

**DEPARTMENT OF PLANNING AND PERMITTING**  
**KA 'OIHANA HO'OLĀLĀ A ME NĀ PALAPALA 'AE**  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041 • WEBSITE: [honolulu.gov/dpp](http://honolulu.gov/dpp)

RICK BLANGIARDI  
MAYOR  
MEIA



DAWN TAKEUCHI APUNA  
DIRECTOR  
PO'O

JIRO A. SUMADA  
DEPUTY DIRECTOR  
HOPE PO'O

March 14, 2024

2024/ED-1 (MAK)

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:** Draft Environmental Assessment (DEA)  
Chapter 343, Hawaii Revised Statutes

**Project:** Garg Residence

**Applicant:** NMG HI Properties LLC

**Agent:** Hawaii Engineering Group, Inc. (Roy Irei)

**Address:** 6973 Kalanianaʻole Highway - Hawaii Kai

**Tax Map Key:** 3-9-002: 031

**Request:** Shoreline Setback Variance and  
Special Management Area Use Permit

**Proposal:** Construction of a new 4,748-square-foot two-story  
single-family dwelling that encroaches within the 40-foot  
shoreline setback.

With this letter, the Department of Planning and Permitting hereby transmits the DEA and anticipated finding of no significant impact for the construction of a new single-family dwelling that encroaches within the 40-foot shoreline setback of the above-referenced parcel in the East Honolulu District, on the island of Oahu, for publication in the next edition of "The Environmental Notice."

We have uploaded an electronic copy of this letter, the publication form, and the DEA to your online submittal site.

Ms. Mary Alice Evans, Director  
March 14, 2024  
Page 2

Should you or the public have any questions, please contact Michael Kat, of our Zoning Regulations and Permits Branch, at (808) 768-8013 or via email at [michael.kat@honolulu.gov](mailto:michael.kat@honolulu.gov).

Very truly yours,



For

Dawn Takeuchi Apuna  
Director

## AGENCY PUBLICATION FORM

Project Name:	Garg Residence Property
HRS §343-5(a) Trigger(s):	(3) Propose any use within a shoreline area
Island(s):	O'ahu
District(s):	Honolulu
TMK(s):	(1) 3-9-002:031
Permit(s)/Approval(s):	<ul style="list-style-type: none"> <li>• Special Management Area Use Permit</li> <li>• Shoreline Setback Variance</li> <li>• Certified Shoreline Survey</li> <li>• Chapter 6E HRS Compliance Historic Resources</li> <li>• Noise Permit</li> <li>• Sewage Connection Permit</li> <li>• Water Use Permit</li> <li>• Street Usage Permit</li> <li>• Building Permits (Demolition, Buildings, Electrical, Plumbing)</li> </ul>
Approving Agency:	City & County of Honolulu, Department of Planning and Permitting
<i>Contact Name, Email, Telephone, Address</i>	Michael Kat Email: michael.kat@honolulu.gov Telephone: (808) 768-8013 Address: 650 South King Street, 7 <sup>th</sup> Floor, Honolulu, Hawai'i, 96813
Applicant:	NMG HI Properties LLC
<i>Contact Name, Email, Telephone, Address</i>	NMG HI Properties LLC Email: roy@hawaiiengineering.net Telephone: (808) 533-2092 Ext. 118 2000 North Fashion Show Drive, #2407 Las Vegas, Nevada 89109
Consultant:	Hawaii Engineering Group, Inc
<i>Contact Name, Email, Telephone, Address</i>	Roy Irei Email: roy@hawaiiengineering.net Telephone: (808) 533-2092 Ext. 118 1088 Bishop Street, Suite 2506 Honolulu, HI 96813
Email address or URL for receiving comments	roy@hawaiiengineering.net

**Status (select one)**☒ X DEA-AFNSI☐ FEA-FONSI☐ FEA-EISPN☐ Act 172-12 EISPN  
("Direct to EIS")**Submittal Requirements**

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed ERP publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed ERP publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed ERP publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed ERP publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

- \_\_\_\_ DEIS                      Submit 1) a transmittal letter to the ERP and to the accepting authority, 2) this completed ERP publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.
- \_\_\_\_ FEIS                      Submit 1) a transmittal letter to the ERP and to the accepting authority, 2) this completed ERP publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
- \_\_\_\_ FEIS Acceptance  
Determination              The accepting authority simultaneously transmits to both the ERP and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
- \_\_\_\_ FEIS Statutory  
Acceptance                      Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
- \_\_\_\_ Supplemental EIS  
Determination              The accepting authority simultaneously transmits its notice to both the proposing agency and the ERP that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
- \_\_\_\_ Withdrawal              Identify the specific document(s) to withdraw and explain in the project summary section.
- \_\_\_\_ Other                      Contact the ERP if your action is not one of the above items.

**Project Summary**

*(Provide a description of the proposed action and purpose and need in 200 words or less.)*

The Applicant seeks an Shoreline Setback Variance and a Major Special Management Area (SMA) Use Permit to construct a new residence that is located within the SMA and on a shoreline parcel in Hawaii Kai. The Project involves the demolition of an existing two-story single-family dwelling and the construction of an approximately 4,748-square-foot, two-story, single-family dwelling. The new proposed structure will encroach approximately 443 square feet into the 40-foot shoreline setback area. The site is a narrow shoreline lot along Kalanianaʻole Highway that is protected by a rock breaker wall that serves as the boat entranceway to the Hawaii Kai Marina. While the shoreline shows signs of accretion, a Shoreline Setback Variance is necessary as the certified shoreline follows the high water mark of an earlier field survey.



# **Draft Environmental Assessment Report**

Garg Residence Property  
6973 Kalanianaʻole Highway  
Tax Map Key (TMK) Number: (1) 3-9-002: Parcel 031  
Honolulu, Honolulu County, Hawaii

FAI Project No. 22-2030

March 1, 2024

*Prepared for:*

**NMG HI Properties LLC**  
c/o Hawaii Engineering Group, Inc.  
1088 Bishop Street, Suite 2506  
Honolulu, Hawaii 96813

*Prepared by:*

**Ford & Associates, Inc.**  
928 Nuuanu Avenue, Suite 505  
Honolulu, Hawaii 96817

---

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
List of Acronyms.....	iv
Executive Summary.....	vi
Project Summary.....	vii
1.0 INTRODUCTION .....	1
2.0 SUBJECT PROPERTY DESCRIPTION .....	1
2.1 SUBJECT PROPERTY LOCATION .....	1
2.2 CURRENT USE OF SUBJECT PROPERTY .....	1
2.3 SURROUNDING/ADJACENT PROPERTIES .....	1
3.0 PROPOSED ACTION .....	2
3.1 TECHNICAL CHARACTERISTICS .....	2
3.2 ALTERNATIVES AND NO ACTION ALTERNATIVE .....	2
4.0 PERMITS.....	3
5.0 COMMUNITY CONSULTATION .....	3
6.0 AFFECTED ENVIRONMENT .....	5
6.1 NATURAL RESOURCES – PHYSICAL RESOURCES .....	5
6.1.1 Earth Resources .....	5
6.1.1.1 Baseline Conditions .....	5
6.1.1.2 Proposed Action Impacts and Mitigation .....	5
6.1.2 Water Resources .....	6
6.1.2.1 Baseline Conditions .....	6
6.1.2.2 Proposed Action Impacts and Mitigation .....	6
6.1.3 Flood Zones and Sea Level Rise .....	7
6.1.3.1 Baseline Conditions .....	7
6.1.3.2 Proposed Action Impacts and Mitigation .....	8
6.1.4 Hazardous Substances.....	9
6.1.4.1 Baseline Conditions .....	9
6.1.4.2 Proposed Action Impacts and Mitigation .....	9
6.2 NATURAL RESOURCES – BIOLOGICAL RESOURCES .....	9
6.2.1 Wetlands.....	9
6.2.1.1 Baseline Conditions .....	9
6.2.1.2 Proposed Action Impacts and Mitigation .....	10
6.2.2 Wilderness Area .....	10
6.2.2.1 Baseline Conditions .....	10
6.2.2.2 Proposed Action Impacts and Mitigation .....	10
6.2.3 Wildlife Preserve .....	10
6.2.3.1 Baseline Conditions .....	10
6.2.3.2 Proposed Action Impacts and Mitigation .....	11
6.2.4 Listed or Proposed Threatened or Endangered Species and Designated or Proposed Critical Habitats.....	11

6.2.4.1	Baseline Conditions .....	11
6.2.4.2	Proposed Action Impacts and Mitigation .....	12
6.3	NOISE .....	15
6.3.1	Baseline Conditions .....	15
6.3.2	Proposed Action Impacts and Mitigation .....	15
6.4	VIEW AND VISUAL IMPACTS .....	15
6.4.1	Baseline Conditions .....	15
6.4.2	Proposed Action Impacts and Mitigation .....	16
6.5	UTILITIES .....	16
6.5.1	Baseline Conditions .....	16
6.5.2	Proposed Action Impacts and Mitigation .....	16
6.6	HISTORIC AND CULTURAL RESOURCES .....	16
6.6.1	Baseline Conditions .....	17
6.6.2	Proposed Action Impacts and Mitigation .....	17
6.7	SOCIO-ECONOMICS .....	17
6.7.1	Baseline Conditions .....	18
6.7.2	Proposed Action Impacts and Mitigation .....	18
6.8	ENVIRONMENTAL JUSTICE .....	18
6.8.1	Baseline Conditions .....	18
6.8.2	Proposed Action Impacts and Mitigation .....	18
6.9	AIR QUALITY .....	19
6.9.1	Baseline Conditions .....	19
6.9.2	Proposed Action Impacts and Mitigation .....	19
6.10	PUBLIC ACCESS .....	19
6.10.1	Baseline Conditions .....	19
6.10.2	Proposed Action Impacts and Mitigation .....	19
6.11	TRAFFIC IMPACTS .....	19
6.11.1	Baseline Conditions .....	19
6.11.2	Proposed Action Impacts and Mitigation .....	19
6.12	LAND USE .....	20
6.12.1	Baseline Conditions .....	20
6.12.2	Proposed Action Impacts and Mitigation .....	20
6.13	ACCESS TO THE AREA .....	21
6.13.1	Baseline Conditions .....	21
6.13.2	Proposed Action Impacts and Mitigation .....	21
6.14	HEALTH AND SAFETY .....	21
6.14.1	Baseline Conditions .....	21
6.14.2	Proposed Action Impacts and Mitigation .....	21
7.0	COMPLIANCE WITH PLANS AND PROGRAMS .....	22
7.1	STATE LAND USE .....	22
7.2	STATE PLANNING ACT .....	22
7.3	COASTAL ZONE MANAGEMENT PROGRAM .....	23
7.4	CITY AND COUNTY OF HONOLULU GENERAL PLAN .....	28
7.5	SPECIAL MANAGEMENT AREA REVIEW .....	28
7.6	EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN .....	30

**8.0 FINDINGS ..... 31**

**Figures**

- 1 Subject Property Location Map
- 2 Subject Property Vicinity Map
- 3 Special Management Area (SMA)
- 4 Existing Site Dwelling Location
- 5 Proposed Site Dwelling Plan
- 6 Rendering of Garg Residence Property
- 7 FEMA/FIRM Map
- 8 Sea Level Rise Exposure Area at 3.2 Feet

**Photographs**

**Appendices**

- A References
- B Architectural Drawings
- C Shoreline Certification Map
- D Community Consultation
- E Hamer Environmental Report
- F DLNR-DOFAW Correspondence
- G Scientific Consulting Services Report

## LIST OF ACRONYMS

AMSL	Above Mean Sea Level
AGL	Above Ground Level
BGS	Below Ground Surface
BMP	Best Management Practices
BWS	Board of Water Supply
CWB	State of Hawaii, Clean Water Branch
CZMP	Coastal Zone Management Program
dBa	Decibel, A-weighted
DLNR	State of Hawaii, Department of Land and Natural Resources
DOFAW	State of Hawaii, Division of Forestry and Wildlife
DOH	State of Hawaii, Department of Health
DOT	State of Hawaii, Department of Transportation
DPP	City and County of Honolulu, Department of Planning and Permitting
DTS	City and County of Honolulu, Department of Transportation Services
EA	Environmental Assessment
EHSCP	East Honolulu Sustainable Communities Plan
ERP	Environmental Review Program
FAI	Ford & Associates, Inc.
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
GP	City and County of Honolulu General Plan
HAR	Hawaii Administrative Rules
HEER	Hazard Evaluation and Emergency Response
HRS	Hawaii Revised Statutes
HSPA	Hawaii State Planning Act
IPCC	Intergovernmental Panel on Climate Change
LOC	Likelihood of Occurrence
mg/L	Milligrams per liter
mm/yr	Millimeters per year
OPSD	Office of Planning and Sustainable Development
ROH	Revised Ordinances of Honolulu
SCS	Scientific Consultant Services, Inc.
SHPD	State Historic Preservation Division
SLR	Sea Level Rise
SLR-XA	Sea Level Rise-Exposure Area
SMA	Special Management Area
sq. ft.	Square-foot
TEC	Threatened, Endangered, Candidate for Listing
TMK	Tax Map Key
UIC	Underground Injection Control
US	United States
USCB	United States Census Bureau

USFWS      United States Fish and Wildlife Service  
USGS      United States Geological Survey

## **Executive Summary**

### Purpose and Need

This Draft Environmental Assessment (EA) for the Garg Residence Property located at 6973 Kalanianaʻole Highway (Tax Map Key [TMK] Number [1] 3-9-002: Parcel 031), Honolulu, Honolulu County, Hawaii 96825 (the “subject property”), has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS); and Hawaii Administrative Rules (HAR) Title 11, State of Hawaii, Department of Health (DOH), Chapter 200, Environmental Impact Rules.

### Proposed Action

The Garg Residence project currently involves demolishing the existing two-story single-family dwelling and constructing an approximately 4,748 square-foot (sq. ft.) two-story single-family dwelling (that will be elevated so that the living area – two floors – is above the base flood elevation), and an approximately 515 sq. ft. garage, pool, and landscaping.

### Environmental Consequences

The Proposed Action is not expected to have any significant adverse effects on the environment. The Proposed Action involves demolition of the existing two-story residential dwelling, and construction of a new, elevated two-story residential dwelling including a garage, pool, and landscaping.

Grading and excavation activities required for the Proposed Action are limited to the immediate vicinity of the subject property. No significant impact to the land is anticipated since previous grubbing and grading have been conducted at the site from past activities. Specific environmental resources with the potential for environmental consequences reviewed included natural physical and biological resources, noise, view and visual impacts, utilities, cultural resources, socioeconomics, environmental justice, air quality, public access, traffic impacts, land use, access to the area, and environmental conditions.

The Proposed Action is not expected to impact natural physical and biological resources, noise, view and visual impacts, utilities, cultural resources, socioeconomics, environmental justice, air quality, public access, traffic impacts, land use, access to the area, and environmental conditions.

Noise levels are anticipated to slightly increase during construction activities. However, this noise impact will be temporary and last only until project completion.

Air quality may decrease during construction due to a slight increase in particulate matter in the form of dust. However, due to the restricted access and protective measures, public health will likely not be affected.

**PROJECT SUMMARY**

Applicant:	NMG HI Properties LLC c/o Hawaii Engineering Group, Inc. 1008 Bishop Street, Suite 2506 Honolulu, HI 96813
Approving Agency:	City and County of Honolulu, Department of Planning and Permitting (DPP)
Project Name:	Garg Residence Property
Project Location:	6973 Kalanianaʻole Highway Honolulu, HI 96825
Tax Map Key (TMK):	(1) 3-9-002: Parcel 031
Lot Area:	10,016 square feet
Zoning:	R-10 Residential
Special Management Area (SMA):	The Project is entirely within the SMA.
State Land Use:	Urban
Existing Land Conditions:	The subject property consists of an existing two-story residential dwelling located along the northeastern boundary, with a concrete lanai, grassy lawn, and areas of landscaped vegetation.



## 1.0 INTRODUCTION

This Draft Environmental Assessment (EA) for the Garg Residence Property located at 6973 Kalanianaʻole Highway (Tax Map Key [TMK] Number [1] 3-9-002: Parcel 031), Honolulu, Honolulu County, Hawaii 96825 (the “subject property”), has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS); and Hawaii Administrative Rules (HAR) Title 11, State of Hawaii, Department of Health (DOH), Chapter 200, Environmental Impact Rules.

This EA was conducted to comply with the State of Hawaii, Office of Planning and Sustainable Development (OPSD), Environmental Review Program (ERP) requirements. The City and County of Honolulu, Department of Planning and Permitting (DPP) is the approving authority. The anticipated outcome of this EA will be a Finding of No Significant Impact (FONSI) for the Garg Residence Property.

## 2.0 SUBJECT PROPERTY DESCRIPTION

### 2.1 SUBJECT PROPERTY LOCATION

The Garg Residence Property consists of approximately 10,016 square feet of land located at 6973 Kalanianaʻole Highway, Honolulu, Oahu, Hawaii, in a residential setting (Figures 1 and 2).

The subject property is further described as the parcel of land designated as TMK Number (1) 3-9-002: Parcel 031. According to the City and County of Honolulu, DPP, the subject property is currently zoned “R-10 Residential.” The State Land Use designation is “Urban,” and lies within the SMA (Figure 3).

Subject property photographs are included behind the Photographs Tab.

### 2.2 CURRENT USE OF SUBJECT PROPERTY

The subject property consists of an existing two-story single-family residential dwelling located along the northeastern boundary, with a concrete lanai, grassy lawn, and areas of landscaped vegetation.

### 2.3 SURROUNDING/ADJACENT PROPERTIES

The areas surrounding the subject property is listed below:

North: Kalanianaʻole Highway, beyond which are residential houses

East: Residential house, and Kalanianaʻole Highway

South: Beach at Maunalua Bay (Pacific Ocean)

West: Maunalua Bay (Pacific Ocean)

### 3.0 PROPOSED ACTION

#### 3.1 TECHNICAL CHARACTERISTICS

The Garg Residence project currently involves demolishing the existing two-story single-family residential dwelling (Figure 4), and constructing an approximately 4,748 sq. ft., two-story, single-family residential dwelling (that will be elevated so that the living area – two floors – is above the base flood elevation), and an approximately 515 sq. ft. garage (Figure 5). Rendering of the Garg Residence is shown in Figure 6.

Based on preliminary architectural plans, the ground level of the proposed dwelling is not considered living space, and will comprise the electrical and mechanical room, the elevator pit, and garage. The main level will consist of the kitchen and dining room, a living room and bar, two guest bedrooms (each with a bathroom) and the main bedroom suite. The upper level will consist of four guest bedrooms (each with a bathroom) and an activity room.

The ground level will be concrete slabs on grade and the framing will consist of wood and steel. The new foundations will consist of continuous and isolated reinforced concrete footings. The ground level will have break-away walls.

In addition, a pool will be located to the southwest of the dwelling near the garage. A concrete driveway will front the garage along the southeastern border of the subject property.

Architectural drawings for the Garg Residence Property are included in Appendix B.

A shoreline survey for the subject property was conducted by Mr. Clayton Kaneshiro on October 16, 2023, and was certified by the Board of Land and Natural Resources on November 30, 2023. The Shoreline Certification Map is included in Appendix C.

The Proposed Action encroaches approximately 442.74 square feet into the shoreline setback, ROH Chapter 23, Article 1 – Establishment of the Shoreline Setback Line on shallow lots, of 40 feet, thereby a Shoreline Setback Variance is required.

#### 3.2 ALTERNATIVES AND NO ACTION ALTERNATIVE

The No Action Alternative represents baseline conditions and would keep the subject property in its present condition with the existing dwelling. However, this alternative is not considered desirable due to the age (built in 1979), condition, and size of the existing dwelling, as well as land value.

An alternative considered was renovation of the existing dwelling. However, the investment to bring the existing dwelling to current code would be costly, the size is not adequate to meet the needs of the residents, and it is not flood compliant.

#### 4.0 PERMITS

Permits required for the Proposed Action to move forward are listed below:

Permit	Approving Agency
Special Management Area Permit, Major	DPP
Demolition Permit	DPP
Building Permit	DPP
Shoreline Setback Variance	DPP
Certified Shoreline Survey	State of Hawaii Department of Land and Natural Resources (DLNR)
Noise Permit	DOH, Indoor and Radiological Health Branch
Sewage Connection Permit	DPP
Water Use Permit	Board of Water Supply
Street Usage Permit	City and County of Honolulu Department of Transportation Services (DTS)

A National Pollutant Discharge Elimination System (NPDES) General Permit for discharges of storm water associated with construction activities will not be required from DOH, Clean Water Branch (CWB) for sites under one acre.

#### 5.0 COMMUNITY CONSULTATION

Public and agency comment to the proposed Garg Residence Project has been initiated through meetings and letters. Copies of response letters, meeting minutes, meeting agendas, sign-in sheets and/or other meeting documentation materials are included in Appendix D.

##### Hawaii Kai Neighborhood Board No. 01

On July 26, 2022, a presentation was made by Hawaii Engineering Group, Inc. regarding the Garg Residence Property. The presentation provided background information and description of the project. During the presentation, questions from the neighborhood board and responses to these questions are included in Appendix D.

##### Maunalua Cultural Center and Maunalua Fishpond Heritage Center

On August 30, 2022, a site meeting was held by Hawaii Engineering Group, Inc. with Ms. Ann Marie Kirk, historian, with the Maunalua Cultural Center and Mr. Chris Cramer, executive director, Maunalua Fishpond Heritage Center, as advised by the Hawaii Kai Neighborhood Board. The meeting provided an on-site visit and a description of the project. Ms. Kirk and Mr. Cramer were supportive of the project.

State Historic Preservation Division 6E Filing

A State Historic Preservation Division (SHPD) 6E filing was made along with an accompanying DPP letter dated December 20, 2022. The DPP letter requests that the SHPD review and comment on any historic and cultural resources related to the subject property. A copy of the DPP letter is included in Appendix D.

State Department of Health, Clean Water Branch (DOH CWB)

A memorandum dated October 7, 2022 from the DOH CWB for comments. However, the proposed Project will not impact State waters. A copy of the memorandum is included in Appendix D.

DPP

A response letter from the DPP dated February 16, 2023 provided comments on the scope and content to be addressed regarding the proposed Project. A copy of the response letter is included in Appendix D.

State of Hawaii, Department of Transportation (DOT)

A response letter from the DOT dated March 7, 2023 provided comments related to any subdivision action and access changes, and for any work within the state right-of-way requires a permit. A copy of the response letter is included in Appendix D.

The proposed Project will not require any subdivision action and access changes. A permit will be obtained if any work is conducted within the state right-of-way.

State of Hawaii, Department of Land and Natural Resources (DLNR)

A response letter from DLNR dated March 22, 2023 provided comments on the proposed Project. DLNR's comments related to future climate change and sea level rise are addressed in Section 6.1.3 (Flood Zones and Sea Level Rise), and their comment regarding siting of structures conforms with the shoreline setback, ROH Chapter 23, Sec. 23-1.4 (b) – Adjustment of Shoreline Setback Line on Shallow Lots, of 40 feet from the certified shoreline.

A copy of the response letter is included in Appendix D.

U.S. Army Corps of Engineers

A pre-consultation letter was sent to the U.S. Army Corps of Engineers dated January 30, 2023 requesting comments on the proposed Project. However, no response was received.

A copy of the pre-consultation letter is included in Appendix D.

## 6.0 AFFECTED ENVIRONMENT

### 6.1 NATURAL RESOURCES – PHYSICAL RESOURCES

Discussions of physical resources of the natural environment include descriptions of earth and water resources, as well as coastal zone hazards and hazardous materials. Components of the earth include topography, geology, and soil. Topography describes the earth's surface features, including terrain and landforms. Geology studies the solid matter from which the earth is made and includes the history and processes that helped to shape it. Soil is the segment of the earth's surface particulates formed from a parent material when various environmental conditions cause the breakdown of that material. Water resources include surface water and groundwater.

#### 6.1.1 Earth Resources

##### 6.1.1.1 Baseline Conditions

The subject property lies in the physiographic region of the island of Oahu. The approximate latitude and longitude of the subject property are 21° 16' 50.64" North and 157° 42' 39.13" West, respectively.

According to the U.S. Geological Survey (USGS) 7.5-minute Koko Head, Hawaii topographic quadrangle map (2017), the elevation at the subject property is approximately 4.5 feet above mean sea level (amsl). The general topography of the subject property is relatively flat with the Pacific Ocean (Maunalua Bay) located on the southwestern boundary.

The soil type found on the north-northeast portion of the subject property is Fill Land, mixed (United States Department of Agriculture, Natural Resources Conservation Service). The remainder of the subject property is underlain by Jaucas Sand, 0 to 15 percent slopes (Scientific Consultant Services, Inc., 2022). In addition, four test borings were drilled at the subject property, and the soils identified were described as Fill, consisting of brown, humid, loose to dense, poorly graded sand; brown, humid, stiff silt silty clay with gravel; and brown, humid, well-graded, dense sandy gravel to a maximum depth of three feet. Below the Fill layer, there is gray-brown and dark gray, moist to saturated, very loose to semi-compact, poorly graded sand with some gravel to a maximum depth of 15 feet (JPB Engineering, Inc., 2020).

