5866
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Status: Final EA

Project Summary: The Project consists of the redevelopment of a 35,428-square-foot lot with a new 4,500-square-foot single-story, single-family dwelling unit, and a new 980-square-foot guest cottage on a shoreline lot located in the Kahala community within the SMA (Project). The proposed primary dwelling unit will consist of four bedrooms, a lanai and a separate three-car garage under a pitched roof. The site is currently vacant, with areas of remnant concrete slab foundations from the prior residential use, and scattered areas of non-native plants, shrubs, and weedy vegetation. The primary residence will be the closest structure to the presumed shoreline (existing nonconforming seawall), and set back approximately 61 feet from the seawall.
Reasons Supporting Determination: Potential short-term construction-related impacts relating to water quality, biological and marine resources, soils and cultural resources are anticipated to be reduced to a level of less than significant through compliance with existing regulatory standards, implementation of Best Management Practices, and implementation of mitigation measures as identified in the Draft EA. As it is located on a shoreline lot, the Project proposes compliance with mandatory regulations (flood plain, building code, stormwater) and will be required to implement site design and structural considerations to address potential long-term impacts related coastal hazards. The Project is not anticipated to result in any additional need for public services, resources, or infrastructure over the existing condition.
4439 Kāhala

FINAL ENVIRONMENTAL ASSESSMENT

WAIKĪKĪ, KONA, O'AHU, HAWAI'I

APPLICANT:

4439 KAHALA LLC

PREPARED BY:

G7O

OCTOBER 2021
4439 Kāhala

FINAL ENVIRONMENTAL ASSESSMENT

WAIKĪKĪ, KONA, O'AHU, HAWAI'I

TMK (1) 3-5-003:007

APPLICANT:

4439 KAHALA LLC
125 MERCHANT STREET, SUITE 200
HONOLULU, HI 96813

APPROVING AGENCY:

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF PLANNING AND PERMITTING
650 SOUTH KING STREET, 7TH FLOOR
HONOLULU, HI 96816

PREPARED BY:

G7O
111 S. KING STREET, SUITE 170
HONOLULU, HI 96813

OCTOBER 2021
Table of Contents

**Section** | **Page**
---|---
List of Figures | iii
List of Tables | iv
Appendices | iv
Abbreviations | iv

**1.0 Introduction**

1.1 Project Information Summary | 1-1
1.2 Site Location and Characteristics | 1-2
1.3 Overview of the Planned Residential Use | 1-2
1.4 Purpose of the Environmental Assessment | 1-2
1.5 Permits and Approvals Required | 1-3
1.6 Agencies, Organizations and Individuals Contacted in Early Consultation and Draft EA Process | 1-3

**2.0 Project Description**

2.1 Existing Conditions and Site Preparation | 2-1
2.2 Description of the Proposed Action | 2-1
2.3 LUO Requirements | 2-9
2.4 Sustainable Design | 2-10
2.5 Construction Characteristics | 2-10
2.6 Summary of Projected Costs | 2-10
2.7 Schedule | 2-10

**3.0 Environmental Setting, Potential Impacts, and Mitigation Measures**

3.1 Topography, Soils and Grading | 3-1
3.2 Near Shore and Ground Water Resources | 3-3
3.3 Climate | 3-3
3.4 Natural and Manmade Hazards | 3-5
  3.4.1 Hurricanes, Tropical Storms, Winds and Storm Surge | 3-5
  3.4.2 Earthquakes and Subsidence | 3-6
  3.4.3 Flooding, High Tide Flooding and Tsunami Inundation | 3-6
  3.4.4 Passive Flooding, High Wave Flooding and Coastal Erosion | 3-9
  3.4.5 Climate Change and Sea Level Rise | 3-11
3.5 Flora and Fauna | 3-17
3.6 Archaeological and Cultural Resources | 3-19
3.7 Socioeconomic Characteristics | 3-20
3.8 Visual Resources ............................................................................................................... 3-21
3.9 Utilities and Infrastructure ............................................................................................. 3-22
  3.9.1 Water ..................................................................................................................... 3-22
  3.9.2 Wastewater .......................................................................................................... 3-26
  3.9.3 Storm Drainage ..................................................................................................... 3-27
  3.9.4 Solid Waste Disposal ......................................................................................... 3-28
  3.9.5 Electrical and Communications ....................................................................... 3-28
  3.9.6 Roadways and Traffic Conditions .................................................................... 3-29
3.10 Air Quality .................................................................................................................... 3-30
3.11 Noise .......................................................................................................................... 3-31
3.12 Public Facilities and Services ..................................................................................... 3-31
3.13 Potential Cumulative and Secondary Impacts .......................................................... 3-33

4.0 Alternatives
  4.1 Alternative A – No-Action Alternative ........................................................................ 4-1
  4.2 Alternative B – Located Outside of the 3.2 ft SLR-XA ............................................. 4-1
  4.3 Alternative C – Four Detached Single-Family Residences ....................................... 4-4
  4.4 Alternative D – Alternative Site ............................................................................... 4-6

5.0 Plans and Policies
  5.1 Hawai‘i State Land Use District Guidelines .............................................................. 5-1
  5.2 Hawai‘i State Plan ..................................................................................................... 5-1
  5.3 Hawai‘i Coastal Zone Management Program ......................................................... 5-4
  5.4 City and County of Honolulu Land Use Ordinance Guidelines ............................. 5-10
  5.5 City and County of Honolulu General Plan ............................................................. 5-10
  5.6 City and County of Honolulu Primary Urban Center Development Plan .............. 5-12
  5.7 City and County of Honolulu Special Management Area Guidelines ..................... 5-14
  5.8 Land Use Ordinance Section 21A Flood Hazard Areas .......................................... 5-16

6.0 Findings Supporting the Anticipated Determination
  6.1 Anticipated Determination ........................................................................................ 6-1
  6.2 Reasons Supporting the Anticipated Determination ................................................ 6-1
  6.3 Summary ................................................................................................................... 6-3

7.0 List of Agencies, Organizations, and Individuals Receiving Copies of the EA
  7.1 Consultation List ......................................................................................................... 7-1
  7.2 Early Consultation Summary .................................................................................... 7-2
  7.3 Draft EA Summary .................................................................................................... 7-2

Early Consultation Letters
Draft EA Comment Letters

8.0 List of References
## List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Project Location</td>
<td>1-4</td>
</tr>
<tr>
<td>1.2</td>
<td>Tax Map Key</td>
<td>1-5</td>
</tr>
<tr>
<td>1.3</td>
<td>State Land Use Classification</td>
<td>1-6</td>
</tr>
<tr>
<td>1.4</td>
<td>City and County of Honolulu Zoning</td>
<td>1-7</td>
</tr>
<tr>
<td>1.5</td>
<td>Special Management Area</td>
<td>1-8</td>
</tr>
<tr>
<td>1.6</td>
<td>Flood and Tsunami Evacuation Zones</td>
<td>1-9</td>
</tr>
<tr>
<td>2.1</td>
<td>Existing Conditions</td>
<td>2-2</td>
</tr>
<tr>
<td>2.2</td>
<td>Conceptual Site Plan</td>
<td>2-3</td>
</tr>
<tr>
<td>2.3</td>
<td>Rendering of the Residence from Kāhala Avenue</td>
<td>2-5</td>
</tr>
<tr>
<td>2.4</td>
<td>Rendering of the Residence Looking Mauka</td>
<td>2-7</td>
</tr>
<tr>
<td>2.5</td>
<td>Proposed Plant Palette</td>
<td>2-11</td>
</tr>
<tr>
<td>2.6</td>
<td>Main Residence Floor Plan</td>
<td>2-13</td>
</tr>
<tr>
<td>2.7</td>
<td>Main Residence Floor Roof Plan</td>
<td>2-14</td>
</tr>
<tr>
<td>2.8</td>
<td>Guest Cottage Floor Plan and Roof Plan</td>
<td>2-15</td>
</tr>
<tr>
<td>3.1</td>
<td>Topography and Soil Classifications</td>
<td>3-2</td>
</tr>
<tr>
<td>3.2</td>
<td>Storm Surge Forecast</td>
<td>3-7</td>
</tr>
<tr>
<td>3.3</td>
<td>Passive Flooding Forecast</td>
<td>3-10</td>
</tr>
<tr>
<td>3.4</td>
<td>Annual High Wave Flooding Forecast</td>
<td>3-12</td>
</tr>
<tr>
<td>3.5</td>
<td>Coastal Erosion Forecast</td>
<td>3-13</td>
</tr>
<tr>
<td>3.6</td>
<td>3.2 ft Sea Level Rise Exposure Area (SLR-XA)</td>
<td>3-15</td>
</tr>
<tr>
<td>3.7</td>
<td>Site Plan with Setbacks and 3.2 ft SLR-XA</td>
<td>3-16</td>
</tr>
<tr>
<td>3.8</td>
<td>4439 Kāhala Photo Key</td>
<td>3-23</td>
</tr>
<tr>
<td>3.8a</td>
<td>View Towards 4439 Kāhala Avenue Heading East</td>
<td>3-24</td>
</tr>
<tr>
<td>3.8b</td>
<td>View Directly Towards 4439 Kāhala Avenue</td>
<td>3-24</td>
</tr>
<tr>
<td>3.8c</td>
<td>View Towards 4439 Kāhala Avenue Heading West</td>
<td>3-25</td>
</tr>
<tr>
<td>3.9</td>
<td>Rendering of the Residence from Kāhala Avenue</td>
<td>3-25</td>
</tr>
<tr>
<td>4.1</td>
<td>Alternative C Site Plan with Homes Mauka of 3.2 ft SLR-XA</td>
<td>4-5</td>
</tr>
<tr>
<td>5.1</td>
<td>City and County of Honolulu Primary Urban Center Development Plan</td>
<td>5-13</td>
</tr>
</tbody>
</table>
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1  LUO Development Standards</td>
<td>2-10</td>
</tr>
<tr>
<td>3.1  Forecast for Minor (1.7 ft) High Tide Flooding in Honolulu</td>
<td>3-8</td>
</tr>
<tr>
<td>7.1  Agencies, Organizations and Individuals Receiving Copies of the EA</td>
<td>7-1</td>
</tr>
<tr>
<td>7.2  Summary of Early Consultation Comments and Responses</td>
<td>7-3</td>
</tr>
<tr>
<td>7.3  Summary of DEA Comments and Responses</td>
<td>7-6</td>
</tr>
</tbody>
</table>

Appendices

A. Certified Shoreline Survey, Sam O. Hirota, Inc. 1983
B. Preliminary Site Plans for 4439 Kāhala Avenue
C. Archaeological Assessment for 4439 Kāhala Avenue in Waikīkī Ahupua’a, Kona District, Island of O’ahu, Keala Pono Archaeological Consulting, LLC., April 2021.

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMP</td>
<td>Best Management Practice</td>
</tr>
<tr>
<td>BWS</td>
<td>Board of Water Supply</td>
</tr>
<tr>
<td>CAB</td>
<td>Clean Air Branch</td>
</tr>
<tr>
<td>City</td>
<td>City and County of Honolulu</td>
</tr>
<tr>
<td>CMU</td>
<td>Concrete Masonry Unit</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>CZM</td>
<td>Coastal Zone Management</td>
</tr>
<tr>
<td>dBA</td>
<td>Decibel</td>
</tr>
<tr>
<td>DLNR</td>
<td>Department of Land and Natural Resources</td>
</tr>
<tr>
<td>DOH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DPP</td>
<td>Department of Planning and Permitting</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>ENV</td>
<td>Department of Environmental Services</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FFE</td>
<td>Finished Floor Elevation</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>FONSI</td>
<td>Finding of No Significant Impact</td>
</tr>
<tr>
<td>ft</td>
<td>Feet</td>
</tr>
<tr>
<td>GHG</td>
<td>Greenhouse Gases</td>
</tr>
<tr>
<td>GPD</td>
<td>Gallons Per Day</td>
</tr>
<tr>
<td>GPM</td>
<td>Gallons Per Minute</td>
</tr>
<tr>
<td>HAR</td>
<td>Hawai‘i Administrative Rules</td>
</tr>
<tr>
<td>HECO</td>
<td>Hawaiian Electric Company</td>
</tr>
<tr>
<td>HFD</td>
<td>Honolulu Fire Department</td>
</tr>
<tr>
<td>HPD</td>
<td>Honolulu Police Department</td>
</tr>
<tr>
<td>HRS</td>
<td>Hawai‘i Revised Statutes</td>
</tr>
<tr>
<td>IBC</td>
<td>International Building Code</td>
</tr>
<tr>
<td>LID</td>
<td>Low Impact Development</td>
</tr>
<tr>
<td>LUO</td>
<td>Land Use Ordinance</td>
</tr>
<tr>
<td>MPH</td>
<td>Miles Per Hour</td>
</tr>
<tr>
<td>MSL</td>
<td>Mean Sea Level</td>
</tr>
<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>POR.</td>
<td>Portion</td>
</tr>
<tr>
<td>ppm</td>
<td>Parts Per Million</td>
</tr>
<tr>
<td>PUC DP</td>
<td>Primary Urban Center Development Plan</td>
</tr>
<tr>
<td>ROH</td>
<td>Revised Ordinances of Honolulu</td>
</tr>
<tr>
<td>RSWMP</td>
<td>Residential Storm Water Management Plan</td>
</tr>
<tr>
<td>SAAQS</td>
<td>State Ambient Air Quality Standards</td>
</tr>
<tr>
<td>SCP</td>
<td>Sustainable Communities Plan</td>
</tr>
<tr>
<td>sf</td>
<td>Square Feet</td>
</tr>
<tr>
<td>SHPD</td>
<td>State Historic Preservation Division</td>
</tr>
<tr>
<td>SLR</td>
<td>Sea Level Rise</td>
</tr>
<tr>
<td>SLR-XA</td>
<td>Sea Level Rise Exposure Area</td>
</tr>
<tr>
<td>SMA</td>
<td>Special Management Area</td>
</tr>
<tr>
<td>TMK</td>
<td>Tax Map Key</td>
</tr>
<tr>
<td>TRB</td>
<td>Traffic Review Branch</td>
</tr>
<tr>
<td>UH</td>
<td>University of Hawai‘i</td>
</tr>
<tr>
<td>USGS</td>
<td>United States Geological Survey</td>
</tr>
</tbody>
</table>
Chapter 1

Introduction
Chapter 1

Introduction

This Environmental Assessment (EA) has been prepared pursuant to and in compliance with Chapter 25, Special Management Area (SMA), Revised Ordinances of Honolulu (ROH), in support of an SMA Use Permit application. EA content and procedures are consistent with the requirements of Chapter 343, Hawai'i Revised Statutes (HRS) and Hawai'i Administrative Rules (HAR), Title 11, Chapter 200.1, Department of Health (DOH).

1.1 Project Information Summary

<table>
<thead>
<tr>
<th>Type of Document:</th>
<th>EA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Name:</td>
<td>4439 Kāhala</td>
</tr>
<tr>
<td>Recorded Fee Owner /</td>
<td>4439 Kahala LLC</td>
</tr>
<tr>
<td>Applicant:</td>
<td>125 Merchant Street, Suite 200</td>
</tr>
<tr>
<td></td>
<td>Honolulu, HI 96813</td>
</tr>
<tr>
<td></td>
<td>Contact: Janice J. Lau</td>
</tr>
<tr>
<td>Agent:</td>
<td>G70</td>
</tr>
<tr>
<td></td>
<td>111 S. King Street, Suite 170</td>
</tr>
<tr>
<td></td>
<td>Honolulu, HI 96813</td>
</tr>
<tr>
<td></td>
<td>Contact: Jeff Overton, Principal</td>
</tr>
<tr>
<td>Approving Agency:</td>
<td>City and County of Honolulu (City)</td>
</tr>
<tr>
<td></td>
<td>Department of Planning and Permitting (DPP)</td>
</tr>
<tr>
<td></td>
<td>650 S. King Street, 7th Floor</td>
</tr>
<tr>
<td></td>
<td>Honolulu, HI 96813</td>
</tr>
<tr>
<td></td>
<td>Contact: Christi Keller</td>
</tr>
<tr>
<td>Ch. 343, HRS Triggers:</td>
<td>A requirement of SMA Use Permit per ROH §25</td>
</tr>
<tr>
<td>Project Location:</td>
<td>4439 Kāhala Avenue, Honolulu, HI 96816 (Figure 1.1)</td>
</tr>
<tr>
<td>Tax Map Key (TMK):</td>
<td>3-5-003:007 (por.) (Figure 1.2)</td>
</tr>
<tr>
<td>Project Area:</td>
<td>Project Area: 0.14 acres Parcel Area: 0.813 acres</td>
</tr>
<tr>
<td>State Land Use District:</td>
<td>Urban (Figure 1.3)</td>
</tr>
<tr>
<td>City &amp; County of</td>
<td>R-7.5 Residential (Figure 1.4)</td>
</tr>
<tr>
<td>Honolulu Zoning:</td>
<td></td>
</tr>
<tr>
<td>City Development Plan:</td>
<td>Primary Urban Center Development Plan (Figure 5.1)</td>
</tr>
</tbody>
</table>
1.2 Site Location and Characteristics

The subject property is located in Honolulu in the traditional moku of Kona, east of Lē‘ahi (Diamond Head) in the Kāhala area, and near the intersection of ‘Elepaio Street and Kāhala Avenue. The site is designated as TMK 3-5-003:007 located at 4439 Kāhala Avenue. The parcel is owned by 4439 Kahala LLC. The site is bordered by the Pacific Ocean to the south, Kāhala Avenue to the north, low-density residential properties to the east, and a vacant property to the west (Figure 1.1). The existing site is vacant, with areas of remnant concrete slab foundations from the prior residential use, and scattered areas of nonnative plants, shrubs, and weedy vegetation. The property is located within the SMA.

1.3 Overview of the Planned Residential Use

The owner is seeking to redevelop the subject property with a one-story, single family residence for a local kama‘aina family. This four-bedroom home with pitched roof includes a covered lanai and three-car garage. The new home will have a floor area of approximately 4,500 square feet (sf), with a separate guest cottage of approximately 980 sf. Supporting utilities will be installed for water, sewer, electric and communications. Landscaping elements will include front and back lawns and gardens. Access will be provided by an existing driveway from Kāhala Avenue.

1.4 Purpose of the Environmental Assessment

This EA is being prepared pursuant to the requirements of ROH §25, in support of an SMA Use Permit application. The EA is prepared in accordance with content and procedures under HRS §343. The City has determined that pursuant to Act 16 (2020), an SMA Use Permit must be secured for the construction or reconstruction of a single-family residence that is on a shoreline lot as defined in ROH §23-1.3, regardless of floor area. The prior threshold for requiring an SMA Permit was for homes exceeding 7,500 sf on shoreline parcels.

The City DPP is the approving agency. The EA examines the potential environmental impacts of the planned improvements and seeks agency and public comment on subject areas that should be addressed. It is anticipated that due to the limited impacts generated by this residence, the Final Environmental Assessment will result in a Finding of No Significant Impact (FONSI).
1.5 Permits and Approvals Required

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

- SMA Use Permit Major (DPP, Honolulu City Council)
- Building Permits (Buildings, Electrical, Plumbing), and Sidewalk/Driveway Work (DPP)
- Grading, Grubbing, and Stockpiling Permits (DPP)
- Sewer Connection Permit (DPP)
- Plan Approval (Board of Water Supply)
- Plan Approval (Hawaiian Electric Company)
- Street Usage (Department of Transportation Services)

1.6 Agencies, Organizations and Individuals Contacted in Early Consultation and Draft EA Process

Agencies, legislators, and members of the community were consulted in the preparation of this EA. Early consultation letters were mailed to select individuals to review the scope of the residential project. Parties contacted in early consultation are listed below. Further information is detailed in Chapter 7.

State

- Representative Bertrand Kobayashi – State House District 19
- Senator Stanley Chang – State Senate District 9

City and County

- Department of Planning and Permitting
- City Council Chair and Councilmember Tommy Waters - Honolulu City Council District 4

Organizations and Individuals

- Chairman Richard Turbin - Waialae-Kahala Neighborhood Board #3
- Daikichi Saito, Representative of adjacent neighbor
Figure 1.1 Project Location
Figure 1.2 Tax Map Key

Legend:
- Project Parcel
- TMK Parcel Boundary

Source: City and County of Honolulu, FEMA DRRM 2021
Figure 1.3

State Land Use Classification
Figure 1.4 City and County of Honolulu Zoning
Figure 1.5  Special Management Area

Legend:
- Project Parcel
- Special Management Areas (SMA)

Source: City and County of Honolulu, 2021
Figure 1.6 Flood and Tsunami Evacuation Zones
Chapter 2

Project Description
Chapter 2

Project Description

This chapter provides the existing uses of the property and surrounding areas. An overview of the planned improvements is provided.

2.1 Existing Conditions and Site Preparation

The property is located on TMK 3-5-003:007 and is bordered by the Pacific Ocean to the south, Kāhala Avenue to the north, low-density residential properties to the east, and a vacant property to the west (Figure 1.1). The 0.813-acre parcel is owned in fee by 4439 Kahala LLC, and is currently vacant, with scattered areas of nonnative plants, shrubs, and weedy vegetation.

The subject property has been utilized for residential use for nearly a century since the establishment of shoreline lots in Kāhala. The most recent use of this property included a large single-family home, a swimming pool, tennis court, and underground utility connections. The pre-existing structures were demolished several years ago, and several concrete foundation slabs remain (Figure 2.1). To prepare the site for construction, the foundation remnants will be removed and minor grading and leveling is required. Side yard walls constructed of concrete masonry units (CMU) remain standing on the east and west sides of the property.

A 1983 certified shoreline survey (Sam O. Hirota Inc.) identifies a seawall feature on their survey drawing (Appendix A). The existing concrete rubble masonry seawall was constructed along the property shoreline prior to 1946 and is classified as a nonconforming structure. The City and County Department of Planning and Permitting (DPP) 1988 inventory of shoreline structures on O‘ahu identifies this property as having a seawall which was constructed prior to the 1976 Shoreline Setback Ordinance.

2.2 Description of the Proposed Action

The owner will improve the property with a one-story, single family residence. This four-bedroom, five-bath home with pitched roof includes a large, covered lanai with outdoor kitchen overlooking the expansive lawn and ocean view (Appendix B). A three-car garage will be located near the front of the property adjacent to Kāhala Avenue. Landscaping elements will include large front and back lawns and privacy gardens. Clearing, grading, and leveling is required to prepare the site for construction. Access will be provided by one existing driveway.

The total floor area of improvements will be approximately 6,180 square feet (sf). The main residence is approximately 4,500 sf (not inclusive of lanais), 700 sf garage, and an approximately 980 sf separate guest cottage. Refer to the Conceptual Site Plan in Figure 2.2. The Site Plan is subject to further refinements during final design. Perspective views of the new home are shown in Figures 2.3 and 2.4.

All of these structures will be located greater than 55 feet (ft) from the shoreline and outside of the shoreline setback area (40 ft inland from the shoreline). Appendix A shows the certified shoreline delineated in 1983 along the face of the seawall which remains in good condition today.
Figure 2.1

Existing Conditions

LEGEND
- Project Parcel (~0.81 acres)
- Contour 1ft Interval

Source: City and County of Honolulu, 2001
Figure 2.3
Rendering of the Residence from Kāhala Avenue (Source: Design Partners Incorporated)
This page intentionally left blank.
Figure 2.4 Rendering of the Residence Looking Mauka (Source: Design Partners Incorporated)
This page intentionally left blank.
Landscaping and Fencing

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 established along the perimeter of the property and also integrated throughout the site. The two-part plant palette stresses elegance & simplicity. The makai lawn, because of its proximity to the ocean, will feature coconut palms (*Cocos nucifera*), turfgrass (*Paspalum vaginatum*) and coastal shrubs at the side boundary walls. These are a combination of both native species and non-native shrubs from similar coastal areas, as suggested in Figure 2.5. Preliminary plans include planting a line of Dwarf Natal plum (*Carissa sp.*) immediately behind the seawall. This would be trimmed to a low height and maintained at 18 to 24 inches tall.

The mauka side of the property will be mostly lawn and ornamental shrubs. The owner has asked for a garden area with *ikebana* plants, or floral arrangement species. Although a design is not yet available for this garden area, conventional landscape plants will be used. A single large canopy tree is proposed near the northeast mauka corner. The Kāhala Avenue boundary will have a 6-foot coral veneer wall softened by massed raphis palms (*Rhapis excelsa*) with a grassy verge beneath on the street side and massed Allspice trees (*Pimenta dioica*) on the makai side for privacy and noise abatement. Side boundary walls are already existing and have been planted with vines.

The planting plan and irrigation plan are currently being designed. It is anticipated that conventional sprinklers rather than drip irrigation will predominate. Coastal plants grow better when the soil is regularly flushed of accumulated salts by rainfall or conventional irrigation rather than by drip systems. Much of the landscape area will be open lawn, where drip systems are not practical. Drip systems are likely to be used alongside the boundary wall planting areas and small landscape zones near the house. A rain sensor will be included to minimize water wastage.

2.3 LUO Requirements

The residential land use of the site is governed by development requirements, such as density, lot coverage, setbacks (required yards), and height per the Land Use Ordinance (LUO), Chapter 21, Revised Ordinances of Honolulu (ROH), and the rules of the Special Management Area.

The property is zoned R-7.5 Residential with a total land area of 0.813 acres (35,428 sf), which allows for development of up to 4.72 dwelling units. The development program is for two dwellings, or less than the total allowed density of four dwellings. The site development will include one single family home and a guest cottage (*Figures 2.6 to 2.8*), under provisions of the LUO. The site will have the main home located on the central portion of the site, and the guest cottage on the mauka portion of the site.

The new residence will be a single-story home with classic kama’aina-style design in keeping with the Kāhala neighborhood setting (*Figures 2.3 and 2.4*). The residence and guest cottage are designed to maintain an appropriate sense of scale with the large property and the surrounding area. Buildings will not exceed the 25-foot height limit for structures in the R-7.5 Residential District (*Appendix B*). Design and construction of the residence will adhere to the development standards for R-7.5 Residential zoning as defined by the LUO. The applicable LUO development standards are shown below in *Table 2.1*. 
Table 2.1  LUO Development Standards

<table>
<thead>
<tr>
<th>LUO Standard</th>
<th>R-7.5 Zone</th>
<th>Project Plans (all in compliance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Lot Area</td>
<td>7,500 square feet</td>
<td>35,248 square feet</td>
</tr>
<tr>
<td>Front Yard</td>
<td>10 feet</td>
<td>50 feet</td>
</tr>
<tr>
<td>Side Yard</td>
<td>5 feet</td>
<td>5 feet</td>
</tr>
<tr>
<td>Maximum Bldg. Area</td>
<td>50% of zoning lot</td>
<td>20% of zoning lot</td>
</tr>
<tr>
<td>Maximum Height</td>
<td>25 feet</td>
<td>25 feet</td>
</tr>
<tr>
<td>Multiple Homes on a Lot (LUO Section 21-8.20A)</td>
<td>Maximum of 4 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.</td>
<td>One home and one guest cottage proposed.</td>
</tr>
</tbody>
</table>

The new home will be located over 55 ft from the shoreline. The existing seawall structure is located within the shoreline setback and classified as a nonconforming structure, as it was built prior to the 1976 Shoreline Setback Ordinance.

2.4  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, efficient plumbing systems which require low demand water, and Volatile Organic Compound (VOC)-free building materials and finishes to provide healthy interior environments. The new residence is anticipated to incorporate renewable energy technology, energy conservation best practices such as energy-efficient mechanical and electrical systems to maximize energy savings, and provisions for electric vehicle (EV) compatible parking. Buildings will incorporate architectural design features such as energy-efficient windows to decrease cooling loads on the building and increase interior thermal comfort levels.

2.5  Construction Characteristics

The property requires very limited vegetation clearing, grubbing, site mass grading and fill. General construction trades will be engaged to construct the home. There will be limited excavation for site utilities and drainage. Refer to Chapter 3.13 Utilities for more detailed information. Extensive landscaping will be established throughout the property.

2.6  Summary of Projected Costs

A total development cost of $4.0M has been estimated for the development of the residence, guest cottage, garage, utilities, landscaping and site improvements.

2.7  Schedule

Planning and permitting for construction of the residential development is anticipated to be completed by Q1 2022. Site and building designs should be completed by Q1 2022, with site construction and building permits anticipated for approval by Q3 2022. Site development will follow with anticipated completion in Q3 2023.
Figure 2.5 Proposed Plant Palette

**Vine Alternatives near Coastline**
Left to right: Beach Morning Glory / Pohelhue; Coastal Morning Glory / Koali-awa; Ivy-leaved Morning Glory / Koali'i-a; Indian Morning Glory / Koali'awa (pink); Hunakai
None are ‘climbers’ - all would need to be started into mesh.

**Seaside Standbys**
Clockwise: Beach Heliotrope (tree); Seagrape (tree); Dwarf Hau (tree); Naupaka (big shrub)

**Hardy Coastal Shrubs**
Clockwise: Pittosporum; Natal Plum (& dwarf Natal Plum); Ixora (medium size only); Wheelers Dwarf Pittosporum; Variegated Pittosporum
These could be used in small masses. They all grow to reasonable sizes. All of these can be trimmed to size & shape.

**Small Coastal Plants**
Left to right: ‘Ilima; Pohinahina (Beach Vitex); Akia; Indian Fleabane; Hinahina
These could be used in foreground areas between lawn & shrubs.
This page intentionally left blank.
Figure 2.7
Main Residence Floor Roof Plan
Chapter 3

Environmental Setting, Potential Impacts, and Mitigation Measures
Chapter 3

Environmental Setting, Potential Impacts, and Mitigation Measures

The environmental setting, potential impacts, and mitigation measures for the proposed residence are addressed in the sections below.

3.1 Topography, Soils and Grading

Existing Conditions

The terrain within the property is evenly graded throughout. The property has little grade change, with elevations between 7.5 to 9.5 ft above mean sea level (MSL) gently sloping towards the shoreline (Figure 3.1). Soil types within the property are identified in the U.S. Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey. As depicted in Figure 3.1, the property consists of Beaches (BS) and Jaucus Sand (JaC), 0 to 15 percent slopes. BS areas consist of light-colored sands of seashells and coral and drain excessively with low runoff. JaC soil permeability is also rapid and runoff is very slow. The water erosion hazard is slight, with wind erosion potential in places where the soil is not anchored by vegetation.

Anticipated Impacts and Proposed Mitigation

The residential use will not change the overall soil composition at the property. Limited grading is required for construction, in order to facilitate site drainage and landscaping. The existing concrete slab will be demolished. The property will be in a gravel fill condition at finished floor elevation (FFE) = 9.5 for the main house, guest house and garage, approximately 10 inches above the existing grade. The main house and guest cottage will be constructed with a 4.5-inch slab on grade and base course, with a foundation depth maximum of 18 to 24-inch thickened slab edges. Best Management Practices will be implemented pursuant to the Grading Permit to mitigate potential soil erosion and fugitive dust during grading and utility excavation. Minor grading will occur crossing the center of the property and dropping off on both sides. The middle pathway to the entry will be high and dry.
Figure 3.1  Topography and Soil Classifications
3.2 Near Shore and Ground Water Resources

Existing Conditions

There are shallow near shore waters off the existing property that sustain limited recreational fishery resources. Ocean water in Kāhala is rated by the State as Class A. It is the objective of Class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use is permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters. These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class.

The residential property lies above the Waialae aquifer system, which has an upper and lower aquifer. The aquifer is not suitable for drinking, as evidenced by its location below the Underground Injection Control (UIC) boundary. The upper aquifer is a basal aquifer type where fresh water is in contact with saltwater. The unconfined aquifer has a water table that is at the upper surface of a saturated, sedimentary aquifer of non-volcanic lithology. The groundwater has a potential use, but the utility is neither for drinking or ecologically important, with a high salinity of 5,000 to 15,000 milligrams per liter (mg/L) of chloride.

The lower aquifer is also basal, but confined, where the aquifer is bounded by impermeable or poorly permeable formations, and the top of the saturated aquifer is below the groundwater surface. This is a flank aquifer type with horizontally extensive lavas. The groundwater has a potential use for drinking water, with a fresh water salinity less than 250 mg/L of chloride. It has an irreplaceable uniqueness and low vulnerability to contamination. There is no groundwater well at this site.

Anticipated Impacts and Proposed Mitigation

Potential impacts to near shore or ground water resources are not anticipated. This is due to the previous and planned residential use of the site. Property drainage designs will comply with current Department of Planning and Permitting standards. No wells are proposed for this residence and use of the property will have no effect on the groundwater recharge cycle.

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 drier plains, along with corresponding differences in temperature, humidity, wind, and rainfall over short distances. 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. Lower velocities (less than 10 miles per hour [mph]) occur frequently, and the typical northeasterly trade winds tend to break down in the Fall giving way to lighter, variable wind conditions through the Winter and into early Spring.
The 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.

In general, rainfall is highly variable depending upon elevation and location with respect to trade winds. The Lē‘ahi area is one of the drier regions of 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.

Global climate change has been associated with changes in Hawai’i’s local climate. The University of Hawai‘i, Center for Island Climate Adaptation and Policy published a Briefing Sheet summarizing specific changes observed in Hawai‘i (Fletcher, 2010). Based on peer-reviewed scientific journals and government reports, it presents evidence of climate change in Hawai‘i as:

1. Rising surface temperature,
2. Decreased rainfall and stream flow,
3. Increased rain intensity,
4. Increased sea level and sea surface temperatures, and
5. Ocean acidification.

Due to the heat-trapping effects of greenhouse gases (GHG), climate scientists project that if GHG emissions continue to accelerate at current output trends, then the average global temperature will likely increase by three to seven degrees Fahrenheit (1.7 to 3.9 degrees Celsius) by the year 2100. These figures were derived from a number of global climate models, which were based on various scenarios of changes in the concentrations of GHG in the Earth’s atmosphere.

As the Earth’s atmosphere warms, so do the oceans; and as seawater warms up it expands, increasing the total volume of the oceans and producing thermosteric sea level rise (SLR). Global average thermal expansion can be calculated directly from simulated changes in ocean temperature. Additional information regarding SLR is located in Chapter 3.4 Natural and Manmade Hazards.

**Anticipated Impacts and Proposed Mitigation**

Construction-related activities are anticipated to generate limited GHG emissions from the generation of exhaust and will adhere to State Department of Health (DOH) Air Quality Standards as discussed in Chapter 3.10 Air Quality to minimize short-term impacts. Construction-related impacts will be temporary and cease upon the completion of the residential development. The installation of landscaping such as shade trees and grass will help to mitigate and absorb local GHG emissions over the long term.

The impacts of GHG emissions are inherently indirect and cumulative. The construction and operation of the residential development is not anticipated to have a direct significant impact on the climate or significantly contribute to climate change, as proposed improvements will not lead to a substantial increase in GHG emissions as compared to baseline conditions. No additional mitigation is recommended.
3.4 Natural and Manmade Hazards

3.4.1 Hurricanes, Tropical Storms, Winds and Storm Surge

Existing Conditions

Hurricanes and tropical storms are both categorized as tropical cyclones, which are warm-core storms that originate over tropical waters with well-defined centers of closed surface wind circulation. A hurricane is a tropical cyclone which sustains surface winds of 64 knots (74 mph) or more. Tropical storms are categorized as an organized system of strong thunderstorms with defined circulation and maximum sustained winds of 39 to 73 mph (National Oceanic and Atmospheric Administration [NOAA], 2015). Tropical cyclones are characterized by very heavy rainfall and strong and damaging winds that can generate storm surge and extremely high waves. A storm surge can be defined as an abnormal rise of water generated by the winds of a storm, over and above the predicted astronomical tide.

Hurricanes are considered to be relatively rare events in the Hawaiian Islands, although records show that strong wind storms have struck all major Hawaiian Islands. The first officially recognized hurricane in Hawaiian waters was Hurricane Hiki in August 1950. Since that time, five hurricanes have caused serious damage in Hawai‘i: Nina (1957), Dot (1959), ‘Iwa (1982), Estelle (1986), and ‘Iniki (1992).

However, with rising global temperatures, Hawai‘i is expected to experience a higher incidence of tropical storm events. In most recent history, Tropical Storm Olivia made landfall on Maui and Lāna‘i in 2018, causing considerable flooding, power outages, and road and school closures. Also, in 2018, Tropical Storm Lane never made landfall in Hawai‘i but unleashed record-breaking rainfall across parts of the island chain, causing considerable flooding and damage.

During normal conditions in the Pacific Ocean, trade winds blow west along the equator, taking warm water from South America towards Asia. To replace that warm water, cold water rises from the depths — a process called upwelling. El Niño is a climate pattern that breaks these normal conditions, weakening upper-level trade winds and pushing warm water back east, toward the west coast of the Americas. The typical influence of El Niño causes more hurricanes in the eastern and central Pacific basins due to less vertical wind shear. Strong vertical wind shear can typically rip a developing hurricane apart, or even prevent it from forming. Overall, average daily wind speeds are slowly declining in Honolulu, and the frequency of gale-force winds is decreasing in the central Pacific (Marra, 2017).

Computer model projections of tropical cyclone activity and El Niño patterns in the central North Pacific indicate increasing risk (in intensity and doubling frequency) of hurricanes for Hawai‘i as the world warms (HCCMAC, 2017). Strong El Niño years in Hawai‘i bring more hot days, windless days, intense rains, active hurricane seasons, spikes in sea surface temperature, and combined with rising sea levels, a growing vulnerability to low-lying coastal flooding and erosion. It is practical to expect that a hurricane will make direct landfall in Hawai‘i under conditions of higher sea levels and that tsunamis will continue to arrive at Hawaiian shores.

Anticipated Impacts and Proposed Mitigation

National Hurricane Storm Surge Hazard Maps indicate the coastal area along the property may be subject to storm surge flooding inundation of greater than 3 ft but less than 6 ft above ground level during a Category 1 hurricane event. The 8.0 ft high legal, non-conforming seawall and location of the residence 60 ft away from the shoreline was designed to protect the property from storm surge
flooding up through a Category 2 or 3 hurricane event where storm surge is modeled to reach greater than 6 ft above the ground. In addition, the property will be in a gravel fill condition at FFE = 9.5 for the main house, guest house and garage, in the event a storm surge modeled at greater than 9 ft overtops the wall in the unlikely event of a Category 4 hurricane (Figure 3.2).

All construction will conform to relevant building codes to mitigate the risk of wind damage. When a hurricane is approaching a coastal location, early evacuation is usually standard mitigation to address the possibility of accompanying storm surge with high winds. The National Weather Service provides guidance, and when necessary, during an event issues a hurricane watch when a storm is expected to make landfall within 36 hours. A hurricane warning is issued when landfall is likely within 12 to 24 hours.

### 3.4.2 Earthquakes and Subsidence

**Existing Conditions**

The majority of earthquakes in Hawai‘i are directly related to volcanic activity on the Island of Hawai‘i. Per the 2015 United States Geological Survey (USGS) International Building Code (IBC) seismic design maps, Honolulu could experience seismic activity around 0.15 of the earth’s gravitational acceleration (g-force). In contrast, the Mauna Loa and Kīlauea Volcanoes on Hawai‘i Island could experience up to 1.47 g-force.

Subsidence is a geologic phenomenon where the land gradually sinks in elevation due to underground material movement. Subsidence is most often caused by the removal of water or mineral resources out of the ground by pumping or mining activities, but can also be caused by natural events such as earthquakes, active volcanism, soil compaction, erosion, sinkhole formation, and adding water to fine soils deposited by wind (a natural process known as loess deposits). The rate of absolute subsidence increases progressively toward the center of current volcanic activity on the Island of Hawai‘i and decreases progressively moving further away towards Honolulu, O‘ahu, which appears to be relatively stable in the vertical. Subsidence can cause beach erosion and increase vulnerability to sea level rise.

**Anticipated Impacts and Proposed Mitigation**

All buildings for the planned improvements will be constructed in compliance with regulatory controls to meet City Building Code requirements as appropriate to IBC seismic probabilities. While the risk for subsidence on the property is low, gravel fill will be used to elevate surfaces, structures, and utilities to FFE = 9.5.

### 3.4.3 Flooding, High Tide Flooding and Tsunami Inundation

**Existing Conditions**

Based on the Federal Emergency Management Agency’s Digital Flood Insurance Rate Map (DFIRM) data, effective 2021, the area is located in Zone X, and a small portion along the coastline in Zone VE. The parcel is also located within the designated tsunami zone (Figure 1.6). The Flood Zone X designation indicates the home will be outside of the 0.2% annual chance floodplain. This portion of the subject parcel is not located in a Special Flood Hazard Area as defined by LUO Section 21A (see Section 5.8). The Zone VE designation along the water’s edge indicates that the area is in a coastal flood zone with velocity hazard (wave action).
Storm Surge

- Less than 3 feet above ground
- Greater than 3 feet above ground
- Greater than 6 feet above ground
- Greater than 9 feet above ground

Figure 3.2 Storm Surge Forecast (NOAA/NWS/NHC Storm Surge Unit, 2018)
High-tide flooding events occur when local sea level temporarily rises above an identified threshold height for flooding, in the absence of storm surge or riverine flooding, causing a public inconvenience (such as overwhelmed storm drains, groundwater inundation and road closures). As relative sea level increases, it no longer takes a strong storm or a hurricane to cause coastal flooding. Tidal flooding now occurs with exceptionally high tides in combination with high waves in many locations due to climate-related sea level rise, land subsidence, and the loss of natural barriers. The frequency of minor flooding at the Honolulu Tide Station from the 1960’s to the year 2005 increased from 6 to 11 times per year on average (Marra, 2017).

A model of high tide flooding for the Honolulu Tide Station was published by NOAA in 2018. Relative to Mean Higher High Water (MHHW), the threshold for minor high tide flooding is 1.7 ft (0.52 m). Moderate high tide flooding is 2.6 ft (0.8 m), and major high tide flooding is 3.8 ft (1.17 m). From this model, it is expected that high tide flooding will arrive decades ahead of global mean sea level rise. High tide flooding, as defined by NOAA, has never occurred at the Honolulu Tide Station as none of these thresholds has ever been crossed. Table 3.1 provides estimates from the NOAA model for when minor high tide flooding will arrive in Honolulu 6, 12, and 24 days per year.

<table>
<thead>
<tr>
<th>Scenario</th>
<th>6 x per year</th>
<th>12 x per year</th>
<th>24 x per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate</td>
<td>2038</td>
<td>2041 - 2042</td>
<td>2044 - 2045</td>
</tr>
<tr>
<td>Intermediate High</td>
<td>2030</td>
<td>2033</td>
<td>2035 - 2036</td>
</tr>
<tr>
<td>High</td>
<td>2025 - 2026</td>
<td>2028 -2029</td>
<td>2030 - 2031</td>
</tr>
<tr>
<td>Extreme</td>
<td>2024</td>
<td>2026</td>
<td>2028 -2029</td>
</tr>
</tbody>
</table>

The City Climate Change Commission stresses that impacts from high tide flooding will be observed decades before permanent inundation by sea level rise. Tidal flooding will become more frequent and more damaging as ocean levels rise. Even smaller tide heights, when convergent with rainfall, will impede drainage leading to flooded roads and properties, and disrupt traffic.

The sudden displacement of the ocean floor (earthquakes), landslides, or volcanism can generate tsunamis, which are a series of waves that can reach speeds of up to 600 mph. Upon reaching a coastline, a tsunami can become a wall of water reaching heights of 30 ft or more and capable of moving inland several hundred feet. Recorded major tsunami events hit O'ahu in 1946, 1952, 1957, 1960, and 1964, and more recently, 2011. Damaging flooding can increase in low-lying coastal areas when infrequent events such as tsunamis strike, and tsunami occurring at high tide will cause greater flood damage than historically. Records show that the property’s seawall was repaired under a City permit approval in May 1946 after the April 1, 1946 tsunami.

**Anticipated Impacts and Proposed Mitigation**

The proposed residence is located within Flood Zone X and will comply with necessary design requirements and flood plain management standards. Construction work will be performed in accordance with the State and County-approved design standards. New drainage infrastructure will be designed and constructed to meet applicable standards.

High tide flooding can have several effects, such as pronounced beach erosion, and storm drain flooding where runoff cannot drain, causing flooding around storm drain sites. Major high tide flooding
is projected for 3.8 ft. Due to the 8.0 ft high seawall, the residence will be protected from high tide flooding. Storm drain flooding is not expected, as there are no City storm drains located at the frontage of the property (see Section 3.9.3). High tide flooding could also potentially cause groundwater inundation where the water table rises to break the ground surface and creates a wetland. Archaeological trenching (Keala Pono, 2021) to depths of 2 to 3 ft did not hit the water table on the property. It is not expected that groundwater inundation of moderate high tide flooding of 2.6 ft will push the water table to the ground surface at this location.

Coastal flooding from high tides can result in damage to structures and their contents. Although no significant adverse effects are anticipated, the property owner is encouraged to purchase flood insurance. In the event of a tsunami, occupants will need to evacuate the property to avoid risk of tsunami inundation.

3.4.4 Passive Flooding, High Wave Flooding and Coastal Erosion

Existing Conditions

Passive flooding can occur in low-lying areas susceptible to flooding by sea level rise. Passive flooding includes areas that are hydrologically connected to the ocean (marine flooding) and low-lying areas that are not hydrologically connected to the ocean (groundwater). Modeling for passive flooding raises static water table levels above current MHHW tidal datum over digital topographic maps. However, the passive marine flooding model will likely produce an underestimate of the area inundated or permanently submerged because the model does not account for waves and coastal erosion. For this reason, annual high wave flooding and coastal erosion are also modeled to provide a more comprehensive picture of the extent of hazard exposure with sea level rise in Hawai‘i.

Hawai‘i is exposed to annual high waves on all open coasts due to its location in the Central North Pacific Ocean. High wave events generated by distant and localized storms combined with extreme high tides frequently cause damaging over-wash and flooding. Annual high waves, which arrive in Hawai‘i seasonally, will flood further landward and cause more damage, as sea level continues to rise. High wave flooding will occur at high tide during typical seasonal swell events as waves run-up past the shoreline and into the backshore.

Coastal erosion can be characterized by shoreline recession and land loss. With higher sea level, waves and tides will reach farther inland and with greater velocity resulting in increased coastal erosion, flooding, and overall damage to coastal communities. Coastal erosion modeling was conducted for sandy shorelines of O‘ahu by the Coastal Geology Group at the University of Hawai‘i. While Hawai‘i has an overall trend of beach erosion, shoreline trends are highly variable at the scale of individual beaches. Modeling did not account for existing seawalls or other coastal armoring in the backshore, of which this property has an 8.0-ft high wall. This seawall has been in place since prior to 1946. A majority of several adjacent properties along the coast are currently armored, extending approximately 1,800 ft west until meeting with a rocky shoreline, and approximately 2,000 ft east before a break in seawalls on one property, which then picks up with additional seawalls for another 2,500 ft until reaching Wai‘alae Beach Park.

Anticipated Impacts and Proposed Mitigation

Modeling for passive flooding represents the simplest projection and provides an initial assessment of low-lying areas susceptible to flooding by sea level rise. According to the Pacific Islands Ocean Observing System (PaciOOS) Hawai‘i Sea Level Rise Viewer, the property is not affected at the 3.2 ft level of passive flooding (Figure 3.3).
Figure 3.3 Passive Flooding Forecast (PaCI00S, 2017)
The maximum annual high wave parameters (significant wave height, period, direction) were statistically determined using historical wave climate records. Waves are propagated along a “bare earth” digital elevation model (DEM) which is void of shoreline structures, buildings, and vegetation, and waves are assumed to flow over an impermeable surface. Minimal annual high wave flooding is forecasted at SLR 3.2 ft, lapping the property at less than 20 ft inland from the seawall (Figure 3.4). This minimal flooding could be due to the presence of nearby shallow reef which refracts and dissipates some of the wave energy traveling through the channel toward the shore. This is corroborated by the data presented in the PacIOOS Sea Level Rise Viewer. There is approximately 700 ft of shallow reef fronting the coastal property of 4439 Kāhala; it is expected that this reef, along with the 8.0-ft high seawall, and over 60 ft of grass lawn overlying permeable, excessively drained Beaches (BS) soil will protect the home from any potential high wave run-up.

Potential erosion projections presented in the PacIOOS Hawai‘i Sea Level Rise Viewer show modeled erosion well inshore of the existing seawall under 3.2 ft of sea level rise (Figure 3.5). Though the coastal erosion model projects a future shoreline well inshore of the seawall, the model operates under the basic assumption that the coast is comprised of mobile sandy substrate. This assumption does not account for the fact that the region is now armored, which fundamentally alters the erosive nature of the coastline. A majority of several adjacent properties along the coast are currently armored, extending approximately 2,000 ft in either direction of the adjacent properties. The subject property’s seawall has been in place since before 1946. The landowner has the right to maintain and repair any damage to the current seawall. Based on the modern condition of the shoreline at the property and in the region, maintenance and improvement of the non-conforming seawall is the proposed mitigation for potential coastal erosion.

3.4.5 Climate Change and Sea Level Rise

Existing Conditions

Rapid anthropogenic climate change is a well-established fact within the scientific community. A 2014 study by the University of Hawai‘i at Mānoa Sea Grant College Program predicts that tropical regions will experience drastically warmer climates by the year 2047. As a result of climate change, oceans are warming and acidifying, ice sheets and glaciers are melting, and sea levels are rising.

In addition to rising temperatures, sea level rise (SLR) is a notable concern for coastal communities. SLR has historically driven shoreline changes throughout the Hawaiian Islands. The global annual SLR averaged over the last century was roughly two millimeters, with previous studies indicating that this rate is now approaching three millimeters and may accelerate in the coming decades. According to the 2017 Hawai‘i Sea Level Rise Vulnerability and Adaptation Report, the sea level in Hawai‘i has increased at a rate of 0.6 inches or more each decade over the past century.
Figure 3.4  Annual High Wave Flooding Forecast (PaClOOS, 2017)
Beaches and Sand (USDA)

The beaches and sand map layer serves as a useful guide to understanding the physical setting of coastal areas around the State and how these areas may be affected by increased flooding and erosion with sea level rise. This layer is adapted from the Gridded USDA-NRCS Soil Survey Geographic (gSSURGO) database. For the purposes of the Viewer, we have highlighted beaches and sand, including dunes and other areas with sandy substrates. These areas may be more susceptible to coastal erosion. However, it should be noted that beach environments may be sustained if they are allowed to migrate landward and erode into upland deposits of beach and dune sand, releasing this sediment into the littoral system. The Beaches and Sand layer identifies surficial deposits only. It should be used as an initial screening tool and may require verification at the site level.

Coastal Erosion

Coastal erosion modeling was conducted for sandy shorelines of Kaua‘i, O‘ahu, and Maui by the Coastal Geology Group at UH SOEST. Modeling did not account for existing seawalls or other coastal armoring in the backshore.

Figure 3.5 Coastal Erosion Forecast (PaCl005, 2017)
The 2018 Sea Level Rise Guidance by the City Climate Change Commission notes that rising seas threaten human communities and natural ecosystems in multiple ways. Urbanized coastal areas will become increasingly vulnerable to four types of flooding during high water and high wave events, including 1) flooding across the shoreline due to wave run-up; 2) saltwater intrusion of engineered drainage systems; 3) groundwater inundation, affecting buried infrastructure and formation of new wetlands; and 4) rainstorms, especially concurrent with high tide. Other threats include land loss and coastal erosion, increased wave energy at the shore, and further inland flooding from annual high wave activity.

While predicting future SLR is challenging because of unknown parameters, research shows that global MSL (GMSL) may rise approximately one foot by mid-century and 2.5 to 3.2 ft by 2100, with some studies showing an extreme scenario of 3.2 ft by mid-century. According to the Mayor’s Directive 18-2 and the recommendations provided in the 2017 SLR Vulnerability and Adaptation Report and associated Hawai‘i Sea Level Rise Viewer (PacIIOOS, 2021) as resources for managing assets, an appropriate planning target to use in the design of future projects would be 3.2 ft sea level rise exposure area (SLR-XA) by mid-century. However, these resources should be further verified on a parcel scale to determine applicability.

**Anticipated Impacts and Proposed Mitigation**

The coastal property is susceptible to SLR. The State Pacific Islands Ocean Observing System SLR Viewer (PacIIOOS, 2021) is a modeling tool to determine the potential future exposure of each island to multiple coastal hazards because of sea level rise. For O‘ahu, three chronic flooding hazards were modeled: passive flooding, annual high wave flooding, and coastal erosion (as presented in Section 3.4.4). The footprint of these three hazards were combined to define the projection of chronic flooding due to sea level rise, called the sea level rise exposure area (SLR-XA). Flooding in the SLR-XA is associated with long-term, chronic hazards punctuated by annual or more frequent flooding events (such as hurricanes and tsunamis). Each of these hazards were modeled for four future sea level rise scenarios: 0.5 ft, 1.1 ft, 2.0 ft and 3.2 ft.

As with all models, the SLR viewer comes with assumptions and limitations. For example, the model was designed for an all-sand environment and operates under the assumption that the coastline is comprised entirely of mobile sandy substrate. Further, the modeling for coastal erosion does not account for existing seawalls or other coastal armoring in the backshore. The model does not include data where the structures have affected erosion rates. As such, the model is designed to operate as if the erosion control structures were not present.

Neither passive flooding nor wave run up affected the exposure area. The SLR-XA impact region presented in the viewer, for this area, is therefore a reflection of only the modeled erosion projection for the property. According to the SLR viewer, approximately 40 ft inland from the shoreline (wall) of the property is anticipated to be subject to 0.5 ft of SLR in the near-term, and the SLR-XA 1.1 ft exposure projection could extend about 50 to 60 ft inland. The projection in the generalized mapping generated in the more extreme SLR-XA 2.0 ft and SLR-XA 3.2 ft models shows some overlap with the current planned location for the home, without considering the effectiveness of site conditions such as shoreline protection and site grades (Figures 3.6, 3.7).
Figure 3.6

3.2 ft Sea Level Rise Exposure Area (SLR-XA)
Figure 3.7 Site Plan with Setbacks and 3.2 ft SLR-XA
There are several measures taken with the 4439 Kāhala property which will accommodate for rising sea level over many decades ahead, well beyond the mid-century 2050 horizon (30 years from now). First, the top of the existing seawall is approximately 8.0 ft above current sea level, which will strictly limit the incursion of rising sea level and potential threats to the residential structure. This wall is a lawful non-conforming use and will be maintained. Second, the new residence will be set back over 60 ft from the shoreline (horizontal retreat), well beyond initial phase projections of SLR without accounting for mitigating factors of shoreline condition and grades. This setback distance is already 50% greater than the required 40 ft shoreline setback. Third, the levelled pad for the homesite and concrete slab will set at a base elevation of 9.5 ft (another 1.0 ft above the existing grade), and utilities (such as electrical and water lines) will be elevated instead of located underground (vertical retreat). Pervious pavements and the large grassy areas and landscaped areas will be used to increase on-site infiltration, and the site will be graded along the eastern and western edges so that stormwater will settle and drain into the bioswales, keeping the structures dry.

The above measures taken to mitigate impacts to the proposed residence and infrastructure need to be considered when reviewing the potential SLR-XA exposure to the structures as portrayed by the SLR-XA model (Figure 3.7). Neither passive flooding nor wave run up affected the exposure area, and the proposed residence is well inland of either of these projections. The SLR-XA impact region presented in the viewer, for this area, is a reflection of the modeled erosion projection for the property, which does not include data where the structures (such as the seawall) have affected erosion rates. Although the horizontal and vertical retreats will still be implemented, the SLR-XA does not give an accurate projection of coastal erosion on the property.

3.5 Flora and Fauna

Existing Conditions

Flora

The ground surface of the property has been completely disturbed with residential development and accessory structures for many decades. The parcel supports few remnants of prior landscape vegetation, including a few Singapore plumeria (*Plumeria obtusa*) trees, two Royal Palms (*Roystonea regia*), a transplanted Loulu Palm (*Pritchardia spp.*) and a Lignum vitae (*Guaiacum spp.*).

There are also eight tall coconut palms (*Cocos nucifera*) growing in the Kāhala Ave right-of-way. These are senescent - very old and nearing the end of their lives as landscape plants. As they die, it is not intended to replace these. The two side boundary walls have been planted with flowering vines; Black-eyed Susan vine (*Thunbergia alata*) on one side and Sandpaper Vine (*Petrea volubilis*) on the other.

There are no species of plants of conservation concern or listed as threatened or endangered at the property.

Fauna

Few fauna or avian species were observed during a property visit; however, it is expected that commonly established alien rodent and avian species occur on the property. Common rodent species include the roof rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), small Indian Mongoose (*Herpestes auropunctatus*), house mouse (*Mus musculus*) and house cat (*Felis cattus*).
Several introduced birds could be seen on the subject property, including Japanese white-eye (Zosterops japonica), Java sparrow (Padda oryzivora), Spotted dove (Steptopelia chinesis), Zebra dove, (Geopelia striata), house finch (Carpodacus mexicanus), and Red-vented bulbul (Pycnonotus cafer).

The indigenous Wedge-tailed Shearwater (Puffinus pacificus) is known to have a small established colony in the Black Point area of Kāhala, which is located approximately 0.4 miles west of the property. The Wedge-tailed Shearwater is not a listed species under the Endangered Species Act, but they are protected under the Migratory Bird Treaty Act (MBTA). In addition, there is a potential that the endangered Hawaiian petrel (Pterodroma sandwichensis), endangered band-rumped storm petrel (Oceanodroma castro), threatened Newell’s shearwater (Puffinus auricularis), and MBTA white tern (Gygis alba) may exist within the vicinity of the property. There is no evidence or accounts of the shearwaters or petrels nesting at or near this property. No nesting seabirds were found on or near the property.

Marine protected species that frequent Hawaiian waters include the indigenous population of the Hawaiian green sea turtle (Chelonia mydas), listed as threatened under the Endangered Species Act (ESA). According to Department of Land and Natural Resources (DLNR) Department of Forestry and Wildlife (DOFAW), green sea turtles have the potential to occur on shore within the vicinity of the proposed project site. The shoreline directly in front of this property would not meet the criteria to support sea turtle nesting because it is not a natural sandy shoreline environment.

The Hawaiian monk seal (Monachus schauinslandi) is also an ESA-listed species that is endemic to the waters off the Hawaiian Islands. These endangered seals commonly haul out onto sandy beaches to rest. NOAA Fisheries has revised the ESA Critical Habitat for the Hawaiian monk seal in the main Hawaiian Islands to include terrestrial habitat that extends 5 meters inland from the shoreline between designated boundary points (NOAA, 2015). The shoreline at this property would not meet the criteria to support monk seal conservation because it is not a natural sandy shoreline environment. No seals were observed during the course of the survey, although some small sand beaches northwest of the property could provide haul-out areas.

No federally or state designated Critical Habitat occurs in the vicinity.

**Anticipated Impacts and Proposed Mitigation**

Vegetation removal and property clearing and grading will affect the existing exotic shrub and ground cover species. The property will be landscaped to include non-invasive indigenous, Polynesian-introduced, and introduced plant species. Drought-tolerant species will be used, wherever possible, to minimize irrigation requirements and water needs (Figure 2.5).

The movement of plant or soil material between worksites will be minimized to reduce the potential impacts that invasive fungal pathogens, vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could inflict onto native species and ecosystems. The O‘ahu Invasive Species Committee will be consulted in planning, design, construction and operation of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, personnel and visitors will be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

The potential presence of the following species may require additional consideration and mitigation measures:
- **Seabirds** – Hawaiian seabirds may traverse the property at night during the breeding season (March 1 to December 15). Although no nesting sites or seabirds were identified during survey of the subject property, shoreline vegetation at the property poses the remote potential to support shearwater nesting. Prior to construction, the shoreline area will be inspected during the breeding season to ensure the area is free of seabird nests. Outdoor lighting for the residential development will be designed with sensors, full shielding, and directed downward to avoid attracting seabirds. Construction activities will be limited to daylight hours to avoid the use of construction work lights.

- **Hawaiian Hoary Bat** – The Hawaiian hoary bat, or ‘Ōpe‘ape‘a *Lasiurus cinereus semotus*, could potentially utilize the residential site, although the property has limited vegetation suitable for ‘Ōpe‘ape‘a roosting. In order to avoid potential negative impacts to roosting bats, woody vegetation taller than 15 ft will not be removed during pupping season (between June 1 and September 15). If this cannot be avoided, woody plants greater than 15 ft tall should not be disturbed, removed, or trimmed without consulting DOFAW.

- **Hawaiian Monk Seal and Green Sea Turtle** - The existing conditions of the beachfront at the residential property include a general lack of sand, which does not allow nor provide an adequate area for monk seals to haul out and rest, give birth and nurse, nor sea turtles to nest or forage. Although the beachfront is not a suitable location for monk seal and sea turtle activities, during the construction period, the contractor will evaluate the shoreline area prior to daily construction activity to ensure no monk seals or turtles are present. If either of these animals are found, all construction activity will cease within 100 ft until the animal voluntarily leaves the area. Further, any construction-related debris that may pose an entanglement threat to these animals from the project site shall be removed if not actively being used at the conclusion of the project.

Recommended avoidance and mitigation measures will be incorporated into the residential design. The contractor will adhere to development plans and specifications which will incorporate measures to avoid or minimize impacts to listed species during construction. The Project will implement the identified concerns to minimize impacts to listed animal species.

The development and operation of the residence is not expected to result in adverse effects to endangered or threatened plant or animal species. There will be no adverse effects on the area’s wildlife or habitat.

### 3.6 Archaeological and Cultural Resources

An Archaeological Inventory Survey (AIS) was completed of the subject property by Keala Pono Archaeological Consulting, LLC (Keala Pono) (April 2021) resulting in an Archaeological Assessment report *Appendix C*. This study addressed the potential for archaeological resources and historic properties, and provides recommendations as related to the State of Hawai‘i’s historic review process.

#### Existing Conditions

The property is situated on what was a large Land Commission Award known as Kānewai-Kahala, LCA 228:2. It was awarded to Kalaiheana, a kahu of King Kamehameha II. According to LCA documentation, the 173-acre plot of land contained one house lot, one lo‘i, a road/path, and a wall/fence. The property is located along the native coastline, and underlying soils consist of Beach Sand and Jaucus Sand, an environment traditionally favored for human burials.
Based on a review of land use and previous archaeological investigations, there is high potential for historic properties to occur in the area. Previous archaeological studies have identified iwi kūpuna, as well as pre- and post-contact artifacts and features in other coastal properties in Kāhala. On the adjacent parcel, archaeological findings include four human burials, two cultural layers, and an A-horizon that contained historic artifacts (SIHP 5320).

A preliminary field inspection and survey work was conducted by Keala Pono in April 2021. A surface pedestrian survey was conducted across 100 percent of the property. No significant historic or cultural properties were identified during the pedestrian survey.

Subsurface testing was conducted during the Archaeological Assessment in order to identify potential human alteration, archaeological features, and associated artifacts in subsurface contexts. Five subsurface test trenches were mechanically excavated during the survey. All excavations produced negative results.

The pedestrian survey and subsurface testing conducted in April 2021 revealed that 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. Refer to Appendix C for the testing results.

**Anticipated Impacts and Proposed Mitigation**

Background research indicates that the planned residence will have no impacts to Hawaiian cultural beliefs, practices, resources (historic and/or cultural properties), sites, and traditions. Existing cultural practices that occur in the area will not be affected. Public access to the shoreline area will not be affected. Project personnel will be alerted to the potential for inadvertent cultural finds. Archaeological monitoring is planned during construction. If iwi or cultural resources are found during the ground disturbance, cultural and lineal descendants of the area and appropriate agencies (e.g. State Historic Preservation District, Office of Hawaiian Affairs, O’ahu Island Burial Council) will be notified and consulted in regard to preparation of appropriate mitigation plans.

3.7 Socioeconomic Characteristics

**Existing Conditions**

The property is situated within the Census Tract 5 (Waiʻalae-Kāhala). This area spans from Black Point Road to the east side of Wailupe Beach Park, from the shoreline mauka to Kalanianaole Highway. The information below presents a snapshot of census conditions for Census Tract 5 between the years 2013 to 2017.

From 2013 to 2017, the total population was 3,813, with a median age of 49.9 years. There were 1,347 households, with an average household size of 2.83 people. Families made up 72.4 percent of all households, and nonfamily households comprised 27.6 percent. 30.6 percent of all households had one or more people under the age of 18, and 48.1 percent of all households had one or more people 65 years and over. 91.3 percent of the people were living in the same residence one year earlier. From 2013 to 2017, 98.2 percent of people 25 years and over had at least graduated from high school and 61.3 percent had a bachelor's degree or higher.

Of the population 16 and over, 53.3 percent were employed, and 45.5 percent were not currently in the labor force. An estimated 81.1 percent of the people employed were private wage and salary
workers, 10.2 percent were federal, state or local government workers, and 8.7 percent were self-employed in their own business. The median income of households was $127,582. An estimated 76.0 percent of households received earnings. An estimated 45.2 percent of households received Social Security and an estimated 28.9 percent of households received retirement income other than Social Security, although these are not mutually exclusive.

During the period of 2013 to 2017, Census Tract 5 had a total of 1,690 housing units. 0.7 percent of the housing inventory was comprised of houses built since 2010, while 6.9 percent of the houses were first built in 1939 or earlier. Of these housing units, 83.7 percent were single-family houses. 16.2 percent of the housing units were located in multi-unit structures, or buildings that contained two or more apartments. The median number of rooms in all housing units in Census Tract 5 was 6.2 rooms, and of these housing units, 78.0 percent had three or more bedrooms.

There were 1,347 housing units that were occupied or had people living in them, while the remaining 343 were vacant. Of the occupied housing units, the percentage of these houses occupied by owners (or homeownership rate) was 81.0 percent, while renters occupied 19.0 percent. The median property value for owner-occupied houses in Census Tract 5 for 2013 to 2017 was $1,662,900. Of the owner-occupied households, 50.2 percent had a mortgage. 49.8 percent owned their houses “free and clear,” that is without a mortgage or loan on the house. The median monthly housing costs for owners with a mortgage was $4,001 and for owners without a mortgage it was $955.

**Anticipated Impacts and Proposed Mitigation**

The planned redevelopment of the property has no foreseeable negative impacts on the residential population of the area. The planned improvements will not affect land and housing speculation, property values of area homes, or affordable housing in the area.

The redevelopment of the property will have some short-term economic benefits resulting from the construction of the facilities. Construction will be completed by a local contractor. Total construction costs for the residence is estimated at approximately $4.0M. Long-term economic benefits will also result from the taxes paid on the property, and the purchases that will be made in the area.

The planned improvements are not expected to result in significant impacts to the socioeconomics or environmental justice of the area. The surrounding area consists of low-density residential area with numerous parks and accesses to the beach. Redevelopment of this property will not change the characteristics of the residential Kāhala area.

**3.8 Visual Resources**

**Existing Conditions**

The property is located in Kāhala, along the shoreline approximately a third of the way between Diamond Head Crater and the Kāhala Hotel & Resort. Residential uses are located adjacent to the property on the east side and across the street, a vacant property on the west side, with the property fronting the ocean. *Figure 1.2* provides an aerial perspective of the general area.

The City and County of Honolulu Coastal View Study (1987) notes that the Maunalua Bay Viewshed, Kahala Section ranges from the Diamond Head lookouts to the Wai’alae Golf Course. Beyond the lookouts, no specific coastal views are present due to the established residential community. Significant public view locations have also been designated by the City and County of Honolulu Primary
Urban Center Development Plan (2004). The property is not located within a Special District and does not lie within significant mauka-makai or east-west views.

The property is presently vacant and shielded from view by chain link fencing with privacy screens along the Kāhala Avenue frontage. The accompanying photos provide visual perspectives of the existing conditions of the property, and immediate vicinity. Figure 3.8 is an aerial photo of the property with a key to photos depicting existing views and land uses. Figures 3.8a to 3.8c provide a selection of property photos. The property is surrounded by large lots or residential uses.

**Anticipated Impacts and Proposed Mitigation**

The construction of two residential units will include one home and a guest cottage as allowed per the LUO. Figures 2.3 and 2.4 present renderings of the main home. View locations are from Kāhala Avenue and from the shoreline area. The rendering from Kahala Avenue is presented again in this section for ease of reference as Figure 3.9. The conceptual elevations show the residence and landscape which are compatible with the surrounding residential uses. The residential structures will conform to design controls established by the LUO, including the 25-foot height limit. Construction will observe a more than 40-foot setback from the shoreline, in accordance with ROH §23 Shoreline Setbacks. Landscaping will be used to improve the visual character of the property from public view locations, primarily the pedestrian and roadway perspectives along the beach and Kāhala Avenue. Prominent public vantage points will be maintained and the residential character of Kāhala will be preserved. No significant visual resource effects are anticipated.

3.9 **Utilities and Infrastructure**

The following section provides key highlights and assesses potential impacts of infrastructure and utility needs.

3.9.1 **Water**

**Existing Conditions**

**Domestic Water**

The existing potable water service to the Kāhala Avenue area is provided by the Honolulu Board of Water Supply (BWS). A 6-inch diameter BWS cast iron water main lies within Kāhala Avenue, on the mauka side of the roadway.