##### 6.1.1.2 Proposed Action Impacts and Mitigation

According to the design information provided to FAI, the Proposed Action will not involve a significant disturbance to the ground surface. In addition, best management practices (BMPs) will be included in construction plans to mitigate dust and/or silt emissions, if any.

## 6.1.2 Water Resources

### 6.1.2.1 Baseline Conditions

The Aquifer Identification and Classification Technical Report No. 179, published by the Water Resources Research Center at the University of Hawaii, describe the aquifer below the subject property as part of the Waialae aquifer system in the Honolulu sector. The groundwater system below the subject property consists of an upper and lower aquifer.

The upper aquifer is an unconfined, basal aquifer of the sedimentary type, occurring in non-volcanic lithology. It is described as having potential use, but is not considered a drinking water source nor is it ecologically important. This aquifer is further described as replaceable with high salinity (5,000 to 15,000 milligrams per liter [mg/L] chloride). This aquifer has a high vulnerability to contamination.

The lower aquifer is a confined, basal aquifer of the flank type, occurring in horizontally extensive lavas. It is described as having potential use, and is an irreplaceable drinking water source with fresh salinity (<250 mg/L chloride). This aquifer has a low vulnerability to contamination.

The depth to groundwater is estimated to be approximately 7 feet below ground surface (bgs). The regional groundwater flow direction is generally inferred to flow in a southwesterly direction toward the Pacific Ocean/Maunalua Bay. However, the local gradient and flow direction under the property may be influenced naturally by zones of higher or lower permeability, tidal changes, or nearby pumping or recharge, and may deviate from the regional trend.

### 6.1.2.2 Proposed Action Impacts and Mitigation

The subject property is located below the State of Hawaii Department of Health (DOH) defined Underground Injection Control (UIC) line. Areas above the UIC line denote potential underground drinking water sources. Areas below the UIC line generally denote groundwater that is unsuitable for drinking water purposes. Consequently, the groundwater below the subject property is considered unsuitable for drinking water purposes. Therefore, mitigation measures are not necessary.

### 6.1.3 Flood Zones and Sea Level Rise

#### 6.1.3.1 Baseline Conditions

##### Flooding

The Federal Emergency Management Agency Flood Insurance Rate Map (FEMA/FIRM Panel No. 15003C-0393G, Revised January 19, 2011) was reviewed to determine if the subject property is located in a flood hazard area. According to the map, the northern, eastern, and southeastern portions of the subject property and the southeastern adjoining properties are located in Zone AE, which denotes special flood hazard areas, with a base flood elevation of nine feet amsl, and within the 1 percent annual chance floodplain. The northwestern, western, and southern portions of the subject property are located in Zone VE, which denotes special flood hazard areas, with a base flood elevation of 12 feet amsl, and a coastal flood zone (1 percent annual chance) with velocity hazard (wave action) (Figure 7).

##### Sea Level Rise

Scientists predict that global mean sea level could rise approximately 1 foot in the next 40 years, and reach an average mid-range of approximately 3 feet over the next century. The rate of sea level rise (SLR) has increased since 1990. However, the pattern of sea level change is complex due to factors such as changing winds, ocean currents, runoff, salinity, gravity, and other factors that affect sea level.

The rate of actual SLR in Hawaii, at approximately 1.5 millimeters per year (mm/yr) at Honolulu and Nawiliwili, lags behind the global average of 3.2 mm/yr over the past two decades. However, long-term SLR exacerbates hazards such as chronic coastal erosion, impacts from seasonal high waves, coastal inundation due to storm surge and tsunamis, and drainage problems due to the convergence of high tide and rainfall runoff.

Based on the 5<sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change (IPCC), the United Nations body of leading climate scientists and governmental representatives, an upper-end projection of 3.2 feet of SLR by 2100 was used for SLR exposure mapping in the 2017 Hawaii Sea Level Rise Report.

Three SLR-induced coastal hazards (passive flooding, annual high wave flooding, and coastal erosion) were modeled and combined to define the projection of a "SLR Exposure Area" (SLR-XA). Passive flooding refers to still water high tide flooding in areas that are connected to the ocean (marine flooding) and isolated low-lying areas (groundwater inundation), and provides an initial assessment of low-lying areas susceptible to flooding by SLR. Annual high wave flooding and coastal erosion are also modeled to provide a more comprehensive picture of coastal hazards. Annual high waves 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. While Hawaii has an overall trend of beach erosion, shoreline trends are highly variable at the scale of individual beaches.

### Other Shoreline Hazards

The Atlas of Natural Hazards in the Hawaiian Coastal Zone (USGS, 2002) reports on the history and character of natural hazards on the Hawaiian coast. Seven potentially hazardous coastal processes in Hawaii are: (1) tsunamis, (2) stream flooding, (3) high waves, (4) storms, (5) erosion, (6) sea level, and (7) volcanic/seismic.

All sectors of the Hawaiian coast have some degree of hazard history and vulnerability.

According to the Atlas of Natural Hazards in the Hawaiian Coastal Zone (USGS, 2002), the Overall Hazard Assessment for the majority of this coastline is ranked moderate to low.

#### 6.1.3.2 Proposed Action Impacts and Mitigation

##### Flooding

The project was designed to include a ground level with concrete slabs on grade that is 8-foot, 2-inch above ground level (AGL) in height (or 12.7 feet amsl) to accommodate the base flood elevation, and will have break-away walls.

##### Sea Level Rise

The potential impacts of SLR of 3.2 feet on the subject property is shown in Figure 8, which is not expected to occur until 2100, and depends on factors discussed above (under Baseline Conditions) that affect sea level.

These projections are not anticipated for approximately 80 years and may exceed the lifespan for the Proposed Action.

### Other Shoreline Hazards

The Overall Hazard Assessment for this general area which includes the subject property is ranked moderate (USGS, 2002).

Construction conditions will conform to current construction requirements to avoid, minimize, and mitigate any potential impacts of the coastal zone hazards.



#### 6.1.4 Hazardous Substances

##### 6.1.4.1 Baseline Conditions

A database review of the DOH, Hazard Evaluation and Emergency Response (HEER) Office records was conducted regarding environmental concerns or violations at the subject property. The subject property was not listed in the HEER database (2021).

##### 6.1.4.2 Proposed Action Impacts and Mitigation

Potentially hazardous materials are not used or stored onsite at the subject property.

The Proposed Action will not involve the use or creation of hazardous substances during construction. Since no impacts are anticipated, no mitigation measures are necessary.

#### 6.2 NATURAL RESOURCES – BIOLOGICAL RESOURCES

Biological resources of the natural environment include wild plants and animals, both native and alien, which may be affected by the Proposed Action. These species live in an ecological community, or specific habitat, and interact with each other within that community. Ecological communities may include wetlands, oceans, shoreline, mountains, etc.

##### 6.2.1 Wetlands

###### 6.2.1.1 Baseline Conditions

The subject property was inspected for the presence of sensitive ecological areas by noting environmental indicators (e.g., wetlands vegetation, floodplains) located on or immediately adjoining the subject property.

No sensitive ecological areas were observed on the subject property. The USGS 7.5-minute Koko Head, Hawaii topographic quadrangle map (2017), does not depict creeks or delineated wetlands located on the subject property. Maunalua Bay/Pacific Ocean is located north, northwest, west, and southwest of the subject property. According to the United States Fish and Wildlife Service (USFWS) National Wetland Inventory Map, the subject property is not located in a designated wetland. The subject property is adjacent to Maunalua Bay which is described as Estuarine and Marine Deepwater and Wetland habitats (Hamer Environmental, 2022). A copy of the Hamer Environmental report is included in Appendix D.

No ponds or mudflats, as well as no hydrophytic vegetation and wetland hydrology were observed at the subject property. Wetland-type plants require hydric soils (or soils that do not have enough oxygen [anaerobic]) which were not observed at the subject property.

The Federal Emergency Management Agency Flood Insurance Rate Map (FEMA/FIRM Panel No. 15003C-0393G, Revised January 19, 2011) was reviewed to determine if the subject property is located in a flood hazard area. According to the map, the northern, eastern, and southeastern portions of the subject

property and the southeastern adjoining properties are located in Zone AE, which denotes special flood hazard areas, with a base flood elevation of nine feet amsl, and within the 1 percent annual chance floodplain. The northwestern, western and southern portions of the subject property is located in Zone VE, which denotes special flood hazard areas, with a base flood elevation of 12 feet amsl, and a coastal flood zone (1 percent annual chance) with velocity hazard (wave action) (Figure 7).

#### 6.2.1.2 Proposed Action Impacts and Mitigation

According to the baseline conditions described in the previous section, the subject property is not located in a designated Wetland; therefore, the Proposed Action will have no effects on wetlands.

Use of BMPs will be implemented to control stormwater runoff and dust control throughout construction.

### 6.2.2 Wilderness Area

#### 6.2.2.1 Baseline Conditions

The subject property consists of an existing two-story residential dwelling located along the northeastern boundary, with a concrete lanai, grassy lawn, and areas of landscaped vegetation.

The National Wilderness Preservation System website, <https://www.wilderness.net>, was reviewed for information on whether the subject property is located within an officially designated wilderness area. According to this website, four federal agencies (the National Park Service, Forest Service, Fish and Wildlife Service, and Bureau of Land Management) manage a total of 803 designated wilderness areas in the US. Two of these wilderness areas are located in the state of Hawaii, including Hawaii Volcanoes Wilderness on the island of Hawaii and Haleakala Wilderness on the island of Maui, which are managed by the National Park Service. Neither area encompasses the subject property.

#### 6.2.2.2 Proposed Action Impacts and Mitigation

According to the baseline conditions, the subject property is not located in a wilderness area. Therefore, there will be no impacts and therefore, no mitigation measures are necessary.

### 6.2.3 Wildlife Preserve

#### 6.2.3.1 Baseline Conditions

The website <http://fws.gov/refuges/refugeLocatorMaps/Hawaii.html>, maintained by the USFWS, was reviewed for information on whether the subject property is located within a designated wildlife preserve. According to this website, there are a total of nine wildlife preserves located within the Hawaiian islands, including:

1. Hakalau Forest National Wildlife Refuge
2. Hanalei National Wildlife Refuge

3. Huleia National Wildlife Refuge
4. James Campbell National Wildlife Refuge
5. Kakahaia National Wildlife Refuge
6. Kilauea Point National Wildlife Refuge
7. Kealia Pond National Wildlife Refuge
8. Oahu Forest National Wildlife Refuge
9. Pearl Harbor National Wildlife Refuge

None of the nine listed wildlife preserves identified encompasses the subject property.

Paiko Lagoon Wildlife Sanctuary is located approximately 0.5 mile northwest of the subject property.

#### 6.2.3.2 Proposed Action Impacts and Mitigation

According to the baseline conditions, the project is not located in a wildlife refuge. Therefore, there will be no impacts and no mitigation measures related to this resource.

In addition, there will be no impacts to Paiko Lagoon Wildlife Sanctuary.

#### 6.2.4 Listed or Proposed Threatened or Endangered Species and Designated or Proposed Critical Habitats

##### 6.2.4.1 Baseline Conditions

A desktop exploration of available terrestrial wildlife, botanical, and ecological data was conducted for the subject property. Only species that are federal- and state-listed as Threatened (T), Endangered (E), or are a Candidate for Listing (C) were considered in this review (Hamer Environmental, 2022). The desktop analysis report is included in Appendix E.

The only species with a high Likelihood of Occurrence (LOC) are shorebirds (migratory species) and Hawaiian Stilts. The Hawaiian hoary bat has a medium LOC. Species with a low LOC included the Short-eared Owl, seabirds, other waterbird species (besides Hawaiian Silt), Hawaiian yellow-faced bee, dragonfly/damselfly species, and the Monarch butterfly. The only TEC terrestrial plant that may occur is the hairy purslane. All other species of terrestrial plants and wildlife considered in this analysis were ranked either zero (no possibility of occurring in the Analysis Area) or marked to indicate that insufficient data was available to assess LOC.

TEC Species	LOC
<b>Mammals</b>	
Hawaiian Hoary Bat	Medium
<b>Birds</b>	
Passerines	None
Fresh & Brackish Water Species: Hawaiian Stilts	High
Migratory Shorebirds	High
Seabirds	Low

Short-eared Owl	Low
<b>Invertebrates / Insects</b>	
Hawaiian Damselfly and Dragonfly Species	Low
Hawaiian Yellow-faced Bee	Low
Hawaiian Picture-wing Fly Species	None
Monarch Butterfly	Low
<b>Plants</b>	
TEC Plant Species (Oahu, Maunalua Bay) – Hairy Perslane	Low

Below is a summary of the analysis report findings:

- Habitat is present in and around the Analysis Area that could attract migratory shorebirds, seabirds, bats, owls, bees, and butterflies.
  - The residential neighborhood surrounding the subject property’s footprint, though low in density, could harbor rodents and insects that may attract predators like bats and owls.
  - The residential neighborhood surrounding the subject property’s footprint, though low in density, could harbor plants that attract and retain Monarch butterflies and Hawaiian yellow-face bees.
- The dominant passerine, plant, and invertebrate species utilizing the site currently are non-native. The TEC plant hairy purslane may occur on the site.
- The subject property is on the marine shoreline and has habitat for shorebirds (migratory species and Hawaiian Stilt). Shorebirds commonly use shorelines during transit flights (airspace corridor) and coastal habitats for foraging and resting. Seabirds, most commonly found far offshore over deep marine waters, will fly over coastal waters when they come ashore during their breeding season and fledglings can be light-attracted at night to fly toward land.

A site inspection was conducted on July 26, 2022. The subject property was observed with an existing two-story single-family residential dwelling located along the northeastern boundary, with a concrete lanai adjacent to the dwelling along the western side, grassy lawn and areas of landscaped vegetation. No shorebirds and/or Hawaiian Stilts were observed on the subject property and adjacent shoreline. In addition, no Hawaiian hoary bats and no hairy purslane plant were observed.

#### 6.2.4.2 Proposed Action Impacts and Mitigation

According to the baseline conditions, the TEC species with high LOC for the subject property are the Hawaiian Stilt, and migratory shorebirds. Migratory shorebirds include Wandering tattler, Ruddy turnstone, Pacific golden plover, Long-billed Dowitcher, and Sanderling.

The Hawaiian Stilt could occur in the Analysis Area, although not for breeding purposes but more likely to rest, forage, or simply transit the area.

Migratory shorebirds may use the shoreline sandy habitat for resting purposes.

The TEC species with a medium LOC for the subject property is the Hawaiian hoary bat. The presence of the Hawaiian hoary bat has been documented in the area based on studies, and the Analysis Area contains habitats with characteristics preferred by the bats, such as prey abundance, low elevation, low precipitation, and near urban areas, and foraging habitat suitability is related to bat occurrence.

At the time of our site inspection, no TEC species were observed at the subject property or adjacent shoreline.

However, the following recommended conservation and minimization measures for terrestrial flora and fauna are:

- During construction and post-development, structures with lighting used/needed for nighttime illumination should follow state and city codes to protect nocturnal species (i.e., seabirds, owls, bats) and avoid negative impacts.
- Hawaiian Stilts, migratory shorebirds, as well as dragonfly/damselfly species – During construction, to avoid and minimize impacts to the Hawaiian Stilt, migratory shorebirds, as well as dragonfly/damselfly species, avoid creating temporary sources of standing water such as retention ponds or ditches, and open pools of water commonly used during construction activities (for cleaning, cement mixing, etc.) which could attract these species. Avoid work within the shoreline buffer.

In addition, to avoid and minimize negative impacts to shorebirds, stop work if shorebirds are present within the work area. Work can resume once species leave the area on their own.

- Hawaiian hoary bats – Do not remove, trim or disturb woody plants (trees and shrubs) greater than 15 feet tall during bat breeding season (June 1 through September 15). In addition, avoid using/installing fence lines that use barbed wire, especially for the top two strands.
- Hawaiian yellow-faced bee, owl, and Monarch butterflies (low-LOC species) – Confine construction impacts to the immediate area of the project. No invasive-type plants species should be used for landscaping.
- Hairy Purslane plant (low-LOC species) – If the plant is found onsite, it should be marked and flagged so disturbance to it does not occur.
  - However, based on our site visit on July 26, 2022, the Hairy Purslane plant was not observed on the subject property.

Further recommendation to reduce impact to species:

- Minimize the project construction footprint to the area necessary to construct the project and use previously disturbed/developed areas where feasible for the new development.
- Avoid work and development within any shoreline buffers and setback areas.

- The duff layer, native topsoil, and natural vegetation should be retained in an undisturbed state as much as feasible.
- Locate large staging areas and temporary storage of materials during construction as far as practicable from shorelines and marine waters.
- Use BMPs for stormwater control throughout construction.
- Adhere to all applicable noise regulations, working hour limitations, and notification requirements. Comply with local dust control requirements.
- Inform project personnel and contractors about the potential presence of endangered species onsite and nearby.

The State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife (DLNR-DOFAW) was contacted regarding concurrence of no impact to listed, threatened, and endangered species at the subject property. In a response letter dated September 20, 2022, the DLNR-DOFAW, Wildlife Program Manager indicated concurrence of no impact to listed, threatened, and endangered species, as well as concurrence with mitigation measures (detailed above). A copy of the correspondence from the DLNR-DOFAW is presented in Appendix F.

In addition, DLNR-DOFAW provided the following additional comments:

- They recommend <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf> for illustrations and guidance related to seabird-friendly light styles.
- If the endangered Hawaiian Monk Seal and threatened Green Sea Turtle haul out onshore within 328 feet of the subject property, all nearby construction activities should cease until the seal or turtle has departed the area on its own accord.
- The threatened White Tern is known to nest in the vicinity of the subject property. If nesting or roosting White Terns is discovered (in mature trees), DLNR-DOFAW personnel should be notified for assistance.
- The Hawaiian Short-eared owl could potentially occur in the area. If Hawaiian Short-eared owl nests are present, DLNR-DOFAW personnel should be notified and a buffer zone should be established in which no clearing occurs until nesting is completed.
- Minimize movement of plant or soil material between worksites as they may contain pathogens, pests (such as Little Fire ants and/or Coconut Rhinoceros beetles) that could harm native species and ecosystems.

## 6.3 NOISE

Noise is generally regarded as unwelcome sound that can distract from normal activities. The negative impacts of noise on the environment are collectively known as noise pollution. Noise pollution is usually generated from cars, aircrafts, humans, animals, and industrial sites. Areas with excess of noise pollution are generally caused by poor planning. Projects should be analyzed for potential noise pollution so that good planning and mitigation takes place before they are implemented.

Depending on the level and duration of the noise pollution, it may have a harmful effect on human health. Minor levels of noise pollution can cause agitation or annoyance, while significant levels may cause hearing loss. The DOH, under Title 11, Chapter 46 of the HAR, sets the maximum permissible sounds level for a Class A zone, which includes “residential” zones at 55 A-weighted decibels (dBa) for daytime (7 a.m. to 10 p.m.) and 45 dBa for nighttime (10 p.m. to 7 a.m.). This standard does not apply to emergency generators. If noise is to be emitted above permissible sounds level, then a permit must be obtained prior to the related activities.

### 6.3.1 Baseline Conditions

Activities that may produce noise include traffic from cars on the main road (Kalanianaʻole Highway), overhead aircraft activities, and watercraft activities on Maunalua Bay and Kuapa Pond.

### 6.3.2 Proposed Action Impacts and Mitigation

Short-term noise impacts from construction activities are expected during the construction period. The construction related noise will have an impact on nearby residents although construction will occur during daylight hours when most adult residents are at work and children are at school. However, this noise impact will be temporary and last only until project completion.

Construction noise will be short-term, intermittent, and limited to daylight hours. Proper mitigation measures will be implemented to minimize noise impacts, and all work will comply with the DOH noise limits.

After construction, long-term noise impacts will be from traffic and associated noise conditions in the general vicinity of the subject property. However, there will be no adverse impacts because traffic operations in the vicinity of the subject property is expected to remain similar without project traffic conditions (see Section 6.11, Traffic Impacts). Therefore, no mitigation measures are necessary.

## 6.4 VIEW AND VISUAL IMPACTS

### 6.4.1 Baseline Conditions

The Proposed Action is to take place in a residential-zoned area. The subject property currently consists of an existing two-story residential dwelling located along the northeastern boundary, with areas of vegetation. The subject property is on the ocean side of Kalanianaʻole Highway and at the apex of a barrier spit of land. It abuts a short span of bridge that is situated southeast of Maunalua Bay Beach

Park. The general area surrounding the subject property is developed, suburban commercial and residential.

#### **6.4.2 Proposed Action Impacts and Mitigation**

The Proposed Action will not significantly change views from Kalanianaʻole Highway, the shoreline fronting the subject property, or other publicly accessible locations, relative to existing conditions.

Therefore, there will be no visual impacts.

### **6.5 UTILITIES**

#### **6.5.1 Baseline Conditions**

An existing residential dwelling is located at the subject property, which is connected to county water and sewer services, and electrical services from Hawaii Electric.

Hawaiian Electric has existing overhead power lines along Kalanianaʻole Highway, immediately to the north and northeast of the subject property. The Board of Water Supply (BWS) owns and maintains the water/sewer system that serves the area.

There is no natural gas servicing the subject property. However, a Hawaii Gas line runs underground along Kalanianaʻole Highway, which borders the north side of the subject property.

#### **6.5.2 Proposed Action Impacts and Mitigation**

The Proposed Action will replace the existing dwelling so there should be no effects to utilities. For natural gas service, Hawaii Gas would be required to trench approximately 70 feet from the road to the new residence to install a meter. Trenching activities would be limited to the immediate work area, and all applicable safety measures would be taken. Any traffic impact would be minimal, and any dust control measures will be implemented, if needed.

Therefore, there will be no impacts to utilities and no mitigation measures are necessary.

### **6.6 HISTORIC AND CULTURAL RESOURCES**

Historic and cultural resources include districts, sites, buildings, structures, or objects significant in Hawaiian and American history, architecture, archaeology, engineering, or culture that are listed, or are eligible for listing, in the National and/or State Register of Historic Places, which may be directly impacted by the Proposed Action. (Direct impact is defined as the area of potential ground disturbance and any property, or any portion thereof, that will be physically altered or destroyed by the Proposed Action.)



### 6.6.1 Baseline Conditions

An archaeological field inspection and literature review was conducted by Scientific Consultant Services, Inc. (SCS) for the subject property. The review involved a field inspection, and background research including review of historic documents, maps, archaeological reports, as well as a review of known cultural resource survey and excavation reports. The archaeological field inspection and literature review report is included in Appendix G.

The project area is located in the southeast of Oahu, just south of Koolau Range, and on Portlock Peninsula, which separates the Pacific Ocean from the former marsh and fishpond, Kuapa Pond, a central feature of Hawaii Kai.

Background research for the general area closest to the subject property revealed the following:

- In 2003, an archaeological survey and monitoring was conducted by International Archaeological Research, Inc. approximately 0.25 mile south-southeast from the subject property, and human remains and possible cultural layer were encountered. A total of two skeletal fragments were identified.
- Between 1994 and 1998, human skeletal remains were discovered during widening of Kalanianaʻole Highway northwest from the subject property at distances greater than 0.5 mile (International Archaeological Research Institute, Inc., 1994; BioSystems Analysis, 1994, 1996; and Garcia and Associates, 1997, 1998).

No archaeological sites or features were identified at the subject property during the field inspection conducted on July 26, 2022.

### 6.6.2 Proposed Action Impacts and Mitigation

Based on the results of the archaeological field inspection and literature review, and anticipated clearance from the Department of Land and Natural Resources, State Historic Preservation Division (DLNR-SHPD), the Proposed Action is not expected to impact historic and cultural resources.

However, in the case that historic and/or cultural resources are found during construction activities, effects will be mitigated by ceasing work and notifying DLNR-SHPD. Therefore, should historic resources, including human skeletal remains, be identified during construction activities associated with the Proposed Action, all work will cease in the immediate vicinity of the find until additional consultation with the DLNR-SHPD is conducted and appropriate evaluation of the resources has been completed.

## 6.7 SOCIO-ECONOMICS

Socioeconomics describes the link between economic activity and social life, where one has an effect on the other. Many things can affect socioeconomic activities such as new technology, a change in the environment, and development. Effects of economics on social life can include redistribution of wealth and an alteration in quality of life.

#### 6.7.1 Baseline Conditions

According to the United States Census Bureau (USCB) website, the town of Honolulu (zip code: 96825) had a population of 28,398 during the 2020 census. Approximately 23,403 of the housing units were owner-occupied, the average household income was approximately \$129,292; and approximately 2 percent of individuals were living below the poverty line.

The nearest schools are as follows: (1) Kokohead Elementary School (public school) is located at 189 Lunalilo Home Road, (2) Henry J. Kaiser High School (public school) is located at 511 Lunalilo Home Road, and (3) Hahaione Elementary School (public school) is located at 595 Pepeekeo Street.

#### 6.7.2 Proposed Action Impacts and Mitigation

The Proposed Action will have a negligible effect on socioeconomics as it will replace an existing dwelling on the subject property. Short-term construction jobs will be created from the Proposed Action.

Therefore, no mitigation is necessary.

### 6.8 ENVIRONMENTAL JUSTICE

Environmental justice is a movement that defines the environment as “where people live and work.” The movement seeks to balance the burden that is borne by minorities, women, the poor, and those who are generally discriminated against by redistributing these burdens (such as industrial developments that pollute the area) out of a select group of neighborhoods and making various goods more accessible.

#### 6.8.1 Baseline Conditions

The USCB website has estimated percentages of people with various backgrounds residing in Honolulu (zip code: 96825) from the 2020 census. According to the website, in 2020 the population of Honolulu (zip code: 96825) was approximately 63 percent minority (non-Caucasian) and 2 percent of individuals were living below the poverty line.

#### 6.8.2 Proposed Action Impacts and Mitigation

The Proposed Action would provide no environmental burden to minorities, women, or the poor. The Proposed Action entails replacing an existing dwelling on the subject property.

Therefore, no mitigation measures are necessary.

## 6.9 AIR QUALITY

### 6.9.1 Baseline Conditions

The air quality in the vicinity of the subject property is generally very good. The general area surrounding the subject property is developed, suburban commercial and residential.

### 6.9.2 Proposed Action Impacts and Mitigation

The Proposed Action is expected to have minimal to no impacts to air quality. Dust control measures will be implemented. No further mitigation measures will be necessary.

## 6.10 PUBLIC ACCESS

### 6.10.1 Baseline Conditions

The subject property is a privately owned parcel of land in a residential-zoned area, and does not include any public access to the shoreline. However, there are multiple public accesses from Portlock Road to the shoreline.

### 6.10.2 Proposed Action Impacts and Mitigation

Since the subject property is in a residential-zoned area, the Proposed Action is not expected to affect public access to the shoreline because of multiple public access points from Portlock Road. In addition, no impacts to lateral beach access is expected because all landscaping and irrigation will be contained and maintained within the property boundaries. Therefore, no mitigation measures are necessary.

The closest public access point to the shoreline is located at Maunalua Bay Beach Park.

## 6.11 TRAFFIC IMPACTS

### 6.11.1 Baseline Conditions

Access to the subject property is provided by an existing driveway off of Kalanianaʻole Highway, which is under the jurisdiction of the State of Hawaii, Department of Transportation, Highways Division. Traffic in the area is moderate and mostly uninterrupted except during rush-hour times.

### 6.11.2 Proposed Action Impacts and Mitigation

The projected traffic conditions with the activities of the Proposed Action is expected to remain similar to traffic conditions without the activities of the Proposed Action.

The only construction -related traffic that may occur is during: (1) delivery of construction materials and/or equipment, and (2) removal of construction waste for disposal and/or removal of equipment.

Though the Proposed Action it is not expected to have a significant impact on traffic operations the Contractor will implement a Traffic Management Plan and Construction Management Plan to minimize construction-related traffic on the surrounding area. The Construction Management Plan will identify the type, frequency and routing of heavy trucks and construction-related vehicles, off-street parking areas for employees, and mitigation measures related to any potential traffic and neighborhood impacts.

In addition, the following mitigation measures are recommended:

- (1) deliveries and removals from the subject property will be scheduled during weekday, non-peak commuter periods (9:00 am to 3:00 pm),
- (2) a street usage permit will be obtained from the State Department of Transportation for any construction-related work that may require the temporary closure of the State-owned highway,
- (3) update on temporary construction related disruptions on the local street network with:
  - a) the State Department of Transportation, b) the Hawaii Kai Neighborhood Board No. 01 area residents and businesses, c) emergency personnel (fire, ambulance, and police), and d) the Oahu Transit Services, inc. (TheBus and The Handi-Van).

## **6.12 LAND USE**

Land use pertains to the human modification of the natural environment, including deforestation, soil degradation, water usage, etc. Human-created land use divides land according to zones, land ownership, parcels, etc. The human division of land use is targeted towards a goal for the region and to promote smart growth of a particular area.

### **6.12.1 Baseline Conditions**

The subject property currently consists of an existing two-story residential dwelling located along the northeastern boundary, with grassy lawn and areas of landscape vegetation. The general area surrounding the subject property is developed, suburban commercial and residential.

### **6.12.2 Proposed Action Impacts and Mitigation**

The Proposed Action involves demolishing the existing two-story residential dwelling at the subject property, and constructing a new two-story residential dwelling. Therefore, the use of the land will remain unchanged.

The Proposed Action is anticipated to have no significant impact to the community and on the environment.

The subject property is in the SMA, and an application for a SMA Use Permit (Major) will be submitted prior to Implementation of the Proposed Action.

## 6.13 ACCESS TO THE AREA

### 6.13.1 Baseline Conditions

Access to the subject property is provided by an existing driveway off of Kalanianaʻole Highway.

### 6.13.2 Proposed Action Impacts and Mitigation

A new driveway will be installed in the same location as the existing driveway at the subject property. The ground surface may be disturbed during construction activities; however, any potential effects are expected to be minor and short-term.

## 6.14 HEALTH AND SAFETY

### 6.14.1 Baseline Conditions

The law enforcement station serving Hawaii Kai is the Honolulu Police Station located at 801 South Beretania Street in Honolulu (zip code: 96813). East Honolulu is also served by a Substation located in the Hawaii Kai Towne Center, 6600 Kalanianaʻole Highway, near the Hawaii Kai Satellite City Hall. The Substation's hours of operation are from 9:00 a.m. to 9:00 p.m.

In addition, a Burglary Theft Detail office serving East Honolulu and Waikiki is located in the Diamond Head area, within the National Guard compound. The Burglary Theft Detail office building was opened in early 2007 and is located at 4087 Diamond Head Road. Access to the building is from the 22<sup>nd</sup> Avenue roadway. The Burglary Theft Detail handles property crime investigations.

The nearest fire station is the Hawaii Kai Fire Station located at 515 Lunalilo Home Road in Honolulu (zip code: 96825).

Medical facilities/clinics in Hawaii Kai (zip code: 96825) are as follows: (1) Straub Clinic at Hawaii Kai located at 7192 Kalanianaʻole Highway, (2) Kaiser Permanente Health Care located at 6700 Kalanianaʻole Highway #111, (3) Queens Health Care Center located at 377 Keahole Street, Suite E108, (4) MinuteClinic located at 377 Keahole Street, and (5) Niu Health located at 6600 Kalanianaʻole Highway.

### 6.14.2 Proposed Action Impacts and Mitigation

The Proposed Action is consistent with the surrounding area and will not exceed normal services required for a single-family residence.

## 7.0 COMPLIANCE WITH PLANS AND PROGRAMS

### 7.1 STATE LAND USE

State Land Use districts, established under Chapter 205, HRS, together with the City and County of Honolulu General Plan and Development/ Sustainable Community Plans, guide population and land use growth over a 20-plus year timeframe.

The proposed Garg Residence Project lies within the “Urban” district designated by the State, and conforms to uses allowed in this district.

### 7.2 STATE PLANNING ACT

The Hawaii State Planning Act (HSPA) was created to guide for future long-range development of the state, to provide for wise use of Hawaii’s resources, and to improve coordination among different agencies and levels of government in the planning process. The goals of the HSPA are to, *“achieve a strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaii’s 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 Hawaii, that nourishes a sense of community responsibility, of caring, and of participation in community life.”*

The objectives of the HSPA relate to:

- (1) Population,
- (2) Economy-In General,
- (3) Economy-Agriculture,
- (4) Economy-Visitor Industry,
- (5) Economy-Federal Expenditures,
- (6) Economy-Potential Growth and Innovative Activities,
- (7) Economy-Information Industry,
- (8) Physical Environment-Land-Based, Shoreline, and Marine Resources,
- (9) Physical Environment-Scenic, Natural Beauty, and Historic Resources,
- (10) Physical Environment-Land, Air, and Water Quality,
- (11) Facility Systems-In General,
- (12) Facility Systems-Solid and Liquid Wastes,
- (13) Facility Systems-Water,
- (14) Facility Systems-Transportation,
- (15) Facility Systems-Energy,
- (16) Facility Systems-Telecommunications,
- (17) Socio-Cultural Advancement-Housing,
- (18) Socio-Cultural Advancement-Health,
- (19) Socio-Cultural Advancement-Education,
- (20) Socio-Cultural Advancement-Social Services,

- (21) Socio-Cultural Advancement-Leisure,
- (22) Socio-Cultural Advancement-Individual Rights and Personal Well-Being,
- (23) Socio-Cultural Advancement-Culture,
- (24) Socio-Cultural Advancement-Public Safety, and
- (25) Socio-Cultural Advancement-Government.

The proposed Garg Residence Project will not affect or inhibit the HSPA objectives.

### 7.3 COASTAL ZONE MANAGEMENT PROGRAM

All land and water use activities in the state must comply with HRS, Chapter 205A, Hawaii Coastal Zone Law. The State of Hawaii designates the Coastal Zone Management Program (CZMP) to manage the intent, purpose, and provisions of HRS, Chapter 205A-2, as amended, for the areas from the shoreline to the seaward limit of the State's jurisdiction, and any other areas which a lead agency may designate for the purpose of administering the CZMP.

The following is an assessment of the Project with respect to the CZMP objectives and policies set forth in HRS, Chapter 205(A)-2.

#### (1) Recreational resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

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

natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.

The proposed Project does not affect any ocean-side recreational resources. The proposed Project will not obstruct public access to and along the lateral coastal and shoreline areas and recreational resources. Growth of shoreline vegetation will be managed to allow public access and recreation along the shoreline.

(2) Historic resources

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

Policies:

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

An archaeological field inspection and literature review was conducted for the subject property. No archaeological sites or features were identified at the subject property during a field inspection or literature review. In accordance with HRS, Chapter 6E, and the requirements of the SHPD, should any historic resources, including human skeletal and significant cultural remains, be identified during ground disturbing activities at the site the following will take place: (1) Work will cease in the immediate vicinity of the find; (2) The find will be protected from any additional disturbance; and (3) SHPD will be contacted immediately at (808) 692-8015 (Main Office, O'ahu) for further instructions, including the conditions under which Project activities may resume.

Refer to Section 6.6, Historic and Cultural Resources for additional discussion and Appendix E, for the HPA.

(3) Scenic and open space resources

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

Policies:

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

The Proposed Action is to take place in a residential-zoned area. The subject property currently consists of an existing two-story residential dwelling located along the northeastern boundary, with areas of vegetation. The subject property is on the ocean side of Kalaniana'ole Highway and at the apex of a



barrier spit of land. It abuts a short span of bridge that is situated southeast of Maunaloa Bay Beach Park. The general area surrounding the subject property is developed, suburban commercial and residential.

The Proposed Action will not significantly change views from Kalanianaʻole Highway, the shoreline fronting the subject property, or other publicly accessible locations, relative to existing conditions.

Therefore, the Proposed Action will not have a significant visual impact and no mitigation measures are necessary. Refer to Section 6.4, View and Visual Impacts, for a complete discussion.

**(4) Coastal ecosystems**

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

Policies:

- (A) Exercise an overall conservation ethic and practice stewardship in the protection, use, and development of marine and coastal resources;
- (B) Improve the technical basis for natural resource management;
- (C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;
- (D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and
- (E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

The construction of the proposed Project is not expected to negatively affect any valuable ecosystems, including reefs. The proposed Project will not disrupt or degrade coastal water ecosystems via stream diversion or channelization. Maintenance of vegetation onsite will prevent debris from entering the bay.

**(5) Economic uses**

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

Policies:

- A) Concentrate coastal dependent development in appropriate areas;
- B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and
- C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development outside of presently designated areas when:
  - (i) Use of presently designated locations is not feasible;
  - (ii) Adverse environmental effects are minimized; and
  - (iii) The development is important to the State's economy.

The proposed Project will not have an impact to socio-economics and no mitigation measures are necessary. Please refer to Section 6.7, Socio-Economics, for a complete discussion. The proposed Project will be outside of the 40-foot shoreline setback area for narrow lots, and will be designed and constructed to minimize exposure to coastal hazards and adverse impacts in the coastal zone management area.

**(6) Coastal hazards**

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

Policies:

- A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
- B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;
- C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and
- D) Prevent coastal flooding from inland projects.

According to the Federal Emergency Management Agency Flood Insurance Rate Map, the subject property is located in a flood hazard area. The northern, eastern and southeastern portions of the subject property and the southeastern adjoining properties are located in Zone AE, which denotes special flood hazard areas, with a base flood elevation of nine feet amsl, and within the 1 percent annual chance floodplain. The northwestern, western, and southern portions of the subject property are located in Zone VE, which denotes special flood hazard areas, with a base flood elevation of 12 feet amsl, and a coastal flood zone (1 percent annual chance) with velocity hazard (wave action).

Please see Sections 6.1.3.2 and 8.0, Findings, (Criteria 11) for a complete discussion.

**(7) Managing development**

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

Policies:

- A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
- B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and
- C) Communicate the potential short- and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

This Environmental Assessment is one of the many processes used by the City and County of Honolulu in implementing the development review process, informing the public about proposed projects, and engaging public participation in managing development within the “coastal zone.” Please see Section 4.0, Permits, for the development review processes for the Proposed Action.

(8) Public participation

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

Policies:

- A) Promote public involvement in coastal zone management processes;
- B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and
- C) Organize workshops, policy dialogues, and site-specific mitigation to respond to coastal issues and conflicts.

This Environmental Assessment is one of the many processes used by the City and County of Honolulu in implementing the development review process, informing the public about proposed projects, and engaging public participation in managing development within the “coastal zone.” Please see Section 4.0, Permits, for the development review processes for the Proposed Action.

(9) Beach and coastal dune protection

Objective: (1) Protect beaches and coastal dunes for: public use and recreation, the benefit of coastal ecosystems, and use as natural buffers against coastal hazards; ND (2) Coordinate and fund beach management and protection.

Policies:

- A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;
- B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;
- C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities;
- 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.

The proposed Project does not involve the construction of private erosion-protection structures seaward or at the shoreline. The proposed Project will be outside of the 20-foot setback for narrow lots. Growth of shoreline vegetation will be managed to allow public access and recreation along the shoreline. The proposed Project does not affect any beach resources.

(10) Marine and coastal resources

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

Policies:

- A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
- B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;
- C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
- D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources 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.

The proposed Project does not affect any marine or coastal resources. The proposed Project does not impede the research of marine life and ocean resources, especially those in the U.S. economic zone.

#### 7.4 CITY AND COUNTY OF HONOLULU GENERAL PLAN

The Proposed Action was evaluated to confirm that it is in compliance with the General Plan (GP), as adopted in December 2021. The GP is a written commitment by the City to a future for the island of Oahu, which it considers desirable and attainable, and sets *“forth the City’s objectives and broad policies for the long-range development of the island.”*

The proposed Garg Residence Project will not affect or inhibit the GP objectives.

#### 7.5 SPECIAL MANAGEMENT AREA REVIEW

The Proposed Action is located in the City and County of Honolulu’s Special Management Area (SMA), and requires a SMA Major Permit prior to commencement. The Revised Ordinance of Honolulu (ROH) Chapter 25 outlines special controls on development within the SMA.

The following is an assessment of the Project with respect to the ROH Chapter 25, Section 25-3.2, “Review Guidelines”:

- (A) All development in the special management area shall be subject to reasonable terms and conditions set by the council to ensure that:
  - (1) 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;
  - (2) Adequate and properly located public recreation areas and wildlife preserves are reserved;
  - (3) Provisions are made for solid and liquid waste treatment, disposition and management that will minimize adverse effects upon special management area resources; and
  - (4) Alterations to existing land forms and vegetation; except crops, and construction of structures shall cause minimum adverse effect to water resources, 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 earthquake.

The subject property is a privately owned parcel of land in a residential-zoned area, and does not include any public access to the shoreline. Lateral beach access will not be impacted. Construction activities will be confined within the subject property and will not affect public shoreline access or public lateral shoreline access.

The proposed Project does not affect any ocean-side recreational resources, and is not located in or adjacent to a wildlife refuge.

BMPs will be followed to minimize and control the generation of construction-related wastewater and pollutants that could be discharged in storm water runoff. Construction will not result in a disruption of solid waste collection services to neighboring parcels.

The Proposed Action is not anticipated to affect nearby water resources or visual, scenic, and recreational amenities, and is not anticipated to exacerbate natural hazard threats. The subject property is in Flood Zone VE with a BFE of 12 feet. Therefore, the subject property will be slightly grade and finished floor elevations will be 14 feet amsl to comply with the underlying Flood Zone VE.

- (B) No development shall be approved unless the council has first found that:
- (1) 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 interest. Those adverse effect 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;
  - (2) The development is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26;
  - (3) 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.

The Project is not anticipated to have a significant adverse environmental or ecological effect or significant cumulative effects. The Proposed Action involves demolishing the existing two-story dwelling, and constructing a new two-story residential dwelling (that will be elevated so that the living area – two floors – is above the base flood elevation).

The Proposed Action is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26. See Section 7.3 “Coastal Zone Management Program” for details.

Sections 7.1 “State Land Use”, 7.4 “General Plan”, and 7.6 “East Honolulu Sustainable Communities Plan” documents the Proposed Action’s consistency with these plans.

- (C) The council shall seek to minimize, where reasonable:
- (1) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;
  - (2) Any development that would reduce the size of any beach or other area usable for public recreation;
  - (3) 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;
  - (4) 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
  - (5) Any development that would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

The Proposed Action does not include dredging, filling, or altering of a bay, estuary, salt marsh, river mouth, slough, or lagoon.

The Proposed Action will have no impact on the size of any beach or other area usable for public recreation. All construction activities will be restricted to the subject property and will have no impact on nearby beaches or public recreation.

The Proposed Action will not reduce or impose restrictions upon public access to tidal and submerged lands, beaches, or portions of rivers and streams within the SMA. The Proposed Action will not interfere with or detract from the line of sight toward the sea from the state highway nearest the coast.

The Proposed Action will not adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

## 7.6 EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN

East Honolulu extends from Makapuu Point along the ridgeline of the Koolau Mountain Range to the Waialae Nui Gulch Stream. The East Honolulu Sustainable Communities Plan (EHSCP) was adopted in April 2021.

The EHSCP provides a vision for preservation, conservation, and enhancement of community resources.

East Honolulu is projected to experience population stabilization through 2035 and 2040 with a population at approximately 50,000 or roughly five percent of Oahu's total population.

The proposed Garg Residence Project will not affect or inhibit the EHSCP land use, public facilities, and infrastructure policies.

The proposed Project will replace an existing residential dwelling with a new single-family residence, and will be located outside of the 40-foot shoreline setback area for narrow lots. Construction activities will

be confined within the subject property and will not affect public shoreline access or public lateral shoreline access.

BMPs will be followed to minimize and control the generation of construction-related wastewater and pollutants that could be discharged in storm water runoff. Construction will not result in a disruption of solid waste collection services to neighboring parcels.

The proposed Project is anticipated to have no significant impact to the community and on the environment.

## 8.0 FINDINGS

We have prepared this Draft EA for the proposed Garg Residence Project (subject property) in conformance with Chapter 343, HRS; HAR Title 11; and DOH Chapter 200 Environmental Impact Rules. The findings presented in this Section are based on Ford & Associates, Inc.'s (FAI's) understanding of the subject property location and the Proposed Action at the subject property, as such action is described in Section 3.0. Should modifications to the location of the subject property or Proposed Action be made in the future, then additional inquiries may be prudent.

According to the DOH Rules (1-200-12), an applicant or agency must determine whether an action may have significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short- and long-term effects.

In making the determination, the Rules establish "Significant Criteria" to be used as a basis for identifying whether significant environmental impacts will occur. According to the Rules, an action shall be determined to have significant impact on the environment if it meets any one of the following criteria:

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

The subject property is located in a residential-zoned area that currently consists of an existing two-story residential dwelling located along the northeastern boundary, with grassy lawn and areas of landscaped vegetation. Based on site inspections and archaeological/cultural literature review (See Section 6.6, Historical and Cultural Resources), there are no known historic properties on or adjacent to the site, and no cultural resources are anticipated to be affected.

No loss or destruction of cultural resources or natural resources (i.e. wetland, wilderness area, wildlife preserve, threatened and/or endangered species, and critical habitat) are expected.

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

The Garg Residence project conforms with State and City and County of Honolulu land use designations, and involves development of an Urban Use site. The subject property will continue to be used for residential purposes.

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

The Garg Residence project is not expected to have a significant impact on the surrounding natural environment, historical areas, or the existing community. Additionally, it will have no negative economic or social impacts on the area. Therefore, it is consistent with the Environmental Policies established in Chapter 344, HRS.

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

The Proposed Action will not substantially affect the economic or social welfare of the community or state.

**(5) Substantially affects public health;**

Impacts to public health may be affected by air and noise during construction; however, these will be short-term and are not expected to significantly affect public health. Construction activities will comply with applicable regulations.

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

The proposed project will not involve secondary impacts as it consists of demolishing an existing residential dwelling and constructing a new residential dwelling.

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

The proposed activities will be limited to the area of the proposed project site. There could be short-term impacts by noise and air quality during construction; however, all construction activities will comply with applicable regulations. Therefore, the Proposed Action will not involve substantial degradation of environmental quality.

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

The Proposed Action will not cumulatively have considerable effect on the environment, or involve a commitment for larger actions. The Proposed Action consists of demolishing an existing residential dwelling and constructing a new residential dwelling.



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

No rare, threatened, or endangered species are known to utilize the subject property. In addition, the subject property is not located within or near a designated or proposed critical habitat.

See Section 6.2.4 “Listed or Proposed Threatened or Endangered Species and Designated or Proposed Critical Habitats” for details.

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

The Proposed Action is not anticipated to detrimentally affect air or water quality or ambient noise levels of the area.

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

The Federal Emergency Management Agency Flood Insurance Rate Map was reviewed to determine if the subject property is located in a flood hazard area. The northern, eastern, and southeastern portions of the subject property and the southeastern adjoining properties are located in Zone AE, which denotes special flood hazard areas, with a base flood elevation of nine feet amsl, and within the 1 percent annual chance floodplain. The northwestern, western, and southern portions of the subject property is located in Zone VE, which denotes special flood hazard areas, with a base flood elevation of 12 feet amsl, and a coastal flood zone (1 percent annual chance) with velocity hazard (wave action).

The project was designed to include a ground level with concrete slabs on grade that is 8-foot, 2-inch in height (or 12.7 feet amsl) to accommodate the base flood elevation of nine feet amsl, and will have break-away walls.

The potential impacts of SLR of 3.2 feet on the subject property is not expected to occur until 2100, and depends on factors that affect sea level which are discussed in Section 6.1.3.

These projections are not anticipated for approximately 80 years and may exceed the lifespan for the Proposed Action.

The Overall Hazard Assessment for this general area which includes the subject property is ranked moderate. The Overall Hazard Assessment looks at (1) tsunamis, (2) stream flooding, (3) high waves, (4) storms, (5) erosion, (6) sea level, and (7) volcanic/seismic.

Construction conditions will conform to current construction requirements to avoid, minimize, and mitigate any potential impacts of the coastal zone hazards.

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

No views will be obstructed or be visually incompatible with the surrounding area since the Proposed Action will be located in the area of the existing dwelling. The Proposed Action will include a wall along the Kalanianaʻole Highway side of the subject property, and will include landscaping.