BWS distribution maps, record drawings, and consultation indicate onsite domestic water to the property is provided by a 1-inch water meter and 1.5-inch lateral (No. 01400673, Premise ID# 8790693399) located approximately in the middle of the lot, on the right side of the driveway apron.

The water meter has a maximum flow rate of 160 gallons per minute (GPM) and a continuous flow rate of 80 GPM.

**Fire Protection**

A 6-inch diameter water main is located in Kāhala Avenue fronting the property, which serves multiple fire hydrants along Kāhala Avenue near the property. One fire hydrant, 1496 is located across the street fronting 4432 Kāhala Avenue.
Figure 3.8a View Towards 4439 Kāhala Avenue Heading East

Figure 3.8b View Directly Towards 4439 Kāhala Avenue
Figure 3.8c  View Towards 4439 Kāhala Avenue Heading West

Figure 3.9  Rendering of the Residence from Kāhala Avenue (Source: DPI)
**Anticipated Impacts and Proposed Mitigation**

**Domestic Water**

The property is currently served by an existing BWS 1-inch water meter which connects to the existing BWS water main within Kāhala Avenue. The property is anticipated to require up to 1,620 gallons per day (GPD) which can be accommodated by the existing BWS water main on Kāhala Avenue. Development of the property will conform to the City and County of Honolulu BWS Water System Standards. The owner will pay the BWS Water System Facilities Charges for resource development, transmission and daily storage. Existing water meters and laterals will remain in place and brought up to the surface, mounting lines on the lower section of the ‘ewa concrete masonry unit (CMU) wall. The new water service line will be installed in a secure above-ground corridor with landscape screening.

**Fire Protection**

The existing fire hydrant located on Kāhala Avenue across from the property will not satisfy fire protection requirements for the new home. The lot is approximately 300 ft deep, and the new house will be located beyond the 150-ft hose lay length. It is anticipated that sprinklers will be provided. The property plan will comply with current National Fire Protection Association (NFPA) 1 standards for access and egress. All building exterior exit doors will be within 150 ft of the driveway.

The plans for the property are not expected to require off-site water system improvements for fire suppression.

**3.9.2 Wastewater**

**Existing Conditions**

Based on record drawings, there are two existing cesspools that were filled when the property was redeveloped in 1983. City records show that there is an existing 6-inch lateral for the property that connects to an 18-inch sewer main in Kāhala Avenue. The lateral follows the driveway into the property. The sewer main and the lateral are both made of vitrified clay pipe material. A sewer manhole is located west of the parcel on Kāhala Avenue and ‘Elepaio Street.

**Anticipated Impacts and Proposed Mitigation**

Projected average wastewater flow for the property is estimated at 490 GPD. The on-site sewer distribution system will consist of an existing gravity-flow 6-inch sewer lateral collecting flows from the residences. The existing sewer line is in good condition and will continue to be used as the sewer line for the new homes. Installation of a new underground sewer line and trenching will not be required. Sewer system components will comply with the Wastewater System Design Standards of the City and County of Honolulu, Department of Environmental Services Volume 1, July 2017.

Future wastewater improvements for the property will comply with Department of Health Administrative Rules, Title 11, Chapter 23. The City sewer system has adequate capacity to serve the planned residential use with no requirements for off-site improvements.
3.9.3 Storm Drainage

Existing Conditions

There is no City storm drain located at the frontage of the property. Storm water generated during heavy rainfall generally percolates into the ground on this level property with sandy soils. Overland flows generally remain within the property with no off-site discharge. Elevation ranges from 9.8± ft at the roadway to 7.5± ft at the makai end of the property.

Anticipated Impacts and Proposed Mitigation

A shallow turfed drainage swale will extend parallel to the northeast boundary (Koko Head side) of the property to allow overland flows to disperse and infiltrate along the length of the bioswale. Most importantly, the ‘footprint’ of non-permeable surfaces will be small as a percentage of the overall property plan. Pervious pavements and landscaped areas will be used to increase on-site infiltration, and to reduce stormwater runoff. The large grassy areas will be fine-graded to allow natural infiltration in most landscape areas; only in especially heavy rain would water flow from these retention areas into the bioswale.

Due to the high permeability of the sandy soils on the property, very little runoff is anticipated during normal rainfall events. Shallow retention basins or similar infiltration BMPs will collect roof downspout discharges. These measures will naturally filter property runoff and will buffer storm runoff flows form the property. All property drainage designs will comply with current Department of Planning and Permitting standards.

A Residential Storm Water Management Plan (RSWMP) which implements Best Management Practices (BMPs) will be provided. Site-specific BMPs will include erosion and sediment control measures, such as silt fences, berms and other erosion control devices, which will be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem and State waters, as specified in HAR §11-54. The RSWMP is a new requirement applicable to Single Family or Two-Family Dwelling Building Permit projects effective August 18, 2020. Since this is not a Priority project as categorized by the City’s Water Quality Rules, Low Impact Development (LID) Property Design Strategies and Source Control BMPs will be implemented to the Maximum Extent Practicable.

Minor grading will occur crossing the center of the property and dropping off on both sides, with two general drainage areas along the eastern and western edges of the property. The middle pathway to the entry will be high and dry.

Landscaping will be established across the makai end of the property to provide natural filtration of runoff. The Civil Engineering Branch of the City and County of Honolulu Department of Planning and Permitting will review and approve the property grading, drainage, and erosion control plans before construction commences.

During the construction period, erosion will be minimized through compliance with the City and County’s grading ordinance and the applicable provisions of the DOH’s Water Quality Standards (HAR §11-54) and Water Pollution Control requirements (HAR §11-55). Additionally, standard BMPs will be employed to minimize impacts, as detailed in subsequent construction plans.
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 Water Quality, it is the goal to reduce the pollution associated with stormwater runoff from development. Infiltrative BMPs that may be used on-site for retention and stormwater quality facilities are described in detail below:

- **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 runoff as it infiltrates through the sand and gravel layers.

- **Enhanced Swale (Bio retention Swale/Dry Swale)** - An enhanced swale is a shallow, linear channel with planting beds covered with turf or other surface material, other than mulch or plants. 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.

Implementation of these measures will mitigate increases in runoff and help to 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 off site. The 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.

### 3.9.4 Solid Waste Disposal

**Existing Conditions**

The property is currently vacant, therefore no solid waste is produced as this time.

**Anticipated Impacts and Proposed Mitigation**

Solid waste from the residence will be collected curbside by the City and County of Honolulu Refuse Division. Construction-generated solid waste will be disposed of at an approved City and County of Honolulu refuse facility.

### 3.9.5 Electrical and Communications

**Existing Conditions**

The property is currently served by overhead power lines along Kāhala Avenue and overhead telecommunication lines by various providers. An existing utility pole is situated across the property, on the mauka side of Kāhala Avenue. Electrical service for residential properties in the Kāhala area is provided by Hawaiian Electric Company (HECO), and service provided will be greater than 200 AMP. Spectrum and Hawaiian Telcom provide telephone, cable and internet service. These service providers will be consulted by the design team to coordinate service to the property.
Anticipated Impacts and Proposed Mitigation

The residential use will add demand for electrical and communication services. Service capacity to the Kāhala Avenue area for electrical and communications are anticipated to be adequate, to be verified with HECO and telcom companies. Electrical and communications service will be designed with the providers and an electrical engineer. Existing electrical infrastructure will remain in place and brought up to the surface, mounting conduits on the lower section of the ‘ewa CMU wall. There will be no new utility lines installed underground.

Off-site improvements required to provide the additional services will be the responsibility of each service provider, respectively. Required connections to the service systems will be coordinated with the respective service providers. No significant impact is anticipated.

3.9.6 Roadways and Traffic Conditions

Existing Conditions

Kāhala Avenue extends parallel to the coastline in the east-west direction, serving the majority of beach front houses from Lē‘ahi to the Wai‘alae Country Club in Kāhala. An existing driveway provides access to the property off Kāhala Avenue. 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 consists of 15-foot wide grassed shoulders and concrete and/or rock curbs. The posted speed limit is 25 miles per hour (mph) in both directions. The roadway is primarily used for residential traffic and provides access to the Wai‘alae Country Club and the Kāhala Hotel & Resort located at the east end of Kāhala Avenue.

Traffic associated with the Kāhala area is generally light, except for annual events such as the Honolulu Marathon and Sony Open golf tournament. Traffic flow along Kāhala Avenue is nearly always uninterrupted. The intersection of ‘Elepaio Street and Kāhala Avenue is stop sign controlled on the ‘Elepaio Street leg.

Discussions with the 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, the City reserves future rights to potentially utilize the existing 15-foot grassed shoulder.

Vehicular access to the property will be from one existing driveway off Kāhala Avenue. The driveway leads directly to a parking area and the garage.

Anticipated Impacts and Proposed Mitigation

The existing access to the property off Kāhala Avenue will be maintained. The driveway will provide access to the parking area and garage.

Low Impact Development design strategies are planned. Permeable pavements, such as pavers or grasscrete products may be used for the driveway surfaces. This type of pavement increases stormwater infiltration and percolation while providing a more aesthetic enhancement as compared to typical concrete or asphalt pavements. This action will reduce runoff from the property and promote infiltration which mimics the existing drainage patterns, reduces runoff and pollutants/sediment entering the Kāhala Street frontage and oceanfront area.
An 8-foot wide setback for a potential future widening of Kāhala Ave exists along the street frontage of the parcel, although there are no County plans to advance this in the foreseeable future. The planned residential use will not affect the road widening setback, and adverse effects on roadway systems are not anticipated.

The traffic associated with the residential use at the property is anticipated to be typical of the residences in the area. The traffic from this home will be negligible and not affect the operations along Kāhala Avenue.

### 3.10 Air Quality

**Existing Conditions**

The U.S. Environmental Protection Agency (EPA) established the National Ambient Air Quality Standards (NAAQS) per the requirements of the Clean Air Act (last amended in 1990) to protect public health and welfare and prevent the significant deterioration of air quality. These standards account for seven major air pollutants: carbon monoxide (CO), nitrogen oxides (NO\textsubscript{X}), ozone (O\textsubscript{3}), particulate matter smaller than 10 microns (PM\textsubscript{10}), particulate matter smaller than 2.5 microns (PM\textsubscript{2.5}), sulfur oxides (SO\textsubscript{X}), and lead. DOH Clean Air Branch (CAB) has also established State Ambient Air Quality Standards (SAAQS) for six of these air pollutants to regulate air quality statewide. The SAAQS for carbon monoxide and nitrogen dioxide are more stringent than NAAQS. Hawai'i also has a stringent standard for hydrogen sulfide, which is a common odorous pollutant associated with wastewater treatment facilities.

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 DOH Air Monitoring Station closest to the property is located in downtown Honolulu on the roof of the DOH building (Kinau Hale) at 1250 Punchbowl Street, which monitors CO, SO\textsubscript{2}, PM\textsubscript{2.5} and PM\textsubscript{10}.

In Hawai'i, both Federal and State environmental health standards pertaining to outdoor air quality are generally met due to prevalent trade winds and the absence of major stationary sources of pollutant emissions. Present air quality in the property area is mostly affected by motor vehicles, with carbon monoxide being the most abundant of the 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 2021).

**Anticipated Impacts and Proposed Mitigation**

There will be two types of short-term air quality effects that will result from construction of the residences. These effects include: fugitive dust generation and on-site/off-site emissions from moving construction equipment and commuting construction workers. The construction activities are anticipated to be in 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 site management practices. The residential use will have no significant long term air quality effects.
3.11 Noise

Existing Conditions

HAR §11-160 defines maximum permissible sound levels which are intended to protect, control, and abate noise pollution from stationary sources and construction, industrial, and agricultural equipment. As detailed below, maximum permissible sound levels in various zoning districts are set for excessive noise sources during the day (7 a.m. to 10 p.m.) and night (10 p.m. to 7 a.m.) at the property line where the activity occurs.

- Class A – Residential, conservation, preservation, public space, open space, or similar type zones – 55 decibel (dBA) (day) and 45 dBA (night)
- Class B – Multi-family dwellings, apartment, business, commercial, hotel, resort, or similar type zones – 60 dBa (day) and 50 dBa (night)
- Class C – Agriculture, country, industrial, or similar type zones – 70 dBa (day) and 70 dBA (night)

The primary source of existing noise levels at the property occurs from the traffic along Kāhala Avenue. The Kāhala area is generally a quiet residential area. The ambient noise levels at the subject parcel are typical of noise levels found in urbanized residential areas.

Anticipated Impacts and Proposed Mitigation

In the long-term, the residential use of the property will not result in an increase in ambient noise levels in the area. Significant amounts of noise may, 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 obtain a noise permit if the noise levels from construction activities are expected to exceed the allowable levels. Mobilization of heavy vehicles to and from the property will also comply with the State’s administrative rules for vehicular noise control.

Construction noise at the proposed location is not expected to be significant. Construction operations must comply with State DOH regulations and the City Noise Ordinance, which limits construction operations and resultant noise to daytime hours and specific maximum levels.

3.12 Public Facilities and Services

This section discusses the potential effects to public facilities and services at the property and surrounding area.

Educational Facilities

Kapi‘olani Community College, part of the University of Hawai‘i System, is located west of the subject parcel. A number of other public and private elementary, middle, and high schools are also located throughout the neighboring communities. The closest schools to the property include:

- Variety School of Hawai‘i is located at 710 Palekaaua Street and is approximately 0.9 miles away from the property.
- Kaimukī Middle School is located at 631 18th Avenue and is approximately 1.3 miles away from the property.
• Kāhala Elementary School, located at 4559 Kīlauea Avenue and is approximately 1.1 miles away from the property.

The residential action will have no effects to existing educational facilities.

**Recreational Facilities**

Public beach parks provide open space and a natural outdoor environment for both residents of Hawai‘i and tourists to enjoy. The public parks located nearest to the residence are Wai‘alae Beach (1.0 miles) and Kuilei Cliffs Beach Park (1.2 miles). These public recreational facilities will not be affected by the residential improvements.

**Medical Facilities**

Numerous major hospitals and clinics are located in relative proximity to the residential property. The nearest emergency hospital is Kapi‘olani Medical Center, located approximately 5.2 miles from the property taking an average response time of 15 to 20 minutes. The residential use will not impact the handling of emergency medical services. The area hospitals will continue to function at their present locations and will be accessible to the medical emergencies in the area. No mitigation is proposed.

**Police Services**

The property is located in District 7 of the Honolulu Police Department (HPD) which encompasses approximately 40 square miles in east Honolulu, from Punahou Street to Makapu‘u Point. With the exclusion of Waikīkī, the area includes Mānoa, McCully, Mō‘ili‘ili, Kaimukī, Pāolo, Lē‘ahi (Diamond Head), Wai‘alae, Kāhala, ‘Āina Haina, Kuli‘ou‘ou, Hawai‘i Kai, Kalama Valley, and Sandy Beach.

East Honolulu has one HPD Substation and a Burglary Theft Detail office located within the District. A walk-in/store front Substation is located in the Hawai‘i Kai Towne Center at 6600 Kalaniana‘ole Highway. The Substation is around the ‘ewa corner of the Hawai‘i Kai Satellite City Hall office. The District's Burglary Theft Detail is located in the Lē‘ahi area at 4087 Diamond Head Road. The Main Office for District 7 is served from the main police station at 801 Beretania Street.

The residential use will not affect HPD’s operations or ability to provide adequate protection services to the surrounding community.

**Fire Services**

Primary fire protection to the area is provided by the Honolulu Fire Department (HFD). The closest HFD fire stations are located in both Kaimukī and Waikīkī.

- Station 5 in Kaimukī is located at 971 Koko Head Avenue and is approximately 1.9 miles away from the property.
- Station 7 in Waikīkī is located at 381 Kapahulu Avenue and is approximately 2.6 miles away from the property.

The residential use is not expected to affect HFD’s operations or ability to provide fire protection services to the property and surrounding areas. The planned residence will be designed to meet fire and building code requirements. Appropriate design plans will also be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department for their review.
3.13 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 undertakes such other actions. The proposed action is consistent with applicable development plans and policies. The applicant will seek a Special Management Area Use permit (Major) and will adhere to the applicable terms and conditions of approval.

The property at 4439 Kāhala has been part of the Kāhala neighborhood subdivision since the early 1920's. The first home was built in 1940. Records show that the property’s seawall was repaired under a City permit approval in May 1946. Since then, homes have been torn down and rebuilt approximately every 30 to 40 years. The most recent dwellings on the property were demolished in the year 2009, and the property is now being prepared for a new residence.

Guidance issued by the Mayor’s Directive 18-2 recommends that an appropriate planning target to use in the design of future projects would be the 3.2 ft sea level rise exposure area (SLR-XA). Situated on the coast, the property is potentially subject to flooding caused by storm surge, high tide flooding, passive flooding, annual high wave flooding, coastal erosion, and the combined effects of SLR. Fortunately, the Kāhala coastline has a shallow reef which refracts and dissipates some of the wave energy traveling toward the shore, protecting the property from potential wave action and storm surge.

The National Hurricane Storm Surge Hazard Maps indicate the coastal area along the property may be subject to storm surge flooding inundation of greater than 3 ft but less than 6 ft above ground level during a Category 1 hurricane event. The 8.0 ft high legal, non-conforming seawall and location of the residence 60 ft away from the shoreline was designed to protect the property from storm surge flooding up through a Category 2 or 3 hurricane event where storm surge is modeled to reach greater than 6 ft above the ground. In addition, the property will be in a gravel fill condition at FFE = 9.5 for the main house, guest house and garage, in the event a storm surge modeled at greater than 9 ft overtops the wall in the unlikely event of a Category 4 hurricane.

High tide flooding can have several effects, such as pronounced beach erosion, storm drain flooding and groundwater inundation. Major high tide flooding is projected for 3.8 ft above MHHW. Due to the 8.0 ft high seawall, the residence will be protected from high tide flooding. Storm drain flooding is not a concern as there are no City storm drains located at the frontage of the property (see Section 3.9.3). High tide flooding could also potentially cause groundwater inundation where the water table rises to break the ground surface and creates a wetland. Archaeological trenching (Keala Pono, 2021) to depths of 2 to 3 ft did not hit the water table on the property. It is not expected that groundwater inundation of moderate high tide flooding of 2.6 ft will push the water table to the ground surface at this location.

Passive flooding is not anticipated at 3.2 ft of SLR. Minimal annual high wave flooding is expected at SLR 3.2 ft, lapping the property at less than 20 ft inland from the seawall. Neither passive flooding nor wave run up affect the exposure area, and the proposed residence is well inland of either of these projections. There is approximately 700 ft of shallow reef fronting the coastal property of 4439 Kāhala; it is expected that this reef, along with the 8.0-ft high seawall, and over 60 ft of grass lawn overlying permeable, excessively drained Beaches (BS) soil will protect the home from any potential high wave run-up.

SLR-XA encompasses passive flooding, annual high wave flooding, and coastal erosion. The SLR-XA impact region presented in the viewer, showing runup through almost half of the property, is a
reflection of the modeled erosion projection for the area, which does not include data where the structures (such as the seawall) have affected erosion rates. Coastal erosion modeling was conducted for sandy shorelines and did not account for engineered structures, such as seawalls. Therefore, coastal erosion is not expected at this location due to the armoring created by the 8.0 ft seawall. Seawalls also exist for approximately 2,000 ft in either direction of the adjacent properties. Based on the modern condition of the shoreline at the property and in the region, maintenance and improvement of the non-conforming seawall is the proposed mitigation for potential coastal erosion.

Although the SLR-XA modeled at this location does not reflect actual or anticipated conditions, the modeling results and associated mitigation are discussed as follows. According to the SLR viewer, approximately 40 ft inland from the shoreline (wall) of the property is anticipated to be subject to 0.5 ft of SLR in the near-term, which would not affect the home in the proposed action. The SLR-XA 1.1 ft exposure projection could extend about 50 to 60 ft inland, which also would not affect the home at 61 ft from the shoreline. The 0.5 to 2.0 ft model projections present the current predictive level for mid-century (2050) by climate scientists, at which time the planned residence will be approximately 30 years old. The projection in the generalized mapping generated in the more extreme SLR-XA 3.2 ft model shows some overlap with the current planned location for the home.

Again, however, this modeling does not consider the effectiveness of the shoreline protection, planned building pad elevation or finished floor elevation. There are several measures taken with the 4439 Kāhala property which will accommodate for rising sea level over many decades ahead, well beyond the mid-century 2050 horizon (30 years from now). First, the top of the existing seawall is approximately 8.0 ft above current sea level, which will strictly limit the incursion of rising sea level and potential threats to the residential structure. The owner has a right and will to maintain this lawful non-conforming seawall, and it should be seen as a first line of defense. Second, the new residence will be set back over 60 ft from the shoreline, well beyond initial phase projections of SLR without accounting for mitigating factors of shoreline condition and site grades. This setback distance is already 50% greater than the required 40 ft shoreline setback. Third, the levelled pad for the homesite and concrete slab will set at a base elevation of 9.5 ft (another 1.0 ft above the existing grade).

Additional design of the property is important when planning for SLR and flooding. Existing utilities will be re-connected to the new home (sewer system) while others (electrical and water) will be brought above ground. Pervious pavements and the large grassy areas and landscaped areas will be used to increase on-site infiltration, and the site will be graded along the eastern and western edges so that stormwater will settle and drain into the bioswales, allowing for proper drainage and reducing the chances for flooding.

Construction activities will generate direct employment in construction-related industries and increase government revenues. The residential use will be consistent with the Kāhala neighborhood by redeveloping the property with a new home. Kāhala is a mature residential neighborhood which includes a mix of older homes as well as newer homes that have been rebuilt over time. This is consistent with other longstanding residential neighborhoods on O‘ahu. The rebuilding process in Kāhala has been gradual and ongoing for decades, with no significant adverse cumulative environmental impacts to the surrounding neighborhood. The subject property was previously in residential use and the new home will be consistent with design character and scale consistent with the surrounding neighborhood. The residential use is not anticipated to result in significant adverse environmental impacts, nor contribute to adverse cumulative environmental impacts.

The approval will not have substantial secondary impacts, such as population changes or effects on public facilities.
Chapter 4

Alternatives

The following provides a discussion of alternatives to the proposed action as described in Section 2.0.

4.1 Alternative A – No-Action Alternative

The No-Action Alternative is the baseline against which all other alternatives are measured. “No-Action” refers to the future site conditions that would likely result should the proposed action not proceed. The No-Action Alternative would keep the site unused without redevelopment for residential structures, with no change to the property.

The existing environmental conditions at the property would remain unchanged and the anticipated improvements to the subject parcel would be foregone. There would be no short-term construction related impacts, such as soil disturbance and construction noise. The long-term environmental conditions would be commensurate with an undeveloped vacant property that has a wall on the makai boundary.

There would be no development-related impacts under the No-Action Alternative. This alternative would result in total non-utilization of the site for its permitted use, under the existing R-7.5 zoning. With the No-Action scenario, at some point in the future another entity would acquire the property from the current owners and pursue development.

Under the No-Action Alternative, the property would not achieve the redevelopment objectives for residential use as outlined in Section 2.0. The intent behind the owner’s acquisition of this land is for future redevelopment of a quality single-family residential use. Leaving the property vacant would continue to expose the land to trespassing, vandalism and future speculation. The No-Action alternative would require the owners to continue to pay Real Property Taxes to the City and continue to pay for insurance without the ability to benefit from the property as zoned for residential use. The No-Action Alternative would not be a practical approach for the future of this land.

4.2 Alternative B – Located Outside of the 3.2 ft SLR-XA

Another alternative to the proposed action would involve an extreme makai setback for the residence and accessory structures whereby all buildings would be positioned outside areas that are within the long-term model prediction (1 m; 3.2 ft SLR-XA) of possible global mean sea level rise (GMSL). The SLR-XA model defines areas as the combined exposure to sea level rise from passive flooding, annual high wave flooding, and coastal erosion. Following this cumulative model, the 3.2 ft SLR-XA alternative would prohibit meaningful improvements on approximately 50% of the property due to an interpretation of policy guidance that does not require such an alternative and is inconsistent with the relevant statutes and ordinances.
Placing all of the buildings outside the SLR-XA essentially implements a policy of managed retreat from the shoreline. There are three primary adaptation strategies to address sea level rise. These strategies are accommodation, protection, and retreat. “Managed retreat” is a coastal management strategy that typically involves modification, relocation, or removal of existing structures to allow the shoreline to naturally move inland as opposed to fixing the shoreline with engineered structures (protection).

Managed retreat is a relatively new concept that is being evaluated for applicability in Hawai‘i. The Hawai‘i State Office of Planning (OP) published a report, titled Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai‘i Final Report (2019). The study evaluated options to establish policies, regulations, tools, and programs to support a managed retreat strategy in response to sea level rise. Three principles from the study bear repeating here.

First, accommodation and protection strategies must be examined to determine the best strategy for the area dealing with coastal hazards before retreat is reviewed. Second, managed retreat is only effective when done voluntarily. Third, the study concluded that it is currently not possible to provide a step-by-step or one-size-fits-all guide to implementing managed retreat because retreat is too complex and cross jurisdictional. Planning, legal, insurance, economics, tax, equity, and other issues all come into play when a policy of managed retreat is adopted by the government and imposed on coastal owners. Accordingly, there must be community agreement and consensus that adopting managed retreat is the best strategy due in part to the high economic and social costs of retreating from the shoreline.

Despite these findings, it appears that in some instances the City has interpreted policy guidance in such a way that imposes a strategy of managed retreat on some residential shoreline owners by requiring all buildings to be outside the SLR-XA with 3.2 ft of sea level rise.

Specifically, the Mayor’s Directive 18-2 provides guidance to the City to address the upper range of the SLR-XA prediction as a planning recommendation. However, the SLR-XA is only a “resource,” and any use as regulation, or a change in the regulations, would require following the charter and ordinance requirements for new ordinances or rulemaking, as applicable. A resource can be consulted on a parcel scale and be determined to be inapplicable or inaccurate or can provide guidance without imposing a requirement. Attempting the viewer as a requirement would exceed the City’s powers.

The Directive does not require the use of SLR-XA to establish the setback, provide an HRS §343 alternative or evaluate the SMA. The respective laws (ROH §23, ROH §25, and HRS §205A) establish those requirements. On the contrary, the Directive specifically states that its policy and procedures are “guidelines” and that “all actions and outcomes shall be in accordance with applicable local, state, and federal laws”. The Directive is not a law, regulation, ordinance or rule. As the Directive explains, “the hazard overlays should be used for planning purposes, for example in the general plan, all development plans, and sustainable community plans.” Nothing in the Directive suggests, or could require, that the SLR-XA overlays should take the place of the legally-established shoreline setback or be used for parcel-level decision making.

In using SLR-XA to dictate where development is allowed, the City is setting a de facto shoreline in contravention of the requirements of HRS §205A, and HRS §91. Under settled law, the shoreline is the upper reaches of the wash of the waves, which is the face of the seawall. The current process for determining the shoreline setback is based on the certified shoreline (seawall) plus 40 feet
(minimum setback), which equates to a shoreline setback area of approximately 4,000 sf. Using SLR-XA at 3.2 ft as the shoreline setback would increase the shoreline setback to approximately 132 ft and the setback area to 13,500 sf, which equates to a 70% increase over what is required by law.

Solely for the purpose of this environmental assessment, an evaluation is provided for this severe site constraint.

The SLR-XA 0.5 ft model projection mapping (PacIOOS, 2021) for this location shows inland reach to 40 ft from the shoreline (wall), assuming the wall were not present, and would not affect the home. The SLR-XA 1.1 ft exposure projection extends about 50 to 60 ft inland, assuming the wall were not present. This also would not affect the home, which is to be conservatively located at 61 feet from the shoreline. The 0.5 to 2.0 ft model projections present a possible level for mid-century (2050), at which time the planned residence will be approximately 30 years old.

The conservative prediction of the generalized mapping generated in the more extreme SLR-XA 2.0 and 3.2 ft models shows some overlap with the current planned location for the home. In these scenarios, the model does not take into account the effectiveness of the planned building pad elevation and finished floor elevation, or the existing seawall, which will continue to be maintained.

More broadly, the SLR-XA model projection across the Kāhala shoreline properties is not precise to the individual conditions on each site and does not account for the effectiveness of existing shoreline protection and future site grades. Instead, the SLR-XA model projection is an initial screening tool with recognized limitations that requires verification at the site level. The model is based on modeling that was developed for an all-sand environment — sandy nearshore, sandy shoreline and sandy foredunes and historical rates of erosion — even if erosion is not occurring on the specific site. The predictions also do not account for existing seawalls or other coastal armoring in the backshore.

Coastal erosion is not expected at this property, as the wall has been in place since before 1946, is a legal non-conforming use, and will be maintained. The top of the existing wall is approximately 8.0 ft above current sea level, which will prevent any incursion of rising sea level and potential threats to the residential structure. A majority of the adjacent properties along the coast are currently protected — extending approximately 1,800 ft west until meeting with a rocky shoreline and approximately 2,000 ft east before a break in walls on one property and picks up with additional walls for another 2,500 ft until reaching Waiʻalae Beach Park.

In addition, other measures taken for the 4439 Kāhala property would accommodate rising sea level for many decades ahead — well beyond the mid-century 2050 horizon (30 years from now). First, the new residence will be set back 61 ft from the shoreline (horizontal retreat), which is well beyond initial phase projections of SLR without accounting for mitigating factors of shoreline condition and site grades. This setback distance is already 50% greater than the required 40 ft shoreline setback. Second, the levelled pad for the homesite and concrete slab will set at a base elevation of 9.5 ft (1.0 ft above the existing grade), and utilities (such as electrical and water lines) will be elevated instead of located underground (vertical retreat). Third, pervious pavements and the large grassy areas and landscaped areas will be used to increase on-site infiltration, and the site will be graded along the eastern and western edges so that stormwater will settle and drain into the bioswales, allowing for proper drainage and reducing the chances for flooding.
The planned architectural design for the new home for a retired kamaʻaina family is consistent with classic Kāhala single-story pitched roof lines, with generous setbacks, ample landscaping and limited public view impact along Kāhala Avenue. The 3.2 ft SLR-XA alternative would force the construction to the mauka half of this Kāhala beachfront property. This alternative would change the character of the planned residential structures and landscape and make it congested such that structures would need to be built to the maximum 25 ft height limit adjacent to the street-facing property line. This alternative would result in a heavily developed character in public view and a development approach for the property that would not be beneficial to the Kāhala community or the owners.

For these reasons, the alternative for siting the home outside the 3.2 SLR-XA prediction is dismissed.

4.3 Alternative C – Four Detached Single-Family Residences

The site constrained Alternative B would require the landowner to position the new residence and accessory structures in the rear 50% of the property, which would completely change the owners’ desire to create a beautiful kamaʻaina family home for their retirement and future family estate. Instead, these plans would be abandoned as unsuited, crowded build-out against the Kāhala Avenue frontage, and the property would be redeveloped to its highest and best use. Specifically, the owners would redevelop the property with four detached single-family homes. This alternative development scenario would be pursued under as-of-right zoning to develop the property. Under the existing R-7.5 Residential zoning district and LUO provisions (see ROH §21-8.20A Multiple Homes on Lot), with a parcel land area of 35,428 sf, a maximum of 4.72 single family dwellings may be developed on this property.

Figure 4.1 shows a conceptual site plan for the site-constrained redevelopment mauka of the SLR-XA 3.2 ft prediction. To meet the high demand for Kāhala beach area residential real estate, the owners would develop four two-story residences as a condominium property regime (CPR), enabling sale to four different parties. There would be a consistent design theme for the multi-unit project to create consistency of quality and character with up to 7,500 sf in floor area per unit. The alternative would result in two large two-story homes built in the makai position and two large two-story homes fronting Kāhala Avenue, all of which would be served by a common driveway court. The four-home plan could include a landscaped open space common element, or the individual home sites could be maintained individually as private elements.

Each of these homes could be built with a total floor area in excess of 7,500 sf, which would require the preparation of an EA and approval of an SMA Use Permit (Major).

Although the owners acknowledge the right to pursue a multiple home development on this property under existing zoning, this is not their intention for the future use and enjoyment of this property for their family. Compared to the proposed action, the four-residence alternative would negatively affect views of the property from public locations. There would be four residential structures built on the property versus one residence and guest cottage. In addition, due to the scale of site development, two of the buildings would be visible from Kāhala Avenue and two would be visible from shoreline locations. In comparison to the proposed action, there would be significant additional water use, sewage generation and noise.

For these reasons, the alternative for siting four detached single family dwellings mauka of the 3.2 ft SLR-XA is dismissed.
Figure 4.1 Alternative C Site Plan with Homes Mauka of 3.2 ft SLR-XA (Source: DPI)
4.4 Alternative D – Alternative Site

The 0.813-acre site is surrounded by residential zoned lands to the east, west and north and by the Pacific Ocean to the south. There are few comparably sized residentially zoned shoreline parcels available in Kāhala. The 0.813-acre site is ideal to support the physical requirements of the single-family residence on this property. Other residential properties in the area are currently occupied, too large and not available for redevelopment. The site was chosen also because it has access to the existing utilities and to ensure compliance with environmental regulations.

The owners could seek another community with shoreline properties in the East Honolulu, windward, North Shore or Waianae coast areas. However, the owners are long-time kama‘aina residents of the community and selected this site for their future residence. The property is an exact fit for the objectives and needs of the residential home.

The Alternative Site option was evaluated and found to be impractical.
Chapter 5

Plans and Policies
Chapter 5

Plans and Policies

The consistency of the planned redevelopment at 4439 Kāhala with applicable State of Hawai‘i and City and County of Honolulu planning and land use objectives, policies, principles and guidelines are discussed below.

5.1 Hawai‘i State Land Use District Guidelines

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 Revised Statutes (HRS) §205-2(b) 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 Land Use Ordinance, General Plan, and Primary Urban Center Development Plan, as discussed below.

5.2 Hawai‘i State Plan

The Hawai‘i State Plan (HRS §226) establishes a statewide planning system that provides goals, objectives, and policies that detail priority directions and concerns of the State of Hawai‘i. It is the goal of the State, under the Hawai‘i State Planning Act, to achieve the following:

- A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i present and future generations.
- A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
- Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

Specific objectives and policies of the State Plan that pertain to the planned improvements are as follows:
Section 226-11 Objectives and policies for the physical environment – land-based, shoreline, and marine resources:

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

1. Prudent use of Hawai‘i’s land-based, shoreline, and marine resources.
2. Effective protection of Hawai‘i’s unique and fragile environmental resources.

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

1. Exercise an overall conservation ethic in the use of Hawai‘i’s natural resources.
2. Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.
3. Take into account the physical attributes of areas when planning and designing activities and facilities.
4. Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.
5. Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai‘i.
6. Pursue compatible relationships among activities, facilities, and natural resources.