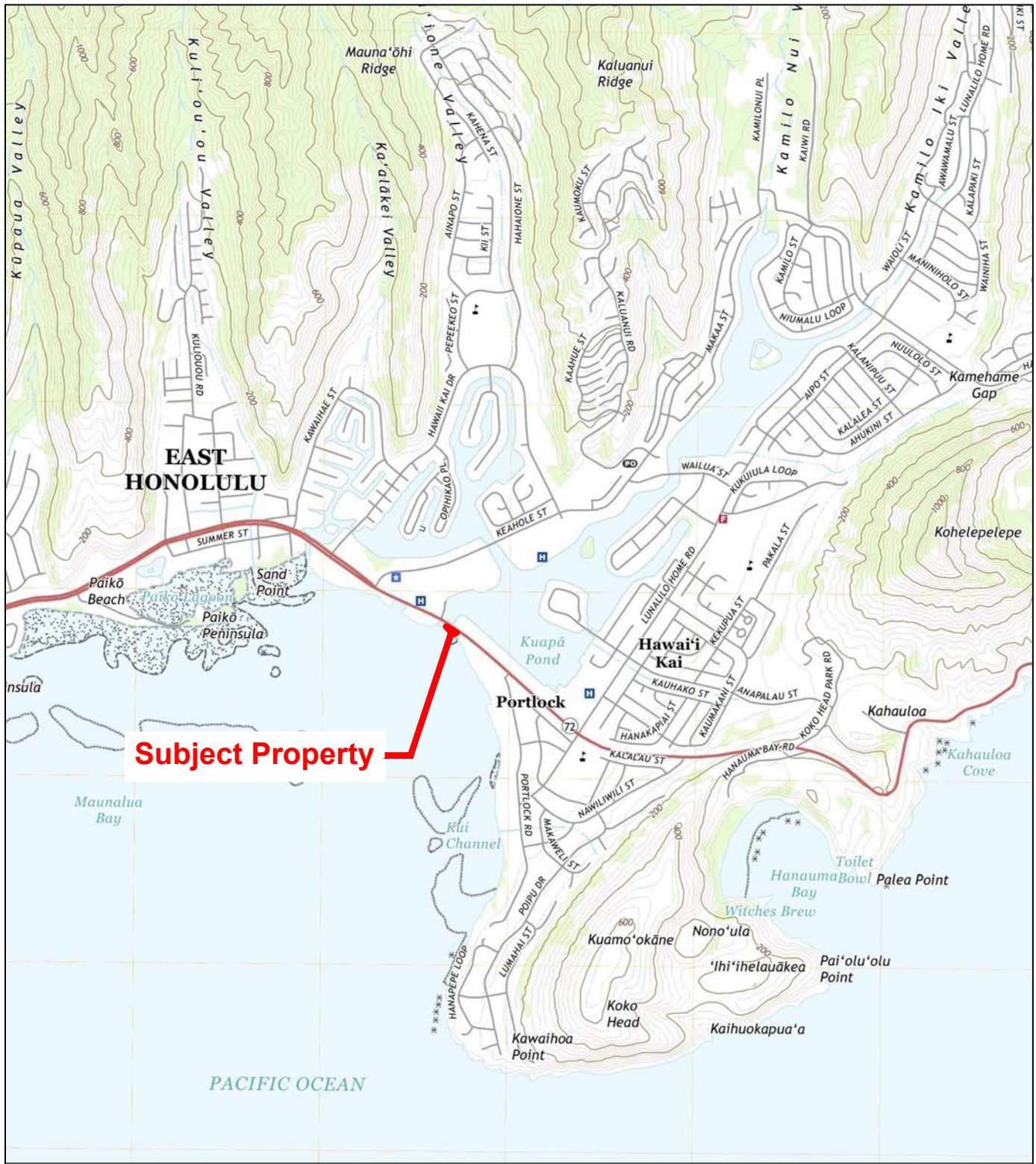
**(13) Requires substantial energy consumption.**

The Proposed Action will not require substantial energy consumption relative to other similar projects. In addition, Energy Star™ appliances will be installed, as applicable.

None of inquiries made or documents reviewed during this draft EA indicated direct evidence of significant negative conditions with respect to the Proposed Action at the subject property.

Based upon the draft EA and review of significant criteria above, a Finding of No Significant Impact is anticipated.

## FIGURES



**Subject Property**



Scale in Feet

USGS Topographic Map  
7.5-Minute Series  
Koko Head Quadrangle  
2017

**FORD & ASSOCIATES, INC.**  
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Job Number: 22-2030

Created by: LF

Date: 7/26/22

Reviewed By: DF

## Subject Property Location Map

Project: Garg Residence Property  
6973 Kalanianaʻole Highway  
Honolulu, Honolulu County, Hawaii

Client: Hawaii Engineering Group, Inc.

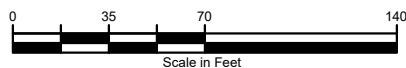
Figure

**1**





Image Source: Google Earth 2016



**FORD & ASSOCIATES, INC.**  
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Project Number: 22-2030

Date: 7/26/22

Created by: LF

Reviewed By: DF

**Subject Property Vicinity Map**

Project: Garg Residence Property  
6973 Kalaniana'ole Highway  
Honolulu, Honolulu County, Hawaii

Client: Hawaii Engineering Group, Inc.

Figure  
**2**





Image Source: Google Earth 2016



<b>FORD &amp; ASSOCIATES, INC.</b> ENVIRONMENTAL SCIENTISTS & ENGINEERS		<b>Special Management Area (SMA)</b>	
Project Number:	22-2030	Created by:	LF
Date:	8/16/22	Reviewed By:	DF
		Project:	Garg Residence Property 6973 Kalanianaʻole Highway Honolulu, Honolulu County, Hawaii
		Client:	Hawaii Engineering Group, Inc.

Figure  
**3**

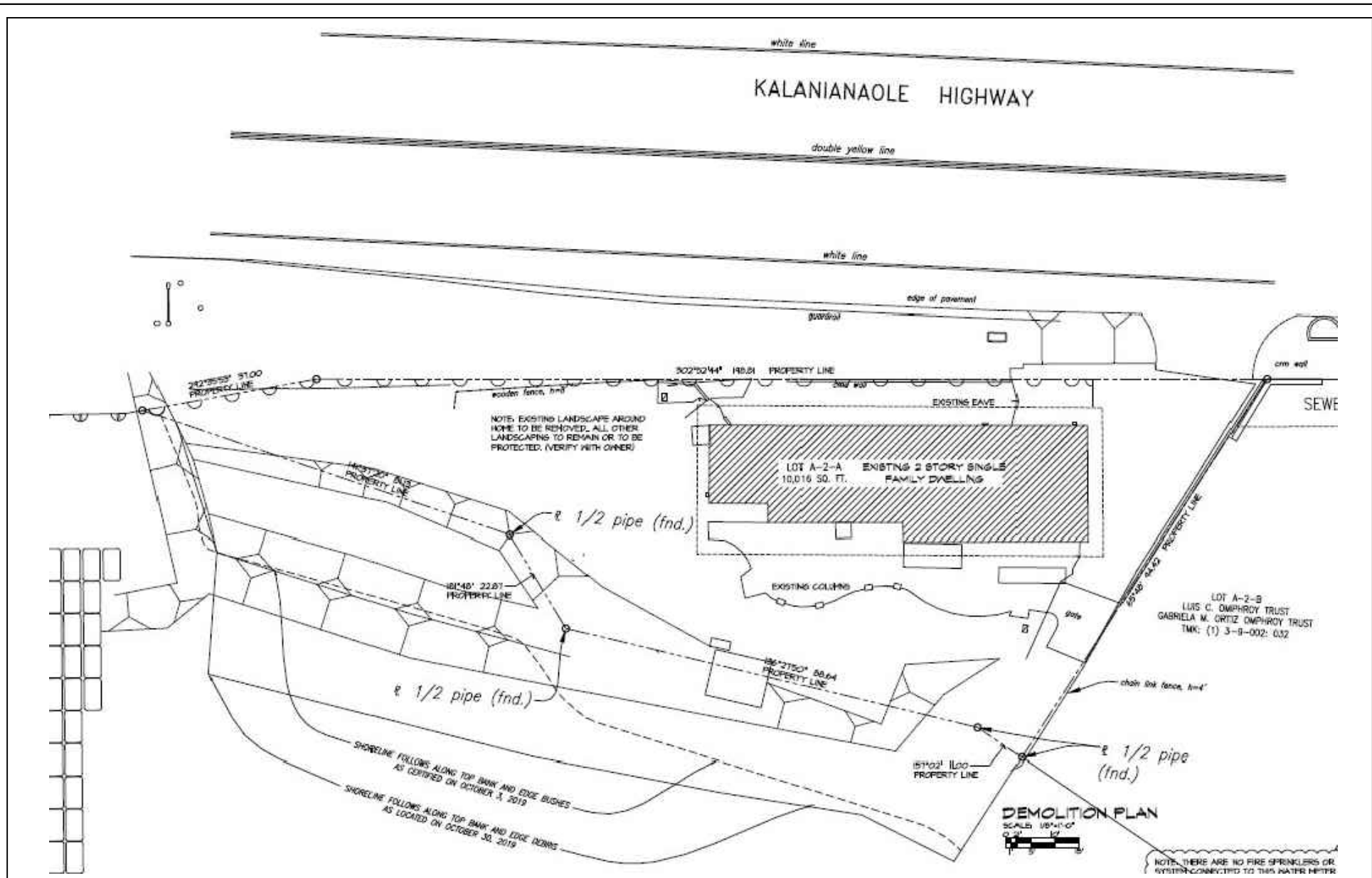
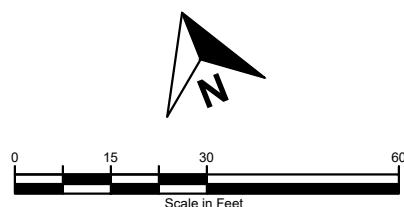


Image Source: Demolition Plan, Eric Trabert & Associates, 2021



FORD & ASSOCIATES, INC. ENVIRONMENTAL SCIENTISTS & ENGINEERS		Existing Site Dwelling Location		Figure 4
Project Number:	22-2030	Created by:	LF	
Date:	7/26/22	Reviewed By:	DF	
		Client:	Hawaii Engineering Group, Inc.	
		Project:	Garg Residence Property 6973 Kalaniana'ole Highway Honolulu, Honolulu County, Hawaii	



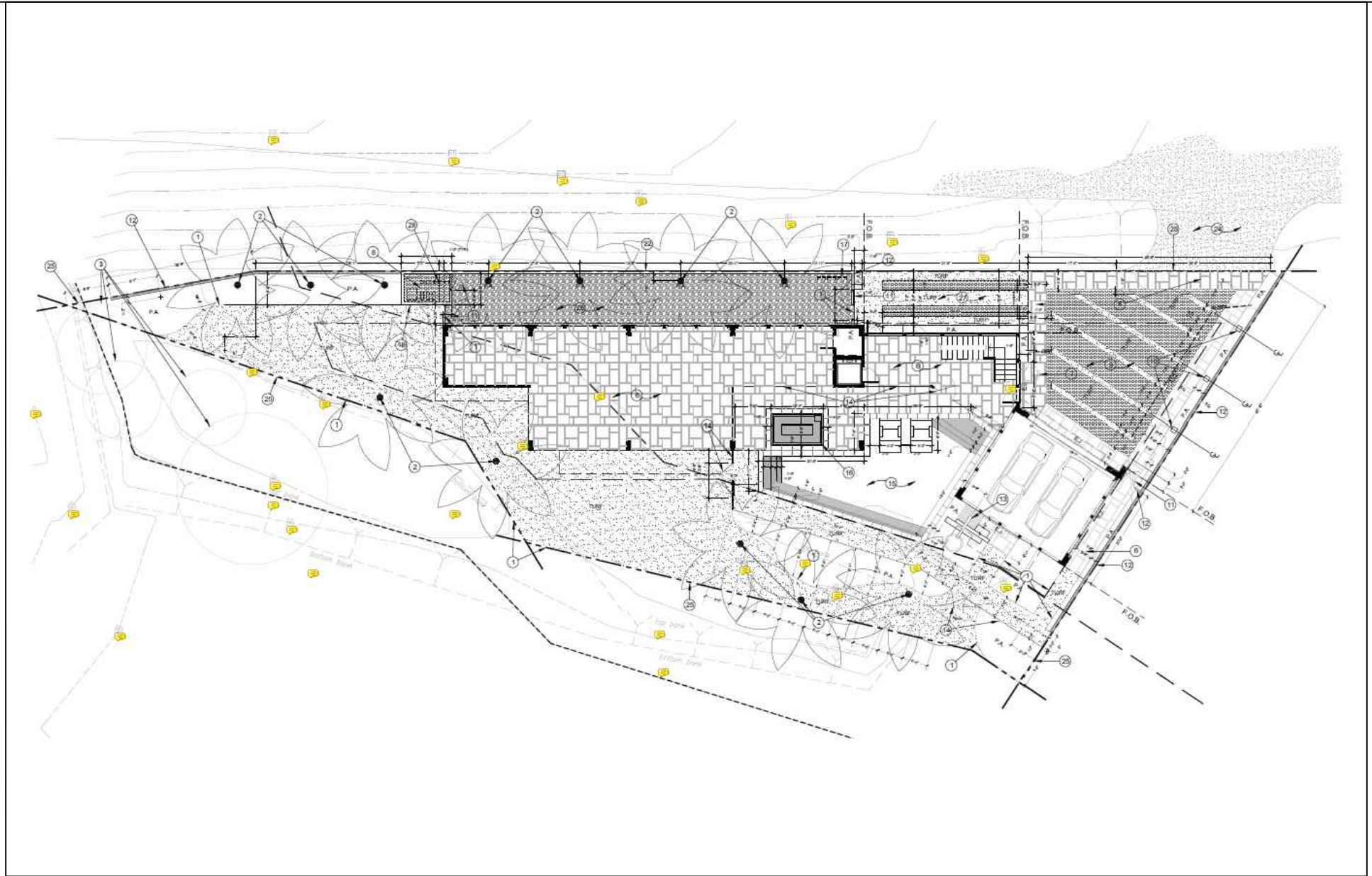
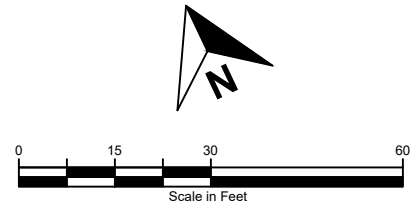


Image Source: Construction Plan, Zucker Design Associates, Inc., 2024



<b>FORD &amp; ASSOCIATES, INC.</b> ENVIRONMENTAL SCIENTISTS & ENGINEERS		<b>Proposed Site Dwelling Plan</b>	
Project Number:	22-2030	Created by:	LF
Date:	1/29/24	Reviewed By:	DF
		Client:	Hawaii Engineering Group, Inc.
		Project:	Garg Residence Property 6973 Kalanianaʻole Highway Honolulu, Honolulu County, Hawaii

Figure  
**5**





**FORD & ASSOCIATES, INC.**  
ENVIRONMENTAL SCIENTISTS & ENGINEERS

Project Number:  
22-2030

Created by:  
LF

Date:  
8/15/22

Reviewed By:  
DF

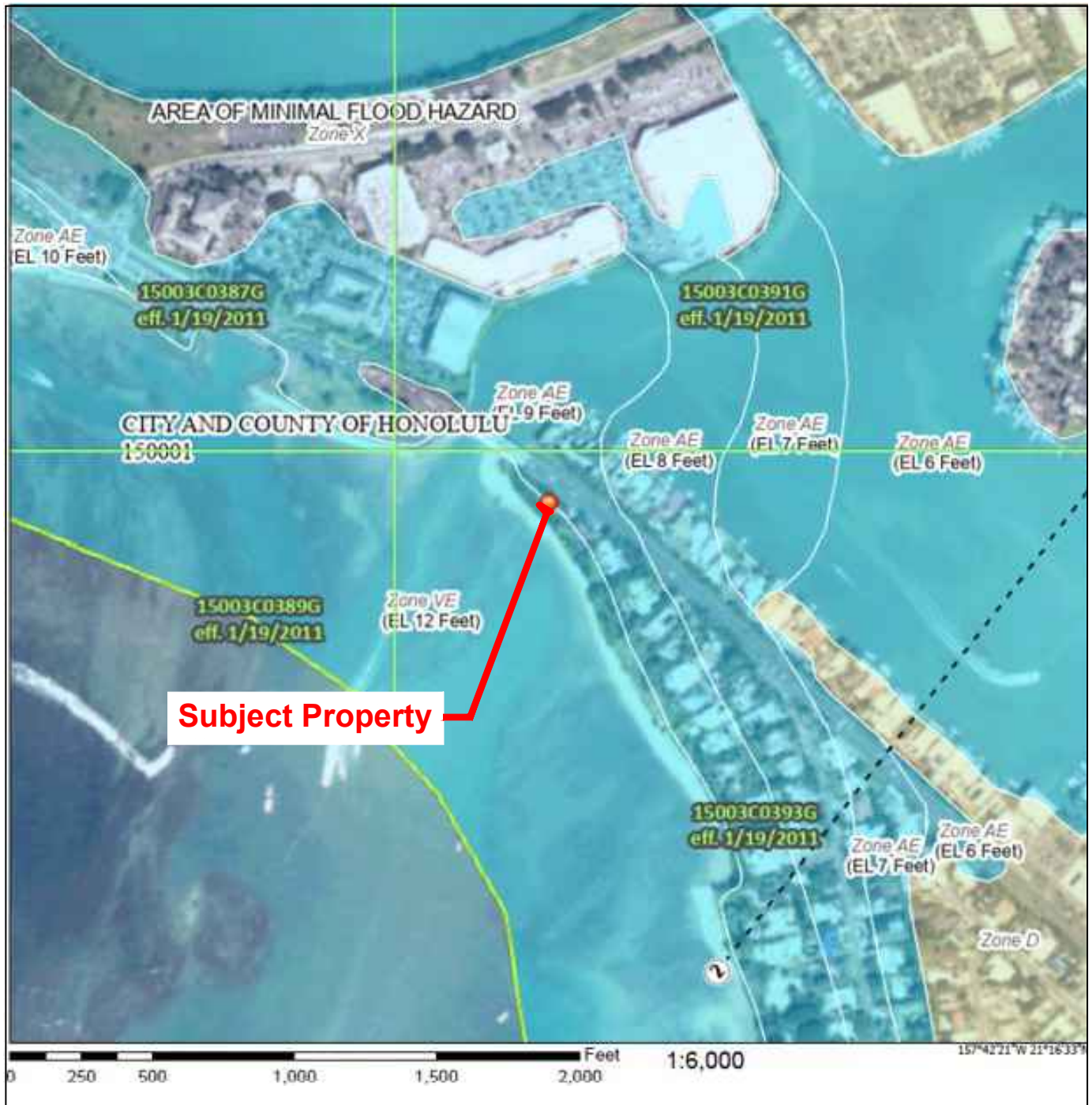
## Rendering of Garg Residence Property

Project:  
Garg Residence Property  
6973 Kalanianaʻole Highway  
Honolulu, Honolulu County, Hawaii

Client:  
Hawaii Engineering Group, Inc.

Figure  
**6**





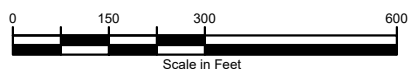
Basemap: USGS National Map; Orthoimagery: Data refreshed October 2020



<b>FORD &amp; ASSOCIATES, INC.</b> ENVIRONMENTAL SCIENTISTS & ENGINEERS		<b>FEMA/FIRM Map</b> Garg Residence Property 6973 Kalanianaʻole Highway Honolulu, Honolulu County, Hawaii		<b>Figure 7</b>
Job Number: 22-2030	Created by: LF	Project:		
Date: 8/15/22	Reviewed By: DF	Client:	Hawaii Engineering Group, Inc.	



Image Source: PacIOOS Sea Level Rise Exposure Area, 3.2 ft scenario



<b>FORD &amp; ASSOCIATES, INC.</b> ENVIRONMENTAL SCIENTISTS & ENGINEERS		<b>Sea Level Rise Exposure Area at 3.2 Feet</b>	
Project Number:	22-2030	Created by:	LF
Date:	8/16/22	Reviewed By:	DF
		Client:	Hawaii Engineering Group, Inc.
		Project:	Garg Residence Property 6973 Kalanianaʻole Highway Honolulu, Honolulu County, Hawaii

Figure  
**8**

## PHOTOGRAPHS



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of the subject property's existing driveway, garage and dwelling looking west.	PHOTO 1
---	------------



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



Partial view of the subject property looking northeast.

PHOTO  
2



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



The northwestern end of the subject property looking east.

PHOTO  
3



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of the subject property from the northwest corner looking east.

PHOTO

4



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of the subject property looking south at the existing dwelling and yard.

PHOTO

5



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



Small wooden deck and yard located along the western boundary of the subject property looking southwest.

PHOTO  
6



**Client:** Hawaii Engineering Group, Inc.  
**Site Name:** Garg Residence Property, 6973 Kalaniana'ole Highway, Honolulu, Honolulu County, Hawaii

**Project No.:** 22-2030

**Date:** July 26, 2022



View of the western portion of the subject property looking northwest showing the yard and concrete patio (on the right side of photo).

PHOTO

7



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of the concrete patio adjacent to the existing dwelling looking southeast.

PHOTO

8



**Client:** Hawaii Engineering Group, Inc.  
**Site Name:** Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii

**Project No.:** 22-2030

**Date:** July 26, 2022



View of the eastern boundary of the subject property looking northwest along Kalanianaʻole Highway.

PHOTO

9



**Client:** Hawaii Engineering Group, Inc.  
**Site Name:** Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii

**Project No.:** 22-2030

**Date:** July 26, 2022



View looking northwest from the beach adjacent to the subject property. Paiko Lagoon Wildlife Sanctuary is shown approximately 0.5 mile across Maunalua Bay in the distant background, and Maunalua Bay Beach Park to the right across the Kuapa Pond channel.

PHOTO  
10



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View from the beach adjacent to the subject property looking south.	PHOTO 11
---	-------------



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of the south adjacent property looking southwest (from the beach).

PHOTO

12



**Client:** Hawaii Engineering Group, Inc.  
**Site Name:** Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii

**Project No.:** 22-2030

**Date:** July 26, 2022



View of the south adjacent property looking south along Kalanianaʻole Highway.

PHOTO

13



<b>Client:</b>	Hawaii Engineering Group, Inc.	<b>Project No.:</b>	22-2030
<b>Site Name:</b>	Garg Residence Property, 6973 Kalanianaʻole Highway, Honolulu, Honolulu County, Hawaii	<b>Date:</b>	July 26, 2022



View of residential properties across Kalanianaʻole Highway looking north-northeast.

PHOTO  
14



Maunalua Bay and adjacent shoreline looking west.

PHOTO  
15

## **APPENDIX A**

## **REFERENCES**

**REFERENCES:**

- City and County of Honolulu, Department of Planning and Permitting. (2021). *General Plan*.
- City and County of Honolulu, Department of Planning and Permitting. (2021). *East Honolulu Sustainable Communities Plan*.
- City and County of Honolulu. Ordinances of Honolulu (ROH) Chapter 25, Special Management Area.
- Eric Trabert & Associates. (2019). *Site Plans*.
- Federal Emergency Management Agency, Flood Insurance Rate Map (FEMA/FIRM Panel No. 15003C-0393G, Revised January 19, 2011)
- Hamer Environmental, L.P. (2022). *Desktop Review of Terrestrial Flora and Fauna for proposed development, Site: TMK: (1) 3-9-002: 031; 0.23-acres, 6973 Kalanianaʻole Hwy, Oahu Island, Hawaii*.
- Hawaii Climate Change Mitigation and Adaptation Commission. (2021). *State of Hawaii Sea Level Rise Viewer* (Version 1.06), Prepared by Pacific Islands Ocean Observing System (PacIOOS).
- IPCC. (2014). *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- JPB Engineering, Inc. (2020). *Geotechnical Report, Garg Residence, 6973 Kalanianaʻole Highway, Hawaii Kai, Honolulu, Hawaii* (Project No. 20083.01G).
- National Wilderness Preservation System website
- Scientific Consultant Services, Inc. (2022). *An Archaeological Field Inspection and Literature Review for a Residential Project at 6973 Kalanianaʻole Highway in Honolulu, Maunaloa Ahupuaʻa, Kona Moku, Oahu Makupuni, Hawaii [TMK: (1) 3-9-002:031]* (Project 2802 LRFI – 1.4).
- State of Hawaii, Department of Health. Chapter 200, 1-200-12, Environmental Impact Rules.
- State of Hawaii, Department of Health. (2021). *Annual Summary 2020 Air Quality Data*.
- State of Hawaii, Department of Health, Hazard Evaluation & Emergency Response (HEER) Office Database (2021)
- State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW)
- State of Hawaii, Department of Land and Natural Resources, State Historic Preservation Division (SHPD)

State of Hawaii, Land Use Commission. Hawaii Revised Statutes, Chapter 205, 205-2, Districting and Classification of Lands.

State of Hawaii, Office of Planning. Hawaii Revised Statutes, Chapter 226, Hawaii State Planning Act – HSPA.

State of Hawaii, Office of Planning. Hawaii Revised Statutes, Chapter 205A, Coastal Zone Management.

State of Hawaii, Department of Health. Hawaii Administrative Rules, Chapter 11-46, Community Noise Control.

State of Hawaii. Hawaii Revised Statutes, Chapter 343, Environmental Impact Statements.

U.S. Census Bureau. (2020). American Community Survey 5-Year Estimates for Zip Code 96825. Retrieved June 2022.

U.S. Department of Agriculture, Natural Resources Conservation Service. *Web Soil Survey*. National Cooperative Soil Survey. Retrieved July 2022.

U.S. Fish and Wildlife Service (USFWS) Refuges website

U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory Map

U.S. Geological Survey (USGS). (2017). 7.5-minute Koko Head, Hawaii topographic quadrangle map

U.S. Geological Survey. (2002). *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (Geologic Investigations Series I-2761).

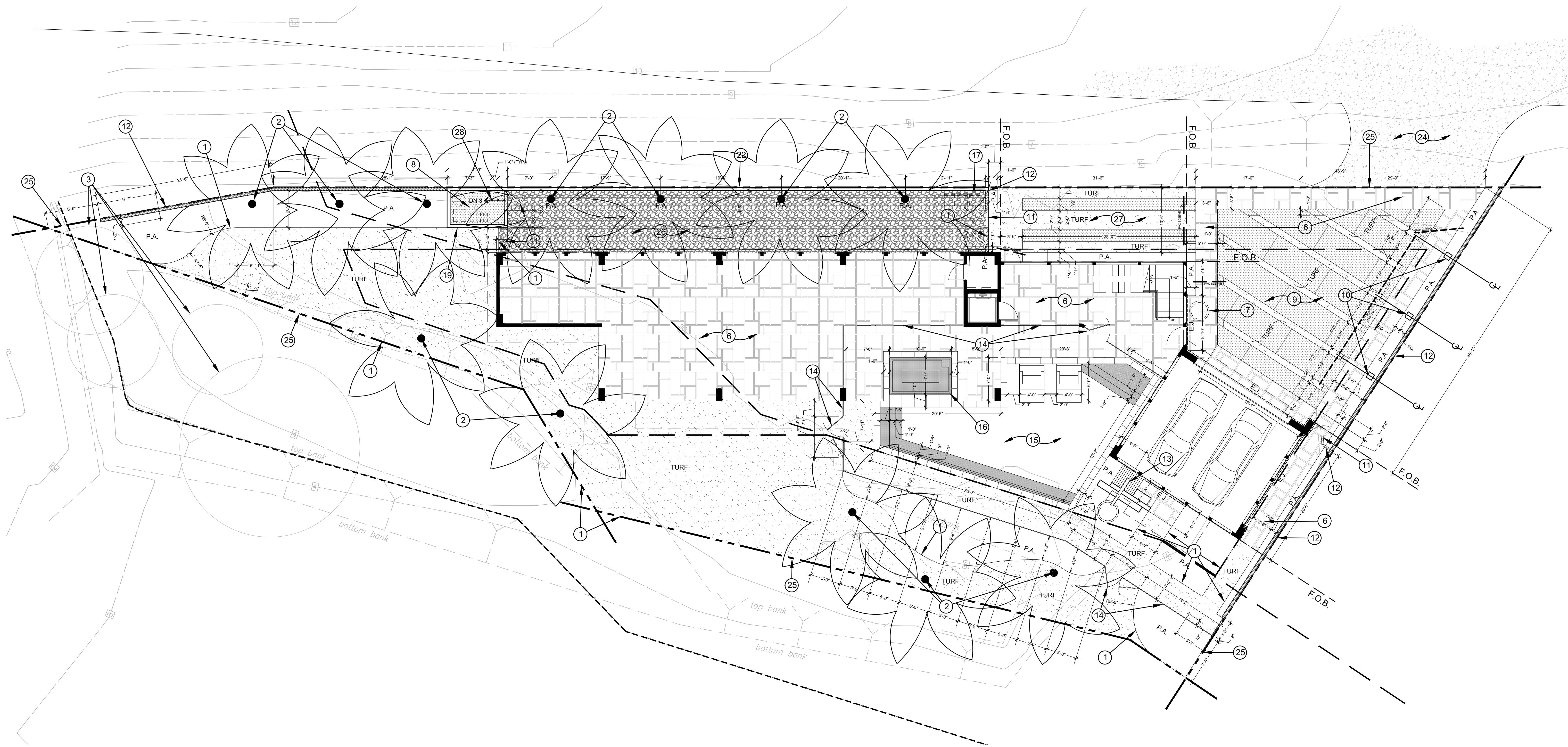
Water Resources Research Center, University of Hawaii. (1990). *Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii, Technical Report No. 179*

Zucker Design Associates, Inc. (2024). *Construction Plans*.

**APPENDIX B**

**ARCHITECTURAL DRAWINGS**





### GENERAL CONSTRUCTION NOTES:

1. ALL DIMENSIONS ARE TAKEN FROM FACE OF BUILDING WALLS OR EDGE OF PAVING, UNLESS OTHERWISE NOTED ON PLAN. THE DIMENSIONS ARE SHOWN FOR APPROXIMATE LINE AND ALL RADII AND CURVES ARE TO HAVE CONTINUOUS AND SMOOTH TRANSITIONS WITHOUT ABRUPT CHANGES OR BENDS.
2. ALL FORMS AND ALIGNMENT OF PAVING SHALL BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO POURING.
3. CONTRACTOR SHALL VERIFY LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION AND SHALL BE HELD LIABLE FOR ALL DAMAGES INCURRED.
4. CONTRACTOR SHALL NOTE AND INSTALL ALL SLEEVES SHOWN ON CONSTRUCTION PLAN PRIOR TO INSTALLATION OF PAVING.
5. ALL CONSTRUCTION AND WORKMANSHIP SHALL CONFORM TO LOCAL CODES.
6. CONTRACTOR MUST CHECK ALL DIMENSIONS, FRAMING CONDITIONS AND SITE CONDITIONS BEFORE STARTING WORK. LANDSCAPE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES OR DEFICIENCIES.
7. CONDITIONS NOT SPECIFICALLY SHOWN SHALL BE CONSTRUCTED SIMILAR TO THE DETAILS FOR THE RESPECTIVE MATERIALS.
8. THE DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. ALL BRACING, TEMPORARY SUPPORTS, SHORING, ETC. IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
9. DESIGN, MATERIALS, EQUIPMENT AND PRODUCTS OTHER THAN THOSE DESCRIBED BELOW OR INDICATED ON THE DRAWINGS MAY BE CONSIDERED FOR USE, PROVIDED PRIOR APPROVAL IS OBTAINED FROM THE OWNER, LANDSCAPE ARCHITECT AND THE APPLICABLE GOVERNING CODE AUTHORITY.

### SYMBOLS AND ABBREVIATIONS

P.A.	PLANTER AREA
R12'-0"	RADIUS
S.J.	SCORE JOINT
E.J.	EXPANSION JOINT
S.L.	SCORE LINE
F.O.B.	FACE OF BUILDING
F.O.P.	FACE OF PILASTER
F.O.W.	FACE OF WALL
—C—	ALIGN
—C—	CENTER LINE
—C—	4" (MINIMUM) PVC SLEEVE - SEE PLAN
----	ROOT BARRIER

### NOTE TO CONTRACTOR:

It is the Contractor's responsibility to oversee the daily work on the project. Zucker Design Associates, Inc. will not provide full time site supervision services and is not responsible for acts of omission by the contractor or any subcontractor. To guarantee compliance with the plans Zucker Design Associates, Inc. must be called to the site at the times listed below.

Recommended site visits by Zucker Design Associates, Inc.:

1. When all wooden forms are in place and before concrete is poured.
2. When plant material (trees, shrubs, vines, groundcover) are delivered to the site so ZDA can approve the quality.
3. When plant material is placed on the site per plan but prior to planting.
4. When installation is deemed complete by the contractor. A final walk-through by ZDA will occur to confirm the landscape was completed per plan.

### GRADING AND DRAINAGE NOTES

1. REFER TO CIVIL ENGINEERING PLANS FOR ALL GRADING AND DRAINAGE.
2. NO DRAINLINE IS TO BE PLACED NEAR TREE PLACEMENT

### PAVING LEGEND:

	CONCRETE DRIVEWAY WITH 12" WIDE TURF BANDS AND 42" WIDE STONE PAVER BORDER. 5 1/2" THICK CONCRETE (DRIVEWAY) WITH #3 REBAR AT 12" O.C. BOTH WAYS OVER CRUSHED STONE BASE ON RELATIVE COMPACTED SUBGRADE. DEPTH OF CRUSHED STONE PER CONTRACTOR. CONCRETE COLOR + FINISH PER LANDSCAPE ARCHITECT.
	STONE ON CONCRETE BASE. STONE AND PATTERN PER L.A. CONCRETE BASE TO BE 3 1/2" THICK (PATIO, POOL DECK, WALKS, ETC.) & 5 1/2" THICK (DRIVEWAY) WITH #3 REBAR AT 12" O.C. BOTH WAYS OVER 4" CRUSHED STONE BASE ON 90% RELATIVE COMPACTED SUBGRADE. DEPTH OF CRUSHED STONE PER SOILS ENGINEER.
	3 1/2" THICK CONCRETE (WALK) 5 1/2" THICK (DRIVEWAY) WITH #3 REBAR AT 12" O.C. BOTH WAYS OVER CRUSHED STONE BASE ON 90% RELATIVE COMPACTED SUBGRADE. DEPTH OF CRUSHED STONE PER CONTRACTOR. CONCRETE COLOR + FINISH PER LANDSCAPE ARCHITECT.

### CONSTRUCTION CALLOUTS:

1. CONTRACTOR TO INSTALL BLACK-COATED 14GA x 4" DEEP DURAEDGE LANDSCAPE STEEL EDGING FROM J.D. RUSSELL COMPANY: WWW.JDRUSSELLCO.COM.
2. PROPOSED TREE PER PLANTING PLAN, SHEET P-1.0. SEE DETAIL C, SHEET P-1.1 FOR PLANTING INSTRUCTIONS.
3. EXISTING TREES TO REMAIN.
- OMIT 4. CONTRACTOR TO FABRICATE LOW RETAINING WALL PER DETAIL D, SHEET CD-1.0.
- OMIT 5. CONTRACTOR TO FABRICATE 6" WIDE BEACH PEBBLE BANDS PER PAVING LEGEND, THIS SHEET + DETAIL M, SHEET CD-1.2.
6. CONTRACTOR TO INSTALL STONE ON CONCRETE BASE PER PAVING LEGEND, THIS SHEET.
7. CONTRACTOR TO INSTALL POT PER DETAIL A, SHEET P-1.1. POT PLANT MATERIAL PER PLANTING PLAN, SHEET P-1.0.
8. CONTRACTOR TO INSTALL CONCRETE PAVING PER PAVING LEGEND, THIS SHEET.
9. CONTRACTOR TO INSTALL CONCRETE DRIVEWAY PER PAVING LEGEND, THIS SHEET.
10. CONTRACTOR TO INSTALL STONE 'TOTEM POLE' PER DETAIL H, SHEET CD-1.2.
11. CONTRACTOR TO FABRICATE 5'-6" TALL (SIDE YARD) AND 2'-6" TALL (FRONT YARD SETBACK) WOODEN GATE PER DETAIL E SHEET CD-1.2.
12. CONTRACTOR TO FABRICATE 6'-0" TALL (SIDE YARD) AND 2'-6" TALL (FRONT YARD SETBACK) TALL BLOCK WALL PER DETAIL A, SHEET CD-1.0.
13. CONTRACTOR TO FABRICATE OUTDOOR SHOWER/ AUGER FOUNTAIN PER DETAIL B, SHEET CD-1.0.
14. CONTRACTOR TO FABRICATE TUBULAR STEEL POOL ENCLOSURE FENCE & GATE(S) PER DETAIL D, SHEET CD-1.2.
15. CONTRACTOR TO FABRICATE POOL PER POOL & SPA DETAIL C, SHEET CD-1.1.
16. CONTRACTOR TO FABRICATE SPA PER POOL & SPA DETAIL C, SHEET CD-1.1.
17. TRASH CAN STORAGE AREA.
- OMIT 18. CONTRACTOR TO FABRICATE WOODEN SHADE STRUCTURE PER DETAIL F, SHEET CD-1.0.
19. CONTRACTOR TO FABRICATE POOL EQUIPMENT ENCLOSURE WALL PER DETAIL G, SHEET CD-1.2 & WOODEN GATE PER DETAIL E, SHEET CD-1.2.
- OMIT 20. CONTRACTOR TO FABRICATE LINEAR FOUNTAIN PER DETAIL I, SHEET CD-1.1.
- OMIT 21. SITE SETBACK
- OMIT 22. CONTRACTOR TO PLASTER EXISTING BLOCK WALL (BOTH SIDES) TO MATCH NEW WALL PER DETAIL A, SHEET CD-1.0.
- OMIT 23. CONTRACTOR TO FABRICATE UTILITY COUNTER WITH BARBEQUE PER DETAIL N, SHEET CD-1.3.
24. EXISTING ASPHALT DRIVEWAY APPROACH TO REMAIN & BE REPAIRED WHERE NEEDED.
25. PROPERTY LINE
26. CONTRACTOR TO INSTALL CRUSHED STONE MULCH PER L.A.
27. CONTRACTOR TO FABRICATE TURF PARKING AREA WITH CONCRETE TIRE TRACKS. SEE PAVING LEGEND, THIS SHEET.
28. CONTRACTOR TO FABRICATE CONCRETE STEP PER DETAIL F, SHEET CD-1.2.
- OMIT 29. CONTRACTOR TO INSTALL CONCRETE PAVING PER PAVING LEGEND, THIS SHEET.
- OMIT 30. CONTRACTOR TO FABRICATE 2'-6" TALL BLOCK WALL ON TOP OF RETAINING WALL PER DETAIL Q, SHEET CD-1.3.

REVISIONS

Zucker Design Associates

DESIGN ASSOCIATES, INC.

LANDSCAPE ARCHITECTURE

Mission Viejo, California 92691

Phone: 714/78-0555

Fax: 949/485-5988

www.zuckerdesign.net

GARG RESIDENCE

6973 Kalaniana'ole Hwy.

Oahu, Hawaii 96825

CONSTRUCTION PLAN

19 JANUARY 2024

1/8" = 1'-0"

18.18

SHEET

C-1.0

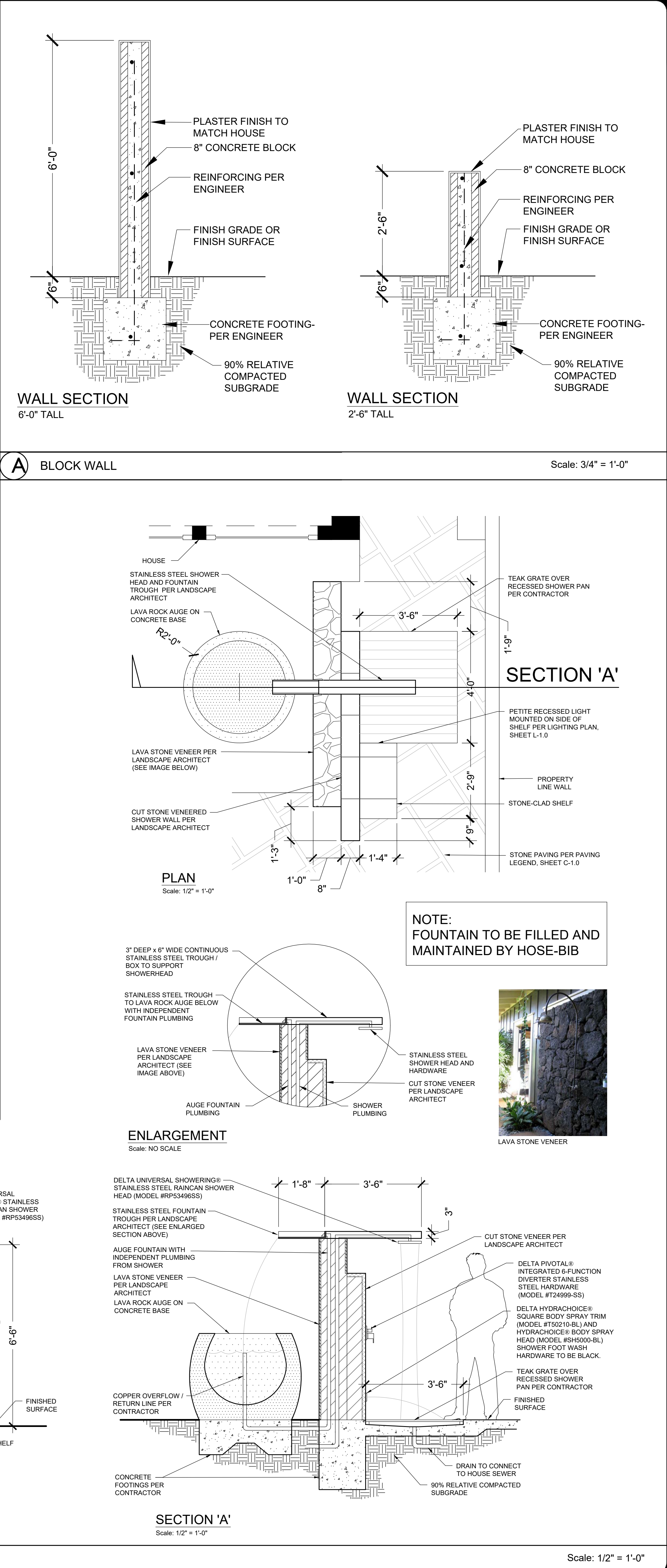
1 OF 7 SHEETS

Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized re-use.





**B** OUTDOOR SHOWER / AUGUE FOUNTAIN



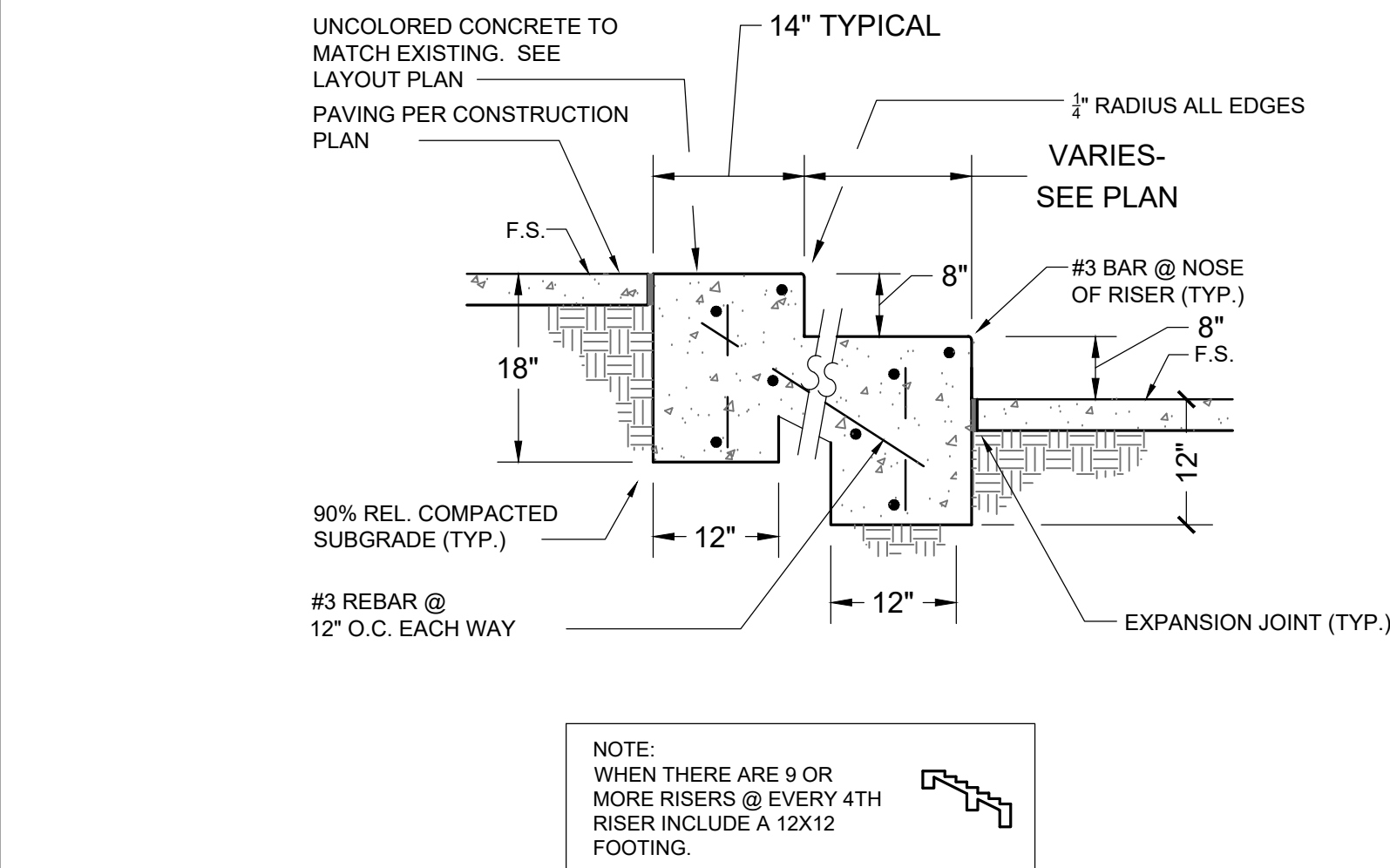
Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized re-use.

REVISIONS	
Zucker Design Associates 28891 Palisado Drive Mission Viejo, California 92691 Phone: 949.440.3665 Fax: 949.440.3666 email: scott@zuckerdesign.net website: www.zuckerdesign.net	
ZUCKER DESIGN ASSOCIATES, INC. LANDSCAPE ARCHITECTURE	
GARG RESIDENCE 6973 Kalanianaʻole Hwy. Oahu, Hawaii 96825	
CONSTRUCTION DETAILS	
RECEIVED LANDSCAPE ARCHITECT SCOTT A. ZUCKER REGISTERED 1/31/24 EXP. DATE DATE STATE OF CALIFORNIA	
DRAWN GC	CHECKED SZ
DATE 19 JANUARY 2024	
SCALE VARIES	
JOB NO. 18-18	
SHEET	
CD-1.0	
2 OF 7 SHEETS	