Discussion: The planned use is a balanced residential redevelopment of an existing lot that is compatible to existing uses and relationships between the built environment and nearby shoreline. Best management practices will ensure that marine and nearshore habitats will be protected during the residential construction and operations.

Section 226-12 Objectives and policies for the physical environment – Scenic, Natural Beauty, and Historic Resources.

(a) Planning for the State’s physical environment shall be directed towards achievement of the objective of enhancement of Hawai‘i’s scenic assets, natural beauty, and multi-cultural/historical resources.

(b) To achieve the scenic, natural beauty, and historic resources objective, it shall be the policy of this State to:

1. Promote the preservation and restoration of significant natural and historic resources.
2. Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
3. Encourage the design of developments and activities that complement the natural beauty of the islands.

Discussion: The residential use is designed to complement the natural beauty of the surrounding area. Existing views and vistas will not be adversely affected. The scale and size of the action are appropriate for the site to meet the design controls established in the Land Use Ordinance (LUO). The residential structures will not exceed 25 feet in height and will not interfere with existing prominent public vantage points from which the public enjoys significant public views of Diamond Head and the ocean.
Therefore, the proposed action will not affect scenic resources. Perimeter landscaping on the site will serve as a visual buffer to surrounding residential areas.

Historic resources have been documented in an Archaeological Assessment (Keala Pono, 2021) conducted for the site. The study found no evidence of archaeological remains. The site area has undergone extensive disturbance from previous development and does not possess culturally significant resources. Archaeological monitoring is planned during construction.

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

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

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

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

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

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

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

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

   (6) Encourage design and construction practices that enhance the physical qualities of Hawai‘i’s communities.

**Discussion:** The residential use is designed to fit appropriately within the surrounding environment. The acoustic environment and surrounding air quality may experience small effects during construction. Best management practices and regulatory controls will ensure air quality levels are within acceptable regulatory limits. The site is located within the tsunami evacuation zone and within the FEMA Flood Zones X and VE. Design controls will plan the development to meet regulatory requirements.

**Section 226-15 Objectives and policies for facility systems – solid and liquid wastes.**

(a) **Planning for the State’s facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:**

   (1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.

   (2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.

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

   (2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.

**Discussion:** Solid waste and wastewater disposal systems for the residential use will be designed to minimize effects on existing solid and liquid waste facilities. The owners will participate with the City and County of Honolulu’s residential recycling program to minimize solid waste.
Section 226-16 Objectives and policies for facility systems – water.

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

(1) Coordinate development of land use activities with existing and potential water supply.

Discussion: The BWS has determined that its existing water system is adequate to accommodate and supply the anticipated water demand.

Section 226-108 Sustainability guidelines.

(b) Encouraging planning that respects and promotes living within the natural resources and limits of the State;

Discussion: During the planning of sustainability, guidelines are considered and evaluated as part of the residential design and environmental review process. The residential use will fit with the existing character of the surrounding Kāhala residences and will not adversely affect existing natural resources.

5.3 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. The Hawai‘i Coastal Zone Management (CZM) Program received federal approval in the late 1970’s (HRS §205A-2). The objectives of the State’s CZM Program 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. Pursuant to HRS §205A-1, “Coastal hazards” means any tsunami, hurricane, wind, wave, storm surges, high tide, flooding, erosion, sea level rise, subsidence, or point and nonpoint source pollution.

Each county is responsible for designating an SMA that extends inland from the shoreline. Development within the SMA is subject to County approval to ensure the proposal is consistent with the policies and objectives of the Hawai‘i CZM Program. The residential site is within the SMA as delineated by the City and as such, requires an additional review under State CZM and County SMA rules. The following subsections examine the objectives of the Hawai‘i CZM Program and the impacts of the planned improvements relative to the State CZM objectives and policies. Specific City SMA policies are also discussed in Section 5.7.

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 restoration of coastal resources that have significant recreational and ecosystem value, including but not limited to coral reefs, surfing sites, fishponds, sand
beaches, and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when restoration 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, including but not limited to artificial lagoons, artificial beaches, and 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.

Discussion: The proposed action would have no effect on coastal resources which would require coordination and funding of coastal recreation planning and management. The residential development will not have an effect on recreational activities, impede public access, or require restoration of coastal resources. The residential use will comply with State CZM guidelines and will not affect public coastal recreational opportunities.

The residential use will be constructed and maintained 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 City sewer systems have adequate capacity to address the anticipated wastewater demand. 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 Hawai‘i and American history and culture.

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

Discussion: An Archaeological Assessment Report (Keala Pono, 2021) was completed 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, it was 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) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Discussion: As described in Section 3.8, the residential redevelopment 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 use will blend into the surrounding urban residential neighborhood. The scale and size of the action are appropriate to the site and meet the design controls established in the LUO. The residences will not exceed 25 feet in height and will not interfere with existing prominent public vantage points from which the public enjoys significant public views of Diamond Head and the ocean. Therefore, the proposed action will not adversely affect scenic resources. Perimeter landscaping on the site will serve as a visual buffer to surrounding residential areas.

COASTAL ECOSYSTEMS

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

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Improve the technical basis for natural resource management;

(C) Preserve valuable coastal ecosystems, including coral reefs, beaches, and coastal dunes, of significant biological or economic importance;

(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

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

Discussion: The action will not affect coastal ecosystems or natural resource management. During construction and operation, stormwater will be retained onsite. Infiltrative BMPs will be used to reduce pollution associated with stormwater runoff generated by the 10-year 1-hour duration design storm event. Operations of the residence 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 coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are planned, designed, and constructed to reduce exposure to coastal hazards, and minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal development to areas designated and used for those developments and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:

   (i) Use of presently designated locations is not feasible;

   (ii) Adverse environmental effects and risks from coastal hazards are minimized; and

   (iii) The development is important to the State’s economy.

Discussion: The proposed residence is consistent with State and County plans and land regulations and will not result in adverse social, visual, and environmental impacts in the CZM area. Risks associated with coastal hazards such as tsunami, hurricane, wind, wave, storm surges, high tide, flooding, erosion, sea level rise, subsidence, or point and nonpoint source pollution are being mitigated by retreating the residence further mauka than the required 40 ft shoreline setback, and elevating the property by a foot to FFE=9.5. The residential development is in an area presently designated for such land use.

COASTAL HAZARDS

Objective: Reduce hazard to life and property from coastal hazards.

(A) Develop and communicate adequate information about risks of coastal hazards;

(B) Control development in areas subject to coastal hazards;

(C) Ensure that developments comply with requirements of the National Flood Insurance Program; and

(D) Prevent coastal flooding from inland projects.

Discussion: As previously discussed, pursuant to HRS §205A-1, “Coastal hazards” means any tsunami, hurricane, wind, wave, storm surges, high tide, flooding, erosion, sea level rise, subsidence, or point and nonpoint source pollution. Adequate information about the risks of coastal hazards to the property have been developed and are discussed in Section 3.4 Natural and Manmade Hazards. Guidance issued by the Mayor’s Directive 18-2 recommends that an appropriate planning target to use in the design of future projects would be 3.2 ft sea level rise exposure area (SLR-XA) by mid-century.

The site is within FIRM Zones X and VE, and is also located within the tsunami evacuation zone (Figure 1.6). The site for residential development is located within Zone X and is therefore not subject to development standards within the Special Flood Hazard Area. The action is a redevelopment of an existing residential lot and will not increase the potential hazard risk associated with flooding, landslides, erosion, siltation or earthquake. Even under the 3.2 ft sea level rise planning target, the residential property is protected by an 8.0 ft seawall, will be built at a distance more than 60 ft from
the certified shoreline, and will be elevated to FFE=9.5. These measures will help to protect the home from high tide, coastal flooding, erosion, and sea level rise.

Construction work will be performed in accordance with the State and County-approved design standards. 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. No significant adverse effects from wind or subsidence are anticipated.

MANAGING DEVELOPMENT

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

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

(C) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion: This EA discloses the potential short-term and long-term impacts of the action on the environment. Procedurally, this EA is completed in support of ROH Chapter 25 SMA Permit request, and the EA conforms to requirements for content and procedures under 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 early consultation and the Draft EA 30-day comment period, agencies and organizations were consulted.

PUBLIC PARTICIPATION

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

(A) Promote public involvement in coastal zone management processes;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: Public participation is part of the ROH Chapter 25/HRS Chapter 343 environmental review process. 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. Information regarding the coastal issues and processes is publicly provided in the EA, along with proposed mitigation measures addressing any coastal concerns. Consulted parties in the environmental process are encouraged to provide comments regarding the proposed action during the Draft EA public review period. Comments submitted through the public review process, and the responses they generate, are all included within the Final EA that is publicly available through the OEQC.
BEACH PROTECTION

Objective: Protect beaches and coastal dunes for (i) Public use and recreation; (ii) Benefits of coastal ecosystems; and (iii) Natural buffers to coastal hazards.

(A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

(B) Prohibit construction of private shoreline hardening structures such as seawalls and revetments, except at sites where they will not adversely affect the beach, beach processes, or public beach access, or interfere with existing recreational and waterline activities;

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline;

(D) Minimize grading of and damage to coastal dunes;

(E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner’s vegetation in a beach transit corridor; and

(F) Prohibit private property owners from creating a public nuisance by allowing the private property owner’s unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Discussion: The property is located near the shoreline. However, no structures will be located near the shoreline area and will be setback according to applicable City development standards to mitigate the effects of storm surge, high tide, wave action, and sea level rise. There will be no construction of erosion-protection structures. The action will not affect public use and recreation of beaches near the site. Vegetation on the property will be maintained to prevent encroachment on the public beach area.

MARINE AND COASTAL RESOURCES

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

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, impacts of climate change and sea level rise, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The planned residential use will not adversely affect marine and coastal resources. The new home will be setback according to City development standards and will not affect the shoreline area. The residential project does not promote research and understanding particular to ocean development activities and effects upon ocean and coastal resources.
5.4 City and County of Honolulu Land Use Ordinance Guidelines

The purpose of the Land Use Ordinance (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 (ROH 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 2.3 for discussion of compliance with LUO standards. Four homes are allowed to be built on this property based on LUO standards. Only one home with a guest cottage are planned to be built.

5.5 City and County of Honolulu General Plan

The General Plan for the City was adopted in 1977 and has been subsequently amended (most recently in 2002). The General Plan is a comprehensive statement of the long-range social, economic, environmental and design objectives for the general welfare and prosperity of the people of O‘ahu. The objectives and policies are organized into 11 subject areas and are intended to guide and coordinate City land use plans and regulations, and budgeting policies and decisions for public facility capital improvements, operations and maintenance. A Draft 2035 O‘ahu General Plan Update was published for public review in November 2012, and the Revised General Plan was submitted to the City Council in April 2018 for approval. A Final Revised General Plan Update is still pending. The planned residential improvements are consistent with the applicable objectives and policies of the existing City General Plan as amended in 2002, described below.

**NATURAL ENVIRONMENT**

**Objective A: To protect and preserve the natural environment.**

- Policy 1. Protect O‘ahu’s natural environment, especially the shoreline, valleys, and ridges, from incompatible development.
- Policy 6. Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.
- Policy 7. Protect the natural environment from damaging levels of air, water, and noise pollution.
- Policy 8. Protect plants, birds, and other animals that are unique to the State of Hawai‘i and the Island of O‘ahu.

**HOUSING**

**Objective A: To provide decent housing for all the people of Oahu at prices they can afford.**

- Policy 3. Encourage innovative residential development which will result in lower costs, added convenience and privacy, and the more efficient use of streets and utilities.
Objective C: To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.

- Policy 1. Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.
- Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.

PUBLIC SAFETY

Objective B: To protect residents and visitors and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.

- Policy 2: Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.
- Policy 7: Provide adequate fire protection and effective fire prevention programs.

CULTURE AND RECREATION

Objective B: To protect O’ahu’s cultural, historic, architectural, and archaeological resources.

- Policy 2. Identify, and to the extent possible, preserve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.
- Policy 3. Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological sites, buildings, and artifacts.

Discussion: The applicant supports the protection and preservation of the natural environment including plants, trees, open spaces and shoreline resources. Short-term air quality and noise quality related to construction activities will be mitigated. Existing views and vistas will not be adversely affected. The scale and size of the action are appropriate to the site and meet the design controls established in the LUO. The residence will not exceed 25 feet in height and will not interfere with existing prominent public vantage points from which the public enjoys significant public views of Diamond Head and the ocean. Perimeter landscaping on the site will serve as a visual buffer to surrounding residential areas.

The site is located within the tsunami evacuation zone and within the FEMA Flood Zones X and VE. Design controls will ensure the planned development meets regulatory requirements. The proposed residence will follow all building codes and standards to ensure health and safety hazards do not occur.

The applicant respects the multi-ethnic cultures found throughout Hawai’i and supports the protection of Hawai’i’s cultural, archaeological, and historic resources. Historic resources within the area have been documented in an Archaeological Assessment (Keala Pono, 2021). The studies and trenching of the site did not identify evidence of archaeological remains at the site. The site area has undergone extensive disturbances from previous development and does not possess culturally significant resources. Archaeological monitoring is planned during construction. Refer to Section 3.5 of the EA.
5.6 City and County of Honolulu Primary Urban Center Development Plan

The island of O‘ahu is divided into eight Development Plan areas. Two areas are identified as “development plans,” (DPs) which provide guidance for future growth and development, while the other six areas are identified as “sustainable communities plans” (SCP), which aim to maintain the region’s character and ensure modest development. Each regional plan implements the objectives and policies of the General Plan for the City and County of Honolulu and provides direction on public policy, investment, and decision-making within each respective region. Together with the General Plan, they guide population and land use growth over a 20- to 25-year time span.

The property is located within the region encompassed by the Primary Urban Center Development Plan (PUC DP). The PUC DP was last revised in June 2004 by Ordinance No. 04-14 and is currently being updated. As of March 2021, the updated PUC DP has not been released. The 2004 PUC DP’s vision for the PUC focuses on:

- Protecting and enhancing Honolulu's natural, cultural, and scenic resources
- Creating livable neighborhoods with business centers, parks, plazas, and walkable streets
- Providing in-town housing choices for people of all ages and incomes
- Making Honolulu the Pacific's leading city and travel destination
- Creating a balanced transportation system that provides excellent mobility for residents and visitors.

Discussion: The PUC DP 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 PUC DP Land Use Map (Figure 5.1). The residential action is consistent with the PUC DP Land Use Map.
Figure 5.1  City and County of Honolulu Primary Urban Center Development Plan
5.7 City and County of Honolulu Special Management Area Guidelines

The property lies within the SMA (Figure 1.5), which was established to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawai‘i. Special controls on development within the SMA are necessary to avoid permanent loss of valuable resources and foreclosure of management options. The review guidelines of ROH §25-3.2 are used by the DPP and the City Council for the review of developments proposed in the SMA. These guidelines are derived from HRS §205A-26.

1. All Development in the SMA 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 that 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 resource, beaches, coastal dunes, and scenic and recreational amenities and minimize impacts from floods, landslides, erosion, sea level rise, siltation or failure in the event of an earthquake.

2. No development shall be approved unless the council has first found that:
   - The development will not have any significant adverse environmental or ecological effect except as any adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interests. Those adverse effects shall include but not be limited to the potential cumulative impact of individual developments, each of which taken by itself might not have a significant 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, Community Plan, and zoning provided that a finding of consistency shall not preclude concurrent processing where a General Plan, Community Plan, or zoning amendment may also be required.

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 that would reduce the size of any beach or other area usable for public recreation;
   - Any development that 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 that would substantially interfere with or detract from the line of sight toward the sea from the State highway nearest the coast; and

Any development that 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:** The property lies within the boundary of the City and County of Honolulu’s Special Management Area (SMA) *(Figure 1.5)*. Proposed improvements within the SMA are subject to SMA permit requirements pursuant to Section 205A, HRS, and Chapter 25 Revised Ordinances of Honolulu. An SMA Permit application will be submitted to the City and County of Honolulu Department of Planning and Permitting.

The closest public access to the beach area fronting the site is located east of the subject parcel, across from Kala Place. The proposed action will not adversely affect access to existing public shoreline or recreation areas. No wildlife preserves or public areas are affected by the action.

Provisions will be made to ensure solid and liquid waste treatment, disposition, and management will have minimum adverse effects upon Special Management Area resources. Wastewater will connect to the City and County of Honolulu operated sewer system. The design of the on-site sewer system will be in accordance with the Wastewater Design Standards of the City and County of Honolulu’s Department of Environmental Services (ENV). Solid waste will be handled and disposed of by ENV.

Alterations to the land and vegetation will not adversely affect coastal areas or recreational resources. The proposed action will require removal of scrub/weed vegetation (non-native species) and grading and grubbing for the construction of new facilities. Best Management Practices will be implemented pursuant to the Grading Permit to mitigate potential soil erosion and fugitive dust during grading and utility excavation.

Views from Kāhala Avenue will be improved with new landscaping. The action is a redevelopment of an existing residential lot and 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.

No substantial adverse environmental or ecological direct, indirect or cumulative impacts are anticipated from the action. Potential environmental impacts of the residential use and the mitigation strategies to minimize adverse effects are described in *Section 3.0* of this EA. The action is consistent with applicable plans and policies of the State of Hawai‘i and the City and County of Honolulu.

There will be no adverse impact to public accesses, public beaches or recreation areas. The new residence will be developed over 60 feet mauka from the shoreline. The action will have no adverse effects on areas of open water, potential fisheries, fisheries, wildlife habitat, or agricultural land. Best management practices and other mitigative strategies will be utilized to minimize effects on water quality. The action will adhere to LUO height and size restrictions and will be similar in the overall size and scale to existing residential developments in the vicinity of the action. There is no line of sight to the ocean from the nearest State highway.
5.8 Land Use Ordinance Section 21A Flood Hazard Areas

The Honolulu Land Use Ordinance §21A was enacted pursuant to the U.S. National Flood Insurance Act of 1968, as amended, and the U.S. Flood Disaster Protection Act of 1973, as amended. Areas that are subject to periodic inundation by flooding and/or tsunami may result in loss of life and property. The purposes of establishing flood hazard districts are to protect life and property and reduce public costs for flood control, rescue, and relief efforts.

The parcel is located in Zones X and VE as shown on the 2021 FEMA Digital Flood Insurance Rate Map (DFIRM) (Figure 1.6). The Flood Zone X designation indicates the area is outside of the 0.2% annual chance floodplain. This portion of the property is not located in a Special Flood Hazard Area as defined by LUO §21A. However, a small portion of the parcel along with the adjacent coastal area is located in Flood Zone VE, indicating a coastal high hazard area subject to inundation by the 1% annual chance flood event with additional hazards due to storm-induced velocity wave action. Floodplain management standards and mandatory flood insurance purchase requirements for residents with a federally backed mortgage apply for this zone.

Discussion: Majority of the subject parcel is not located in a Special Flood Hazard Area as defined by the LUO §21A. However, the property will adhere to development standards within the Flood Hazard District, such as no more than two dwelling units on the property. Construction work will be performed in accordance with the State and County-approved design standards. New site infrastructure will be designed and constructed to meet applicable standards. No significant adverse impacts are anticipated.
Chapter 6

Findings Supporting the Anticipated Determination
Chapter 6

Findings Supporting the Anticipated Determination

6.1 Anticipated Determination

Based on a review of the significance criteria outlined in HRS §343 and HAR §11-200.1-13, it is anticipated that the Department of Planning and Permitting (DPP) will find that the planned development of residences at the subject property will 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 Environmental Assessment (EA). As stated earlier, there are no significant environmental impacts expected to result from the planned improvements. This determination is based on the assessments as presented below for criterion (1) to (13).

(1) Irrevocably commit a natural, cultural or historic resource.

The archaeological and cultural landscapes have been documented in studies conducted specifically for the property. As detailed in Chapter 3.6 of this report, the property does not involve any known loss or destruction of existing natural or cultural resources. Even with the negative findings of subsurface testing, there 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 planned 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 descendants 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 will be affected by the residential improvements.

Curtail the range of beneficial uses of the environment.

The residential activities will not curtail the range of beneficial uses of the environment. Existing uses conform to existing land use designations. The proposed residence would actually increase beneficial uses of the parcel, replacing vacant, untended land with a revitalized residential use and landscaping.
There will be no impact on public access to the shoreline and no significant change in lateral access along the shore. No structures will be built within the shoreline setback. There will be no impact to fishing on the reef flat seaward of the property.

(2) **Conflict with the State’s environmental policies or long-term environmental goals established by law.**

The residential improvements do not conflict with State’s long-term environmental policies or goals and guidelines as expressed in HRS §344, and any revisions thereof and amendments thereto, court decision, or executive orders. State waters will not be affected.

(3) **Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State.**

The proposed action 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.

(4) **Have a substantial adverse effect on public health.**

The proposed action is consistent with existing land uses and is not expected to affect public health, except in beneficial ways mentioned in item four above. However, there will be temporary short-term effects 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 effects of noise, dust, and emissions will be mitigated by compliance with the State Department of Health Administrative Rules.

(5) **Involve adverse secondary impacts, such as population changes or effects on public facilities.**

The proposed action will not have substantial secondary impacts, such as population changes or effects on public facilities.

(6) **Involve a substantial degradation of environmental quality.**

The proposed action will have no significant adverse environmental effects, nor will it degrade environmental quality. It will not degrade water quality, nor impact marine flora and fauna. The proposed action will not involve development within the shoreline setback area.

(7) **Be individually limited but cumulatively have substantial adverse effect upon the environment or involved a commitment for larger actions.**

The property is located in an area subject to the combined effects of SLR, flooding, storm surge, wave action, and shoreline erosion. Mitigative improvements will not have substantial negative effects upon the environment and will not be a precursor for future actions.

(8) **Have a substantial adverse effect on a rare, threatened or endangered species, or its habitat.**

No rare, threatened, or endangered species or habitats are present on-site nor will be substantially affected by this residential use.
(9) Have a substantial adverse effect on air or water quality or ambient noise levels.

General temporary impacts associated with construction are identified in Chapter 3.0 of this EA. Mitigation measures which are outlined in this EA will be applied during the on-going construction activity. No detrimental long-term impacts to air, water, or acoustic quality are anticipated with the planned improvements.

(10) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters.

The property is located within Flood Zones X and VE and is also located within the designated tsunami zone (Figure 1.6). Therefore, the residential use will comply with necessary design requirements. Construction work will be performed in accordance with the State and County-approved design standards. 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. No significant adverse effects are anticipated. Refer to Chapter 3.4 for additional details relating to natural hazards.

(11) Have a substantial adverse effect on scenic vistas and viewplanes, during day or night, identified in county or state plans or studies.

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

(12) Require substantial energy consumption or emit substantial greenhouse gases.

The residence is not anticipated to require substantial energy consumption or emit substantial GHGs when compared to other similar-sized homes. In an effort to reduce energy consumption, the proposed residence is anticipated to incorporate renewable energy technology, energy conservation best practices such as energy-efficient mechanical and electrical systems to maximize energy savings, and provisions for electric vehicle (EV) compatible parking. No long-term impacts to energy resources or increase in GHG emissions are anticipated.

### 6.3 Summary

Based on the above findings, further evaluation of the proposed residence impacts through the preparation of an Environmental Impact Statement is not warranted. The EA recommends mitigation measures to alleviate impacts where such impacts are identified. A FONSI is anticipated.

The action is consistent with the Hawai‘i State Plan, 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.
List of Agencies, Organizations and Individuals Receiving Copies of the EA
List of Agencies, Organizations and Individuals Receiving Copies of the EA

7.1 Consultation List

Early consultation on the planned improvements has been carried out with various agencies and stakeholders as part of the scoping process for this proposed residence. Parties contacted in preparation of the Draft Environmental Assessment (EA) process, comments received, those that were provided an opportunity to review the Draft EA, and Draft EA comments received are identified below. A summary of comments received during these consultation processes are also provided following this list.

<table>
<thead>
<tr>
<th>Table 7.1</th>
<th>Agencies, Organizations and Individuals Receiving Copies of the EA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Respondents and Distribution</strong></td>
<td><strong>Early Consultation</strong></td>
</tr>
<tr>
<td><strong>Federal Agencies</strong></td>
<td></td>
</tr>
<tr>
<td>U.S. Army Corps of Engineers</td>
<td></td>
</tr>
<tr>
<td>U.S. Department of the Interior, Fish and Wildlife Service</td>
<td></td>
</tr>
<tr>
<td><strong>State of Hawai’i Agencies</strong></td>
<td></td>
</tr>
<tr>
<td>Department of Health (DOH), Environmental Health Administration</td>
<td></td>
</tr>
<tr>
<td>DOH, Clean Air Branch</td>
<td></td>
</tr>
<tr>
<td>DOH, Clean Water Branch</td>
<td></td>
</tr>
<tr>
<td>DOH, Environmental Management Division</td>
<td></td>
</tr>
<tr>
<td>DOH, Safe Drinking Water Branch</td>
<td></td>
</tr>
<tr>
<td>DOH, Solid and Hazardous Waste Branch</td>
<td></td>
</tr>
<tr>
<td>Department of Land and Natural Resources (DLNR), Land Division</td>
<td></td>
</tr>
<tr>
<td>DLNR, Division of Aquatic Resources</td>
<td></td>
</tr>
<tr>
<td>DLNR, Division of Engineering</td>
<td></td>
</tr>
<tr>
<td>DLNR, Division of Forestry and Wildlife</td>
<td></td>
</tr>
<tr>
<td>DLNR, Land Division – Oahu District</td>
<td></td>
</tr>
<tr>
<td>DLNR, Office of Conservation and Coastal Lands</td>
<td></td>
</tr>
<tr>
<td>Office of Hawaiian Affairs</td>
<td></td>
</tr>
</tbody>
</table>
Table 7.1  Agencies, Organizations and Individuals Receiving Copies of the EA

<table>
<thead>
<tr>
<th>Respondents and Distribution</th>
<th>Early Consultation</th>
<th>Receiving Draft EA</th>
<th>Draft EA Comments Received</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State of Hawai‘i Agencies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office of Planning &amp; Sustainable Development</td>
<td></td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td><strong>City and County of Honolulu Agencies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Water Supply</td>
<td></td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td>Department of Facilities Maintenance</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Department of Planning and Permitting</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Department of Transportation Services</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Honolulu Fire Department</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Honolulu Police Department</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Office of Climate Change, Sustainability and Resiliency</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Elected Officials</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senator Stanley Chang – State Senate District 9</td>
<td>X</td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td>Representative Bertrand Kobayashi – State House District 19</td>
<td>X</td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td>Mayor Rick Blangiardi</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Council Chair Tommy Waters – Honolulu City Council District 4</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Waialae-Kahala Neighborhood Board No. 3</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Libraries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hawai‘i State Library</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Kaimukī Public Library</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Individuals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daikicho Saito, Representative of adjacent neighbor</td>
<td></td>
<td></td>
<td>X X</td>
</tr>
<tr>
<td>Lucinda Pyles</td>
<td></td>
<td></td>
<td>X X</td>
</tr>
</tbody>
</table>

7.2 Early Consultation Summary

A summary of comments received during the early consultation period by major topics and associated responses is provided in Table 7.2 below. Refer to comment letters located after Table 7.2.

7.3 Draft EA Summary

A summary of comments received during the Draft EA 30-day comment period by major topics and associated responses is provided in Table 7.3 below. Refer to comment letters located after Table 7.3.
<table>
<thead>
<tr>
<th>Activities in the Shoreline Setback Area / Certified Shoreline Survey</th>
</tr>
</thead>
</table>

In 2014, when my husband was on the NHB, the Board was involved in the EA process for two abutting vacant properties in the same area, 4465 & 4469 Kahala Ave. DLNR required the removal of an un-permitted seawall prior to certification resulting in the recovery of a white sand beach fronting these properties. (See Google Earth photograph below showing the white sand beach only a few properties NE of 4439.) Development at 4439 has been placed on the NHB agenda for this month. Your communication does not mention the seawall or any planned structures, pool, fencing, gazebo, ?? in the 40 foot shoreline setback area. We believe before comments can be made, you need to divulge the proposed plans for the setback area. After all, what will ultimately impact the public beach over time is what is in this area as we have seen from recent articles in the news that have been exposing what property owners have been doing in the setback area causing extreme adverse consequences for the public trust resource.

Please provide Representative Kobayashi and others who you have contacted requesting early comments with information about the seawall and any structures or landscaping in the setback area as well as the status of a shoreline certification.

Table 7.2 Summary of Early Consultation Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 2014, when my husband was on the NHB, the Board was involved in the EA process for two abutting vacant properties in the same area, 4465 &amp; 4469 Kahala Ave. DLNR required the removal of an un-permitted seawall prior to certification resulting in the recovery of a white sand beach fronting these properties. (See Google Earth photograph below showing the white sand beach only a few properties NE of 4439.) Development at 4439 has been placed on the NHB agenda for this month. Your communication does not mention the seawall or any planned structures, pool, fencing, gazebo, ?? in the 40 foot shoreline setback area. We believe before comments can be made, you need to divulge the proposed plans for the setback area. After all, what will ultimately impact the public beach over time is what is in this area as we have seen from recent articles in the news that have been exposing what property owners have been doing in the setback area causing extreme adverse consequences for the public trust resource. Please provide Representative Kobayashi and others who you have contacted requesting early comments with information about the seawall and any structures or landscaping in the setback area as well as the status of a shoreline certification.</td>
<td>Pyles</td>
<td>The residential structures will be located greater than 55 feet (ft) from the shoreline and outside of the shoreline setback area (40 ft inland from the shoreline). A 1983 certified shoreline survey (Sam O. Hirota Inc.) identifies the certified shoreline as delineated along the face of a seawall. Preliminary landscaping plans include planting a line of Dwarf Natal plum (<em>Carissa sp.</em>) immediately behind the seawall. This would be trimmed to a low height and maintained at 18 to 24 inches tall.</td>
</tr>
<tr>
<td>With a 55 foot setback, do you avoid a shoreline certification requirement?</td>
<td>Pyles</td>
<td>The new home will be situated 61 feet from the previous certified shoreline and qualifies for a waiver of the requirement for a new certified shoreline.</td>
</tr>
<tr>
<td>Not much to comment on, given your very brief description. 1. not a monster house, as elsewhere recently on Kahala Ave. 2. many changes of recent and upcoming with beach front, erosion, exemptions, etc.. 3. is the current seawall unpermitted?... and what is the condition? ...and any expected future requests for rebuilding/renovation of this seawall? As emailed to you prior, the Kahala Neighborhood Board dealt with a nearby property, 4 properties east, with an amazing outcome, ie, a new beautiful white sand beach, sand coming naturally from the ocean to create this new beach, showing that beach restoration is possible and QUICKLY SO. See your emailed photos for evidence. Show your client this new nearby beach,...and ask: what value would you put on an amenity such as a semi—private white sand beach [such as the beach nearby]. Semi-private because as you know, it will be difficult to get to your client’s oceanfront except via the ocean and also because very few people will know about this beach, if and when it exists. [to get to the new existing nearby beach, you have to walk in the water or walk/scamper (gingerly, carefully) on the big rocks along the shore EVEN during low tide.]</td>
<td>Rep. Kobayashi</td>
<td>The existing concrete rubble masonry wall was constructed along the property shoreline prior to 1946 and is classified as a lawful non-conforming structure. The wall remains in good condition today, therefore there are no plans for any wall modifications. The wall will be maintained.</td>
</tr>
</tbody>
</table>
### Table 7.2 Summary of Early Consultation Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onsite Structures:</strong> Please describe all existing structures that remain on site, including residences, garages, swimming pools, lanais, stairways, shoreline hardening structures, etc. If any existing structures are proposed to remain in place, the DEA should describe what and where they are located, whether they were lawfully established, and whether they are located within any required setback areas. Such structures should be included in the DEA’s analysis of the Project’s compliance with the applicable development standards in the LUO.</td>
<td>DPP</td>
<td>Existing on-site structures are described in the EA under <em>Section 2.1 Existing Conditions and Site Preparation.</em></td>
</tr>
<tr>
<td><strong>Shoreline Setback:</strong> According to the information provided in your submittal, the proposed residence would be located greater than 55 feet from the regulatory shoreline. We note all development, including the guest house and any other accessory structures must also be located outside of the shoreline setback area. The distance from the shoreline must also be confirmed on a shoreline survey certified by the State of Hawaii, and must also be reflected in the plans submitted for the SMA Use Permit to confirm compliance with the Shoreline Setback Ordinance (Chapter 23, ROH). This information, and a copy of the Shoreline Survey, should be included and evaluated in the DEA. A Certified Shoreline Survey should be included in the Final EA. Alternatively, if the Applicant is seeking to avoid completion of a Certified Shoreline Survey, the DEA should identify the specific proposed shoreline setback distance, and any documentation available providing evidence of the location of the shoreline from which the 55-foot setback line was measured. Such information may include, but is not limited to, a previously certified shoreline survey, site-specific survey, erosion and/or accretion information, historic versus current photographs, and physical or geographic markers such as survey pins or trees that document the level of change in the shoreline since the most recent certified shoreline survey. Please note that approval of a 55-foot shoreline Waiver Line, as opposed to the standard 40-foot shoreline setback line, is subject to the discretion of the Director of the Department of Planning and Permitting.</td>
<td>DPP</td>
<td>A previously approved Certified Shoreline Survey is located in <em>Appendix A</em> of the EA. We intend to utilize a 55-foot shoreline Waiver Line.</td>
</tr>
</tbody>
</table>