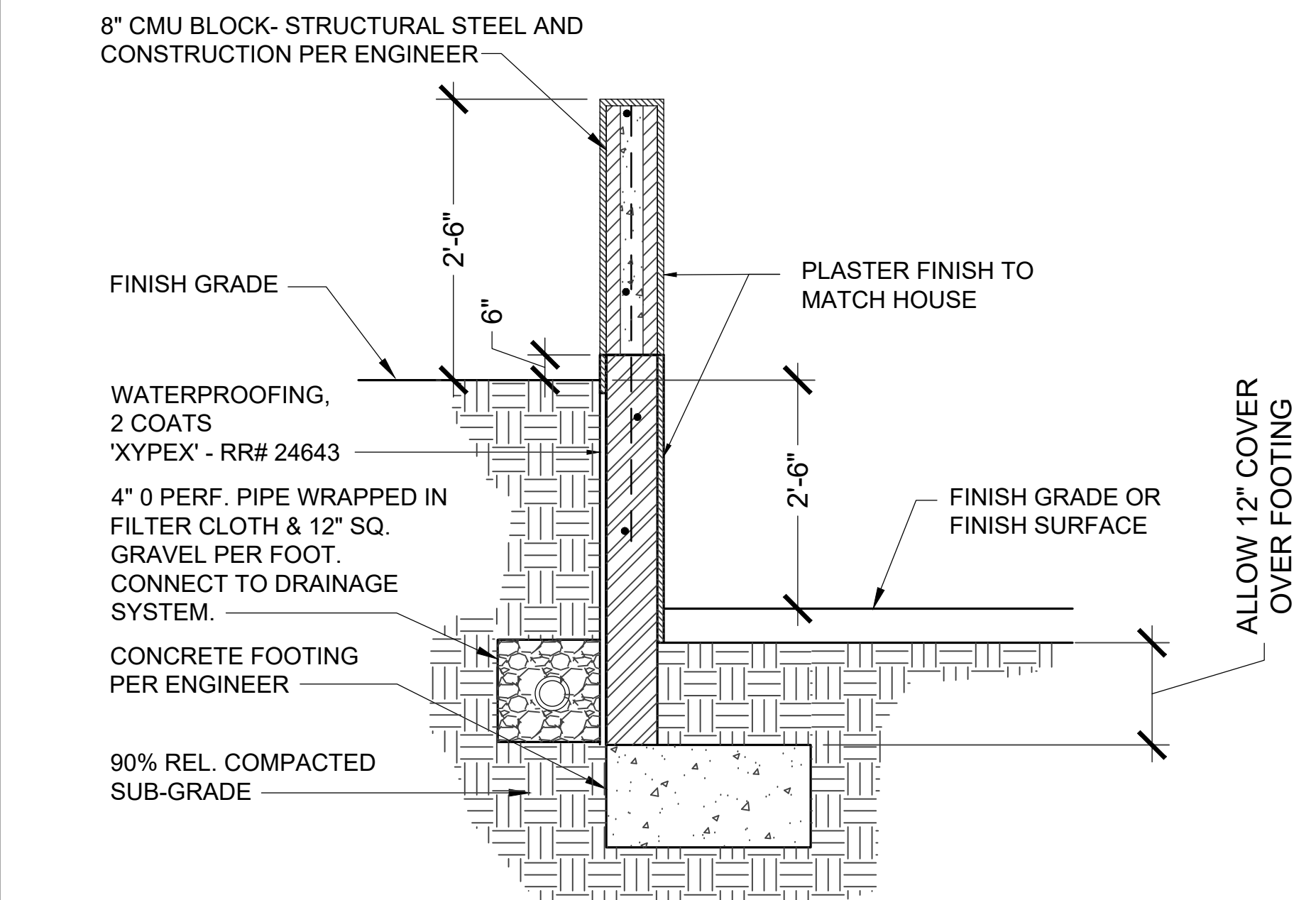




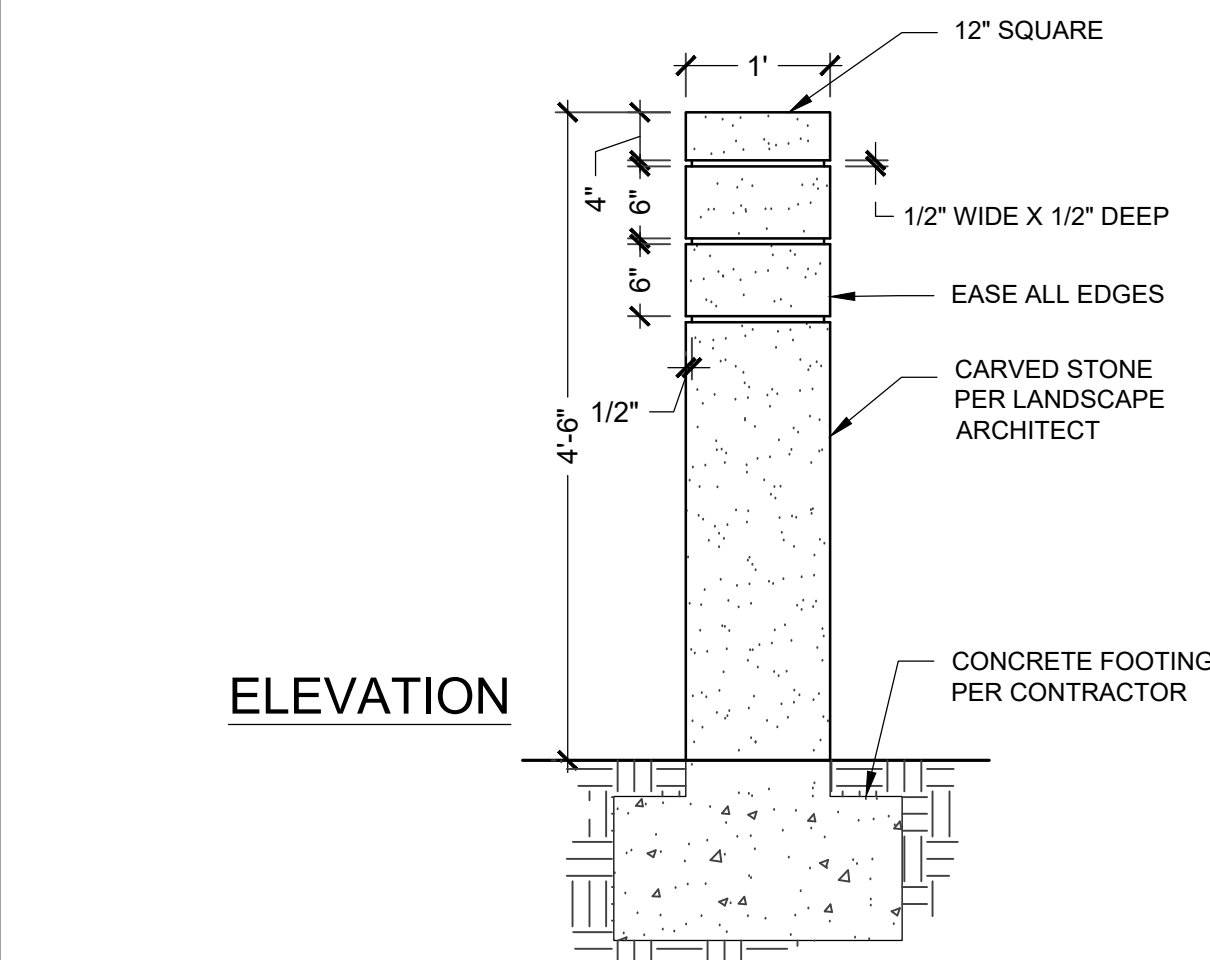




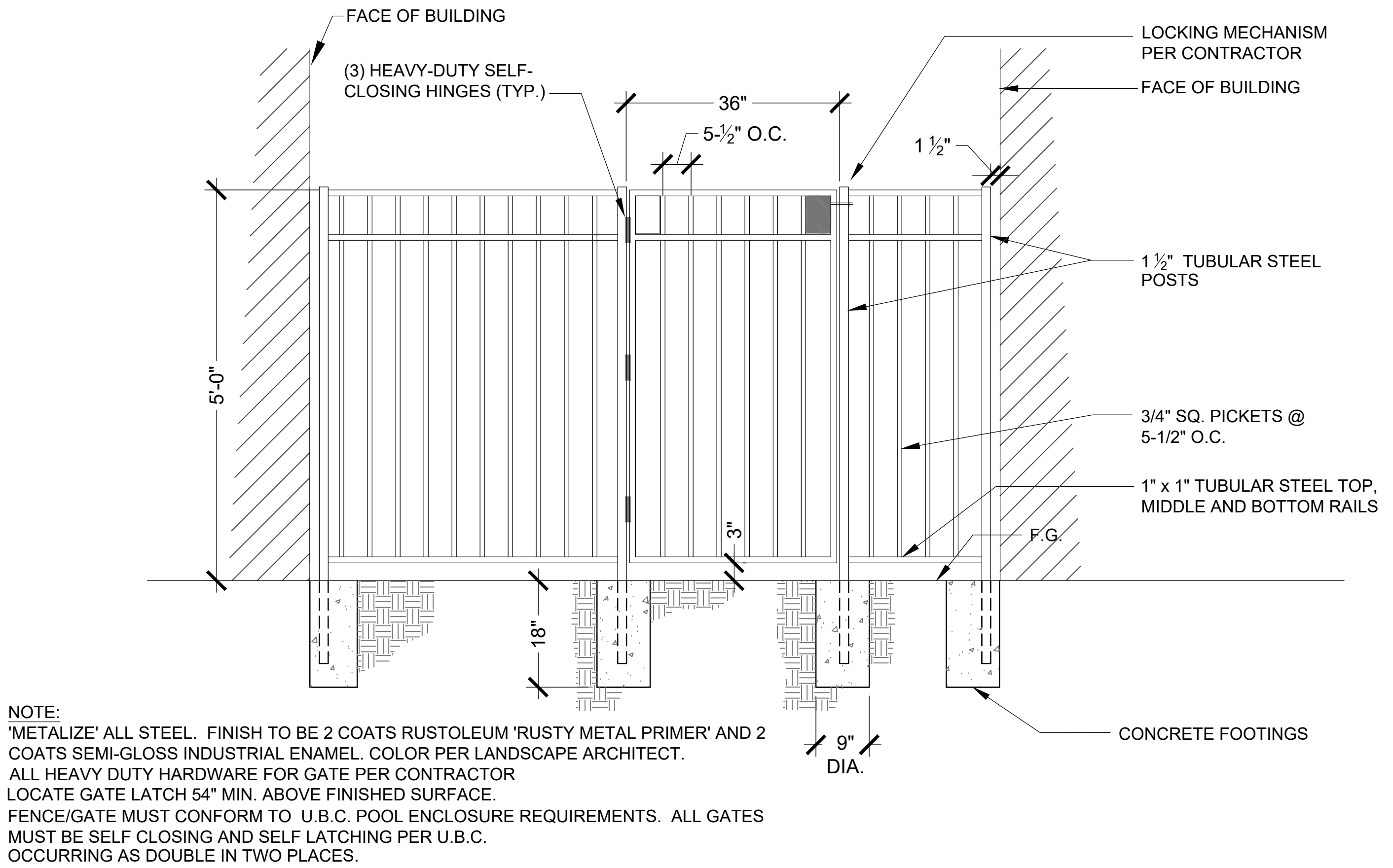
F CONCRETE STEP Scale: 3/4" = 1'-0"



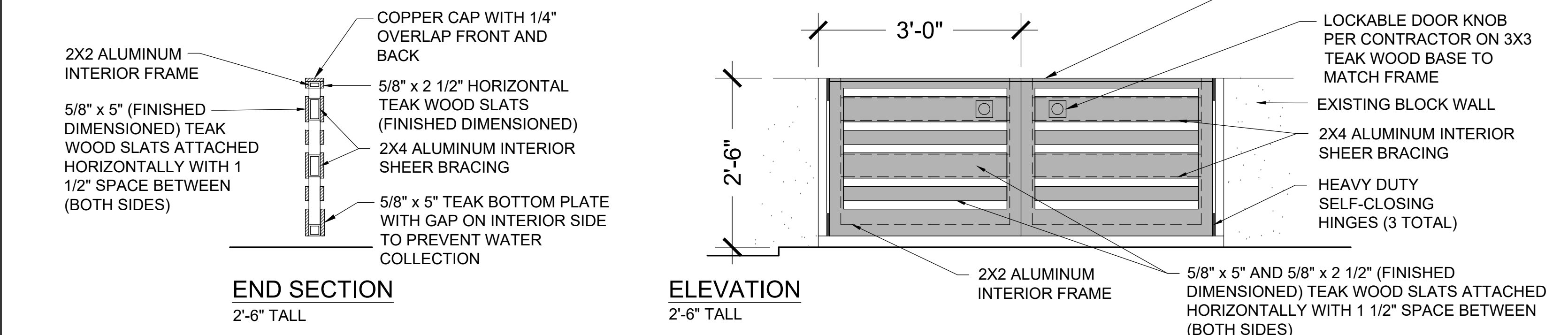
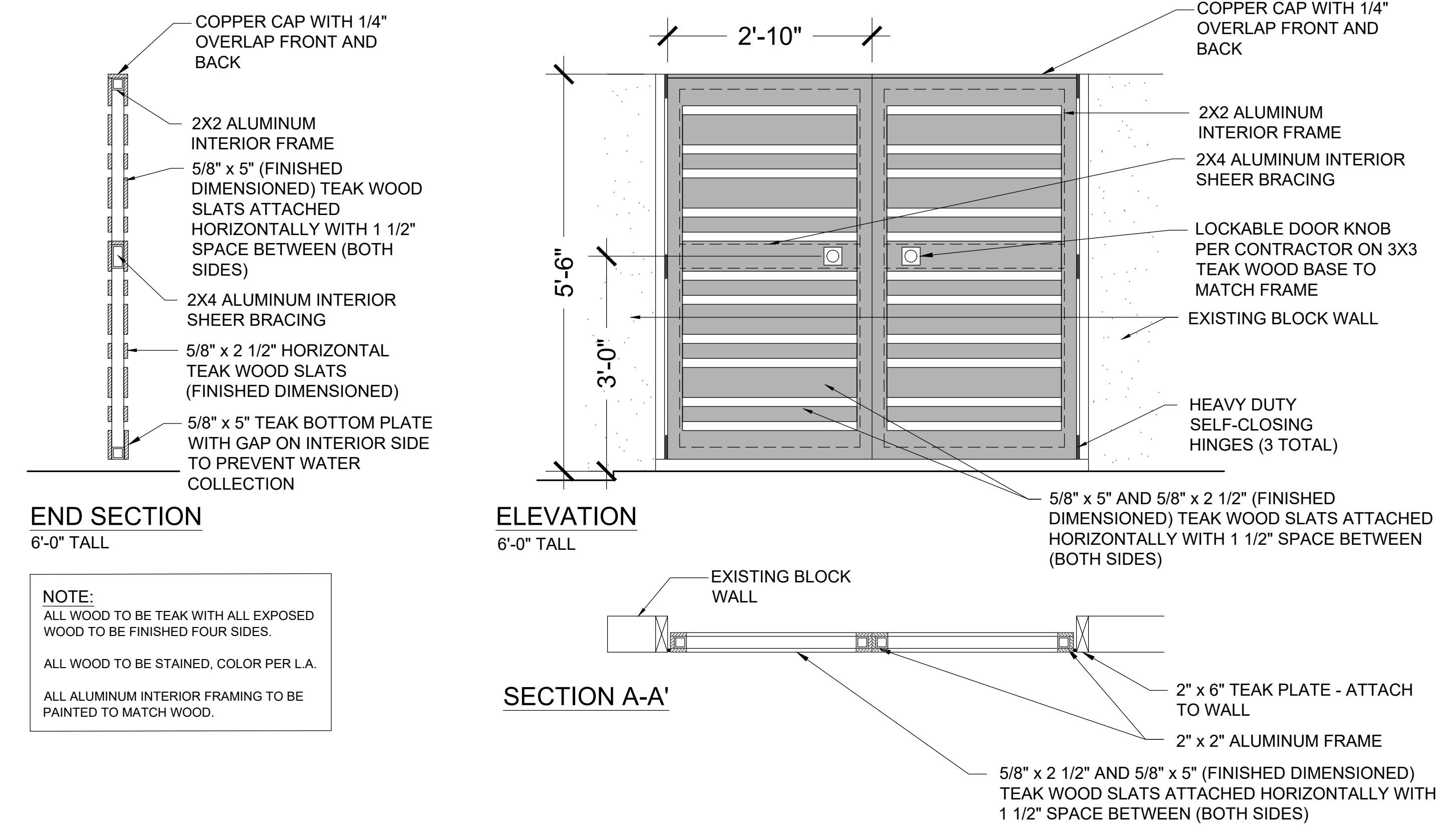
G 2'-6" TALL WALL ON TOP OF RETAINING WALL Scale: 3/4" = 1'-0"



H STONE 'TOTEM POLE' Scale: 3/4" = 1'-0"



D TUBULAR STEEL POOL ENCLOSURE FENCE & GATE Scale: 3/4" = 1'-0"



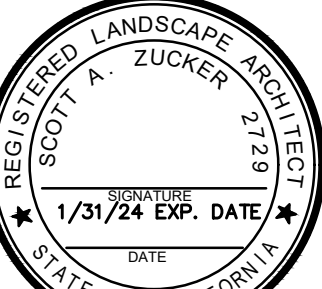
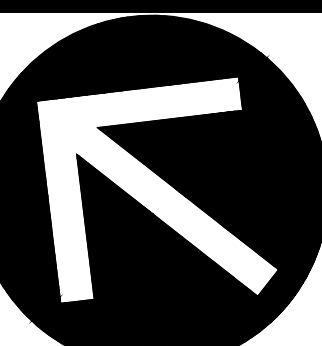
E WOODEN GATE Scale: 3/4" = 1'-0"

Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized reuse.

**Zucker Design Associates**  
28851 Parita Drive  
Mission Viejo, California 92691  
Phone: 714.749.0565  
Fax: 714.749.0566  
email: scott@zuckerdesign.net  
website: www.zuckerdesign.net

**GARG RESIDENCE**  
6973 Kalanianaʻole Hwy.  
Oahu, Hawaii 96825

**CONSTRUCTION  
DETAILS**

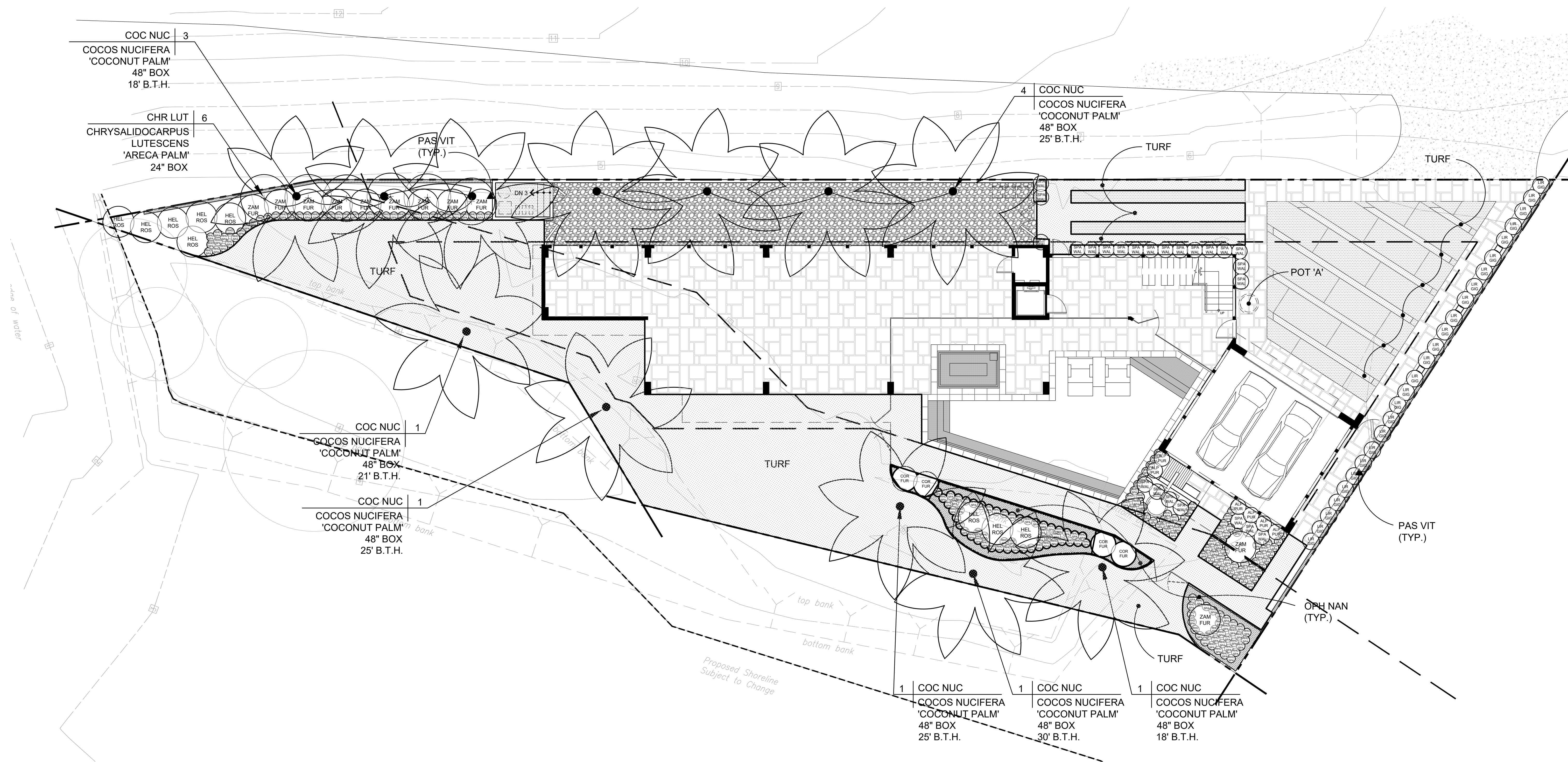


DRAWN  
GC  
CHECKED  
SZ  
DATE  
19 January 2024  
SCALE  
VARIES  
JOB NO.  
18.18  
SHEET

CD-1.2

4 OF 7 SHEETS





VINES					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	QUANTITY
PAS VIT	PASSIFLORA VITIFOLIA	RED PASSION FLOWER	5 GAL	FOR ATTACHING TO WALL SEE DETAIL B, THIS SHEET.	1

TREES					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	QUANTITY
COC NUC	COCOS NUCIFERA	COCONUT PALM	48" BOX	18" B.T.H.	4
				21" B.T.H.	1
				25" B.T.H.	6
				30" B.T.H.	1
CHR LUT	CHRYSALIDOCARPUS LUTESCENS	ARECA PALM	24" BOX	PLANT @ 7" O.C.	6

POTS					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	QUANTITY
A	ANTHURIUM 'WAIMEA'	ANTHURIUM	1 GAL	4 PER POT	4
	HELICONIA CARIBAEA X BIHAI 'HOT RIO NIGHTS'	HOT RIO NIGHTS PARROT BEAK	15 GAL	1 PER POT	1
	*POT: MILL PLANTER, SIZE = 36" DIA. X 31" TALL				

NOTE:  
\* POTS ARE TO BE ORDERED WITHOUT DRAINHOLES AND WILL BE DRILLED AT SITE AS NEEDED. ALL POTS ARE TO BE SECURED IN PLACE AND SUPPLIED DRAINAGE LINES PER POT DRAINAGE DETAIL A, THIS SHEET.

PLANTING LEGEND					
SHRUBS					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	QUANTITY
ALP PUR	ALPINIA PURPURATA	RED GINGER	5 GAL	PLANT @ 30" O.C.	6
COR FRU	CORDYLINE FRUTICOSA 'RED SISTER'	HAWAII TI	5 GAL		8
HEL ROS	HELICONIA ROSTRATA	HANGING LOBSTER CLAW	5 GAL	PLANT @ 4" O.C.	12
LIR GIG	LIRIOPE GIGANTEA	GIANT LILY TURF	5 GAL	PLANT @ 30" O.C.	26
RHO SPA	RHOEO SPATHACEA	OYSTER PLANT	1 GAL	PLANT @ 14" O.C.	258
SPA WAL	SPATHIPHYLLUM WALLISII	PEACE LILY	5 GAL		24
ZAM FUR	ZAMIA FURFURACEA	CARDBOARD PALM	5 GAL		11

GROUNDCOVERS					
SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	REMARKS	QUANTITY
OPH NAN	OPHIPOGON 'NANA'	DWARF MONDO GRASS	FLATS	PLANT @ 4" O.C.	157 S.F.
TURF		TURF	SOD		3154 S.F.

Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized re-use.

REVISIONS

Zucker Design Associates

20691 Pellico Drive  
Mission Viejo, California 92691  
Phone: 714.778.0585  
Email: scott@zuckerdesign.net  
Website: www.zuckerdesign.net

ZUCKER

DESIGN

ASSOCIATES, INC.

LANDSCAPE ARCHITECTURE

GARG RESIDENCE

6973 Kalanianaʻole Hwy.

Oahu, Hawaii 96825

PLANTING PLAN

REGISTERED LANDSCAPE ARCHITECT

SCOTT A. ZUCKER 3382

1/31/24 EXP. DATE

DATE

STATE OF CALIFORNIA

DRAWN

GC

CHECKED

SZ

DATE

19 January 2024

SCALE

1/8" = 1'-0"

JOB NO.