### Standards and Regulations

**Land Use Ordinance (LUO; Chapter 21, Revised Ordinances of Honolulu [ROH1]):** Based on a review of our records, the Project site consists of a 35,428-square-foot shoreline zoning lot located in the R-7.5 Residential District. Therefore, proposed development activities must comply with the development standards applicable to the R-7.5 District. Project compliance with these standards should be presented and evaluated in Chapter 5 of the DEA.  
**Special Management Area (SMA) Permit Required:** As noted in your submittal, on September 15, 2020, Governor Ige signed Act 16 (2020) into law. The stated purpose of Act 16 (2020) is to strengthen the State’s coastal zone management policy by amending Chapter 205A, Hawaii Revised Statutes (HRS), to protect state beaches, and to reduce residential exposure to coastal hazards. Under Chapter 25, ROH, uses, activities, or operations considered “development” are subject to review. As a result of Act 16 (2020), the single-family residential exclusion from the definition of “development” was revised as follows:

| Project compliance with LUO Chapter 21 is described in both *Section 2.3* and *Section 5.4* of the EA. | DPP       | The EA includes in its analysis the required components for an SMA Use Permit under both Chapter 205A, HRS and Chapter 25, ROH. |
Table 7.2 Summary of Early Consultation Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Development” does not include the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) Construction or reconstruction of a single-family residence that is less than seven thousand five hundred square feet of floor area, is not situated on a shoreline parcel or a parcel that is impacted by waves, storm surges, high tide, or shoreline erosion, and is not part of a larger development.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consequently, the Project, which proposes construction of residences on a shoreline parcel within the SMA, is considered development under Chapter 205A, HRS, because it is a shoreline lot. Therefore, the DEA should include in its analysis all of the required components for an SMA Use Permit under both Chapter 205A, HRS and Chapter 25, ROH.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flooding and Sea Level Rise</td>
<td>DPP</td>
<td>The project as it relates to LUO §21A Flood Hazard Areas is described in Section 5.8 of the EA.</td>
</tr>
<tr>
<td>Flood Zone: The Project site is located in Flood Zones X and VE. VE Zone is considered a coastal high hazard zone subject to high velocity wave action. Therefore, the DEA should discuss the Project’s compliance with the City’s Flood Hazard Areas Ordinance (Chapter 21A, ROH).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coastal Hazards: The Project site is susceptible to Sea Level Rise (SLR), tsunamis and storm surge. Mayor’s Directive 18-2, issued on July 16, 2018, requires all City departments and agencies to use the SLR Guidance and the Hawaii SLR Vulnerability and Adaptation Report in planning decisions. The recent amendments to Chapter 205A, HRS, under Act 16 (2020), reiterate the need to evaluate potential impacts related to coastal hazards and SLR. As such, the following items need to be evaluated in a site-specific Coastal Hazards Study prepared for both the DEA and SMA Use Permit application prepared for the Project:</td>
<td>DPP</td>
<td>Sea Level Rise and storm surge are discussed in the EA under Section 3.3 Natural and Manmade Hazards. Ways to reduce potential impacts to the development are also included in Section 3.3.</td>
</tr>
<tr>
<td>• SLR - According to the State Pacific Islands Ocean Observing System SLR Viewer, approximately one fifth of the subject property is anticipated to be subject to 0.5 feet of SLR in the near-term, and approximately half of the property is subject to 3.2 feet of SLR by as soon as 2060. Further, SLR is likely to exacerbate the current level of flood hazard on the site in the near term.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Storm Surge - National Hurricane Storm Surge Hazard Maps indicate coastal area along the Project site may be subject to flooding inundation of more than three feet above ground level during a Category 1 or greater hurricane event.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The DEA should explore ways to reduce potential impacts to the development including siting the dwellings as far from the shoreline as possible.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 7.3 Summary of DEA Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities in the Shoreline Setback Area / Certified Shoreline Survey</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any work or use of State lands makai of the property boundary or shoreline may require a disposition from Land Division.</td>
<td>DLNR, Land</td>
<td>No work will occur makai of the property boundary or shoreline.</td>
</tr>
<tr>
<td>Page 5-14, the Draft EA states that the new residence will be developed over 55 feet mauka from the shoreline, while the project summary states that the primary residence will be approximately 61 feet from the existing seawall. The applicant should consult with the Department of Planning and Permitting, City and County of Honolulu, for the determination of the shoreline setback line as defined in HRS §205A-41.</td>
<td>OPSD</td>
<td>As defined in HRS §205A-41, a &quot;Shoreline setback line&quot; means that line established in this part or by the county running inland from the shoreline at a horizontal plane. According to ROH §23-1.4(a), the shoreline setback line shall be established 40 feet inland from the certified shoreline. Please see Appendix A for a map of the certified shoreline survey.</td>
</tr>
<tr>
<td>Flooding and Sea Level Rise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards. The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA’s Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (<a href="http://gis.hawaiinfip.org/FHAT">http://gis.hawaiinfip.org/FHAT</a>).</td>
<td>DLNR, Eng.</td>
<td>Based on the Federal Emergency Management Agency’s Digital Flood Insurance Rate Map (DFIRM) data, effective 2021, the development area is located in Zone X, and a small non-development portion along the coastline in Zone VE. Flood Zone X is not located in a Special Flood Hazard Area as defined by LUO Section 21A (see Section 5.8).</td>
</tr>
</tbody>
</table>

As stated in our pre-DEA comment letter, nearly half of the subject property, including approximately half of the main house as proposed, is anticipated to be subject to 3.2 feet of SLR by mid-century. Section 3.4.3 of the DEA states that the property will be primarily protected from high tide flooding by an existing nonconforming eight-foot-high seawall. However, new construction should not be dependent upon the longevity of nonconforming structures, particularly those located within the shoreline setback area. Therefore, the Final Environmental Assessment (FEA) should explore additional methods of protection from active, passive, high tide or SLR related flooding.

| DPP                         | Analysis related to active, passive, and high tide flooding shows no to minimal effect on the property. Should there be a break in the legal non-conforming parcel seawall, the landowner will repair the wall as it has a right to do. Methods of additional protection from SLR-related flooding include placing the residence at a distance over 61 ft from the certified shoreline, elevating the structures over a foot from existing elevation to FFE 9.5, raising electrical conduits above ground, and securing flood insurance. |
We note that the DEA includes a brief alternative discussion considering the relocation of proposed structures further mauka from the shoreline, which is dismissed based on potential for inconsistency with the surrounding community. However, the purpose of this DEA and FEA is to evaluate potential impacts of a proposed development to coastal resources, in support of an upcoming SMA Use Permit application. In this regard, it is unclear how the proposed placement of approximately fifty percent of the proposed main house within the 3.2-foot SLR-XA is consistent with Chapter 25, ROH, and Chapter 205A, HRS. It is also unclear that relocation of the main house further mauka and outside of the SLR-XA is not considered a reasonable and practicable alternative, particularly given the large yard areas currently proposed along Kahala Drive and in between the garage guest house and main house. Therefore, the FEA should further explore alternatives to avoid the placement of structures within the 3.2-foot SLR-XA coastal hazard area, including placing structures further mauka and/or reducing the scale of proposed structures. It may be useful for such alternatives to include conceptual drawings.

DPP See Section 4.2 and 4.3 of the FEA for expanded discussions of placing the home behind the 3.2-foot SLR-XA. Sections 5.3 and 5.7 discuss consistency of the project with Chapter 25, ROH, and Chapter 205A, HRS. As explained in Section 4.2 of the FEA, placement of buildings outside the 3.2-foot SLR-XA is not required by law, justified or desired. Placement of approximately fifty percent of the proposed main house within the 3.2-foot SLR-XA does not adversely affect coastal resources, and is consistent with applicable laws, plans and policies of the State of Hawai‘i and the City and County of Honolulu.

Finally, in addition to high tide, wave action, and tsunami flooding, the FEA should also disclose and evaluate the potential effects of passive flooding throughout the lifespan of the proposed structures, both individually and cumulatively, when combined with potential impacts of SLR and active flooding events. The Hawaii SLR Viewer includes passive flood modeling.

DPP Section 3.4.4 of the FEA includes a discussion of passive flooding, and Section 3.4.5 provides a discussion of passive flooding combined with SLR.

Pages 3-5 and 3-6, the Draft EA states that the 8.0-foot-high seawall and location of the residence 60 feet away from the shoreline should protect the property from storm surge flooding up through a Category 2 or 3 hurricane event where storm surge is modeled to reach greater than 6 feet above the ground. Given the fact that sea level rise increases the risk of flooding, storm surges and coastal erosion, the Final EA should assess the potential impacts of sea level rise on the proposed development area by referring to the findings of the Hawaii Sea Level Rise Vulnerability and Adaptation Report 2017, accepted by the Hawaii Climate Change Mitigation and Adaptation Commission. The Final EA should further consider site-specific mitigation measures, including elevation and shoreline setbacks during the life of the proposed residence structure, to respond to the potential impacts of 3.2-foot sea level rise, including increasing storm surges and high tides from sea level rise, on the proposed development. Please note that shoreline hardening structures, including seawalls and revetments, are prohibited at sites with beaches pursuant to HRS § 205A-2(c)(9)(B) and HRS § 205A-46(a)(9), as amended.

OPSD Potential impacts to the property by storm surge are assessed in Section 3.4.1 Hurricanes, Tropical Storms, Winds and Storm Surge. Flooding and coastal erosion is assessed in Section 3.4.4 Passive Flooding, High Wave Flooding and Coastal Erosion. The wall at this property is a legal non-conforming structure that has been in place since before 1946.

Water Quality

Page 3-21, Paragraph 5 (and global if/as applicable): The “Rules Relating to Storm Drainage Standards” were superseded by the “Rules Relating to Water Quality.” Therefore, the FEA should be revised to indicate that the Project must comply with the “Rules Relating to Water Quality.” The Project’s

DPP Understood and revised within the FEA in Section 3.9.3 Storm Drainage.
Table 7.3 Summary of DEA Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>compliance with these rules will be verified at the time that the building permit application is submitted to the DPP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Draft EA on page 3-21 states that a Residential Storm Water Management Plan will be provided. The Final EA may include the subject Residential Storm Water Management Plan if it is available. The OPSD recommends that site-specific best management practices with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and State waters as specified in Hawaii Administrative Rules Chapter 11-54.</td>
<td>OPSD</td>
<td>A Residential Storm Water Management Plan (RSWMP) is typically not available until later in the design/contracting process. The RSWMP will outline best management practices suitable to the site.</td>
</tr>
</tbody>
</table>

Utilities

Potable Water: The existing water system is adequate to accommodate the proposed new single-family dwelling. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage. The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

| Utilities | BWS | Understood and noted within the EA in Section 3.9.1 Water. |

Biological Resources

The State listed Hawaiian Hoary Bat or ‘Ōpe’ape’a (*Lasiurus cinereus semotus*) has the potential to occur in the vicinity of your project area and may roost in nearby trees. If any trees must be removed for the project during the bat breeding season there is a risk of injury or mortality to juvenile bats. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

| Biological Resources | DLNR, DOFAW | Mitigation for the protection of the Hawaiian hoary bat has been added to the Final EA in Section 3.5 Flora and Fauna. |

The state endangered Hawaiian Monk Seal (*Monachus schauinslandi*) and threatened Green Sea Turtle (*Chelonia mydas*) have the potential to occur or haul out on shore within the vicinity of the proposed project site. We understand that the mitigation taken if either species is detected within 100 meters of the project area will be to cease construction operations and not continue until the focal animal has departed the area on its own accord. DOFAW concurs with and supports this approach.

| Biological Resources | DLNR, DOFAW | Mitigation for the protection of the Hawaiian Monk Seal and Green Sea Turtle has been added to the Final EA in Section 3.5 Flora and Fauna. |

We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting should be avoided during the seabird season.

| Biological Resources | DLNR, DOFAW | Mitigation for the protection of seabirds is listed in Section 3.5 Flora and Fauna. |
Table 7.3  Summary of DEA Comments and Responses

<table>
<thead>
<tr>
<th>Comments</th>
<th>Commenter</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai‘i please visit: <a href="https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf">https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf</a>.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens, vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O‘ahu Invasive Species Committee at (808) 266-7994 in planning, design, construction and operation of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel and visitors should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.</td>
<td>DLNR, DOFAW</td>
<td>Mitigation against invasive fungal pathogens, vertebrate and invertebrate pests, and plants has been added to the Final EA in Section 3.5 Flora and Fauna.</td>
</tr>
<tr>
<td>DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai‘i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (<a href="https://sites.google.com/site/weedriskassessment/home">https://sites.google.com/site/weedriskassessment/home</a>). We recommend that you refer to <a href="http://www.plantpono.org">www.plantpono.org</a> for guidance on selection and evaluation for landscaping plants.</td>
<td>DLNR, DOFAW</td>
<td>The comments will be taken into consideration for selection and evaluation for the planting plan. Numerous native plants are being considered in the preliminary plans, including beach naupaka, pohuehue, koali‘awa, koali‘ai, hunakai, ‘ilima, pohinahina, hinahina, and akia.</td>
</tr>
<tr>
<td>The OPSD concurs that the exterior lighting and lamp posts associated with the proposed project shall be cut-off luminaries to provide the necessary shielding to mitigate potential light pollution in the coastal areas, and lessen possible seabird strikes. No artificial light, except as provided in HRS §§ 205A-30.5(b) and 205A-71(b), shall be directed to travel across property boundaries toward the shoreline and ocean.</td>
<td>OPSD</td>
<td>To avoid attracting seabirds, outdoor lighting for the residential development will be designed with sensors, shielding, and directed downward.</td>
</tr>
<tr>
<td>Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area. These include: Hawaiian hoary bat / ‘ōpe‘ape‘a (Lasiurus cinereus semotus), wedge-tailed shearwater / ‘ua‘u kani (Ardenna pacificus), and white tern / manu-o-kū (Gygis alba). Recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality have been added to the PIFWO website.</td>
<td>USFWS</td>
<td>The Hawaiian hoary bat and white tern along with the associated mitigation has been added to the Final EA in Section 3.5 Flora and Fauna. Additional avoidance and minimization measures will be added to the Final EA with regards to the seabirds.</td>
</tr>
</tbody>
</table>
Early Consultation Letters
Aloha Barbara,
I am a 50 year resident of Kahala Ave and a former member of the Waialae-Kahala Neighborhood Board (NHB). Kahala Beach is very near and dear to me, to my family and to other residents. Representative Kobayashi forwarded your email regarding the draft EA your firm is preparing for the planned developments at 4439 Kahala Ave.

In 2014, when my husband was on the NHB, the Board was involved in the EA process for two abutting vacant properties in the same area, 4465 & 4469 Kahala Ave. DLNR required the removal of an un-permitted seawall prior to certification resulting in the recovery of a white sand beach fronting these properties. (See Google Earth photograph below showing the white sand beach only a few properties NE of 4439.) Development at 4439 has been placed on the NHB agenda for this month. Your communication does not mention the seawall or any planned structures, pool, fencing, gazebo, ?? in the 40 foot shoreline setback area. We believe before comments can be made, you need to divulge the proposed plans for the setback area. After all, what will ultimately impact the public beach over time is what is in this area as we have seen from recent articles in the news that have been exposing what property owners have been doing in the setback area causing extreme adverse consequences for the public trust resource.

Please provide Representative Kobayashi and others who you have contacted requesting early comments with information about the seawall and any structures or landscaping in the setback area as well as the status of a shoreline certification.

Thank you.
Lucinda Pyles
808-732-6262
Hello, B. Natale,
Not much to comment on, given your very brief description.
1. not a monster house, as elsewhere recently on Kahala Ave.
2. many changes of recent and upcoming with beach front, erosion, exemptions, etc..
3. is the current seawall unpermitted?...and what is the condition? ...and any expected future requests for rebuilding/renovation of this seawall?
As emailed to you prior, the Kahala Neighborhood Board dealt with a nearby property, 4 properties east, with an amazing outcome, ie, a new beautiful white sand beach, sand coming naturally from the ocean to create this new beach, showing that beach restoration is possible and QUICKLY SO. See your emailed photos for evidence.

Show your client this new nearby beach,...and ask: what value would you put on an amenity such as a semi—private white sand beach [such as the beach nearby]. Semi-private because as you know, it will be difficult to get to your client’s oceanfront except via the ocean and also because very few people will know about this beach, if and when it exists. [to get to the new existing nearby beach, you have to walk in the water or walk/scamper (gingerly, carefully) on the big rocks along the shore EVEN during low tide.]
/Bertrand Kobayashi
State Representative
Diamond Head, Kahala, Kaimuki, Kapahulu
Barbara Natale

From: Pyles <kahalabob@aol.com>
Sent: Friday, February 19, 2021 11:46 AM
To: 219035-01 4439 Kahala; repkobayashi@capitol.hawaii.gov
Cc: richturbin@turbin.net; gay@gaycoburngale.com; davin.aoyagi@honolulu.gov
Subject: Re: reply-RE: 4439 Kāhala Avenue - Environmental Assessment Early Consultation

Barbara,
It was nice to meet you last night. I apologize for not including 4439 with the other Kahala Beach items brought before the NHB. We did not expect you. With no response from Group70 to our emails and little information provided in your initial email to Rep. Kobayashi, it seemed best to defer. I am wondering how you knew it was on the agenda. With a 55 foot setback, do you avoid a shoreline certification requirement? We look forward to hearing from you.
Lucinda Pyles
732-6262
Ms. Barbara Natale, AICP
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Ms. Natale:

SUBJECT: Request for Pre-Consultation Comments
Environmental Assessment for Residences on Shoreline Lot
4439 Kahala Avenue - Kahala
Tax Map Keys 3-5-003: 007

This is in response to your email, received February 2, 2021, requesting comments on the scope and content to be addressed in a Draft Environmental Assessment (DEA), as required under Chapter 343, Hawaii Revised Statutes, for two proposed single-family dwellings at the above-referenced property. We understand that the Project proposes two single-story, single-family detached dwelling units, including one 4,500-square-foot primary residence, and a 1,000-square-foot guest cottage. The subject property is a 35,428-square-foot shoreline lot in Kahala. Given this, the following are our comments for the items to address in the DEA:

1. **Land Use Ordinance (LVO: Chapter 21, Revised Ordinances of Honolulu (ROH)):** Based on a review of our records, the Project site consists of a 35,428-square-foot shoreline zoning lot located in the R-7.5 Residential District. Therefore, proposed development activities must comply with the development standards applicable to the R-7.5 District. Project compliance with these standards should be presented and evaluated in Chapter 5 of the DEA. The latest version of the LVO is available on our website at:

   www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits

2. **Onsite Structures:** Please describe all existing structures that remain on site, including residences, garages, swimming pools, lanais, stairways, shoreline hardening structures, etc. If any existing structures are proposed to remain in place, the DEA should describe what and where they are located, whether they were lawfully established, and whether they are located within any required
setback areas. Such structures should be included in the DEA’s analysis of the Project’s compliance with the applicable development standards in the LUO.

3. **Special Management Area (SMA) Permit Required:** As noted in your submittal, on September 15, 2020, Governor Ige signed Act 16 (2020) into law. The stated purpose of Act 16 (2020) is to strengthen the State’s coastal zone management policy by amending Chapter 205A, Hawaii Revised Statutes (HRS), to protect state beaches, and to reduce residential exposure to coastal hazards.

Under Chapter 25, ROH, uses, activities, or operations considered “development” are subject to review. As a result of Act 16 (2020), the single-family residential exclusion from the definition of “development” was revised as follows:

"Development" does not include the following:

(1) Construction or reconstruction of a single-family residence that is less than seven thousand five hundred square feet of floor area, is not situated on a shoreline parcel or a parcel that is impacted by waves, storm surges, high tide, or shoreline erosion, and is not part of a larger development.

Consequently, the Project, which proposes construction of residences on a shoreline parcel within the SMA, is considered development under Chapter 205A, HRS, because it is a shoreline lot. Therefore, the DEA should include in its analysis all of the required components for an SMA Use Permit under both Chapter 205A, HRS and Chapter 25, ROH. The revised text of Chapter 205A, HRS as amended by Act 16 (2020) is available online at:

https://www.capitol.hawaii.gov/session2020/bills/SB2060_HD2_.htm

Chapter 25, ROH, SMA. Chapter 25 is available online at:

http://www.honolulu.gov/rep/site/ocs/roh/ROH_Chapter_25_article_1_12.pdf

4. **Shoreline Setback:** According to the information provided in your submittal, the proposed residence would be located greater than 55 feet from the regulatory shoreline. We note all development, including the guest house and any other accessory structures must also be located outside of the shoreline setback area. The distance from the shoreline must also be confirmed on a shoreline survey certified by the State of Hawaii, and must also be reflected in the plans submitted for the SMA Use Permit to confirm compliance with the Shoreline Setback Ordinance (Chapter 23, ROH). This information, and a copy of the Shoreline Survey, should be included and evaluated in the DEA. A Certified Shoreline Survey should be included in the Final EA.
Alternatively, if the Applicant is seeking to avoid completion of a Certified Shoreline Survey, the DEA should identify the specific proposed shoreline setback distance, and any documentation available providing evidence of the location of the shoreline from which the 55-foot setback line was measured. Such information may include, but is not limited to, a previously certified shoreline survey, site-specific survey, erosion and/or accretion information, historic versus current photographs, and physical or geographic markers such as survey pins or trees that document the level of change in the shoreline since the most recent certified shoreline survey. Please note that approval of a 55-foot shoreline Waiver Line, as opposed to the standard 40-foot shoreline setback line, is subject to the discretion of the Director of the Department of Planning and Permitting.

Chapter 23, ROH, is available online at:


5. **Flood Zone:** The Project site is located in Flood Zones X and VE. VE Zone is considered a coastal high hazard zone subject to high velocity wave action. Therefore, the DEA should discuss the Project’s compliance with the City’s Flood Hazard Areas Ordinance (Chapter 21A, ROH).

6. **Coastal Hazards:** The Project site is susceptible to Sea Level Rise (SLR), tsunamis and storm surge. Mayor’s Directive 18-2, issued on July 16, 2018, requires all City departments and agencies to use the SLR Guidance and the Hawaii SLR Vulnerability and Adaptation Report in planning decisions. The recent amendments to Chapter 205A, HRS, under Act 16 (2020), reiterate the need to evaluate potential impacts related to coastal hazards and SLR. As such, the following items need to be evaluated in a site-specific Coastal Hazards Study prepared for both the DEA and SMA Use Permit application prepared for the Project:

- **SLR** - According to the State Pacific Islands Ocean Observing System SLR Viewer, approximately one fifth of the subject property is anticipated to be subject to 0.5 feet of SLR in the near-term, and approximately half of the property is subject to 3.2 feet of SLR by as soon as 2060. Further, SLR is likely to exacerbate the current level of flood hazard on the site in the near term.

- **Storm Surge** - National Hurricane Storm Surge Hazard Maps indicate coastal area along the Project site may be subject to flooding inundation of more than three feet above ground level during a Category 1 or greater hurricane event.
The DEA should explore ways to reduce potential impacts to the development including siting the dwellings as far from the shoreline as possible. Relevant sources are available online at the following links:


- National Oceanic and Atmospheric Administration SLR Mapping Tool: https://www.nhc.noaa.gov/nationalsurge/

- Honolulu Office of Climate Change, Sustainability and Resiliency Climate Ready Oahu Web Explorer: https://resilientoahu.org/water

- Storm Surge: https://noaa.maps.arcgis.com/apps/MapSeries/index.html?appid=d9ed7904dbec441a9c4dd7b277935fad&entry=3

Thank you for the opportunity to comment on this proposal. Should you have any questions, please contact Christi Keller, of our staff, at (808) 768-8087, or c.keller@honolulu.gov.

Very truly yours,

[Signature]

Dean Uchida
Director

cc: Ms. Barbara Natale (via email: 4439kahala@G70.design)
Draft EA Comment Letters
In Reply Refer To: 01EPIF00-2021-TA-0391

August 2, 2021

Mr. Jeffrey Overton
Principal, G70
111 South King Street, suite 170
Honolulu, Hawai‘i 96813

Subject: Technical Assistance for Draft Environmental Assessment Construction of Residence at 4439 Kahala Avenue, Honolulu, O‘ahu

Dear Mr. Overton:

Thank you for your recent correspondence requesting technical assistance on species biology, habitat, or life requisite requirements. The Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (Service) appreciates your efforts to avoid or minimize effects to protected species associated with your proposed actions. We provide the following information for your consideration under the authorities of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.), as amended.

Due to significant workload constraints, PIFWO is currently unable to specifically address your information request. The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. Based on your project location and description, we have noted the species most likely to occur within the vicinity of the project area, in the ‘Occurs In or Near Project Area’ column. Please note this list is not comprehensive and should only be used for general guidance. We have added to the PIFWO website, located at https://www.fws.gov/pacificislands/promo.cfm?id=177175840 recommended conservation measures intended to avoid or minimize adverse effects to these federally protected species and best management practices to minimize and avoid sedimentation and erosion impacts to water quality. If your project occurs on the island of Hawai‘i, we have also enclosed our biosecurity protocol for activities in or near natural areas.

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac/.
Under section 7 of the ESA, it is the Federal agency’s (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project “may affect” federally listed species or designated critical habitat. A “may affect, not likely to adversely affect” determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a “may affect, likely to adversely affect” determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have “no effect” on federally listed species and/or critical habitat do not require additional coordination or consultation.

Implementing the avoidance, minimization, or conservation measures for the species that may occur in your project area will normally enable you to make a “may affect, not likely to adversely affect” determination for your project. If it is determined that the proposed project may affect federally listed species, we recommend you contact our office early in the planning process so that we may assist you with the ESA compliance. If the proposed project is funded, authorized, or permitted by a Federal agency, then that agency should consult with us pursuant to section 7(a)(2) of the ESA. If no Federal agency is involved with the proposed project, the applicant should apply for an incidental take permit under section 10(a)(1)(B) of the ESA. A section 10 permit application must include a habitat conservation plan that identifies the effects of the action on listed species and their habitats and defines measures to minimize and mitigate those adverse effects.

We appreciate your efforts to conserve endangered species. We regret that we cannot provide you with more specific protected species information for your project site. If you have questions that are not answered by the information on our website, you can contact PIFWO at (808) 792-9400 and ask to speak to the lead biologist for the island where your project is located.

Sincerely,

AARON NADIG
Digitally signed by AARON NADIG
Date: 2021.08.02
08:18:13-10'00'
Island Team Manager
Pacific Islands Fish and Wildlife Office

Enclosures (2)
The table below lists the protected species most likely to be encountered by projects implemented within the Hawaiian Islands. For your guidance, we have marked species that may occur in the vicinity of your project, this list is not comprehensive and should only be used for general guidance.

**Enclosure 1. Federal Status of Animal Species**

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name / Hawaiian Name</th>
<th>Federal Status</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mammals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Lasiurus cinereus semotus</em></td>
<td>Hawaiian hoary bat/ʻōpeʻapeʻa</td>
<td>E</td>
<td>☒</td>
</tr>
<tr>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chelonia mydas</em></td>
<td>green sea turtle/honu - Central North Pacific distinct population segment (DPS)</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td><em>Eretmochelys imbricata</em></td>
<td>hawksbill sea turtle/honu ʻea or ʻea</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><strong>Birds</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Anas wyvilliana</em></td>
<td>Hawaiian duck/koloa</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Branta sandvicensis</em></td>
<td>Hawaiian goose/nēnē</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td><em>Fulica alai</em></td>
<td>Hawaiian coot/ʻalae keʻokeʻo</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Gallinula galeata sandvicensis</em></td>
<td>Hawaiian gallinule/ʻalae ʻula</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Himantopus mexicanus knudseni</em></td>
<td>Hawaiian stilt/aeʻo</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Oceanodroma castro</em></td>
<td>band-rumped storm-petrel Hawaiʻi DPS/ʻakēʻakē</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Pterodroma sandwichensis</em></td>
<td>Hawaiian petrel/ʻuaʻu</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Puffinus auricularis newelli</em></td>
<td>Newell’s shearwater/ʻaʻo</td>
<td>T</td>
<td>☐</td>
</tr>
<tr>
<td><em>Ardenna pacificus</em></td>
<td>wedge-tailed shearwater/ʻuaʻu kani</td>
<td>MBTA</td>
<td>☒</td>
</tr>
<tr>
<td><em>Buteo solitarius</em></td>
<td>Hawaiian hawk/ʻio</td>
<td>MBTA</td>
<td>☐</td>
</tr>
<tr>
<td><em>Gygis alba</em></td>
<td>white tern/manu-o-kū</td>
<td>MBTA</td>
<td>☒</td>
</tr>
<tr>
<td><strong>Insects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Manduca blackburni</em></td>
<td>Blackburn’s sphinx moth</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Megalagrion pacificum</em></td>
<td>Pacific Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Megalagrion xanthomelas</em></td>
<td>orangeblack Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
<tr>
<td><em>Megalagrion nigrohamatum</em></td>
<td>blackline Hawaiian damselfly</td>
<td>E</td>
<td>☐</td>
</tr>
</tbody>
</table>
## Enclosure 2. Federal Status of Plant Species

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name or Hawaiian Name</th>
<th>Federal Status</th>
<th>Locations</th>
<th>May Occur In Project Area</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Abutilon menziesii</em></td>
<td>koʻoʻoʻaʻula</td>
<td>E</td>
<td>O, L, M, H</td>
<td></td>
</tr>
<tr>
<td><em>Achyranthes splendens</em> var. rotundata</td>
<td>‘ewa hinahina</td>
<td>E</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td><em>Bonamia menziesii</em></td>
<td>no common name</td>
<td>E</td>
<td>K, O, L, M, H</td>
<td></td>
</tr>
<tr>
<td><em>Canavalia pubescens</em></td>
<td>‘āwikiwiki</td>
<td>E</td>
<td>Ni, K, L, M</td>
<td></td>
</tr>
<tr>
<td><em>Colubrina oppositifolia</em></td>
<td>kauila</td>
<td>E</td>
<td>O, M, H</td>
<td></td>
</tr>
<tr>
<td><em>Cyperus trachysanthis</em></td>
<td>puʻukaʻa</td>
<td>E</td>
<td>K, O</td>
<td></td>
</tr>
<tr>
<td><em>Gouania hillebrandii</em></td>
<td>no common name</td>
<td>E</td>
<td>Mo, M</td>
<td></td>
</tr>
<tr>
<td><em>Hibiscus brackenridgei</em></td>
<td>maʻo hau hele</td>
<td>E</td>
<td>O, Mo, L, M, H</td>
<td></td>
</tr>
<tr>
<td><em>Ischaemum byrone</em></td>
<td>Hilo ischaemum</td>
<td>E</td>
<td>K, O, Mo, M, H</td>
<td></td>
</tr>
<tr>
<td><em>Isodendrion pyrifolium</em></td>
<td>wahine noho kula</td>
<td>E</td>
<td>O, H</td>
<td></td>
</tr>
<tr>
<td><em>Marsilea villosa</em></td>
<td>‘ihiʻihi</td>
<td>E</td>
<td>Ni, O, Mo</td>
<td></td>
</tr>
<tr>
<td><em>Mezoneuron kavaiense</em></td>
<td>uhiuhi</td>
<td>E</td>
<td>O, H</td>
<td></td>
</tr>
<tr>
<td><em>Nothocestrum breviflorum</em></td>
<td>‘aiea</td>
<td>E</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td><em>Panicum fauriei</em> var. carteri*</td>
<td>Carter’s panicgrass</td>
<td>E</td>
<td>Molokini Islet (O), Mo</td>
<td></td>
</tr>
<tr>
<td><em>Panicum niihauense</em></td>
<td>lauʻehu</td>
<td>E</td>
<td>K</td>
<td></td>
</tr>
<tr>
<td><em>Peucedanum sandwicense</em></td>
<td>makou</td>
<td>E</td>
<td>K, O, Mo, M</td>
<td></td>
</tr>
<tr>
<td><em>Pleomele (Chrysodracon) hawaiensis</em></td>
<td>halapepe</td>
<td>E</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td><em>Portulaca sclerocarpa</em></td>
<td>‘ihi</td>
<td>E</td>
<td>L, H</td>
<td></td>
</tr>
<tr>
<td><em>Portulaca villosa</em></td>
<td>‘ihi</td>
<td>E</td>
<td>Le, Ka, Ni, O, Mo, M, L, H, Nihoa</td>
<td></td>
</tr>
<tr>
<td><em>Pritchardia affinis</em> (maideniana)*</td>
<td>loulu</td>
<td>E</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td><em>Pseudognaphalium sandwicensium var.</em></td>
<td>‘enaʻena</td>
<td>E</td>
<td>Mo, M</td>
<td></td>
</tr>
<tr>
<td>molokaiense</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Scaevola coriacea</em></td>
<td>dwarf naupaka</td>
<td>E</td>
<td>Mo, M</td>
<td></td>
</tr>
<tr>
<td><em>Schenkia</em> (Centaurium) sebaeoides</td>
<td>‘āwiwi</td>
<td>E</td>
<td>K, O, Mo, L, M</td>
<td></td>
</tr>
<tr>
<td><em>Sesbania tomentosa</em></td>
<td>‘ōhai</td>
<td>E</td>
<td>Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa</td>
<td></td>
</tr>
<tr>
<td><em>Tetramolopium rockii</em></td>
<td>no common name</td>
<td>T</td>
<td>Mo</td>
<td></td>
</tr>
<tr>
<td><em>Vigna o-wahuensis</em></td>
<td>no common name</td>
<td>E</td>
<td>Mo, M, L, H, Ka</td>
<td></td>
</tr>
</tbody>
</table>

Location key: O=Oʻahu, K=Kauaʻi, M=Maui, H=Island of Hawaiʻi, L=Lānaʻi, Mo=Molokaʻi, Ka=Kahoʻolawe, Ni=Niʻihau, Le=Lehua
If your proposed project:

**Requires an Air Pollution Control Permit**

You must obtain an air pollution control permit from the Clean Air Branch and comply with all applicable conditions and requirements. If you do not know if you need an air pollution control permit, please contact the Permitting Section of the Clean Air Branch.

**Includes construction or demolition activities that involve asbestos**

You must contact the Asbestos Abatement Office in the Indoor and Radiological Health Branch.

**Has the potential to generate fugitive dust**

You must control the generation of all airborne, visible fugitive dust. Note that construction activities that occur near to existing residences, business, public areas and major thoroughfares exacerbate potential dust concerns. It is recommended that a dust control management plan be developed which identifies and mitigates all activities that may generate airborne, visible fugitive dust. The plan, which does not require Department of Health approval, should help you recognize and minimize potential airborne, visible fugitive dust problems.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust. In addition, for cases involving mixed land use, we strongly recommend that buffer zones be established, wherever possible, in order to alleviate potential nuisance complaints.

You should provide reasonable measures to control airborne, visible fugitive dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

a) Planning the different phases of construction, focusing on minimizing the amount of airborne, visible fugitive dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;

b) Providing an adequate water source at the site prior to start-up of construction activities;

c) Landscaping and providing rapid covering of bare areas, including slopes, starting from the initial grading phase;

d) Minimizing airborne, visible fugitive dust from shoulders and access roads;

e) Providing reasonable dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and

f) Controlling airborne, visible fugitive dust from debris being hauled away from the project site.

If you have questions about fugitive dust, please contact the Enforcement Section of the Clean Air Branch

<table>
<thead>
<tr>
<th>Clean Air Branch</th>
<th>Indoor Radiological Health Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>(808) 586-4200</td>
<td>(808) 586-4700</td>
</tr>
<tr>
<td><a href="mailto:cab@doh.hawaii.gov">cab@doh.hawaii.gov</a></td>
<td></td>
</tr>
</tbody>
</table>

April 1, 2019
August 23, 2021

Mr. Jeffrey Overton, Principal
G70
111 South King Street, Suite 170
Honolulu, HI 96813

(Via email: jeff@g70.design)

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment
4439 Kahala Avenue Single-Family Residence
Honolulu Island of Oahu, Hawai’i
TMK: (1) 3-5-003:007

Thank you for the opportunity to review and comment on the subject project. The Land Division of the Department of Land and Natural Resources (DLNR) distributed copies of your request to various DLNR divisions for their review and comment.

Attached are comments received from our (a) Division of Engineering and (b) Office of Conservation and Coastal Lands, and (c) Land Division, Oahu District. Should you have any questions, please feel free to contact Barbara Lee via email at barbara.j.lee@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments

Cc: Central Files
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96819

July 23, 2021

LD 0817

MEMORANDUM

FROM: DLU Agencies:
  Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)
  Div. of Boating & Ocean Recreation
  Engineering Division (via email: DLNR.Engr@hawaii.gov)
  Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
  Div. of State Parks
  Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
  Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)
  Land Division – Oahu District (via email: DLNR.Land@hawaii.gov)

TO: Russell Y. Tsuji, Land Administrator

SUBJECT: Draft Environmental Assessment (DEA)

LOCATION: 4439 Kahala Avenue Single-Family Residence
Honolulu, Island of Oahu, Hawaii; TMK: (1) 3-5-003;007

APPLICANT: G70 on behalf of the Department of Planning and Permitting, City and County of Honolulu

Transmitted for your review and comment is information on the above-referenced subject. The DEA was published on July 23, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-07-23-TEN.pdf

Please submit any comments by August 20, 2021 to DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above address. Thank you.

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
(✓) Comments are attached.

Signed: Carty S. Chang, Chief Engineer
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Aug 10, 2021

Attachments
Cc: Central Files
LD/Russell Y. Tsuji  
Ref: Draft Environmental Assessment (DEA)  
4439 Kahala Avenue Single-Family Residence  
Location: Honolulu, Island of Oahu, Hawaii  
TMK(s): (1) 3-5-003:007  
Applicant: G70 on behalf of the Department of Planning and Permitting, City and County of Honolulu

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). State projects are required to comply with 44CFR regulations as stipulated in Section 60.12. Be advised that 44CFR reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood Hazard Zones are designated on FEMA’s Flood Insurance Rate Maps (FIRM), which can be viewed on our Flood Hazard Assessment Tool (FHAT) (http://gis.hawaiiinfip.org/FHAT).

If there are questions regarding the local flood ordinances, please contact the applicable County NFIP coordinating agency below:

- **Oahu**: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- **Hawaii Island**: County of Hawaii, Department of Public Works (808) 961-8327.
- **Maui/Molokai/Lanai**: County of Maui, Department of Planning (808) 270-7253.
- **Kauai**: County of Kauai, Department of Public Works (808) 241-4896.

Signed:  
CARTY S. CHANG, CHIEF ENGINEER

Date: Aug 10, 2021
MEMORANDUM

TO: DLNR Agencies:
  X Div. of Aquatic Resources  (via email: kendall.l.tucker@hawaii.gov)
  ___ Div. of Boating & Ocean Recreation
  X Engineering Division  (via email: DLNR.Engr@hawaii.gov)
  X Div. of Forestry & Wildlife  (via email: Rubyrosa.I.Terrago@hawaii.gov)
  ___ Div. of State Parks
  X Commission on Water Resource Management  (via email: DLNR.CWRM@hawaii.gov)
  X Office of Conservation & Coastal Lands  (via email: sharleen.kubota@hawaii.gov)
  X Land Division – Oahu District  (via email: DLNR.Land@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Draft Environmental Assessment (DEA)

LOCATION: 4439 Kahala Avenue Single-Family Residence

APPLICANT: G70 on behalf of the Department of Planning and Permitting, City and County of Honolulu

Transmitted for your review and comment is information on the above-referenced subject. The DEA was published on July 23, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-07-23-TEN.pdf

Please submit any comments by August 20, 2021 to DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above address. Thank you.

Does not appear to be n.c.d.  ( ) We have no objections.
  ( ) We have no comments.
  ( ) We have no additional comments.
  ( ) Comments are attached.

Signed: Michael Cain
Print Name: Michael Cain
Division: OCCC
Date: 26 July 2021

Attachments
Cc: Central Files
July 23, 2021

MEMORANDUM

TO: DLANR Agencies:
   X Div. of Aquatic Resources  (via email: kendall.l.tucker@hawaii.gov)
   X Div. of Boating & Ocean Recreation
   X Engineering Division  (via email: DLNR.Engr@hawaii.gov)
   X Div. of Forestry & Wildlife  (via email: Rubyrosa.T.Terrego@hawaii.gov)
   X Div. of State Parks
   X Commission on Water Resource Management  (via email: DLNR.CWRM@hawaii.gov)
   X Office of Conservation & Coastal Lands  (via email: sharleen.k.kuba@hawaii.gov)
   X Land Division – Oahu District  (via email: DLNR.Land@hawaii.gov)

FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Draft Environmental Assessment (DEA)

LOCATION: 4439 Kahala Avenue Single-Family Residence

APPLICANT: G70 on behalf of the Department of Planning and Permitting, City and County of Honolulu

Transmitted for your review and comment is information on the above-referenced subject. The DEA was published on July 23, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-07-23-TEN.pdf

Please submit any comments by August 20, 2021 to DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above address. Thank you.

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

Signed:______________
Print Name:__________
Division:___________
Date:___________

Attachments
Cc: Central Files
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 23, 2021

Mr. Jeffrey Overton, Principal
G70
111 South King Street, Suite 170
Honolulu, HI 96813

(Via email: jeff@g70.design)

Dear Mr. Overton:

SUBJECT: Draft Environmental Assessment
4439 Kahala Avenue Single-Family Residence
Honolulu Island of Oahu, Hawai’i
TMK: (1) 3-5-003:007

Thank you for the opportunity to review and comment on the above subject. In addition to previous comments sent to you from the Department of Land and Natural Resources (DLNR) dated August 23, 2021, enclosed are comments from DLNR’s Division of Forestry and Wildlife.

Should you have any questions, please feel free to contact Barbara Lee at 587-0453 or barbara.j.lee@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments

Cc: Central Files
MEMORANDUM

TO:       DLNR Agencies:
          X Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)
          ___ Div. of Boating & Ocean Recreation
          X Engineering Division (via email: DLNR.Engr@hawaii.gov)
          X Div. of Forestry & Wildlife (via email: Rubyrosa.T.Terrago@hawaii.gov)
          ___ Div. of State Parks
          X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)
          X Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)
          X Land Division – Oahu District (via email: DLNR.Land@hawaii.gov)

FROM:    Russell Y. Tsuji, Land Administrator  Russell Tsuji

SUBJECT: Draft Environmental Assessment (DEA)

        4439 Kahala Avenue Single-Family Residence

LOCATION: Honolulu, Island of Oahu, Hawaii; TMK: (1) 3-5-003:007

APPLICANT: G70 on behalf of the Department of Planning and Permitting, City and County of Honolulu

Transmitted for your review and comment is information on the above-referenced subject. The DEA was published on July 23, 2021 by the State Environmental Review Program (formerly the Office of Environmental Quality Control) at the Office of Planning and Sustainable Development in the periodic bulletin, The Environmental Notice, available at the following link:

http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2021-07-23-TEN.pdf

Please submit any comments by August 20, 2021 to DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov. If no response is received by this date, we will assume your agency has no comments. If you have any questions, please contact Barbara Lee directly via email at the above address. Thank you.

( ) We have no objections.
( ) We have no comments.
( ) We have no additional comments.
[✓] Comments are attached.

Signed:                  DAVID G. SMITH, Administrator

Print Name:             Division of Forestry and Wildlife

Division:               Aug 23, 2021

Date:                   Aug 23, 2021

Attachments

Cc: Central Files
MEMORANDUM

TO: RUSSELL Y. TSUJI, Administrator
   Land Division

FROM: DAVID G. SMITH, Administrator
       Division of Forestry and Wildlife

SUBJECT: Division of Forestry and Wildlife Comments for the Draft Environmental Assessment (DEA) 4439 Kahala Avenue Single-Family Residence

August 23, 2021

The Department of Land and Natural Resources, Division of Forestry and Wildlife has received your inquiry regarding the DEA for a single family residence in Kahala on O‘ahu, Hawai‘i, TMK: (1) 3-5-003:007. The proposed project consists of developing two single-story, single-family detached dwelling units, including one 4,500 square-foot primary residence and a 1,000 square-foot guest cottage on a 35,428 square-foot shoreline lot.

The State listed Hawaiian Hoary Bat or ‘Ōpe’a-ape’a (*Lasius maximus semotus*) has the potential to occur in the vicinity of your project area and may roost in nearby trees. If any trees must be removed for the project during the bat breeding season there is a risk of injury or mortality to juvenile bats. If any site clearing is required this should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). If this cannot be avoided, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed without consulting DOFAW.

The state endangered Hawaiian Monk Seal (*Monachus schauinlandi*) and threatened Green Sea Turtle (*Chelonia mydas*) have the potential to occur or haul out on shore within the vicinity of the proposed project site. We understand that the mitigation taken if either species is detected within 100 meters of the project area will be to cease construction operations and not continue until the focal animal has departed the area on its own accord. DOFAW concurs with and supports this approach.

We note that artificial lighting can adversely impact seabirds that may pass through the area at night by causing disorientation. This disorientation can result in collision with manmade artifacts or grounding of birds. For nighttime lighting that might be required, DOFAW recommends that all lights be fully shielded to minimize impacts. Nighttime work that requires outdoor lighting
should be avoided during the seabird fledging season from September 15 through December 15. This is the period when young seabirds take their maiden voyage to the open sea. For illustrations and guidance related to seabird-friendly light styles that also protect the dark, starry skies of Hawai‘i please visit: https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf.

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens, vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O‘ahu Invasive Species Committee at (808) 266-7994 in planning, design, construction and operation of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel and visitors should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

DOFAW recommends using native plant species for landscaping that are appropriate for the area (i.e. climate conditions are suitable for the plants to thrive, historically occurred there, etc.). Please do not plant invasive species. DOFAW recommends consulting the Hawai‘i-Pacific Weed Risk Assessment website to determine the potential invasiveness of plants proposed for use in the project (https://sites.google.com/site/weedriskassessment/home). We recommend that you refer to www.plantpono.org for guidance on selection and evaluation for landscaping plants.

We appreciate your efforts to work with our office for the conservation of our native species. Should the scope of the project change significantly, or should it become apparent that threatened or endangered species may be impacted, please contact our staff as soon as possible. If you have any questions, please contact Paul Radley, Protected Species Habitat Conservation Planning Coordinator at (808) 587-0010 or paul.m.radley@hawaii.gov.

Sincerely,

David G. Smith
Administrator
August 17, 2021

Mr. Dean Uchida, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attn: Ms. Christi Keller

Dear Mr. Uchida:

Subject: Chapter 25, Revised Ordinances of Honolulu, Draft Environmental Assessment for a Single-Family Residence located at 4439 Kahala Avenue, Kahala, Oahu; Tax Map Key: (1) 3-5-003: 007

The Office of Planning and Sustainable Development (OPSD) is in receipt of your review request on the Draft Environmental Assessment (Draft EA), received July 16, 2021, for the proposed residence project at 4439 Kahala Avenue, Kahala, Oahu.

According to the Draft EA, the proposed project consists of redevelopment of a 35,428-square-foot lot with a new 4,500-square-foot single-story single family dwelling unit, and a new 980-square-foot guest cottage on a shoreline lot located in the Kahala. The site is currently vacant, with areas of remnant concrete slab foundations from the prior residential use, and scattered areas of non-native plants, shrubs, and weedy vegetation.

The property is zoned R-7.5 Residential and located within the county designated Special Management Area (SMA) under the Hawaii Coastal Zone Management Law, Hawaii Revised Statutes (HRS) Chapter 205A. The subject EA is prepared in accordance with the content and procedures under HRS Chapter 343, as required by Revised Ordinances of Honolulu (ROH) Chapter 25, in support of an SMA Use Permit application.

Site construction and building permits are anticipated for approval by the third quarter of 2022. Site development is anticipated to be completed in the third quarter of 2023.

The OPSD has reviewed the subject Draft EA, and has the following comments to offer:
1. Page 5-14, the Draft EA states that the new residence will be developed over 55 feet mauka from the shoreline, while the project summary states that the primary residence will be approximately 61 feet from the existing seawall. The applicant should consult with the Department of Planning and Permitting, City and County of Honolulu, for the determination of the shoreline setback line as defined in HRS § 205A-41.

2. Pages 3-5 and 3-6, the Draft EA states that the 8.0-foot high seawall and location of the residence 60 feet away from the shoreline should protect the property from storm surge flooding up through a Category 2 or 3 hurricane event where storm surge is modeled to reach greater than 6 feet above the ground. Given the fact that sea level rise increases the risk of flooding, storm surges and coastal erosion, the Final EA should assess the potential impacts of sea level rise on the proposed development area by referring to the findings of the Hawaii Sea Level Rise Vulnerability and Adaptation Report 2017, accepted by the Hawaii Climate Change Mitigation and Adaptation Commission. The Final EA should further consider site-specific mitigation measures, including elevation and shoreline setbacks during the life of the proposed residence structure, to respond to the potential impacts of 3.2-foot sea level rise, including increasing storm surges and high tides from sea level rise, on the proposed development. Please note that shoreline hardening structures, including seawalls and revetments, are prohibited at sites with beaches pursuant to HRS § 205A-2(c)(9)(B) and HRS § 205A-46(a)(9), as amended.

3. The OPSD concurs that the exterior lighting and lamp posts associated with the proposed project shall be cut-off luminaries to provide the necessary shielding to mitigate potential light pollution in the coastal areas, and lessen possible seabird strikes. No artificial light, except as provided in HRS §§ 205A-30.5(b) and 205A-71(b), shall be directed to travel across property boundaries toward the shoreline and ocean.

4. The Draft EA on page 3-21 states that a Residential Storm Water Management Plan will be provided. The Final EA may include the subject Residential Storm Water Management Plan if it is available. The OPSD recommends that site-specific best management practices with erosion and sediment control measures, including silt fences, berms and other erosion control devices, shall be prepared and implemented to confine the proposed excavation and construction activities, and prevent potential soil, construction debris and polluted runoff from adversely impacting the coastal ecosystem, and State waters as specified in Hawaii Administrative Rules Chapter 11-54.

If you have any questions regarding this comment letter, please contact Shichao Li of our office at (808) 587-2841.

Sincerely,

Mary Alice Evans
Director

cc: Mr. Jeffrey Overton, G70
TO: DEAN UCHIDA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

ATTN: CHRISTI KELLER

FROM: ERNEST Y. W. LAU, P.E., MANAGER AND CHIEF ENGINEER

SUBJECT: YOUR MEMORANDUM DATED JULY 16, 2021 REGARDING THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED NEW SINGLE-FAMILY DWELLING AT 4439 KAHALA AVENUE
TAX MAP KEY: 3-5-003: 007

The existing water system is adequate to accommodate the proposed new single-family dwelling. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.
Ms. Barbara Natale, AICP
G70
111 South King Street, Suite 170
Honolulu, Hawaii 96813

Dear Ms. Natale:

SUBJECT: Draft Environmental Assessment (DEA)
Single Family Residences - Shoreline Lot
4439 Kahala Avenue - Kahala
Tax Map Key 3-5-003: 007

This is in response to the submittal, dated April 6, 2021, of the above-referenced DEA as required under Chapter 25, Revised Ordinances of Honolulu (ROH). We understand that the Project proposes two single-story, single-family detached dwelling units, including one 4,500-square-foot primary residence, and a 1,000-square-foot guest cottage on a shoreline lot located in Kahala within the Special Management Area (SMA). Our comments are as follows:

1. **Sea Level Rise (SLR) and Coastal Hazards**: As stated in our pre-DEA comment letter, nearly half of the subject property, including approximately half of the main house as proposed, is anticipated to be subject to 3.2 feet of SLR by mid-century. Section 3.4.3 of the DEA states that the property will be primarily protected from high tide flooding by an existing nonconforming eight-foot-high seawall. However, new construction should not be dependent upon the longevity of nonconforming structures, particularly those located within the shoreline setback area. Therefore, the Final Environmental Assessment (FEA) should explore additional methods of protection from active, passive, high tide or SLR related flooding.

The DEA also states that existing seawalls are not accounted for in the projections for the 3.2-foot SLR Exposure Area (SLR-XA). While this may be correct, experts with the University of Hawaii Sea Grant program have also expressly stated that their modeling approach should be considered conservative, due to the fact that the various models (SLR, active flooding, passive flooding, etc.) reflect the individual impacts of that issue area, and do not
address the potential for cumulative impacts that may be exacerbated when such hazards compound upon each other. As a result, the Department of Planning and Permitting (DPP) strongly recommends that, in order to find that potential development is consistent with Chapter 25, ROH, and Chapter 205A, Hawaii Revised Statues (HRS), all structures, particularly habitable structures, should be located outside of the 3.2-foot SLR-XA coastal hazard area as much as possible.

We note that the DEA includes a brief alternative discussion considering the relocation of proposed structures further mauka from the shoreline, which is dismissed based on potential for inconsistency with the surrounding community. However, the purpose of this DEA and FEA is to evaluate potential impacts of a proposed development to coastal resources, in support of an upcoming SMA Use Permit application. In this regard, it is unclear how the proposed placement of approximately fifty percent of the proposed main house within the 3.2-foot SLR-XA is consistent with Chapter 25, ROH, and Chapter 205A, HRS. It is also unclear that relocation of the main house further mauka and outside of the SLR-XA is not considered a reasonable and practicable alternative, particularly given the large yard areas currently proposed along Kahala Drive and in between the garage guest house and main house. Therefore, the FEA should further explore alternatives to avoid the placement of structures within the 3.2-foot SLR-XA coastal hazard area, including placing structures further mauka and/or reducing the scale of proposed structures. It may be useful for such alternatives to include conceptual drawings.

Finally, in addition to high tide, wave action, and tsunami flooding, the FEA should also disclose and evaluate the potential effects of passive flooding throughout the lifespan of the proposed structures, both individually and cumulatively, when combined with potential impacts of SLR and active flooding events. The Hawaii SLR Viewer includes passive flood modeling.

2. **Water Quality:** Page 3-21, Paragraph 5 (and global if/as applicable): The “Rules Relating to Storm Drainage Standards” were superseded by the “Rules Relating to Water Quality.” Therefore, the FEA should be revised to indicate that the Project must comply with the “Rules Relating to Water Quality.” The Project’s compliance with these rules will be verified at the time that the building permit application is submitted to the DPP.
Thank you for the opportunity to comment on this proposal. Should you have any questions, please contact Christi Keller, of our staff, at (808) 768-8087, or c.keller@hono lulu.gov.

Very truly yours,

[Signature]

For: Dean Uchida
Director

cc: Ms. Barbara Natale (via email: 4439kahala@G70.design)
List of References
Chapter 8

List of References

City and County of Honolulu, Department of Land Utilization. 1987.

City and County of Honolulu, Department of Planning and Permitting. 2004.
Primary Urban Center Development Plan.

City and County of Honolulu, Department of Planning and Permitting. 2002.
General Plan for City and County of Honolulu.

Fletcher, Chip. 2010.
Hawaii’s Changing Climate. Department of Geology and Geophysics, School of Ocean and Earth Science and Technology, University of Hawai’i at Mānoa.

Freeman Seabird Preserve. [Available URL: https://www.hawaiiaudubon.org/freeman-seabird-preserve]


Fletcher, Chip. 2010.
Hawaii’s Changing Climate. Department of Geology and Geophysics, School of Ocean and Earth Science and Technology, University of Hawai’i at Mānoa.


NOAA. 2014. 

NOAA. 2015. 

NOAA. 2021. 


State of Hawai‘i, Department of Health, Clean Air Branch. 2019. 
*Hawaii Air Quality Data.* [Available URL: https://air.doh.hawaii.gov/home/map]


*Patterns and projections of high tide flooding along the U.S. coastline using a common impact threshold.* NOAA Technical Report NOS CO-OPS 086.

University of Hawai‘i at Mānoa Sea Grant College Program. June 2014. 

U.S. Census Bureau. n.d. 

U.S. Department of Agriculture, Soil Conservation Service. n.d. 

Seismic Design Maps for International Building Code.
Appendices
Appendix A

Certified Shoreline Survey
Figure A

1983 Certified Shoreline Survey (Sam A. Hirota, Inc.)
Appendix B

Preliminary Site Plans
Appendix C

Archaeological Assessment
DRAFT—Archaeological Assessment for 4439 Kāhala Ave. in Waikīkī Ahupua‘a, Honolulu District, Island of O‘ahu, Hawai‘i

TMK: (1) 3-5-003:007

Prepared For:

4439 Kahala, LLC
125 Merchant St., Suite 200
Honolulu, Hawaii 96813

May 2021

Keala Pono Archaeological Consulting, LLC ● PO Box 1645, Kāne'ohe, HI 96744 ● Phone 808.381.2361
DRAFT— Archaeological Assessment for 4439 Kāhala Ave. in Waikīkī Ahupua‘a, Honolulu District, Island of O‘ahu, Hawai‘i

TMK: (1) 3-5-003:007

Prepared For:
4439 Kahala, LLC
125 Merchant St., Suite 200
Honolulu, Hawaii 96813

Prepared By:
Windy Keala McElroy, PhD
Kālenalani McElroy, MA
and
Max Pinsonneault, MA

May 2021
MANAGEMENT SUMMARY

An archaeological inventory survey (AIS) was conducted for proposed residential construction at 4439 Kāhala Ave. in Waikīkī Ahupua’a, Honolulu District, on the island of O‘ahu on TMK: (1) 3-5-003:007. The survey was done in preparation for ground disturbance associated with proposed residential construction on the property. The archaeological work included a pedestrian survey that covered 100% of the project area, as well as test excavations consisting of five trenches. The property has been disturbed by modern use, and no archaeological remains were found on the surface. Likewise, no subsurface cultural features or deposits were encountered during excavation. Because of the presence of īwi kūpuna in the vicinity, archaeological monitoring is recommended for any future ground disturbance.
## CONTENTS

**MANAGEMENT SUMMARY** ................................................................. i  
**FIGURES** ......................................................................................... iv  
**TABLES** ........................................................................................ iv  

**INTRODUCTION** ............................................................................. 1  
  Project Location and Natural Environment ........................................ 1  
  Project Description ........................................................................... 4  

**CULTURAL BACKGROUND** ........................................................... 6  
  Wai‘alae in Traditional Times ............................................................ 6  
  Subsistence and Traditional Land Use .............................................. 6  
  Moʻolelo ............................................................................................ 8  
  The Supernatural Owls of Kupalaha Heiau ...................................... 8  
  ‘Ōlelo Noʻeau .................................................................................. 10  
  Wind and Rain Names ..................................................................... 11  
  Power and Warfare in Waikīkī .......................................................... 12  
  Waikīkī and Waiʻalae in the Historic Era ........................................... 13  
  Māhele Land Tenure ....................................................................... 13  
  Economic Pursuits of the Late Historic Era ....................................... 14  
  Historic Maps .................................................................................. 15  
  Contemporary History ..................................................................... 15  
  Previous Archaeology ..................................................................... 23  
  Summary and Anticipated Finds ....................................................... 28  

**METHODS** ....................................................................................... 30  

**RESULTS** ......................................................................................... 31  
  Pedestrian Survey ............................................................................ 31  
  Subsurface Testing ........................................................................... 31  
  Harris Matrix ................................................................................... 33  
  Individual Trench Stratigraphy ....................................................... 33  
  Summary of Findings ....................................................................... 35  

**SUMMARY AND RECOMMENDATIONS** .......................................... 40  

**GLOSSARY** ..................................................................................... 41  

**REFERENCES** ................................................................................ 44
FIGURES

Figure 1. Project area on 7.5 minute Honolulu and Koko Head quadrangle maps (USGS 1998)..................2
Figure 2. Project area on TMK plat map 3-5-003 (State of Hawai‘i 1932)........................................3
Figure 3. Soils in the vicinity of the project area (data from Foote et al. 1972)......................................5
Figure 4. Trails in the vicinity of the project area (ʻĪ‘ī 1959:93).............................................................9
Figure 5. Portion of a map of the south side of O‘ahu (U.S. Navy 1878)........................................16
Figure 6. Portion of an O‘ahu map (Alexander 1881)........................................................................17
Figure 7. Portion of a map of the southeast coast of O‘ahu (Wall 1883)............................................18
Figure 8. Portion of a map of O‘ahu (Wall 1902)............................................................................19
Figure 9. Portion of a fisheries map (Monsarrat 1913).................................................................20
Figure 10. Portion of a map showing LCA boundaries (Podmore 1927)...........................................21
Figure 11. Portion of a Honolulu quadrangle map (USGS 1953)....................................................22
Figure 12. Previous archaeological studies in the vicinity of the project area.................................24
Figure 13. Known archaeological sites in the project vicinity.........................................................25
Figure 14. Heavy equipment used during the AIS. View is to the southeast.....................................30
Figure 15. Project area conditions during the AIS. View is to the northwest....................................31
Figure 16. Location of trenches on a USGS topographic map (USGS 1998)..................................32
Figure 17. TR 1 southeast face profile drawing..............................................................................36
Figure 18. TR 1 southeast face profile photo, northeast end of trench...........................................36
Figure 19. TR 2 southeast face profile drawing..............................................................................36
Figure 20. TR 2 southeast face profile photo, northeast end of trench...........................................37
Figure 21. TR 3 north face profile drawing.....................................................................................37
Figure 22 TR 3 north face profile photo, west end of trench............................................................37
Figure 23. TR 4 northwest face profile drawing..............................................................................38
Figure 24. TR 4 northwest face profile photo, southwest end of trench.........................................38
Figure 25. TR 5 south face profile drawing......................................................................................38
Figure 26. TR 5 south face profile photo..........................................................................................38

TABLES

Table 1. Previous Archaeological Studies in the Project Vicinity..............................................26
Table 2. Harris Matrix Stratigraphy Throughout the Project Area........................................34
Table 3. Individual Trench Stratigraphy................................................................................35
INTRODUCTION

At the request of G70 on behalf of 4439 Kahala, LLC, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for proposed residential construction at 4439 Kāhala Avenue in Waikīkī Ahupua’a, Honolulu District, on the island of O’ahu on TMK: (1) 3-5-003:007. This work was designed to identify, document, assess significance, and provide mitigation recommendations for any historic properties that may be located in the project area in anticipation of the proposed construction.

This report is drafted to meet the requirements and standards of state historic preservation law, as set out in Chapter 6e of the Hawai’i Revised Statutes and the Rules Governing Standards for Archaeological Inventory Surveys and Reports, Hawai‘i Administrative Rules (HAR) §13–276. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275-5(b)(5)(A).

The report begins with a description of the project area and a historical overview of land use, Hawaiian traditions, and archaeology in the area. The next section presents methods used in the fieldwork, followed by results of the survey. Project results are summarized and recommendations are made in the final section. Hawaiian words and technical terms are defined in a glossary.

Project Location and Natural Environment

The project area is located in the residential neighborhood of Kāhala at TMK: (1) 3-5-003:007 (Figures 1 and 2), a .329 ha parcel (0.81 ac.) that is privately owned by 4439 Kahala LLC. This is located at 4439 Kāhala Avenue and is bounded by Kāhala Avenue to the north, the coastline to the south, low-density residential properties to the east, and a vacant property to the west. The project parcel is vacant, with areas of remnant concrete slab from the prior residential use, and scattered areas of non-native plants, shrubs, and weedy vegetation. The property is located within a Special Management Area (SMA).

Topography is relatively flat, and vegetation consists of landscaped grass with a few large trees. The project area lies at roughly 2.5 m (8.5 ft.) above mean sea level (amsl), and rainfall averages approximately 68 cm (27 in.) per year (Giambelluca et al. 2013). The closest fresh water source to the project is Kāhala Stream, a non-perennial watercourse that lies approximately 1.3 km (.8 mi.) to the northeast.

The leeward coastal plain of Honolulu is comprised of a series of former reef and soils, along with sediment deposits. These features include a late-Pleistocene coral reef substrate that is overlaid along the coast with calcareous marine beach sand, often with intermixed terrigenous sediments deposited from streams and nearby slope erosion. Adjacent to streams there are alluvial soils most of which have originated from weathered volcanic bedrock and then subsequently deposited during flood events. Former reef sediments (i.e., sands) are found along the coastal margin sometimes extending out onto the coastal plain (Armstrong 1983:36). Coastal terrigenous sediments originate on land, later deposited along the coastal plain and these deposits may contain materials mixed with marine sediments that include sands and larger components of the near-shore environment. The current Hawaiian shoreline configuration is the product of late and post-Pleistocene rising sea levels (Stearns 1978; Macdonald et al. 1983) followed by a mid- Holocene rise in sea level of roughly 1.5–2.0 m (4.9–6.6 ft.); and human landscape modification, much of which occurred within the past 200 years since the arrival of Europeans and Americans to Hawai‘i.
Figure 1. Project area on 7.5 minute Honolulu and Koko Head quadrangle maps (USGS 1998).
Figure 2. Project area on TMK plat map 3-5-003 (State of Hawai‘i 1932).
The project area lies on Jaucas sand, 0–15% slopes (JaC) and Beaches (BS), the former occurring on the mauka half of the property and the latter on the makai half (Figure 3) (Foote et al. 1972:29). Jaucas sand is a favored environment for human burial in traditional Hawai‘i. Both soils are described in the United States Department of Agriculture Soil Survey by (Foote et al. 1972):

Jaucas sand, 0 to 15 percent slopes (JaC)

This series consists of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. They developed in wind- and water-deposited sand from coral and seashells. Permeability is rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed. Workability is slightly difficult because the soil is loose and lacks stability for use of equipment. This soil is used for pasture, sugarcane, truck crops, and urban development.

Beaches

Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashell. Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development.

Also in the project vicinity are Ewa silty clay loam, 0–2% slopes (EmA); Coral outcrop (CR); Keaau clay, 0–2% slopes (KmA); Mamala stony silty clay loam, 0–12% slopes (MnC); Makalapa clay, 2–6% slopes (MdC); Molokai silty clay loam, 3–7% slopes (MuB); and Molokai silty clay loam, 15–25% slopes (MuD).

Project Description

The landowner is seeking to redevelop the subject property with a one-story, single family residence for a local kama‘āina family. This proposed four-bedroom home with pitched roof includes a covered lanai and three-car garage. The new home will have a floor area of approximately 4,500 square feet (sf), with a separate guest cottage of approximately 980 sf. Landscaping elements will include front and back lawns and gardens. Access will be provided by an existing driveway to Kāhala Avenue. Depths of excavation for the proposed construction are not expected to exceed 46 cm (1.5 ft.). Utilities will either be run through existing underground lines or will be laid on the surface.
Figure 3. Soils in the vicinity of the project area (data from Foote et al. 1972).
CULTURAL BACKGROUND

This section of the report presents background information that provides context through which one can examine the cultural and historical significance of the project lands. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, the State Historic Preservation Division (SHPD) library, and online on the Waihona ‘Aina database and the State of Hawai‘i Department of Accounting and General Services (DAGS) and Ulukau websites. Historical maps, archaeological reports, Māhele data, and historical reference books were among the materials examined.

Wai‘alae in Traditional Times

Place names often shed light on traditional views of an area and can provide important contextual information. Hawaiian place names “usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history” (Pukui et al. 1974:xii). The project area is within the ahupua‘a of Waikīkī and the ‘ili of Wai‘alae Iki. Waikīkī translates to “spouting water” (Pukui et al. 1974:223) and was named for the swamps that made up the surrounding environment which were later drained to form the Ala Wai Canal. Wai‘alae translates to “mudhen water” while Wai‘alae Iki means “small Wai‘alae” (Pukui et al. 1974:220). The project’s neighborhood is Kāhala, which means “amberjack fish” (Pukui et al. 1974:62).

Other place names in the project vicinity are listed in the book Place Names of Hawaii (Pukui et al. 1974), along with the meanings of the names and/or comments about the specific locales:

Kapakahi...Gulch, Wai‘alae, Honolulu. Lit., crooked. (Pukui et al. 1974:87)

Kaunuakahkili...heiau near Wai‘alae, O‘ahu. Lit., the altar of Kahekili. (Pukui et al. 1974:95)


Lē‘ahi...Honolulu. The highest peak in Diamond Head; a variant name for Lae-‘ahi. (Pukui et al. 1974:130)

Wai‘alae Nui...land division and gulch, Honolulu. Lit., large Wai‘alae. (Pukui et al. 1974:220)

Wailupe...land section...valley, gulch...peninsula...A pond here was filled in by man to form Wailupe Peninsula. Lit., kite water (kites were only flown in prescribed places; this was one of them). (Pukui et al. 1974:225)

Subsistence and Traditional Land Use

Wai‘alae had an established settlement, which was observed by the American missionary Levi Chamberlain in the early historic period. Chamberlain reported on the landscape of 1828 as he traveled along the southern coast of O‘ahu, and it can be assumed that land use was similar in the pre-contact period:

At a quarter before 9 o’clock we arrived at the pleasant settlement of Waialae, distant on a straight line from Waikiki in a N.E. direction, about 4 miles, but much farther following the circuitous path along the seashore. This place is rendered agreeable by a grove of cocoanut [sic] 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 1957[1828]:28–29)
Although some of Waiʻalae’s aquatic resources came from streams and ponds, the majority were found in the bountiful coastal waters. The pelagic waters off Waiʻalae and Waikīkī were rich with deep-sea marine life. Most of the shoreline of Waikīkī was devoid of reef due to the flow of fresh water and its sediments into the sea which stifled coral growth. However, there was a healthy reef system growing at the eastern end of Waikīkī fronting Kapōʻolani Park and Lēʻahi, extending around the point to Waiʻalae. These provided a good variety of reef fishes. In addition, the entire coast offered many other types of edible marine resources such as crabs, shellfish, and limu (Kanahele 1995).

To supplement their marine diet, the Hawaiians made use of inland ponds. Some ponds were near the shore, separated from the sea by sand dunes, but connected to the sea through an ‘auwai; these were called loko puʻuone. Other ponds were further inland and only fed by freshwater streams or springs; these were called loko wai. These ponds were modified, stocked, and maintained through the ingenuity of the people. They added to their waters such things as mākāhā, or sluice gates, paniwai, or dams, kahe, or fish traps, and umu, or man-made fish shelters. Koʻa were also erected near these water resources and dedicated to the god Kūʻula to ensure an abundant harvest of fish (Kanahele 1995).

Multiple sources indicate that springs in the area gave Waiʻalae its name, and these were located near what is now Kalaniaʻole Highway. These springs were clearly prized among the local inhabitants, who took great care in protecting and maintaining the water resources.