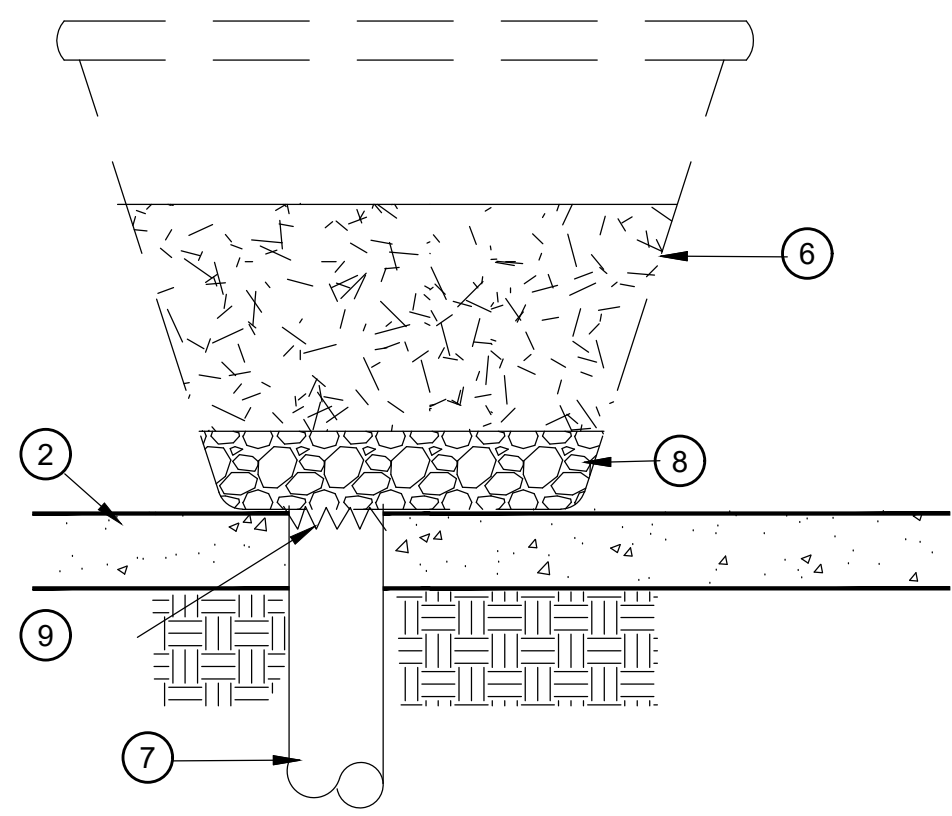
18-18

SHEET

P-1.0

5 OF 7 SHEETS



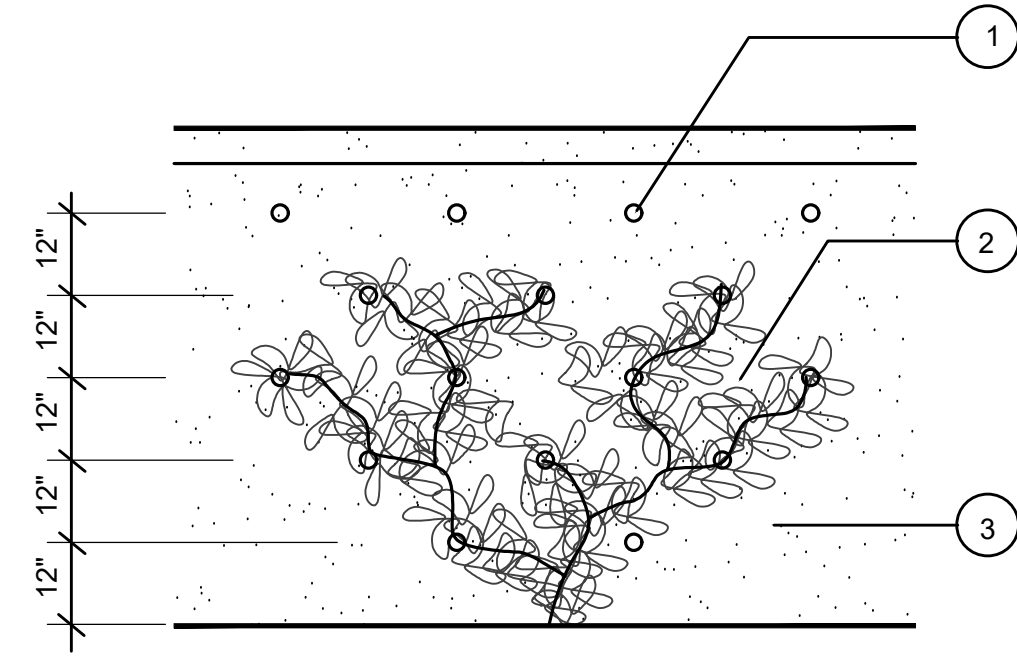


### LEGEND

2. FINISH SURFACE
6. POTTED PLANTING
7. 4" SCHED. 40 PVC DRAINLINE- CONNECT TO LANDSCAPE DRAINAGE SYSTEM
8. DRAIN ROCK
9. SEALANT

A

### POT DRAINAGE



### LEGEND

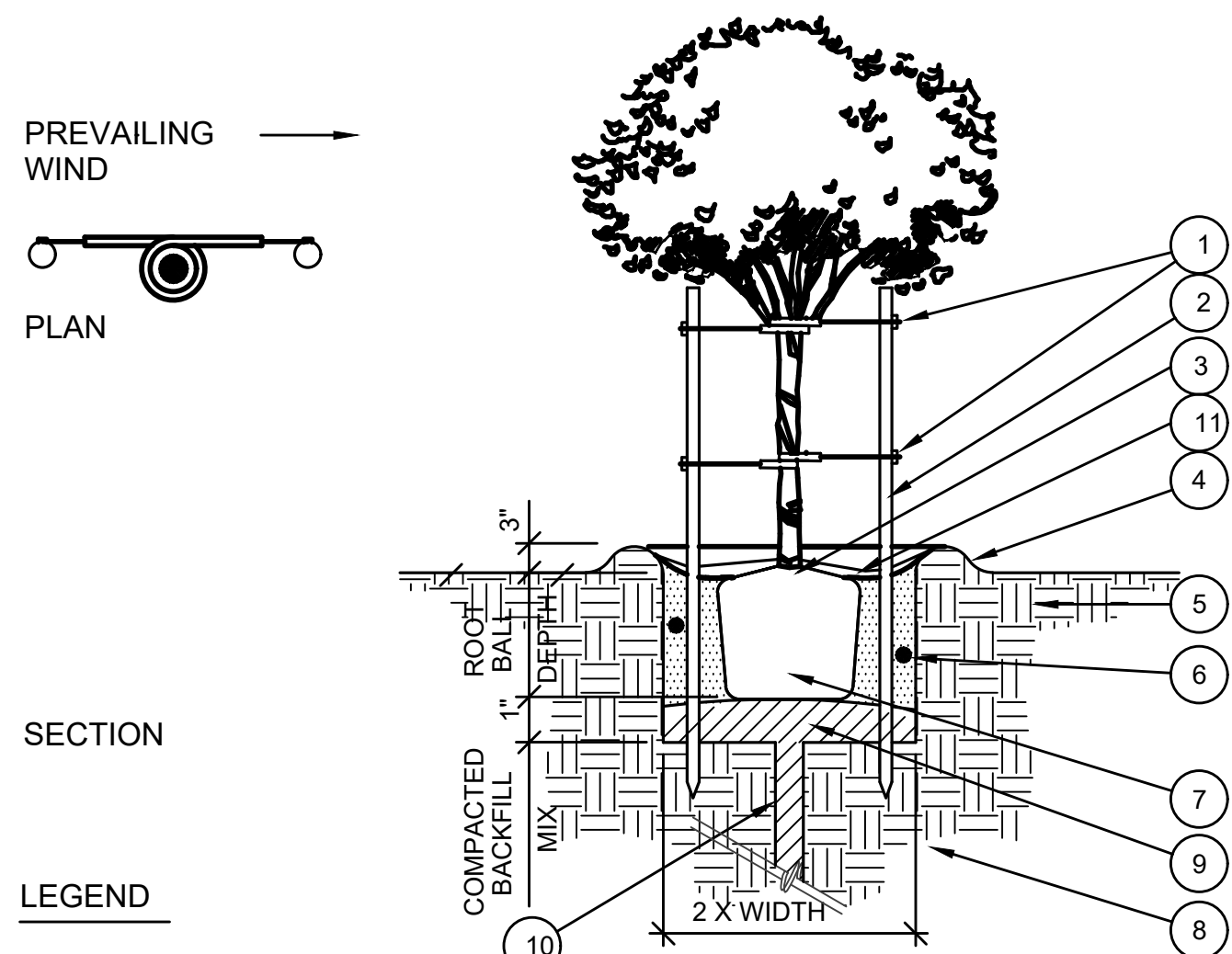
1. APPLY A ONE INCH (1") DIAMETER AMOUNT OF G.E. SILICON ADHESIVE WITH SIX INCH (6") LONG STAINLESS STEEL WIRE TO SURFACE (TRIANGULAR SPACED LOCATIONS)
2. ESPALIER OR VINE (SEE PLANTING PLAN FOR SIZE)
3. FENCE OR WALL

B

### VINE PLANTING

N.T.S.

(ON FENCES/WALLS)



### LEGEND

1. V.I.T. TREE CINCH TIES (SEE SPECS.)
2. 2" DIA X 10' LODGE POLE PINE STAKE (2) TOTAL. KEEP CLEAR OF ROOT BALL. (SEE SPECS.)
3. ROOT CROWN AT ORIGINAL LINE OF SLOPE.
4. WATER BASIN 3" MIN. DEPTH. AFTER INITIAL WATERING BY HOSE, REMOVE BASIN IN LAWN AREAS.
5. BERM FILL
6. PLANT TABLETS. (SEE SPECS.)
7. ROOT BALL.
8. EXISTING SOIL.
9. 1" COMPACTED AMENDED BACKFILL. (SEE SPECS.)
10. VERTICAL DRAIN HOLE (6" DIA. X 6' DEPTH). USE CORK SCREW AUGER TO EXCAVATE DRAIN HOLES AND FILL W/ PREPARED BACKFILL MIX.
11. 1" DEPTH AT MULCH. MAINTAIN 1" CLEARANCE AT ROOT CROWN.

C

### TREE PLANTING DETAIL & STAKING DETAIL

N.T.S.

## RECOMMENDED SITE VISITS BY ZUCKER DESIGN ASSOCIATES, INC.

1. WHEN ALL WOODEN FORMS ARE IN PLACE AND BEFORE CONCRETE IS POURED.
2. WHEN PLANT MATERIAL (TREES, SHRUBS, VINES, GROUNDCOVER) ARE DELIVERED TO THE SITE SO ZDA CAN APPROVE THE QUALITY.
3. WHEN PLANT MATERIAL IS PLACED ON THE SITE PER PLAN BUT PRIOR TO PLANTING.
4. WHEN INSTALLATION IS DEEMED COMPLETE BY THE CONTRACTOR. A FINAL WALK-THROUGH BY ZDA WILL OCCUR TO CONFIRM THE LANDSCAPE WAS COMPLETED PER PLAN.

## NOTE TO CONTRACTOR:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OVERSEE THE DAILY WORK ON THE PROJECT. ZUCKER DESIGN ASSOCIATES, INC. WILL NOT PROVIDE FULL TIME SITE SUPERVISION SERVICES AND IS NOT RESPONSIBLE FOR ACTS OF OMISSION BY THE CONTRACTOR OR ANY SUBCONTRACTOR. TO GUARANTEE COMPLIANCE WITH THE PLANS ZUCKER DESIGN ASSOCIATES, INC. MUST BE CALLED TO THE SITE AT THE TIMES LISTED BELOW.

## SOIL PREPARATION

IF THE OWNER AGREES TO FORGO THE RECOMMENDED AGRONOMY REPORT AND ITS RECOMMENDED SOIL AMMENDMENTS, THE CONTRACTOR IS TO ROTOTILL THE FOLLOWING AMMENDMENTS INTO THE SOIL AT RATES PER 1000 SQ. FT.:

4 CU. YDS.	NITROGEN STABILIZED SAWDUST
150 LBS.	GYPSUM
125 LBS.	GRO-POWER PLUS

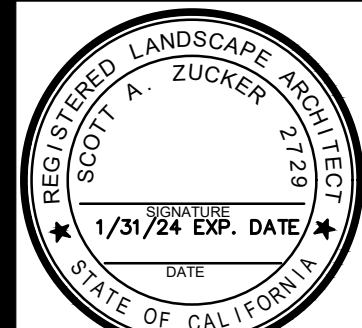
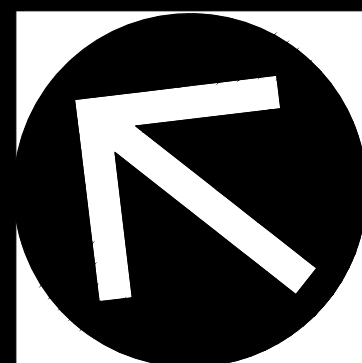
## PLANTING NOTES

1. WHERE PERENNIAL WEEDS EXIST ON SITE AT THE BEGINNING OF WORK, CLEAN AND REMOVE THESE EXISTING WEEDS BY MOWING OR GRUBBING OFF ALL PLANT MATERIAL. UPON COMPLETION OF SOIL PREPARATION AND PLANTING OF ALL SPECIMEN TREES, BEGIN WEED ABATEMENT PROGRAM BY APPLYING 100 POUNDS OF COMMERCIAL FERTILIZER 46-0-0 PER ACRE. PER MANUFACTURER'S INSTRUCTIONS. WATER ALL AREAS FOUR (4) TIMES DAILY FOR FOURTEEN (14) CONSECUTIVE DAYS UNTIL WEED SEEDS HAVE GERMINATED. CEASE WATERING FOR THREE (3) DAYS. SPRAY A NON-SELECTIVE, NON-RESIDUAL, SYSTEMIC HERBICIDE TO ERADICATE GERMINATED WEEDS. LET THE WEEDS DIE WITHOUT IRRIGATION FOR A MINIMUM DEPTH OF 1/4 INCH BELOW THE SURFACE OF THE SOIL. IF STUBBORN AND RESIDUAL WEEDS (I.E. BERMUDA GRASS) PERSIST, ERADICATION PROCEDURE SHOULD BE REPEATED. THE TYPE OF WEEDS THAT EXIST SHOULD BE IDENTIFIED AND COORDINATED WITH AN APPROVED LICENSED PEST CONTROL ADVISOR TO ENSURE COMPATIBILITY WITH CHEMICAL AND SEASON OF APPLICATION. DO NOT USE MATERIAL OR METHOD THAT WOULD ADVERSELY EFFECT NEW PLANTINGS, OR HYDROSEEDING.
2. AFTER ALL SOIL HAS BEEN IMPORTED TO THE SITE AND ROUGH GRADING COMPLETED, BUT BEFORE SOIL PREPARATION, THE CONTRACTOR SHALL FURNISH A COPY OF SOIL TESTS FOR AGRICULTURAL SUITABILITY AND FERTILITY (PREPARED BY A CALIFORNIA ASSOCIATION OF AGRICULTURAL LABORATORIES MEMBER) TO THE OWNER AND LANDSCAPE ARCHITECT.
3. SOIL AMMENDMENTS SHALL BE APPLIED PER SOIL REPORT SPECIFICATIONS.
4. ALL SHRUB AND GROUNDCOVER AREAS, EXCEPT FOR HYDROSEEDDED AREAS OR SLOPES IN EXCESS OF 4:1, ARE TO BE TOPDRESSED WITH 3" (102 MM) LAYER OF 'GORILLA HAIR' MULCH FROM LOCAL VENDOR.
5. CONTRACTOR WILL BE RESPONSIBLE TO REVIEW THE GRADING AND DRAINAGE PLANS FOR DRAINAGE LOCATION, DRAINAGE SWALES AND CONTOUR GRADES. CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGES DUE TO MODIFICATIONS BY THE CONTRACTOR TO THE DRAINAGE SPECIFIED BY THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES TO THE FIELD CONDITIONS WILL BE BROUGHT TO THE ATTENTION OF THE OWNER OR OWNER REPRESENTATIVE.
6. ALL PLANTING INSTALLATIONS SHALL CONFORM WITH ALL LOCAL CODES AND REGULATIONS.
7. QUANTITIES SHOWN IN THE LEGENDS ARE FOR CONVENIENCE ONLY. THE LANDSCAPE CONTRACTOR SHALL VERIFY AND INSTALL PLANT QUANTITIES AS DRAWN ON PLAN.
8. INSTALL ARBOR-GUARD TREE BOOTS ON ALL TREES PLANTED WITH IN TURF AREAS. TREE BOOTS ARE AVAILABLE THROUGH DEEP ROOT CORPORATION (714) 896-0563. USE DEEP ROOT NO. A68-4, OR EQUAL.
9. ANY TREE, 15 GALLON SIZE OR LARGER, PLANTED WITHIN 5' (1.5 M) OF ANY CONCRETE EDGE SHALL HAVE A DEEP ROOT BARRIER INSTALLED ALONG THE ENTIRE TREE PLANTING PIT ADJACENT TO THAT CONCRETE EDGE. INSTALL ROOT BARRIERS MANUFACTURED BY DEEP ROOT CORPORATION AT (714) 896-0563, #A68-4 OR AN APPROVED EQUAL PER MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized re-use.

GARG RESIDENCE  
6973 Kalaniana'ole Hwy.  
Oahu, Hawaii 96825

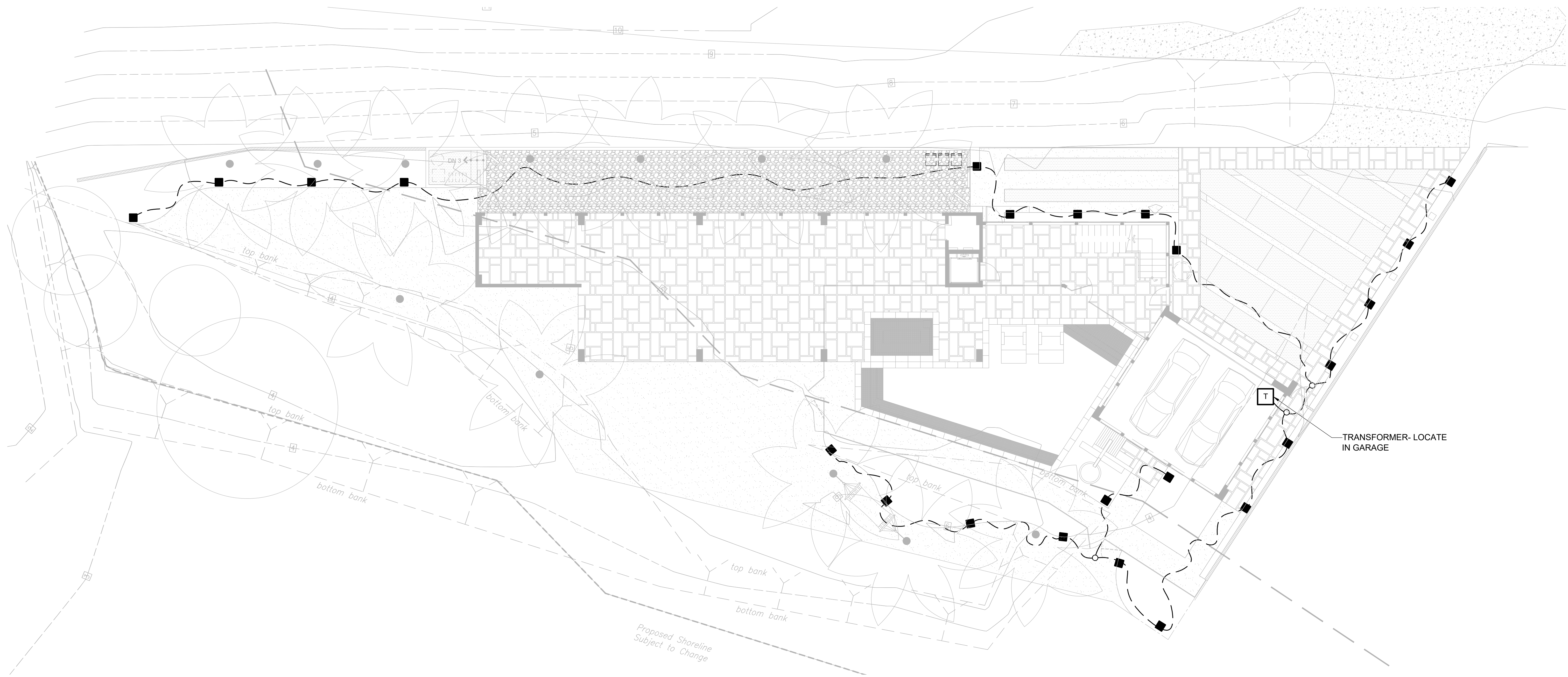
PLANTING PLAN



DRAWN	GC
CHECKED	SZ
DATE	19 January 2024
SCALE	1/8" = 1'-0"
JOB NO.	18-16
SHEET	

P-1.1





LIGHTING SYSTEM NOTES

1. THE LIGHTING CONTRACTOR INSTALLING THE LIGHTING SYSTEM SHALL MEET WITH THE PAVING CONTRACTOR TO INSURE THAT ADEQUATE SLEEVES HAVE BEEN INSTALLED IN THE PROPER LOCATIONS FOR INSTALLATION OF THE LIGHTING SYSTEM. BE AWARE THAT THE SLEEVES INSTALLED WILL BE 4" SCH. 40 PVC OR ABS, (NO THIN WALL PIPE) AND THAT THE SLEEVES WILL BE USED FOR THE IRRIGATION SYSTEM AS WELL. THE TENTATIVE SLEEVE LOCATIONS ARE SHOWN ON THE CONSTRUCTION PLAN.
2. WHEN THE CONTRACTOR IS READY TO INSTALL THE LIGHTING, HE / SHE SHALL CONTACT THE LANDSCAPE ARCHITECT, WHO WILL COME TO THE JOB SITE AND SELECT THE EXACT LOCATION AND ORIENTATION OF THE FIXTURES AND COMPONENTS. THE LOCATIONS SHOWN ON THE PLAN ARE FOR GENERAL INFORMATION ONLY.
3. THE CONTRACTOR SHOULD BE AWARE THAT IT MAY TAKE UP TO SIX WEEKS TO ORDER SOME OF THE EQUIPMENT, AND SHOULD ALLOW FOR ENOUGH LEAD TIME.
4. THE LOW VOLTAGE WIRING SHALL BE INSTALLED 9" BELOW GRADE, AND MAY BE LOCATED IN IRRIGATION TRENCHES. THE CONTRACTOR IS TO GUAGE THE LOW VOLTAGE WIRE TO ACCOMODATE THE EXTRA LONG RUNS.
5. NOTE THAT THE TRANSFORMER HAS A MAXIMUM LOAD OF 300 WATTS. DO NOT ALTER THE NUMBER OF FIXTURES ON THE CIRCUIT OF THE WIRING LAYOUT AS SHOWN ON THE PLAN. IT HAS BEEN DESIGNED WITH THE MAXIMUMS DESCRIBED ABOVE.
6. THE TRANSFORMER WILL BE CONNECTED TO AN INTERNAL PLUG-IN CLOCK PER CONTRACTOR OR THE CLIENT'S COMPUTERIZED HOUSE CONTROLLER AS PER CODE BY A LICENSED ELECTRICIAN. THE PHOTO CELL WILL TURN ON THE LIGHTS AT DUSK AND THE PLUG-IN CLOCK OR HOUSE COMPUTERIZED CONTROLLER WILL TURN OFF THE LIGHTS AT A TIME DETERMINED BY THE OWNER. ATTACH TRANSFORMER TO WALL WITH 2 MASONRY ANCHORS, 12" MIN. ABOVE GRADE. SEE NOTE ABOVE REGARDING LOCATION OF TRANSFORMERS.

GENERAL NOTES

1. EQUIPMENT IS MANUFACTURED BY SPJ LIGHTING INC., UNLESS OTHERWISE NOTED.
2. LAYOUT OF 12V SYSTEMS, ANY SWITCHING MECHANISMS, (I.E. - TIMERS, PHOTOCELL, ETC...), AND ANY ADDITIONAL LIGHTING COMPONENTS DEEMED NECESSARY AND NOT INCLUDED IN THIS PLAN, TO BE COORDINATED BY CONTRACTOR WITH APPROVAL OF CLIENT AND LANDSCAPE ARCHITECT.
3. ALLOW SIX WEEKS LEAD TIME FOR ORDERING ALL NECESSARY EQUIPMENT.

LIGHTING SYMBOLS LEGEND

SYMBOL	FIXTURE	LAMP	VOLTAGE	WATTS	QUANTITY	COMMENTS
■	SPJ-RSPL-6	LED (6 WATT)	12	6	20	PATH LIGHT
○	SILICONE WIRE CAP					SILICONE WIRE CAP PER CONTRACTOR
- - -	UL/CSA LISTED 12V DIRECT BURIAL CABLE	CONTRACTOR TO GUAGE WIRE TO ACCOMODATE EXTRA LONG RUNS				
T	SPJ-FL300-15V					300 WATT LOW VOLTAGE WEATHER PROOF TRANSFORMER.

NOTE:  
ALL SPJ LIGHTING INC. FIXTURES TO BE PVD BLACK FINISH UNLESS OTHERWISE STATED.



PATH LIGHT  
SPJ-RSPL-6



LOW VOLTAGE TRANSFORMER  
SPJ-FL300-15V

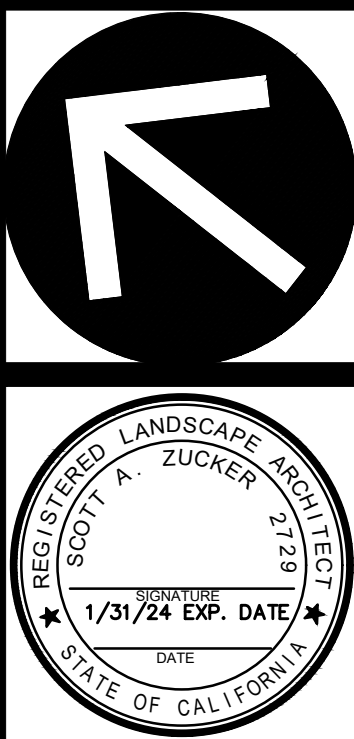
Zucker Design Associates expressly reserves its common law copyright and other property rights in these plans. These plans are not to be reproduced, changed, or copied in any form or manner whatsoever, nor are they to be assigned to a third party, without first obtaining the written permission and consent of Zucker Design Associates. In the event of unauthorized use of these plans by any third party, the client agrees to hold harmless indemnify and defend Zucker Design Associates from any claims arising from such unauthorized re-use.