Waialae Springs. From which Waialae derived its name. It supplied water for the chiefs from olden times. The location had been lost for many years. During a tour of the island by Kamehameha III, the King became thirsty and inquired of an old couple who were living at Waialae where he could get some water to drink. It happened that the ancestors of these old people were the keepers of this water hole, and the duty descended to them. They said that the only reason they stayed there was so that when the King stopped there they might carry out their duty and reveal the location to him. This hole was covered with pohuehue [morning glory] and under the pohuehue was a large slab of stone covering the water. (Sterling and Summers 1978:275)

Handy discusses the importance of the water resources for cultivation in the upper reaches of Waiʻalae:

The ahupua'a takes its name from the stone-incased spring, which may be seen today just above the highway. From the spring runs a stream which watered terraces that are now largely covered with grass raised for dairying and by the golf links. Three moderate sized gulches having streams of constant flow are included in this ahupua'a. In the lower portion of one of these gulches which was examined no terraces were seen. According to Mr. A.F. Judd, some seaward holdings in Waialae had inland plots (lele) located in Palolo.” (Handy 1940 in Sterling and Summers 1978:275)

A local Waiʻalae resident, J.K. Mokumaia, related a story in 1920 of the importance surrounding the Waiʻalae Iki spring:

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. Paki was Waialae-nui’s konohiki of fishing; Kamamalu was Waialae-iki’s konohiki of fishing. There were ever so many people on the shore when these chiefs came to spend a while with the common people. Here your scout looked at everything that he was told of. There was the pool that Kamamalu used to bathe in. I went to see its beauty for myself. There are two springs, one is on the summit of Waialae-nui and the other is on Waialae-iki. These appear to be good sites, there is much water, but its beauty at the time of the konohikis is gone. Now the kapu is freed and the kapu places are trodden underfoot. (Ka Nupepa Kuokoa 1920 in Sterling and Summers 1978:275)

Another aquacultural innovation was the loko i’a kalo, or taro fishponds. These were ponds in which fish were raised, but they also served the purpose of growing kalo. The latter purpose probably took the forefront since
kalo was culturally and spiritually significant in Hawaiian cosmology, and kalo was the main starch in the Hawaiian diet. The marshy environment of Waikīkī was perfectly suited for the conditions essential to the cultivation of wetland kalo, and an estimated 20 acres of Waikīkī’s marshlands were planted in kalo. Some of these wetland kalo fields continued their operation well into the 19th century (Kanahele 1995).

Besides kalo, the original inhabitants of Waikīkī cultivated ‘uala, grew ipu for containers, and cultivated wauke for clothing. In addition, the ahupua’a of Waikīkī provided various ferns and berries for food; pili grass for house thatching; hau for cordage, clothing, canoe making, and for igniting fires; mamaki for cloth; naio for timber; kukui for food, medicine, and lamp oil; lama, ‘ōhi’a ‘ai and uhiuhi for timber; ‘olonā for cordage; ‘ie‘ie for weaving; and ʻōhi’a lehua for house building and weapon making (Kanahele 1995). Clearly, the natural environment of Waikīkī was a place that easily furnished a large community with all the necessities for survival. Kāhala in particular was noted for its groves of hala trees (Handy et al. 1991:200).

The famed historian John Papa ‘Ī‘ī reminds us that there was a well-known, well-traveled network of trails that crisscrossed Oʻahu connecting east to west and north to south (Figure 4). Of the famous trail which traversed Waikīkī, ‘Īʻī elucidates:

The trail from Kawaiahao which led to lower Waikiki went along Kaananiau, into the coconut grove at Pawaa, the coconut grove of Kuakuaka, then down to Piinaio; along the upper side of Kahanaumaikai’s coconut grove, along the border of Kaikapu pond, into Kawehewehi; then through the center of sandy beach of Ulukou to Kapuni, where the surfs roll in; thence to the stream of Kuekaunahi; to Waiula and to Paliiki, Kamanawa’s house site. The latter was named for the Paliiki in Punahoa, Hilo. Perhaps that was where Kamanawa lived when the king resided in Hilo during the battle called Puana, prior to the building of the great peleleu fleet. From Paliiki the trail ran up to Kalahu, above Leahi, and on to the place where the Waialae stream reached the sand. (ʻĪ‘ī 1959:92)

Moʻolelo

As mentioned earlier, Hawaiian place names were connected to traditional stories through which the history of the places was preserved. These stories were referred to as “moʻolelo, a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or prosaic. Moʻolelo were repositories of cultural insight and a foundation for understanding history and origins, often presented as allegories to interpret or illuminate contemporary life…Certainly many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language” (Nogelmeier 2006:429–430). Still, many traditional stories managed to be recorded as Hawaiian society transitioned from an oral culture to a written one, and among those chronicled were several versions of stories connected to Waikīkī Ahupua’a.

The Supernatural Owls of Kupalaha Heiau

The heiau called Kupalaha at today’s Cunha Beach, is intimately connected to a supernatural battle against owls in the days of old. As a result of this battle, the O‘ahu chief Kakuhihewa pardoned the life of the man named Kapoi who built Kupalaha. The noted ethnographer Martha Beckwith shared this story concerning Kupalaha Heiau in her documentation of Hawaiian mythology.

A famous Oahu owl story is that of the owl war carried on in behalf of a man named Kapoi who, having robbed an owl’s nest, took pity on the lamenting parent and returned the eggs. He then took the owl as his god and built a heiau [Kupalaha Heiau] for its worship. The ruling chief Kakuhihewa, considering this an act of rebellion, ordered his execution but at the moment of carrying out the order
the air was darkened by flying owls who had come to his protection. The places on Oahu where the owls made rendezvous for this battle are known today by the word pueo (owl) in their names, such as Kala-pueo east of Diamond Head, Kanoni-a-ka-pueo in Nu'uanu valley, Pueo-hulu-nui near Moanalua. The scene of the battle at Waikiki is called Kukaeunahio-ke-pueo (Confused sound of owls rising in masses). (Beckwith 1970:124–125)

Chief Kakuhihewa was just one of many aliʻi connected to Waikīkī through moʻolelo. One of the first aliʻi mentioned as being connected to Waikīkī was Kalamakua-a-Kaipuhola. He was the chief who built the grand taro fields of Keʻokea, Kualulua, and Kalamanamana and others in Waikīkī. Kalamakua-a-Kaipuhola married the skilled surfing chiefess Kelea-nui-noho-ʻana-ʻapiʻapi. Their daughter Laʻie-lohelohoe was born in Waikīkī at Helumoa and raised there at Kaluaokau. Laʻie-lohelohoe later married the famed Maui chief Piʻilani, and this marriage solidified the ties between Waikīkī and Maui. The son of Laʻie-lohelohoe and Piʻilani was Kiha-a-Piʻilani, an heir to the Maui chiefdom. He was raised in Waikīkī by a kahuna at Mauʻoki Heiau (Kamakau 1991).
‘Ōlelo No‘eau

In 1983, Mary Kawena Pukui published a volume of close to 3,000 ‘ōlelo no‘eau that she collected throughout the islands. The introductory chapter reminds us that if we know these proverbs and wise sayings well, then we will know Hawai‘i well (Pukui 1983). Although no ‘ōlelo no‘eau were found specifically for Kāhala or Wai‘alae, several are known for Waikīkī. Here are the traditional sayings from Pukui’s book which mention Waikīkī:

(27) Aia aku la paha i Waikīkī i ka ‘imi ‘ahu‘awa.
*Perhaps gone to Waikīkī to seek the ‘ahu‘awa sedge.*
Gone where disappointment is met. A play on *ahu* (heap) and *‘awa* (sour).

(110) Alia e ‘oki ka ‘āina o Kahewahewa, he ua.
*Wait to cut the land of Kahewahewa, for it is raining.*
Let us not rush. Said by Kaweloleimakua as he wrestled with an opponent at Waikīkī.

(285) E ho‘i i ka u‘i o Mānoa, ua ahiahi.
*Let the youth of Mānoa go home, for it is evening.*
Refers to the youth of Mānoa who used to ride the surf at Kalehuawehe in Waikīkī. The surfboards were shared among several people who would take turns using them. Those who finished first often suggested going home early, even though it might not be evening, to avoid carrying the boards to the *hālau* where they were stored. Later the expression was used for anyone who went off to avoid work.

(1378) Ka i‘a pīkoi kānaka o Kālia; he kānaka ka pīkoi, he kanaka ka pōhaku.
*The fish caught by the men of Kālia; men are the floaters, men are the sinkers.*
In ancient days, when a school of mullet appeared at Kālia, O‘ahu, a bag net was set and the men swam out in a row and surrounded the fish. Then the men would slap the water together and kick their feet, driving the frightened fish into the opening of their bag net. Thus the fishermen of Kālia became known as human fishnets.

(1463) Ka makani kā‘ili aloha o Kīpahulu.
*The love-snatching wind of Kīpahulu.*
A woman of Kīpahulu, Maui, listened to the entreaties of a man from O‘ahu and left her husband and children to go with him to his home island. Her husband missed her very much and grieved. He mentioned his grief to a *kahuna* skilled in *hana aloha* sorcery, who told the man to find a container with a lid. The man was told to talk into it, telling of his love for his wife. Then the *kahuna* uttered an incantation into the container, closed it, and hurled it into the sea. The wife was fishing one morning at Kālia, O‘ahu, when she saw a container floating in on a wave. She picked it up and opened it, whereupon a great longing possessed her to go home. She walked until she found a canoe to take her to Maui.

(1493) Ka nalu ha‘i o Kalehuawehe.
*The rolling surf of Kalehuawehe.*
Ka-lehua-wehe (Take-off-the-lehua) was Waikīkī’s most famous surf. It was so named when a legendary hero took off his lei of lehua blossoms and gave it to the wife of the ruling chief, with whom he was surfing.
(1772) Ke one ‘ai ali‘i o Kakuhihewa.

_The chief-destroying sands of Kakuhihewa._

The island of O‘ahu. When the priest Ka‘opulupulu was put to death by chief Kahāhana for warning him against cruelty to his subjects, he uttered a prophecy. He predicted that where his own corpse would lie in a _heiau_ in Waikīkī, there would lie the chief’s corpse as well. Furthermore, he said, the land would someday go across the sea. This was felt to be a curse. When Kamehameha III was persuaded by a missionary friend to move the capital from Lahaina to O‘ahu, a _kahuna_, remembering the curse, warned him not to, lest the monarchy perish. The warning was ignored, and before the century had passed, the Kingdom of Hawai‘i was no more.

(1776) Ke one kuilima laula o ‘Ewa.

_The sand on which there was a linking of arms on the breadth of ‘Ewa._

‘Ewa, O‘ahu. The chiefs of Waikīkī and Waikele were brothers. The former wished to destroy the latter and laid his plot. He went fishing and caught a large _niuhi_, whose skin he stretched over a framework. Then he sent a messenger to ask his brother if he would keep a fish for him. Having gained his consent, the chief left Waikīkī, hidden with his best warriors in the “fish.” Other warriors joined them along the way until there was a large army. They surrounded the residence of the chief of Waikele and linked arms to form a wall, while the Waikīkī warriors poured out of the “fish” and destroyed those of Waikele.

_Wind and Rain Names_

With their lives closely connected to the natural environment and physical surroundings, Hawaiian winds and rains were individually named and associated with a specific place, region, or island. In _Hānau Ka Ua_, Akana and Gonzales (2015:xv) explain that kūpuna “knew when a particular rain would fall, its color, duration, intensity, the path it would take, the sound it made on the trees, the scent it carried, and the effect it had on people.” The following wind and rain names associated with the project region offer further insight on kūpuna perspectives of the project area.

A wind recorded for Kāhala is ‘Ōlau-niu. This translates to “coconut-leaf piercing” (Nakuina 2005).

Although no rain names were found specifically for Kāhala or Wai‘alae, two are associated with Waikīkī. These are Makahuna and Wa‘ahila (Akana and Gonzales 2015). Both rains were recorded in mele:

- Ku‘u kane i ka makani Hauālia  My husband of the Hauālia wind
- ‘O ka Makahuna i Hāwāwā ē  The Makahuna rain at Hāwāwā
- Wā ihola, ke wā wale maila nō  Boisterous, making an uproar
- Ka ua hila hila moe awakea  The shy rain that settles down at midday

From a mele by Hi‘iakaikapiopele on hearing the clamor of people in the house she has just left in Waikīkī. (Akana and Gonzales 2015:170)

- Ku‘u kane i ka ua noe  My husband of the misty rains
- Noe hāli‘i i a Ka Wa‘ahila  Blanketing fall of the Wa‘ahila showers
- Ho‘ohila ka mana‘i, wehi i ka lau  Abashed, yet adorned by the outpour
- Lau a ke aloha e pī i ana i ka liko  An outpouring of love, rising to brightness
Wā ihola, ke wā wale maila nō  Boisterous, an uproar

From a mele by Hi‘iakaikapoliopele as she was leaving a house with noisy people playing the game of kilu in Waikīkī. (Akana and Gonzales 2015:280)

A well-known person in Hawaiian oral traditions is the demigod Kamapua‘a. He was a legendary figure from O‘ahu who could assume the shapes of various plants and animals, most notably a pig. In the story of Kamapua‘a published in 1891 in the Hawaiian language newspaper Ka Leo o ka Lahui, Kamapua‘a utters a chant which mentions the wind and rain of Waikīkī by name. He tells us that the wind belonging to Kapua, an ancient well-known surf spot near present-day Kapi‘olani Park, is called Haualialia. Kamapua‘a then indicates that the rain belonging to Waikīkī is called Wa‘ahila:

Oli aku la o Kamapuaa:  Kamapua‘a chanted:
… He Haualialia ko Kapua     … Kapua has the Hauālialia [breeze]
He ua Waahila ko Waikiki     Waikīkī has the Wa‘ahila rain
He ua Kukalahale ko Honolulu…  Honolulu has the Kūkalahale rain…(Akana 2004:13, 16–17)

Power and Warfare in Waikīkī

There are many O‘ahu chiefs connected to Waikīkī. Some of the most noted are Mā‘ilikūkahī, Ka‘ihikapuamanuia, Kukuhihewa, Ka‘ihikapuaakahihikewa, and Kahahana. Sometime around the start of the 15th century, Mā‘ilikūkahī was born at the sacred birthing place in Wahiawā known as Kukaniloko. When Mā‘ilikūkahī was 29 years old, he was chosen by the ali‘i, kahu na, and maka‘āinana to become O‘ahu’s king. He consented and moved to Waikīkī, making it his administrative center. Mā‘ilikūkahī was well-loved because he ruled with compassion and wisdom as heard in his decree:

Cultivate the land, raise pigs and dogs and fowl, and take the produce for food. And you, chiefs of the lands, do not steal from others or death will be the penalty. The chiefs are not to take from the maka‘āinana. To plunder is to rebel; death will be the penalty. This is my command to the chiefs, the lesser chiefs, the warrior chiefs, the warriors, and the people: all the first-born sons, the keiki makahiapo, are to be mine to raise; they will be my sons, ka‘u keiki, and mine to take care of. (Kamakau 1991:55)

Many generations after Mā‘ilikūkahī, Ka‘ihikapuamanuia became the ruler of Waikīkī, and like Mā‘ilikūkahī, Ka‘ihikapuamanuia was well-liked by the people. Ka‘ihikapuamanuia built the heiau in Waikīkī called Hale Kumuk’a‘a, and shortly thereafter laid plans to kill his brother Ha‘o who was the chief at Waikele in ‘Ewa. After Ka‘ihikapuamanuia carried out his plans of murdering his brother, there was a dividing of O‘ahu into two chiefdoms. Out of Waikīkī, Ka‘ihikapuamanuia continued ruling the districts of Kona, Ko‘olaupoko and his brother’s former stronghold of ‘Ewa. Ha‘o’s son Napulanahumahiki, who escaped to Wai‘anae after his father’s murder, became O‘ahu’s other chief, ruling the districts of Wai‘anae, Waialua, and Ko‘olauloa (Kamakau 1991).

Upon the death of Ka‘ihikapuamanuia, his warrior son Kukuhihewa assumed power. Kukuhihewa’s daughter Kaeaakalona married the rival chief Napulanahumahiki of Wai‘anae, and once again, O‘ahu became one united kingdom under Kukuhihewa. The reign of peace and prosperity that Kukuhihewa brought to the kingdom of O‘ahu marked him as the greatest of Mā‘ilikūkahī’s descendants and gave O‘ahu the nickname of “The Sands of Kukuhihewa.” This period is described as follows:

Conditions in the kingdom in the mid-1500s were excellent. Agricultural and fishing industries were thriving. Food was abundant and the people were healthy. The prosperous economy attracted chiefs from Maui, Hawai‘i and Moloka‘i who came to O‘ahu to live or to enjoy the excitement and brilliance of the court. Chiefs from the island of Hawai‘i also came to escape their own interminable wars. (Kanahele 1995:73)
When Kakuhihewa died, his oldest son Kanekapuakakuhihewa became the ruler, and this new king shared the monarchy over O‘ahu with his three brothers. One of the four brothers, Ka‘ihikapuakakuhihewa, ensured that the kingdom of O‘ahu continued to be administered from Waikīkī as well as ‘Ewa. Unlike previous generations, the four brothers did not succumb to intrafamily conflict, and as a result they brought five generations of continued peace to O‘ahu. Their only challenge came from the outside when the Maui chief Kauhiakama invaded O‘ahu at Waikīkī. The invading Maui ruler was routed, and he was offered up at the heiau ‘Āpuakēhau in Waikīkī (Kanahele 1995).

A little over a century later, the last of O‘ahu’s sovereign chiefs was Kahahana. Although Kahahana was born on O‘ahu, he was raised by his uncle, the chief of Maui, Kahekili. Since the people of O‘ahu had been mistreated by their ruler Kumuhana, the O‘ahu chiefs deposed Kumuhana and summoned Kahahana from Maui to be their new ruler. Kahahana accepted and sailed for O‘ahu where he was greeted with rejoicing when he landed on the Waikīkī shores of Kahaloa, an area between today’s Halekulani and Royal Hawaiian Hotels. Kahahana had his residence at Helumoa in Waikīkī as did the future rulers Kahekili and Kamehameha I (Feeser 2006). For a while, Kahahana was a well-loved chief, and much of his good leadership was attributed to the guidance of his high priest Ka‘opulupulu. However, Kahahana’s uncle Kahekili had coveted the O‘ahu kingdom, and he wrongfully convinced Kahahana that Ka‘opulupulu was a traitor. As a result, Kahahana killed his high priest and presented him on the sacrificial altar of the heiau at Helumoa (Pukui 1983:44). As soon as Kahekili learned that the wise priest was dead, he set out to invade and conquer O‘ahu. Kahekili and his army from Maui landed their war canoes on the shores of Waikīkī, covering the entire coast from Ka‘alawai near today’s Diamond Head to Kawehewehe near the present Halekulani Hotel. After three years of fighting, Kahekili finally subdued the forces of Kahahana, and the sovereignty of the O‘ahu kingdom was no more. The year was 1783, and by that time, the Western explorers had also already arrived on O‘ahu’s shores (Kanahele 1995). Thus ended one chapter of O‘ahu’s history and started a new one toward the modern era.

Waikīkī and Waiʻalae in the Historic Era

Since the arrival of Westerners to Hawai‘i in the late 1700s, perhaps no other village in the islands epitomizes the transformation of Hawai‘i as well as Waikīkī does. At the time of contact, Waikīkī was the center of rule for the independent O‘ahu kingdom under Kahahana. Waikīkī remained a seat of political administration even under Kahekili, the chief from Maui who wrested control from Kahahana, and it continued to be the seat of rule for the completely unified Hawaiian Kingdom under Kamehameha, who conquered Kahekili. After little more than a decade of ruling from Waikīkī, Kamehameha moved the seat of government to Honolulu, but Waikīkī continued to be a place of royal residences, surf spots, and temples.

Māhele Land Tenure

The change in the traditional land tenure system in Hawai‘i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the konohiki presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kama‘aina totaling only about 30,000 acres and recorded in ten large volumes.
Abner Pākī was awarded the ‘ili of Wai‘alae Iki and after his death, John ‘Ī‘ī inherited the lands. Victoria Kamāmalu was awarded the ‘ili of Wai‘alae Nui in 1848 and after her death, Bernice Pauahi Bishop inherited the lands. Kamāmalu’s claim also included a lele of Wai‘alae Nui located within Wai‘alae Iki, which comprised Wai‘alae Spring and the surrounding lo‘i.

One LCA was awarded that encompasses the project area, LCA 228:2, known as Kānewai-Kahala (see Figure 10). It was awarded to Kalaiheana (also spelled Kāleiheiana), a kahu of King Kamehāmeha II (Kamakau 1992:220, 268). According to LCA documentation, the property consisted of one house lot, one lo‘i, a road/path, and a wall/fence. John ‘Ī‘ī was retained as a witness for Kalaiheana’s claim. ‘Ī‘ī indicated:

…Kalaiheana’s land, called Kanewai, is at Waikiki. It has some leles in Manoa…and the lele of Pahoa at Waikiki; and the sea of Kahala. That 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 land to chiefs at that time. When the peleleu 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 as taken for Waialae. And in the year 1846 another portion was taken for Kalaepohaku…(LCA 228:2)

After the death of Kalaiheana in 1855, John ‘Ī‘ī inherited his lands in Kānewai, as he was the guardian to Victoria Kamāmalu. After the death of Kamāmalu, the lands were then bequeathed to Bernice Pauahi Bishop.

**Economic Pursuits of the Late Historic Era**

The 1800s brought whalers, sandalwood traders, and Protestant missionaries to Waikīkī’s doorstep. The foreigners brought with them new diseases for which Hawaiians had no immunity, and as a result, there was a rapid depopulation of Waikīkī and throughout Hawai‘i. Waikīkī’s once-thriving lo‘i kalo and loko i‘a would decline severely.

Agricultural endeavors across O‘ahu were prevalent through the 1800s, with some more profitable than others, and dependent largely on the regional environment and surrounding resources. By the late 19th century, the sugar industry in Hawai‘i had reached its economic high. There was only one sugar plantation recorded in the Wai‘alae area, Niu Sugar Plantation, and according to Thomas Thrum’s 1881 edition of *The Hawaiian Almanac and Annual*, J.C. White was Niu Plantation’s operations manager (Thrum 1881:57). There was no other mention of Niu Plantation in Thrum’s subsequent annuals, which may indicate that the endeavor did not last. By the 20th century, the former taro lands in and around Wai‘alae were converted into farming communities of immigrant Chinese farmers with fruits, vegetables, and rice among the crops that were cultivated.

Ranching was brought to Wai‘alae by Daniel Paul Rice Isenberg, the son of German-born businessman Paul Isenberg, who was a co-founder of H. Hackfeld & Co. and a manager of the Līhu‘e Sugar Plantation. For a time, Daniel Isenberg managed the Līhu‘e Plantation before moving to O‘ahu, and leasing land in Wai‘alae from the Bishop Estate. There, he established a dairy ranch where he also promoted horse racing and bred horses. In his years on O‘ahu he was highly active in local business enterprises and politics. He was also known as “Paulo Liilii” and was close to King Kalākaua, who would often be present at lūaus hosted by Isenberg at his Wai‘alae ranch. Isenberg also founded the first dairyman’s association, the first baseball team, and baseball association. After the annexation of Hawai‘i, Isenberg became highly involved in politics and he was elected to the house of Representatives eight consecutive times (Takasaki 1976).
Historic Maps

Historic maps help to paint a picture of Wai‘alae in years past and illustrate the many changes that have taken place in the region. This section presents a selection of six maps from the 19th and 20th centuries that provide insight to the project area.

The earliest map was created by the U.S. Navy using shoreline and topography data from a Hawaiian Government Survey in 1878 (Figure 5). This map depicts the south side of O‘ahu and also shows the depth of the sea floor. The project area is located on the coastal flat next to two hills. A pond is shown within Diamond Head crater and a coconut grove is seen to the east near Wai‘alae Stream. Inland, the main trail later mentioned by ‘Ī‘ī crosses through Wai‘alae and continues east. Just off the shoreline is the label “Mud and sand over coral. Dry at L.W.” (low water).

A map of O‘ahu from 1881 shows the names of major landmarks, LCA awards, and ahupua‘a names (Figure 6). The region of the project area is shown as Kahala, while the lands to the west are Kaalawai. Just off of the Kūpikipiki‘ō Point are the words “Ten Fathom Bank” and the same pond within Diamond Head from the last map is still shown here as well.

An 1883 map depicts the entire southeast coastline of O‘ahu from Diamond Head to Koko Head. Northeast of the project area, a coconut tree grove can be seen along the river (Figure 7). The shoreline appears much as it does today, although there are now a few structures illustrated near Kūpikipiki‘ō Point and Diamond Head. One structure is not far from the project area to the west.

An O‘ahu Government Survey map from 1902 portrays land use for the project area and surrounding region (Figure 8). Grazing lands (yellow outline) extend across most of the south shore beginning just past the project lands to the east. Diamond Head and Kūpikipiki‘ō Point are federal reservations (pink). Kapi‘olani Park is shaded green for public lands and Waikīkī had not yet been filled in at this time and is still wetland for taro and rice (blue stripes).

A 1913 map illustrates fisheries along the southern coast of O‘ahu, from Diamond Head to Koko Head (Figure 9). The map shows the project area fronting the Kahala Fishery, which is labeled as “Bishop Est.” This likely indicates that the fishery was owned or managed by the Bishop Estate. To the east of the project area is Waokana; this may be a place name.

A 1927 map shows LCA awards in Kāhala and its environs (Figure 10). As mentioned above, the project area lies within LCA 228:2, which was awarded to Kaleiheana. The parcel is labeled as “Kanewai Kahala.” Kāhala Avenue is depicted on this map in its current location, along with the U.S. Military Reservation and “Kaalawai Lots.” The W.W. Thayer Subdivision is labeled in the vicinity of Kūpikipiki‘ō Point.

By 1953, the Kāhala area appears much more developed (Figure 11). The streets are in roughly the same layout as they are currently, and many structures are shown at the base of the Diamond Head slopes. A military reservation is illustrated at Kūpikipiki‘ō Point. The point is also labeled with the name more commonly used today, Black Point.

Contemporary History

The 19th century closed with the overthrow of the Hawaiian monarchy by foreigners backed by the United States and the annexation of Hawai‘i into an American territory. As the 1900s started, the U.S. military began construction of a base in Waikīkī at Fort DeRussy and later dredged the Ala Wai Canal, permanently changing the nature of Waikīkī’s landscape. This spurred a host of construction projects by developers wanting to capitalize on the filled-in former marshlands. Development came to a standstill during the Second World War
Figure 5. Portion of a map of the south side of O‘ahu (U.S. Navy 1878).
Figure 6. Portion of an O‘ahu map (Alexander 1881).
Figure 7. Portion of a map of the southeast coast of Oʻahu (Wall 1883).
Figure 8. Portion of a map of O‘ahu (Wall 1902).
Figure 9. Portion of a fisheries map (Monsarrat 1913).
Figure 10. Portion of a map showing LCA boundaries (Podmore 1927).
Figure 11. Portion of a Honolulu quadrangle map (USGS 1953).
when martial law strictly regulated non-military presence in Waikīkī. But after the war, many construction projects in Waikīkī were started. The latter half of the 1900s witnessed hyper-development of Waikīkī, turning it into one of the most famous tourist destinations in the world today, although the Kāhala area remains largely residential.

**Previous Archaeology**

Many archaeological studies have been conducted in Wai’alae. The following discussion provides information on archaeological investigations that have been carried out in the vicinity of the project area, based on reports found in the SHPD library in Kapolei, Hawai‘i (Figure 12 and Table 1). SIHP (State Inventory of Historic Places) numbers are prefaced by “50-80-14” (Figure 13).

The earliest archaeological survey on O‘ahu was completed by J.G. McAllister in his published work, *Archaeology of Oahu* (1933). This study documented many important Hawaiian cultural sites, including heiau, at a time before many were destroyed. There are no McAllister sites in the vicinity of the current project area, although two were recorded in the Wai’alae/Wailupe region. Kaunua Kahekili Heiau (Site 55) was located on a ridgetop that divides the land areas of Wai‘alae and Wailupe. It was said to be a very large heiau, and the site was later planted with pineapples. McAllister noted that the site was overgrown, and all that remained was “many large rocks embedded in the earth” (McAllister 1933:71). Wailupe Fishpond (Site 56) was located at the shoreline of Wailupe Ahupua’a. McAllister described the fishpond as 41 acres in area, with a wall that was 2,500 feet long. He noted a sandy expanse at the west end of the fishpond, at least 50 feet wide where four mākāhā allowed water to pass through. The rock wall of the pond was a massive 12 feet wide (McAllister 1933). The fishpond has since been filled in and a residential development was built in its place, now referred to as Wailupe Peninsula.

Archaeological testing was performed at the Wai‘alae Shelter Cave (SIHP 2503) on Kuana Street (Soehren 1967). One test unit was excavated where shell midden, and pre- and post-contact artifacts were identified. The pre-contact artifacts included a fishhook, octopus lure, and a coral file. Post-contact artifacts included copper tubing and bottle glass from the 1880s to 1920s.

Iwi kūpuna were inadvertently identified at a construction site at 4505 Kāhala Avenue (Griffin 1987). SHPD was notified and a site visit was made to disinter the burial. The burial was a young to middle aged female in a semi-flexed position. It was later found that a second burial of a young male adult lower body was intrusive with the first. The burials were re-interred at the property and designated SIHP 3725.

Iwi kūpuna were again inadvertently identified at a construction site, this time at 4745 Aukai Avenue (Bath 1989). SHPD was notified and it was determined that the burial was partially intact. It was disinterred and further examination found that the remains were of an approximately 40–45 year-old adult male. The burial was re-interred at the property and designated SIHP 4126.

At 4585 Kāhala Avenue, human remains were first identified in 1989. Police had recovered some of the remains and transferred them into the possession of the Medical Examiner, who then notified SHPD (Kawachi 1989). At that time, all of the long bones, the pelvis, and vertebrae had been recovered, but the skull was missing. SHPD archaeologists conducted a site visit and determined that the burial had likely been in a semi-flexed position (Kawachi 1989). In the vicinity of the remains, a dark lens was located 5–7 cm below the surface (cmbs); this was thought to represent a slab of wood that was above the burial (Kawachi 1989). Hand and finger bones and ribs were recovered, but the skull and upper third of the body were never found. It was posited that the missing skeletal elements were either hauled away with backdirt or left within a large backdirt pile on the property. This large pile was not screened by the archaeologists and the final disposition of this pile remains unclear.
Figure 12. Previous archaeological studies in the vicinity of the project area.
Figure 13. Known archaeological sites in the project vicinity.
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Location</th>
<th>Study Type</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>McAllister 1933</td>
<td>Island Wide</td>
<td>Survey</td>
<td>Noted two sites in the region- Site 55-Kaumua Kahekili Heiau and Site 56-Wailupe Fishpond; neither are near the current project area.</td>
</tr>
<tr>
<td>Soehren 1967</td>
<td>Waiʻalae- Kuana St.</td>
<td>Archaeological Testing</td>
<td>Excavated the Waiʻalae Shelter Cave (SIHP 2503); finds included midden, fishing gear, a coral file, and post-contact artifacts dating from the 1880s–1920s.</td>
</tr>
<tr>
<td>Griffin 1987</td>
<td>4505 Kāhala Ave.</td>
<td>Burial Report</td>
<td>Identified SIHP 3725 as a young-to middle aged female.</td>
</tr>
<tr>
<td>Dye 2005a</td>
<td>4577 Kāhala Ave.</td>
<td>Burial Report</td>
<td>Identified a cultural layer and one in-situ and one disturbed burial (SIHP 6762).</td>
</tr>
<tr>
<td>Dye 2005b</td>
<td>4577 Kāhala Ave.</td>
<td>Burial Report</td>
<td>Identified a cultural layer and one in-situ and one disturbed burial (SIHP 6762).</td>
</tr>
<tr>
<td>Collins and Clark 2006</td>
<td>4433, 4423, &amp; 4415 Kāhala Ave.</td>
<td>Archaeological Inventory Survey</td>
<td>Documented two cultural layers and no additional burials at SIHP 5320.</td>
</tr>
<tr>
<td>Dye 2006</td>
<td>4577 Kāhala Ave.</td>
<td>Data Recovery Plan</td>
<td>Prepared a burial site component to a data recovery plan for the two burials of SIHP 6762.</td>
</tr>
<tr>
<td>Dye and Jourdane 2007</td>
<td>4433, 4423, &amp; 4415 Kāhala Ave.</td>
<td>Archaeological Inventory Survey</td>
<td>Reinterpreted the two previously identified cultural layers of SIHP 5320 as a single A-horizon containing historic artifacts.</td>
</tr>
<tr>
<td>Tulchin and Hammatt 2007</td>
<td>4564 Kāhala Avenue</td>
<td>Burial Recovery</td>
<td>Recovered additional skeletal elements of the SIHP 6927 burial.</td>
</tr>
<tr>
<td>Hazlett and Spear 2014</td>
<td>4465 &amp; 4469 Kāhala Ave.</td>
<td>Archaeological Inventory Survey</td>
<td>No findings.</td>
</tr>
<tr>
<td>Pestana and Spear 2015</td>
<td>4607 Kāhala Avenue</td>
<td>Archaeological Inventory Survey</td>
<td>No findings.</td>
</tr>
<tr>
<td>Pestana and Spear 2017</td>
<td>4465 &amp; 4469 Kāhala Ave.</td>
<td>Archaeological Monitoring</td>
<td>Recorded SIHP 7926, a human burial.</td>
</tr>
<tr>
<td>Davis 2018</td>
<td>4585 Kāhala Ave.</td>
<td>Burial Recovery</td>
<td>Identified more than 200 skeletal elements intermixed with pre- and post-contact artifacts</td>
</tr>
<tr>
<td>Mello et al. 2019</td>
<td>4585 Kāhala Ave.</td>
<td>Archaeological Inventory Survey</td>
<td>Recorded three human burials which were included with SIHP 4065; also identified SIHP 8725, six historic features.</td>
</tr>
</tbody>
</table>
A recent archaeological inventory survey was completed for the same property at 4585 Kāhala Avenue (Mello et al. 2019). One aim of this initial AIS was to identify the remainder of the burial previously identified by Kawachi in 1989 (Burial 1), but the rest of Burial 1 was not found. However, three additional components to SIHP 50-80-14-4065 were identified (Burial Finds 2–4) and one newly identified historic property was recorded, SIHP 50-80-14-8725. This new property consists of six sub-surface features related to historic land use including four post-molds and two pit features (Mello et al. 2019). Burial Finds 2 and 3 were identified in a secondary context and Burial Find 4 was identified in a primary, in-situ context. Burial Find 2 consisted of highly fragmentary human remains located from 68–86 cmbs. Burial Find 3 was located at approximately 90 cmbs and consisted of three juvenile cranial fragments. Burial Find 4 was located from 103–123 cmbs and was found in-situ, articulated, and in a flexed position with the head facing towards the ocean, to the east. Osteological analysis determined that the remains were that of a sub-adult, 4–9 years old, likely of Native Hawaiian ancestry, but gender was undetermined. Burial Finds 2–4 were designated components of SIHP 50-80-14-4065 (Mello et al. 2019).

During unmonitored seawall repairs in 2018, additional human remains were inadvertently identified at the same property at 4585 Kāhala Avenue (Davis 2018). Osteological analysis indicated that the remains consisted of three individuals. This find was subsequent to the completion of the Mello et al. 2019 fieldwork. SHPD made a site visit and requested that backdirt piles from the seawall be screened. More than 200 elements of human skeletal remains intermixed with pre- and post-contact artifacts were identified.

Several archaeological investigations were also completed in and surrounding 4433 Kāhala Avenue, adjacent to the project area to the west. First, iwi kū puna were inadvertently identified during construction (Jourdane 1995). SHPD was notified and it was determined that the burial likely originated from a subsurface cultural layer located approximately 60–95 cmbs. The burial was disinterred and relocated at the property and both the burial and cultural layer were designated as SIHP 5320. A subsequent burial recovery was conducted at the same property, due to the excavation of an elevator shaft (Erkelens and Tomonari-Tuggle 1997). Three separate sets of human skeletal remains were identified. Burial 1 was recovered after sifting through the backdirt piles and determined to be that of a 30–35 year-old male. When the elevator excavation was examined, a fire pit feature and a burial pit outline were observed in the excavation wall. An additional 4 m by 2.5 m section was excavated surrounding the burial pit outline where Burials 2 and 3 were identified. Burial 2 was a 20–25 year old woman, and Burial 3 was a 3 year-old child. The authors speculated that Burials 2 and 3 were related due to their proximity to each other. A square cut nail was identified with Burial 3 indicating internment in the 19th century. Burials 1–3 were relocated at the property and included with the SIHP 5320 site number. Later an archaeological inventory survey was conducted at the parcel along with two neighboring properties; 4423, and 4415 Kāhala Avenue (Collins and Clark 2006). A total of 51 test units were excavated. Two cultural layers were identified; the upper layer was a historic-era occupation and the lower layer was believed to be associated with pre-contact Hawaiian habitation. Minimal quantities of charcoal, fire-cracked rock, fish bone and marine shell were found in association with the cultural layers. A later archaeological inventory survey was completed in an attempt to relocate the 1997 burial internment location (Dye and Jourdane 2007). A total of 20 shovel test pits were excavated in locations that were tested earlier. The cultural layers were encountered but the layers were of “a single old land surface, or paleosol, upon which a variety of historic-period artifacts had been deposited” (Dye and Jourdane 2007:32). 

Archaeological monitoring was conducted in support of water system improvements in the Black Point vicinity (Jones and Hammatt 2003). Excavations for the water system remained shallow throughout, approximately 50 cmbs. No historic properties were identified.
Iwi kūpuna were inadvertently identified during the excavation of a utility line at 4773 Kāhala Avenue (Putzi and Dye 2003). Further investigation revealed a cultural layer containing five burials and several pre-contact Hawaiian artifacts. SIHP 6632 was assigned to the cultural layer and burials.

Iwi kūpuna were inadvertently identified during the excavation of a sewer line located at 4577 Kāhala Avenue (Dye 2005a, 2005b). A cultural layer was found that contained one in-situ burial and one disturbed burial. Both were disinterred and relocated on the property. SIHP 6762 was assigned to the cultural layer and burials (Dye 2006).

Iwi kūpuna were inadvertently identified during construction activities located at 4564 Kāhala Avenue (Chinen 2007a). SHPD conducted a site visit, where it became apparent that human remains had been scattered all over the property. It was determined that a qualified archaeological consultant would need to be contracted to screen the backdirt piles and complete controlled block excavations to identify the original burial location and identify the presence or absence of additional burials. Additional remains were then recovered from the backdirt piles and excavation was completed on 25 test units, but the original burial site was not located (Tulchin and Hammatt 2007). All remaining construction-related activities were monitored, and additional skeletal elements were identified. These remains were thought to be from the previously identified burial. The remains were then relocated and designated as SIHP 6927 (Chinen 2007b).

An archaeological inventory survey was conducted in support of excavations for a retaining wall near the current project area to the east (Hazlett and Spear 2014). A subsurface A-horizon was recorded within several of the trenches, but no cultural remains were found in association. Therefore, the authors reported that no historic properties were identified within the project area, but archaeological monitoring was still recommended due to the high potential for significant finds. Subsequent archaeological monitoring was conducted at the same project area (Pestana and Spear 2017). Human skeletal remains were inadvertently identified at approximately 300 cmbs at the makai end of the project. The burial was in-situ, with mandible fragments and a pit outline identified, and it was assigned SIHP 7926.

An archaeological inventory survey was completed at 4607 Kāhala Avenue (Pestana and Spear 2015). A total of ten test trenches were excavated and a former land surface A-horizon and remnant modern building foundations were documented. The A-horizon contained no cultural material, so the authors reported that no historic properties were identified. However, archaeological monitoring was still recommended for any future subsurface work.

The Kuilei Cliffs Small Cell Network project required a literature review and field inspection to be conducted (McCurdy 2016). There were no finds during the brief field visit, however due to the “traditional importance of Diamond Head and previous archaeological investigations” the area was determined to have potential for pre- and post-contact cultural materials.

**Summary and Anticipated Finds**

Based on the review of land use and previous archaeological investigations, there is high potential for historic properties to occur in the project area. The project location is along the native coastline and underlying soils consist of Beach sand (BS) and Jaucas sand (JaC) (Foote et al. 1972; see Figure 3), an environment traditionally favored for human burials. Previous archaeological studies have identified iwi kūpuna (SIHP 5320) in the parcel adjacent to the current project area to the west. Additional human remains and pre- and post-contact artifacts and features are located in proximity. It is likely that these kinds of remains could be found during test excavations for this AIS.
Research questions will broadly address the identification of historic properties and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Is it possible that features of Site 5320 located at the adjacent parcel extends into the current project area?
2. Are there any indications of pre-contact and/or historic land use? Are cultural layers, features, and artifacts present within the project area? If so, what do those resources indicate about habitation and/or subsistence patterns?

Once these basic questions are answered, additional research questions can be developed in consultation with SHPD, tailored to the specific kinds of historic properties that occur in the study area.
METHODS

Pedestrian survey and subsurface testing were conducted on April 15, 2021 by Windy McElroy, PhD, Kālenalani McElroy, MA, and Robin Kapoi, BA. McElroy served as Principal Investigator, overseeing all aspects of the project. A total of 16 hours were expended by the three employees for the survey.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for the entire project area. Of the .329 hectare (0.81 ac.) survey area, 100% was covered on foot, with archaeologists spaced approximately 5 m apart. Vegetation was very sparse throughout the survey area, and did not limit the survey effort. In addition, much of the survey area is covered in the remains of pavement and a former tennis court.

A total of five trenches were excavated to determine the presence or absence of subsurface archaeological deposits or material using a mini excavator (Figure 14). Vertical provenience was measured from the surface, and trenches were excavated to approximately 60–90 cm below surface (cmbs) (2–3 ft.), as agreed upon beforehand by SHPD. This is slightly deeper than the 45 cm (1.5 ft.) excavations proposed for the construction phase of the project, and this depth was chosen to avoid disturbing any archaeological remains or iwi kūpuna that would not be encountered during construction. Profiles were drawn and photographed for each trench. Profile locations were recorded with a 3 m-accurate Garmin 62st GPS unit. An iPhone XS Max camera was used to take digital photos of the excavations and stratigraphy. Soils were described using the USDA Soil Survey Manual (Soil Science Division Staff 2017), Munsell soil color charts (Munsell 2010), and a sediment texture flowchart (Thien 1979). All trenches were backfilled after excavation and damaged pavement was hauled away with a dump truck.

The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in Field Book for Describing and Sampling Soils: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2-35). No material was collected; field notes and photo logs are being curated at the Keala Pono office in Kapolei, Hawai‘i.

Figure 14. Heavy equipment used during the AIS. View is to the southeast.
RESULTS

Pedestrian survey and subsurface testing were conducted in the .329 ha (0.81 ac.) project area. No archaeological resources were found. Excavation of five test trenches did not yield any evidence of subsurface archaeological deposits or features. Stratigraphy generally consisted of topsoil or pavement atop various fill layers, which are underlain by a natural beach sand deposit. All of the trenches exhibited previous disturbance as evidenced by buried utility lines and the presence of modern debris.

Pedestrian Survey

The surface survey included 100% of the .329 ha (0.81 ac.) parcel. The majority of the survey area was open with short grass and pavement and a few large trees (Figure 15). No surface archaeological remains were observed within any parts of the project area; any archaeological features that may have once been present are no longer there because of former residential use.

Subsurface Testing

The subsurface testing strategy was approved by SHPD before testing began. A total of five trenches were excavated to determine the presence or absence of subsurface archaeological deposits or material (Figure 16). Trenches were excavated to approximately 60–90 cmbs (2–3 ft.), which is slightly deeper than the 45 cm (1.5 ft.) excavations planned for the construction phase of the project. This depth was chosen to avoid impacting any archaeological remains or iwi kūpuna that would not be disturbed during construction. No archaeological deposits or cultural materials were found during testing. Stratigraphic profiles were drawn and photographed for each trench. Stratigraphic layers identified in individual profiles were then organized according to their various depths to form a site-wide Harris Matrix according to the methodology put forth by Colin Renfrew and Paul Bahn (2016).

Figure 15. Project area conditions during the AIS. View is to the northwest.
Figure 16. Location of trenches on a USGS topographic map (USGS 1998).
Harris Matrix

All five trenches revealed culturally sterile subsurface deposits, with a total of six stratigraphic layers present in the Harris Matrix (Table 2). The six layers are as follows:

Layer I is a topsoil that comprises the non-paved surface throughout the study area. It is a slightly to moderately sticky, slightly to very plastic, dark brown sandy clay loam. Layer I was typically found on the surface. On average, Layer I ranges in depth from 0–18 cmbs and typically includes 10% roots and 5% basalt pebbles and gravel. Abandoned utility lines amidst other modern debris were encountered.

Layer II is the pavement found intermittently throughout the study area. Averaging in depth from 0–18 cmbs, Layer II is the concrete pavement of the tennis court and concrete slabs currently visible on the surface of the property.

Layer III is a basecourse found intermittently below the pavement throughout the study area. It is a moderately sticky, very plastic, gray clay. On average, Layer III ranges in depth from 10–28 cmbs and typically contains roughly 90% basalt gravel. Abandoned utility lines and other modern debris were encountered in this layer.

Layer IV is a fill layer intermittently encountered throughout the project area. It is a moderately sticky, very plastic, dark brown sandy clay. Layer IV was found as shallow as the surface and exceeded the excavation depth of 70 cmbs in TR 5, with average depths ranging from 14–67 cmbs. Layer IV typically includes 7% roots and 5–50% basalt gravel and cobbles. Abandoned utility lines were found within Layer IV.

Layer V is a fill layer intermittently encountered throughout the project area. It is a non-sticky, non-plastic, pale brown fine to medium sand. On average, Layer V ranged in depth from 20–52 cmbs and sometimes contained 5% roots. This layer also contained abandoned utility lines and modern debris.

Layer VI is a natural layer of beach sand present beneath the fill exposed in TR 1–TR 4. It is a non-sticky, non-plastic, very pale brown fine sand. On average, Layer VI was found at a minimum depth of 34 cmbs and extended to the base of excavation in the four trenches where it was exposed (averaging 76 cmbs). Modern debris and abandoned utility lines were found in Layer VI, indicating disturbance of the natural beach sand at these depths.

Individual Trench Stratigraphy

The Harris Matrix above was formed through the analysis of five exploratory trenches excavated throughout the project area (see Figure 16). These trenches are individually described in Table 3 and discussed in more detail in the following paragraphs.

TR 1 was excavated on the east side of the property (see Figure 16). This trench had to be stopped short because of the occurrence of a substantial concrete slab (50 cm+ thick) that was encountered on the west end of the trench. The trench measured 3.7 m long and 76 cm wide and was excavated to 60 cmbs. Stratigraphy consisted of a layer of topsoil (Layer I), a layer of fill (Layer V) disturbed by another fill deposit (Layer Va), with natural beach sand below (Layer VI) (Figures 17 and 18). Abandoned utility lines were observed in Layers I, V, and VI, and modern debris was found in Layers I and V, indicating prior disturbance. No archaeological deposits or cultural material were identified.
Table 2. Harris Matrix Stratigraphy Throughout the Project Area

<table>
<thead>
<tr>
<th>Harris Layer</th>
<th>Avg Min / Max Depth*</th>
<th>Munsell Color</th>
<th>Texture Description</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>0–18</td>
<td>10YR 3/3</td>
<td>Sandy Clay Loam</td>
<td>Topsoil</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slightly to moderately sticky, slightly to very plastic, typically containing 10% roots, 5% pebbles, modern debris, and abandoned utility lines.</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>0–18</td>
<td>N/A</td>
<td>Concrete</td>
<td>Pavement</td>
</tr>
<tr>
<td>III</td>
<td>10–28</td>
<td>10YR 5/1</td>
<td>Clay</td>
<td>Base Course</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderately sticky, very plastic, typically containing 90% basalt gravel, modern debris, and abandoned utility lines.</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>14–67</td>
<td>5YR 3/4</td>
<td>Sandy Clay</td>
<td>Fill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moderately sticky, very plastic, typically containing 7% roots, 5–50% basalt gravel and cobbles, and abandoned utility lines.</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>20–52</td>
<td>10YR 6/3</td>
<td>Fine to Medium Sand</td>
<td>Fill</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-sticky, non-plastic, typically containing 5% roots, modern debris, and abandoned utility lines.</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>34–76</td>
<td>10YR 8/2</td>
<td>Fine Sand</td>
<td>Natural Beach Sand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Non-sticky, non-plastic, typically containing modern debris and abandoned utility lines.</td>
<td></td>
</tr>
</tbody>
</table>

*cmbs

TR 2 was placed approximately in the center of the property (see Figure 16). The trench measured 7.5 m long and 110 cm wide and was excavated to 90 cmbs. Stratigraphy consisted of the Layer V fill layer above the lower natural layer of beach sand (Layer VI) (Figures 19 and 20). The Layer II pavement was present in this area but was pulled back so that it was not visible in the trench stratigraphy and is therefore not documented here. Modern debris, including construction materials, as well as abandoned utility lines were exposed in both layers. No archaeological deposits or material were identified.

TR 3 was located on the west side of the property (see Figure 16). This trench had to be stopped short because of the occurrence of a very thick concrete slab that was encountered on the east end of the trench. The trench measured 5.1 m long and 100 cm wide and was excavated to 90 cmbs. Stratigraphy consisted of the Layer II pavement, a thin layer of basecourse (Layer III), a fill deposit (Layer V), an intrusive lens of fill within Layer V (Layer Va), and the lower natural layer of beach sand (Layer VI) (Figures 21 and 22). Modern debris was observed in Layers III and V, and utility lines were also encountered in Layer III. No archaeological deposits or material were identified.

TR 4 was placed on the northwest side of the property on the current tennis court (see Figure 16). The trench measured 7.6 m long, 90 cm wide, and was excavated to 70 cmbs. Stratigraphy consisted of the Layer II pavement, Layer III basecourse, Layer IV fill, and Layer VI natural beach sand. Modern debris was observed in Layers III and IV, and utility lines were also encountered in Layer IV. No archaeological deposits were identified (Figures 23 and 24).
Table 3. Individual Trench Stratigraphy

<table>
<thead>
<tr>
<th>Profile</th>
<th>Harris Layer</th>
<th>Minimum Depth</th>
<th>Maximum Depth</th>
<th>Roots %</th>
<th>Rocks %</th>
<th>Boundary Character / Distinctness</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>TR 1</td>
<td>I</td>
<td>0</td>
<td>18</td>
<td>10%</td>
<td>5%</td>
<td>Smooth / Very Abrupt</td>
<td>Modern Debris; Utility Lines</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>18</td>
<td>24</td>
<td>5%</td>
<td>0%</td>
<td>Smooth / Very Abrupt</td>
<td>Modern Debris; Utility Lines</td>
</tr>
<tr>
<td></td>
<td>Va</td>
<td>24</td>
<td>30</td>
<td>2%</td>
<td>5%</td>
<td>Broken / Very Abrupt</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>VI</td>
<td>30</td>
<td>60+</td>
<td>0%</td>
<td>0%</td>
<td>Base of Excavation</td>
<td>Utility Line</td>
</tr>
<tr>
<td>TR 2</td>
<td>V</td>
<td>0</td>
<td>90+</td>
<td>10%</td>
<td>5%</td>
<td>Smooth / Abrupt</td>
<td>Modern Debris; Utility Lines; Rebar; Brick</td>
</tr>
<tr>
<td></td>
<td>VI</td>
<td>22</td>
<td>90+</td>
<td>0%</td>
<td>0%</td>
<td>Base of Excavation</td>
<td>Modern Debris; Utility Lines</td>
</tr>
<tr>
<td>TR 3</td>
<td>II</td>
<td>0</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>Smooth / Very Abrupt</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>10</td>
<td>20</td>
<td>0%</td>
<td>90%</td>
<td>Smooth / Very Abrupt</td>
<td>Modern Debris; Utility Lines</td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>20</td>
<td>50</td>
<td>0%</td>
<td>0%</td>
<td>Smooth / Gradual</td>
<td>Modern Debris</td>
</tr>
<tr>
<td></td>
<td>Va</td>
<td>30</td>
<td>40</td>
<td>0%</td>
<td>0%</td>
<td>Broken / Very Abrupt</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>VI</td>
<td>30</td>
<td>90+</td>
<td>0%</td>
<td>0%</td>
<td>Base of Excavation</td>
<td>-</td>
</tr>
<tr>
<td>TR 4</td>
<td>II</td>
<td>0</td>
<td>25</td>
<td>-</td>
<td>-</td>
<td>Smooth / Very Abrupt</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>25</td>
<td>28</td>
<td>0%</td>
<td>90%</td>
<td>Smooth / Very Abrupt</td>
<td>Modern Debris</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>28</td>
<td>53</td>
<td>0%</td>
<td>5%</td>
<td>Smooth / Gradual</td>
<td>Modern Debris; Utility Lines</td>
</tr>
<tr>
<td></td>
<td>VI</td>
<td>53</td>
<td>70+</td>
<td>0%</td>
<td>0%</td>
<td>Base of Excavation</td>
<td>-</td>
</tr>
<tr>
<td>TR 5</td>
<td>IV</td>
<td>0</td>
<td>70+</td>
<td>7%</td>
<td>50%</td>
<td>Base of Excavation</td>
<td>Modern Debris; Utility Line</td>
</tr>
<tr>
<td></td>
<td>IVa</td>
<td>30</td>
<td>50</td>
<td>0%</td>
<td>0%</td>
<td>Broken / Very Abrupt</td>
<td>Utility Line</td>
</tr>
<tr>
<td></td>
<td>IVb</td>
<td>30</td>
<td>60</td>
<td>3%</td>
<td>1%</td>
<td>Broken / Very Abrupt</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>IVc</td>
<td>58</td>
<td>65</td>
<td>0%</td>
<td>0%</td>
<td>Broken / Very Abrupt</td>
<td>-</td>
</tr>
</tbody>
</table>

TR 5 was placed on the northeast side of the property (see Figure 16). The trench measured 8.8 m long and 85 cm wide and was excavated to 70 cmbs. A single layer of fill was exposed in this trench (Layer IV), with three discontinuous fill lenses within it (Figures 25 and 26). Utility lines were encountered in Layers IV and IVa, and modern debris was observed in Layer IV. No archaeological deposits or material were identified.

**Summary of Findings**

Previous archaeological investigations in the vicinity of TMK: (1) 3-5-003:007 identified human remains as well as pre- and post-contact artifacts and features. Our research questions to aid in the identification of archaeological resources for this project were as follows: 1) Is it possible that features of Site 5320 located at the adjacent parcel extends into the current project area? 2)
Figure 17. TR 1 southeast face profile drawing.

Figure 18. TR 1 southeast face profile photo, northeast end of trench.

Figure 19. TR 2 southeast face profile drawing.
Figure 20. TR 2 southeast face profile photo, northeast end of trench.

Figure 21. TR 3 north face profile drawing.

Figure 22. TR 3 north face profile photo, west end of trench.
Figure 23. TR 4 northeast face profile drawing.

Figure 24. TR 4 northeast face profile photo, southwest end of trench.

Figure 25. TR 5 south face profile drawing.

Figure 26. TR 5 south face profile photo, center of trench.
Are there any indications of pre-contact and/or historic land use? Are cultural layers, features, and artifacts present within the project area? If so, what do those resources indicate about habitation and/or subsistence patterns?

This study identified no surface or subsurface archaeological remains and deposits. The pedestrian survey of the .329 ha (0.81 ac.) parcel produced no evidence of surface archaeological remains. Any archaeological features that may have once been present are no longer there because of former residential use. The subsurface testing, consisting of five trenches, did not identify any subsurface cultural remains. Stratigraphy generally consisted of topsoil or pavement atop various fill episodes, which are underlain by a natural beach sand deposit. All of the trenches exhibited previous disturbance as evidenced by buried utility lines and the presence of modern debris.

Given the lack of cultural findings, the two research questions presented above can be answered in the negative, as no features of Site 5320 or other vestiges of pre-or post-contact land use were identified. It is possible that cultural remains occur at a depth greater than what was excavated during the subsurface testing. As construction ground disturbance will not exceed this depth, any potential cultural features that may be located on the property will remain undisturbed.
SUMMARY AND RECOMMENDATIONS

An archaeological inventory survey was conducted on TMK: (1) 3-5-003:007 in the Kāhala neighborhood in Waikīkī Ahupua’a, Honolulu District, on the island of O’ahu. Residential construction is proposed for the property, with ground disturbance not to exceed a depth of 45 cm (1.5 ft.). The archaeological work included pedestrian survey that covered 100% of the .329 ha (0.81 ac.) project area, as well as test excavations consisting of five trenches.

No surface archaeological remains were found during pedestrian survey of the project area. The entire area has been disturbed by former residential use, and because of this any archaeological features that may have once been present on the surface are no longer there. Likewise, subsurface testing did not yield any evidence of buried archaeological features or deposits. Due to the negative findings, the AIS results are presented as an archaeological assessment per HAR §13–275-5(b)(5)(A).

Even though this survey did identify any cultural properties, archaeological monitoring is recommended because of the occurrence of human burials and other archaeological sites nearby. An archaeological monitoring plan should be prepared for the property in accordance with HAR §13-279-4. Should human burial remains be discovered during construction activities, work in the vicinity of the remains should cease immediately and the SHPD should be contacted.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ahupua’a</td>
<td>Traditional Hawaiian land division usually extending from the uplands to the sea.</td>
</tr>
<tr>
<td>ali’i</td>
<td>Chief, chiefess, monarch.</td>
</tr>
<tr>
<td>‘auwai</td>
<td>Ditch, often for irrigated agriculture.</td>
</tr>
<tr>
<td>hālau</td>
<td>Meeting house for hula instruction or long house for canoes.</td>
</tr>
<tr>
<td>hau</td>
<td>The indigenous tree <em>Hibiscus tiliaceous</em>, which had many uses in traditional Hawai‘i. Sandals were fashioned from the bark and cordage was made from fibers. Wood was shaped into net floats, canoe booms, and various sports equipment and flowers were used medicinally.</td>
</tr>
<tr>
<td>heiau</td>
<td>Place of worship and ritual in traditional Hawai‘i.</td>
</tr>
<tr>
<td>i‘a</td>
<td>Fish or other marine animal.</td>
</tr>
<tr>
<td>‘ie’ie</td>
<td>The vine <em>Freycinetia arborea</em>, an endemic, woody branching climber that grows at altitudes of 300–600 m. In ancient Hawai‘i, vines were considered sacred and used in basketry and for ceremonial purposes.</td>
</tr>
<tr>
<td>‘ili</td>
<td>Traditional land division, usually a subdivision of an ahupua’a.</td>
</tr>
<tr>
<td>ipu</td>
<td>General name for a vessel or container. Also the bottle gourd <em>Lagenaria siceraria</em> or <em>L. vulgaris</em>, which was used traditionally for containers, hula instruments, and for medicine.</td>
</tr>
<tr>
<td>iwi</td>
<td>Bone.</td>
</tr>
<tr>
<td>kahe</td>
<td>To flow, trickle, melt, drop, or menstruate; in heat; a school of fish.</td>
</tr>
<tr>
<td>kahuna</td>
<td>An expert in any profession, often referring to a priest, sorcerer, or magician.</td>
</tr>
<tr>
<td>kalo</td>
<td>The Polynesian-introduced <em>Colocasia esculenta</em>, or taro, the staple of the traditional Hawaiian diet.</td>
</tr>
<tr>
<td>kama‘aina</td>
<td>Native-born.</td>
</tr>
<tr>
<td>kapu</td>
<td>Taboo, prohibited, forbidden.</td>
</tr>
<tr>
<td>ko’a</td>
<td>Fishing shrine.</td>
</tr>
<tr>
<td>konohiki</td>
<td>The overseer of an ahupua’a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.</td>
</tr>
<tr>
<td>kou</td>
<td>The flowering tree, <em>Cordia subcordata</em>, either native to Hawai‘i or introduced by Polynesians.</td>
</tr>
<tr>
<td>kuleana</td>
<td>Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.</td>
</tr>
<tr>
<td>kupuna</td>
<td>Grandparent, ancestor; kupuna is the plural form.</td>
</tr>
<tr>
<td>kū’ula</td>
<td>A stone god used to attract fish, an altar near the sea, or a hut where fishing gear was kept with kū’ula images to invoke their power.</td>
</tr>
<tr>
<td>lauhala</td>
<td>Leaf of the hala, or pandanus tree (<em>Pandanus odoratissimus</em>), used for matting and basketry.</td>
</tr>
<tr>
<td>lele</td>
<td>A detached part or lot of land belonging to one ‘ili, but located in another ‘ili.</td>
</tr>
<tr>
<td>limu</td>
<td>Refers to all sea plants, such as algae and edible seaweed.</td>
</tr>
<tr>
<td>lo‘i, lo‘i kalo</td>
<td>An irrigated terrace or set of terraces for the cultivation of taro.</td>
</tr>
<tr>
<td><strong>loko</strong></td>
<td>Inside, interior. Pond, lake, pool.</td>
</tr>
<tr>
<td><strong>loko i’a kalo</strong></td>
<td>Pond for both fish and taro cultivation.</td>
</tr>
<tr>
<td><strong>loko wai</strong></td>
<td>Freshwater lake or pond.</td>
</tr>
<tr>
<td><strong>lū‘au</strong></td>
<td>Hawaiian feast, named for the taro tops always served at one; this is not an ancient name, but goes back to at least 1856.</td>
</tr>
<tr>
<td><strong>makai</strong></td>
<td>Toward the sea.</td>
</tr>
<tr>
<td><strong>Māhele</strong></td>
<td>The 1848 division of land.</td>
</tr>
<tr>
<td><strong>maka‘āinana</strong></td>
<td>Common people, or populace; translates to “people that attend the land.”</td>
</tr>
<tr>
<td><strong>mākāhā</strong></td>
<td>A fishpond sluice gate.</td>
</tr>
<tr>
<td><strong>māmaki</strong></td>
<td><em>Pipturus</em> spp., a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled mamake in old texts.</td>
</tr>
<tr>
<td><strong>mauka</strong></td>
<td>Toward the mountains.</td>
</tr>
<tr>
<td><strong>mele</strong></td>
<td>Song, chant, or poem.</td>
</tr>
<tr>
<td><strong>mo‘olelo</strong></td>
<td>A story, myth, history, tradition, legend, or record.</td>
</tr>
<tr>
<td><strong>naio</strong></td>
<td><em>Myoporum sandwicense</em>, the bastard sandalwood native to Hawai‘i.</td>
</tr>
<tr>
<td><strong>niuhi</strong></td>
<td>Man-eating shark; any shark more than 3.5 m long is probably a niuhi. Catching the niuhi was a sport of chiefs.</td>
</tr>
<tr>
<td><strong>‘ōhi‘a ‘ai</strong></td>
<td>The mountain apple tree, <em>Eugenia malaccensis</em>, a forest tree that grows to 50 ft high.</td>
</tr>
<tr>
<td><strong>‘ōhi‘a lehua</strong></td>
<td>The native tree <em>Metrosideros polymorpha</em>, the wood of which was utilized for carving images, as temple posts and palisades, for canoe spreaders and gunwales, and in musical instruments.</td>
</tr>
<tr>
<td><strong>‘ōlelo no‘eau</strong></td>
<td>Proverb, wise saying, traditional saying.</td>
</tr>
<tr>
<td><strong>oli</strong></td>
<td>Chant.</td>
</tr>
<tr>
<td><strong>olonā</strong></td>
<td>The native plant <em>Touchardia latifolia</em>, traditionally used for making cordage.</td>
</tr>
<tr>
<td><strong>paniwai</strong></td>
<td>Levee, dam, sluice, dike.</td>
</tr>
<tr>
<td><strong>pili</strong></td>
<td>A native grass, <em>Heteropogon contortus</em>.</td>
</tr>
<tr>
<td><strong>pōhuehue</strong></td>
<td>The beach morning glory, <em>Ipomoea pes-caprae</em> subsp. <em>brasiliensis</em>, used medicinally. Vines are also used to drive fish into nets.</td>
</tr>
<tr>
<td><strong>post-contact</strong></td>
<td>After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.</td>
</tr>
<tr>
<td><strong>pre-contact</strong></td>
<td>Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.</td>
</tr>
<tr>
<td><strong>pueo</strong></td>
<td>The Hawaiian short-eared owl, <em>Asio flammeus sandwichensis</em>, a common ‘aumakua.</td>
</tr>
<tr>
<td><strong>pu‘u</strong></td>
<td>Hill, mound, peak.</td>
</tr>
<tr>
<td><strong>pu‘uone</strong></td>
<td>Pond near the seashore, as at the end of a stream; divination.</td>
</tr>
<tr>
<td><strong>ti (kī)</strong></td>
<td>The plant <em>Cordyline terminalis</em>, whose leaves were traditionally used in house thatching, raincoats, sandals, whistles, and as a wrapping for food.</td>
</tr>
<tr>
<td><strong>‘uala</strong></td>
<td>The sweet potato, or <em>Ipomoea batatas</em>, a Polynesian introduction.</td>
</tr>
</tbody>
</table>
**uhiuhi**  The endemic tree *Mezoneuron kauaiense*, a legume with pink or red flowers and winged pods. It produces a hard, heavy wood that was used for hōlua sleds, spears, digging sticks, and house posts in ancient times.

**umu**  Furnace or oven; a pile of rocks placed in the ocean to attract small fish. More commonly called imu.

**wauke**  The paper mulberry, or *Broussonetia papyrifera*, which was made into tapa cloth in traditional Hawai‘i.
REFERENCES


Alexander, W.D. 1881 Hawaiian Government Survey Map, Oahu, Hawaiian Islands. Scale 1:60,000.


Dye, T.S. and E. Jourdane
2007 Archaeological Inventory Survey of a Residential Parcel on Kahala Avenue O‘ahu, Hawai‘i (TMK:3-5-3:8, 9, 10). T.S. Dye & Colleagues, Archaeologists, Inc., Honolulu.

Erkelens, C. and M.J. Tomonari-Tuggle
1997 Archaeological Investigations at 4433 Kahala Avenue, Honolulu, Hawai‘i. International Archaeological Research Institute Inc., Honolulu.

Feeser, A.

Foote, D., E. Hill, S. Nakamura, and F. Stephens
1972 Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. United States Department of Agriculture, Soil Conservation Service. Published in cooperation with the University of Hawaii Agricultural Experiment Station, Washington, D.C.


Griffin, A.

Handy, E.S., E.G. Handy, and M.K. Pukui

Hazlett, A. and R.L. Spear

‘Ī, J.P.

Jones, C.K. and H.H. Hammatt
Jourdane, E.  
1995 *Inadvertent Discovery of Skeletal Remains at 4433 Kahala Avenue, Wai`alae, Kona, O`ahu*. Department of Land and Natural Resources, State Historic Preservation Division, Honolulu.

Kamakau, S.M.  

Kanahele, G.S.  

Kawachi, C.  
1989 *Burial Investigation at 4585 Kahala Ave., Kahala, Honolulu District, O`ahu Island*. Department of Land and Natural Resources, Division of State Parks, Honolulu.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson  

McAllister, J.G.  

McCurdy, T.D.  
2016 *FINAL-Literature Review and Field Inspection: Proposed Kuilei Cliffs Small Cell Network, Waikīkī Ahupua`a, Kona District, Island of O`ahu, Hawai`i [TMK (1) 3-1-038 through 042, 044, (1) 32-046, (1) 3-5-003 through 005, 013 through 016 por.]*. Cardno, Honolulu.

Mello, N., C. Dagher, and M. Davis  
2019 *Archaeological Inventory Survey Report for a Residential Property at 4585 Kāhala Avenue `Ili of Wai`alae `Iki, Waikīkī Ahupua`a, Kona (Honolulu) District, Island of O`ahu, Hawai`i [TMK (1) 3-5-005:016]*. Scientific Consultant Services, Inc., Honolulu.

Monsarrat, M.D.  
1913 *No. 5 Oahu Fisheries Wai'alae Section Waimanalo Diamond Head*. Registered Map 2848 Sheet 5. Scale 1 in. = 1,000 ft.

Munsell Color (Firm)  

Nakuina, M.K.  

Nogelmeier, M.P.  
Podmore, G.

Pukui, M.K.

Pukui, M.K., S.H. Elbert, and E.T. Mookini

Putzi, J.L. and T.S. Dye

Renfrew, C. and P. Bahn

Schoeneberger, P.J., D.A. Wysocki, E.C. Benham, and Soil Survey Staff

Soehren, L.
1967 Waialae Shelter Cave 2503. On file at Department of Land and Natural Resources, State Historic Preservation Division, Kapolei, Hawaii‘i.

Soil Science Division Staff

State of Hawai‘i
1932 TMK Map, Zone 3 Sec 5 Plat 4. Kahala Sub-Div., Honolulu, Oahu, Hawaii. Scale 1 in. = 50 ft. Department of Finance, Property Assessment Division, Honolulu.

Stearns, H.T.

Sterling, E.P. and C.C. Summers

Takasaki, J.
Thien, S.

Thrum, T.G.

Tulchin, T. and H.H. Hammatt

USGS (United States Geological Survey)


U.S. Navy

Wall, W.E.
1883 Waialae Coast Diamond Head to Koko Head Island of Oahu. Registered Map 1293. Scale 1 in. = 1,000 ft.

1902 Hawaii Territory Survey, Oahu, Hawaiian Islands.