GARG RESIDENCE  
6973 Kalanianaʻole Hwy.  
Oahu, Hawaii 96825

**ZUCKER**  
DESIGN  
ASSOCIATES, INC.  
LANDSCAPE  
ARCHITECTURE

Zucker Design Associates  
26891 Palolo Drive, Suite 100  
Palolo, HI 96867  
Phone: 714/775-0965  
Fax: 949/485-5886  
email: scott@zuckerdesign.net  
website: www.zuckerdesign.net

LIGHTING PLAN



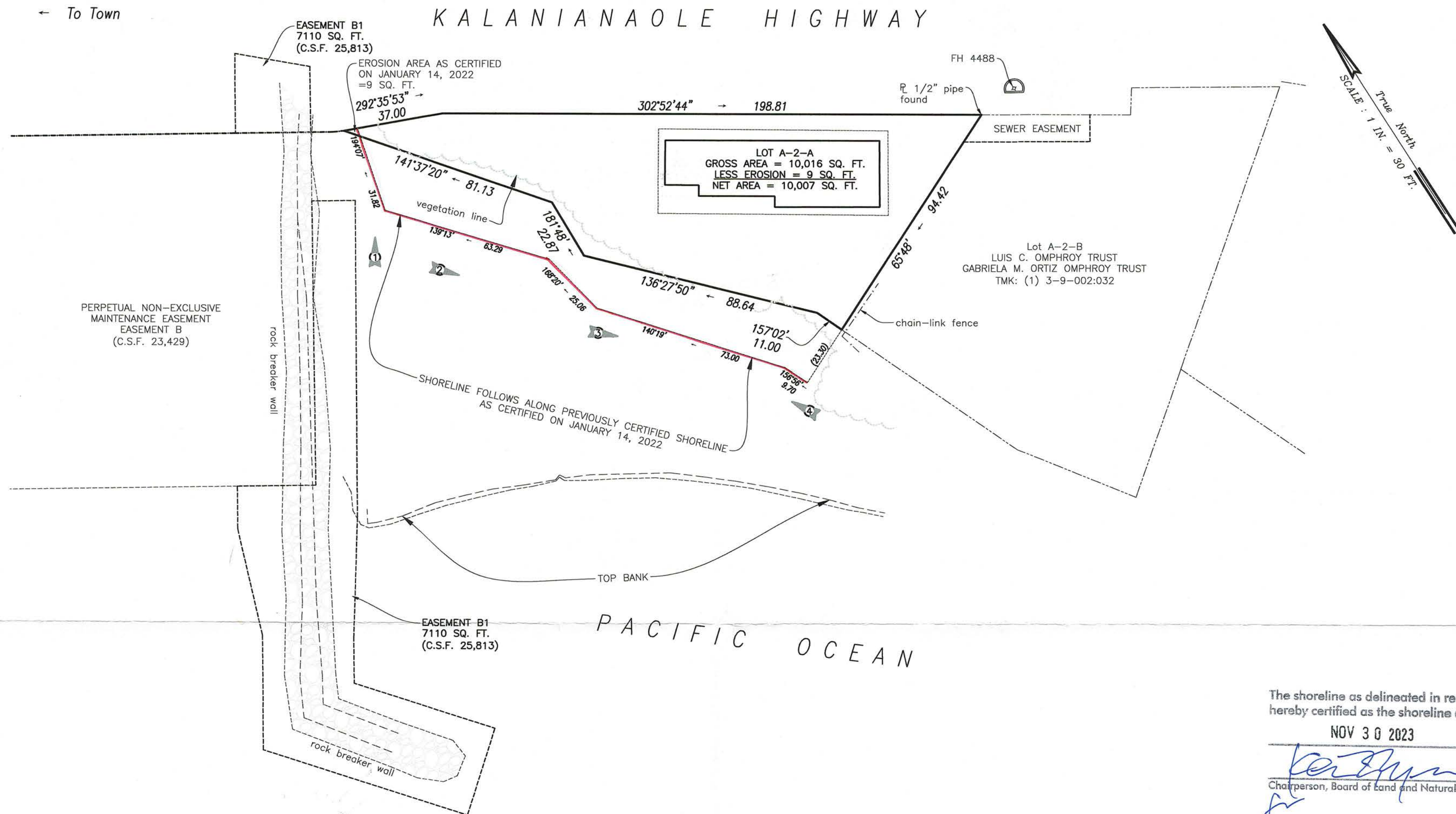
DRAWN  
GC  
CHECKED  
SZ  
DATE  
19 January 2024  
SCALE  
1/8" = 1'-0"  
JOB NO.  
18.18  
SHEET

L-1.0



**APPENDIX C**

**SHORELINE CERTIFICATION MAP**



The shoreline as delineated in red is  
hereby certified as the shoreline as of  
NOV 30 2023

*[Signature]*  
Chairperson, Board of Land and Natural Resources

NOTES:

1. Azimuths shown on this map are referred to Government Survey Triangulation Station "KOKO HEAD 3"Δ.
2. Shoreline certification is for building setback purposes.  
① Denotes photo number and direction.
3. Map is based on a field survey on July 6-7, 2023.

TMK: (1) 3-9-002: 031

**SHORELINE CERTIFICATION MAP**  
6973 KALANIANA'OLE HIGHWAY  
BEING LOT A-2-A OF THE MAUNALUA BEACH SUBDIVISION  
BEING A POR. OF R.P. 4475, L.C. AW. 7713, AP. 30 TO V. KAMAMALU  
AT MAUNALUA, HONOLULU, OAHU, HAWAII



HAWAII ENGINEERING GROUP, Inc.  
Executive Center  
1088 Bishop Street, Suite #2506  
Honolulu, Hawaii 96813  
Phone: (808) 533-2092  
Fax: (808) 533-2059  
email: heg@hawaiiengineering.net



*[Signature]*

Clayton M. Kaneshiro  
Licensed Professional Land Surveyor  
Certificate Number 12972  
Exp. Date: 04/30/24

OWNER: SUSHIL AND LORENE GARG  
SITE ADDRESS: 6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HAWAII 96825

JULY 10, 2023  
REVISED: OCTOBER 16, 2023

## **APPENDIX D**

### **COMMUNITY CONSULTATION**



## HAWAII KAI NEIGHBORHOOD BOARD

### **REGULAR MEETING AGENDA – INITIAL CONVENING MEETING**

**Tuesday, July 26, 2022**

**ROBERTA MAYOR**  
At Large  
Chairperson

7:00 pm Hahaione Elementary School Cafeteria and Via WebEx – Access Information:

Meeting Link:

<https://cchnl.webex.com/cchnl/j.php?MTID=m705bfb4e0e85975863f2530244a6a6ec>

Meeting Number: 2487 410 3275

Password: HKNB#1 (456201 from phones and video systems)

Join By Phone: 1-408-418-9388

United States Toll Access Code: 2487 410 3275

**ELIZABETH REILLY**  
At Large  
Vice Chair

**TEHANI MALTERRE**  
Sub district #9  
Secretary

**BYRON APO**  
Sub district #8  
Treasurer

**GREG KNUDSEN**  
At Large

**KALEO NAKOA**  
At Large

**Vacant**  
Sub district #1

**MARIAN GREY**  
Sub district #2

**TATIANA QUONG**  
Sub district #3

**SAMUEL WOLFF**  
Sub district #4

**ELIJAH LEE**  
Sub district #5

**HERB SCHREINER**  
Sub district #6

**KIM HOLLANDSWORTH**  
Sub district #7

**Vacant**  
Sub district #10

**PAIGE ALTONN**  
Sub district #11

**Hawaii Kai  
Neighborhood Board #1**  
c/o Neighborhood  
Commission Office  
925 Dillingham Blvd., #160  
Honolulu, Hawaii 96817  
Phone: (808) 768-3710  
Fax: (808) 768-3711  
[www.honolulu.gov/nco](http://www.honolulu.gov/nco)

*Hawaii Kai Neighborhood  
Board meets 7 p.m. the last  
Tuesday of every month  
except Dec. at Hahaione  
Elementary School cafeteria.  
The public is welcome to  
attend.*

1. **CALL TO ORDER** – *Chair Pro Tem Roberta Mayor*
  - 1.1. Introduction of Board members
2. **ELECTION OF OFFICERS TO SERVE FROM JULY 26, 2022 TO JUNE 30, 2023**  
The officers to be elected are the Chair, one or more Vice Chairs, a Secretary, a Treasurer.
3. **MEETING DETERMINATION: DATE/TIME, LOCATION FROM AUGUST 2022 TO AUGUST 2023.** Meetings have traditionally been held on the last Tuesday of each month, at Hahaione Elementary School and/or on WebEx, beginning at 7:00 p.m.
4. **DETERMINATION OF RECESS SCHEDULE FROM AUGUST 2022 TO AUGUST 2023**  
The Hawaii Kai Neighborhood Board has traditionally recessed its December meeting.
5. **STATUS REPORTS**– *Three (3) minutes maximum per department. Questions to follow.*
  - 5.1. Honolulu Fire Department
  - 5.2. Honolulu Police Department
  - 5.3. Board of Water Supply
  - 5.4. Kaiser Complex Schools
6. **VACANCIES: SUBDISTRICTS 1 and 10.**  
*Appointment through June 2023. Three minutes per candidate. See endnote<sup>1</sup>*
7. **COMMUNITY ANNOUNCEMENTS** – *Brief announcements by board members and the public on events, activities, and general information directly relating to Hawaii Kai.*
8. **PUBLIC-GENERATED ISSUES**– *Two (2) minutes per speaker. Questions to follow.*  
*Issues/concerns not listed elsewhere on the Board's agenda may be raised but no Board action may be taken because of the "Sunshine Law."*
9. **PRESENTATIONS** – *Five (5) minutes per presentation. Questions to follow. Discussion or action as needed.*
  - 9.1. Housing Hawaii's Future (Addressing the Workforce Housing Shortage) – Presenter: Sterling Higa, Executive Director of Housing Hawaii's Future
  - 9.2. 6973 Kalaniana'ole Hwy Single Family Residential Project SMA Application – Presenter: Roy Irei, VP Telecom Division, Hawaii Engineering Group
10. **OFFICIALS' REPORTS** – *Three (3) minutes per speaker. Reports should relate to issues of interest to residents of Hawaii Kai. Questions to follow.*
  - 10.1. Mayor Rick Blangiardi's Representative – Amy Asselbayer
  - 10.2. City Council Chair Tommy Waters – District 4
  - 10.3. Governor David Ige's Representative – Doug Murdock
  - 10.4. Senator Stanley Chang – District 9



## Hawaii Kai Neighborhood Board No. 1 Meeting Agenda

Tuesday, July 26, 2022

Page 2 of 2

- 10.5. Senator Chris Lee – District 25
- 10.6. Representative Gene Ward – District 18
- 10.7. Representative Mark Hashem – District 19
- 10.8. Congressional Representatives
11. **BOARD BUSINESS** – *For discussion/action. Five (5) minutes.*
  - 11.1. Update on Luana Kai, A Proposed Life Plan Community in Hawaii Kai
  - 11.2. Update on Koko Crater Stables
  - 11.3. Update on Kaiwi Coast Scenic Byway
  - 11.4. Update on Kamilo Nui Valley Agriculture
  - 11.5. Update on Early Morning Hikers at Koko Head District Park
12. **BOARD COMMITTEES**
  - 12.1. Board Committees: Transportation, Education, Parks & Recreation, Planning & Environment
  - 12.2. Announcements by committee chairpersons or members as needed.
13. **TREASURER'S REPORT**
14. **APPROVAL OF REGULAR MEETING MINUTES** – *Minutes for June 26, 2022.*
15. **OTHER BOARD ANNOUNCEMENTS**
  - 15.1. Board Member Announcements
  - 15.2. Board Chairperson Announcements
16. **CLOSING ANNOUNCEMENTS**
  - 16.1. The next regular meeting of the Hawaii Kai Neighborhood Board is Tuesday, August 30, 2022, 7:00 p.m., at Hahai'one Elementary School Cafeteria.
  - 16.2. Hawaii Kai Neighborhood Board regular meetings are cablecast on Olelo Ch. 49 on the 2nd Monday of the following month at 9:00 p.m. repeating on that month's 3rd Friday and the next month's 1st Friday at 7:00 a.m. Videos can also be seen online at [www.olelo.org/olelonet](http://www.olelo.org/olelonet) (search "Hawaii Kai Board"), or via [www.honolulu.gov/nco/boards](http://www.honolulu.gov/nco/boards) ("Board Meeting Video Archive").
17. **ADJOURNMENT**

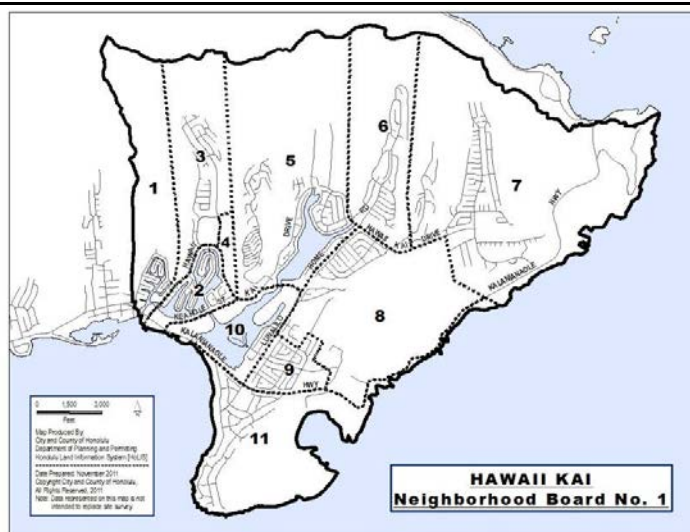
<sup>1</sup> **VACANCY: SUB DISTRICT 1 (Marina West) and SUB DISTRICT 10 (Marina East)** – Appointment through June 30, 2023. Candidates must be 18 or older and reside in their district (bring official ID). Board majority of at least eight votes needed for appointment. More than one round of voting may occur. Successful candidate will take Oath of Office upon appointment. **Boundary descriptions are available online at** <http://www.honolulu.gov/cms-nco-menu/site-nco-sitearticles/20115-board-subdistrict-descriptions.html>.

### Hawaii Kai Neighborhood Board

For agenda, minutes, member contact directory, and other information, go to [www.honolulu.gov/nco/boards](http://www.honolulu.gov/nco/boards).

To receive this Board's agenda and minutes by mail or email, visit the Neighborhood Commission Office, 925 Dillingham Blvd., Suite 160, Honolulu, Hawaii 96817; call 768-3710 or fax 768-3711; or go to [www.honolulu.gov/nco](http://www.honolulu.gov/nco).

If you would like to attend a Neighborhood Board meeting and have questions about accommodations for a physical disability or a special physical need, call the Neighborhood Commission Office at 768-3710 between 8:00 a.m. and 4:00 p.m. at least 24 hours before the scheduled meeting.







## HAWAI'I KAI NEIGHBORHOOD BOARD NO. 1

NEIGHBORHOOD COMMISSION ☐ 925 DILLINGHAM BOULEVARD, SUITE 160 HONOLULU, HAWAII, 96817  
PHONE (808) 768-3710 ☐ FAX (808) 768-3711 ☐ INTERNET <http://www.honolulu.gov/nco>

### DRAFT REGULAR MEETING MINUTES

TUESDAY, JULY 26, 2022

### HAHAI'ONE ELEMENTARY AND VIDEO TELECONFERENCE (WEBEX)

**CALL TO ORDER** – Chair Roberta Mayor called the meeting to order at 7:00 p.m. and thanked attendees for coming. **A quorum was established with 12 members present at 7:00 p.m.** Note: This 15-member Board requires eight (8) members to establish a quorum and to take official Board action.

**Board Members Present:** Roberta Mayor, Elizabeth Reilly, Byron Apo, Greg Knudsen, Kaleo Nakoa, Marian Grey, Tatiana Quong, Samuel Wolff, Elijah Lee, Herb Schreiner, Kim Hollandsworth, and Paige Altonn.

**Board Members Absent:** Tehani Malterre.

**Guests:** Firefighter John Chun (Honolulu Fire Department); Lieutenant Nishimura, Sergeant Hong (Honolulu Police Department); Iris Oda (Board of Water Supply); Adam Doo (Councilmember Tommy Waters' Representative); Doug Murdock (Governor David Ige's Representative); Representative Gene Ward; Kama Hopkins (Manoa Neighborhood Board Chair); Sterling Higa (Housing Hawaii's Future); Diamond Garcia, Dick Johnson, Keola Fisher, Cynthia Sims, Lisa Bishop, Elizabeth Jordan, Hauoli Keawe-Aiko, Travis Counsell, Skip Williams, Chris Cramer, Simeon Rojas, Dylan Whitsell, (Residents); Olelo Virtual, and Neighborhood Assistant (NA) Partner Akiona (Neighborhood Commission Office). **Total Attendees: 28**

### ELECTION OF OFFICERS

**Chair:** Reilly **NOMINATED** Mayor to the Chair position. Mayor accepted the nomination. Mayor was elected to the Chair position by **UNANIMOUS** roll call vote.

**Vice Chair:** Altonn **NOMINATED** Reilly to the Vice Chair position. Reilly accepted the nomination. Reilly was elected to the Vice Chair position by **MAJORITY** roll call vote (**Aye:** Mayor, Reilly, Nakoa, Grey, Quong, Wolff, Lee, Schreiner, Hollandsworth, Apo, Altonn; **Nay:** Knudsen; **Abstain:** None).

**Secretary:** Knudsen **NOMINATED** Malterre to the Secretary position. Malterre was not present to accept the nomination. Malterre was elected to the Secretary position by **MAJORITY** roll call vote (**Aye:** Mayor, Reilly, Knudsen, Nakoa, Grey, Quong, Wolff, Lee, Schreiner, Apo, Altonn; **Nay:** None; **Abstain:** Hollandsworth).

**Treasurer:** Reilly **NOMINATED** Apo to the Treasurer position. Apo accepted the nomination. Apo was elected to the Treasurer position by **UNANIMOUS** roll call vote.

**Meeting Determination:** Chair Mayor proposed to retain the current meeting schedule of the last Tuesday of each month, at Hahaione Elementary School and Webex, start time 7:00 p.m. The board retained the current meeting schedule by **UNANIMOUS** consent.

**Meeting Recess Schedule:** Chair Mayor proposed for the board to recess during the month of December. The board approved to recess during the month of December by **UNANIMOUS** consent.

### STATUS REPORTS

**Honolulu Fire Department:** Firefighter John Chun reported the following:

- **June 2022 Statistics:** One (1) Nuisance Fire; One (1) Cooking Fire; One (1) Activated Alarm; 81 Medical Calls; 10 Motor Vehicle Crash/Collision; Three (3) Mountain Rescues.
- **Safety Tips – Grilling:** Chun provided information on grilling safety. More information can be found at: <http://www.honolulu.gov/hfd>.

Questions, comments, and concerns followed:

1. **Statistics:** Member Knudsen requested the statistics relating to Emergency Medical Services (EMS) call responses/co-responses with HFD to an emergency call.

**Honolulu Police Department:** Sergeant Adam Lipka reported the following:

- **June/May 2022 Statistics:** 9/2 Motor Vehicle Thefts; 5/3 Burglaries; 13/17 Thefts; 16/26 Unauthorized Entry to a Motor Vehicle.
- **Hurricane Preparedness Tips:** Go to [ready.hawaii.gov](http://ready.hawaii.gov) to find out and learn what to do to prepare for a hurricane.

Questions, comments, and concerns followed:

1. **Staffing:** Member Altonn inquired on the size of the district, the number of watches and the number of officers per watch. The district runs from Punahou Street to Makapu'u lighthouse, and operations assigns the officers to the 3 watches.
2. **Maunaloa Bay:** Chair Mayor shared a resident's query if HPD is aware of the residentially-challenged individual currently residing at Maunaloa Bay and if services have been provided or any action taken by HPD. Member Nakoa gave additional information regarding the individual.

**Chair Mayor called a recess at 7:38 p.m. to restore order and decorum. Chair Mayor gaveled the meeting back to order at 7:43 p.m.**

3. Vehicle: Member Reilly queried what HPD can do regarding a vehicle operating within the district with expired tags.
4. Encampment: Member Hollandsworth inquired about the residentially-challenged encampment on the mountain side of Kalanianaʻole Highway across from Wawamalu Beach Park. She expressed concerns about the unsanitary conditions and the possible fire hazard posed by the growing encampment.

Board of Water Supply (BWS): Iris Oda reported the following:

- General Water Announcements: July is Smart Irrigation Month. For information on ways to adjust your irrigation methods go to <https://www.boardofwatersupply.com/irrigation>.
- Response: Oda gave responses to questions and concerns mentioned during the June 2022 regular meeting.

Questions, comments, and concerns followed:

1. Pressure: Member Reilly commented on the water pressure issue for the farmers in Kamilo Nui Valley. She also commented on the delay in the completion of the Watershed Management Plan.
2. Cost: Member Wolff inquired about the cost the BWS (and the taxpayers of Hawaii) has incurred on behalf of the United States Navy in addressing the Red Hill Fuel Crisis.
3. Answers: Member Altonn asked for clarification on BWS's determination that improvements to the water infrastructure in Hawaii Kai have been made, thus making it possible to support the Luana Kai Development Project? Ms. Oda will inquire specifically about Kalama Valley and report at next month's meeting.
4. Watering: Member Altonn questioned the watering practices at Koko Head Elementary as it contradicts the watering guidelines advertised by BWS. Ms. Oda noted that some watering is done during the entity's working hours.
5. Support: Member Hollandsworth reiterated her question from previous meetings regarding the ability for the BWS infrastructure to support the Luana Kai Development Project.
6. Corrections: Member Knudsen commented on the current water infrastructure within Kalama Valley, noting that further improvement is necessary.
7. Request: Member Altonn suggested that BWS present an official to the board who can answer the questions the board presents.

Kaiser Complex Schools: Representative not present. No report given.

FILLING OF VACANCIES: Sub-Districts 1 and 10: There were no volunteers to fill the vacancies.

#### COMMUNITY ANNOUNCEMENTS:

- Hawea Heiau & Keawawa Wetland: Announcement of a volunteer workday on Saturday, August 13, 2022 and every second Saturday from 8:00a.m. - 11:30p.m. Sign-up sheet is available for volunteers.
- Kahala Hilton: Member Reilly mentioned the cultural activities calendar at the Kahala Hilton Hotel. Activities are free to Oahu residents. For more information and reservations call 808-739-8911.
- Century Ride: Travis Counsell from Hawaii Bicycling League announced the Century Ride taking place on Sunday, September 25, 2022, starting at 6:15 a.m. from Kapiolani Park.

#### PUBLIC-GENERATED ISSUES:

- Land: Member Lee reported on information he received regarding a parcel within the district known as the McCoriston Property and the equipment/material stockpiling that has occurred there. Member Reilly also commented on the status of the property. Chair Mayor will retain this item for the August 2022 regular meeting agenda for an update.
- Farms: Member Apo reported on a number of farms located behind Kaiser High School on Pakala Street and requested to know what State or City agency monitors the farms' use of pesticides and what measures the farms are taking to protect residents from the use of pesticides.
- Concern: Member Hollandsworth reiterated her concern regarding a car that was set on fire on the mauka side of Kalanianaʻole Highway across from Wawamalu Beach. Since the initial incident, four (4) additional vehicles have arrived at the same spot. She has reached out to countless city and state entities for help, to no avail.

#### PRESENTATIONS

Housing Hawaii's Future – Sterling Higa, Executive Director: Higa presented to all in attendance, his organization's focus and goal of improving the current workforce housing shortage in Hawaii and how that can become possible. Discussion followed. Higa responded to numerous questions concerning affordable housing, work force housing, reasons for the scarcity of housing, and median income required by an average family to acquire housing.

SMA Application – Roy Irei, Hawaii Engineering Group: Irei presented to all in attendance, an update regarding the proposed single family residential project SMA application for the property located at 6973 Kalanianaʻole Highway. Discussion followed. Irei responded to questions about any increases in size or height of the renovation, and if the property would be owner occupied. Concerns were also raised about possible cultural artifacts that might be present at the site that need to be removed and saved.

#### OFFICIALS' REPORTS:

Mayor Rick Blangiardi's Representative: Representative not present. No report given.

Council Chair Tommy Waters: Adam Doo reported the following:

- Deadline: The deadline to file for the homeowner's tax exemption is Friday, September 30, 2022. For more information go to [www.realpropertyhonolulu.org](http://www.realpropertyhonolulu.org) or call 808-768-3799.
- Canal: The Ana Palau Canal was cleared on the week of July 11, 2022.
- Follow-up: Mr. Doo provided updates on last month's concerns.
- Concern: The Councilmember's office will look into the situation mentioned by member Hollandsworth regarding the vehicles used as housing by residentially challenged individuals along Kalanianaʻole Highway.

Questions, comments, and concerns followed:

Gate: The Chair requested a status update on the resolution submitted by Waters' office regarding the opening of the Koko Head District Park Gate for early morning hikers. Mr. Doo indicated it had not yet been acted upon.

Governor Ige's Office: Doug Murdock was present, but had no report. He was available to take concerns.

Senator Stanley Chang: Representative not present. No report given. Physical newsletter was available at the meeting venue.

Senator Chris Lee: Representative not present. No report given.

Representative Gene Ward: Ward reported on items covered in his monthly newsletter.

Questions, comments, and concerns followed:

Tactic: Member Altonn queried if Kamehameha Schools is utilizing the cesspool issue as a "playing card" due to the leases being up in 2025.

Beer Summit: Member Nakoa asked for a reason on choosing Josh Green and Duke Aiona as the featured candidates at the Beer Summit after the primary election is completed. Also, if Aiona loses in the primary, will Ward choose another candidate? Rep. Ward noted he was following the polls, and it was his intention to feature the two primary election winners.

Voting: Member Nakoa asked why in-person voting is not a listed option along with other options covered in his newsletter and Ward's opinion on the unmanned ballot dropboxes. Discussion followed on the safety of ballots in the drop boxes.

Solution: Member Schreiner recommended a safety solution, that voters should hand deliver their mail-in ballots to a polling location to ensure voter identification and integrity.

Registration: Member Grey asked for Ward's best resolution to voter fraud.

Representative Mark Hashem: No representative present. No report given.

Congressional Representatives: No representatives present. No reports given.

## BOARD BUSINESS

Update on Luana Kai - A Proposed Life Plan Community in Hawai'i Kai: No updates were provided by the project developers. Impact studies are still being conducted which will be reported once completed. The Planning and Environment Committee, co-chaired by members Reilly and Lee, will hold a public meeting on Luana Kai on Tuesday, August 16, 2022, 7:00 p.m. at Hawaii Kai Library. Co-chair Lee will solicit community input about Luana Kai, explore alternative uses for the Kalama Valley Shopping Center, and consider other possible locations in Hawaii Kai more suitable for a senior residential facility.

Update on Koko Crater Stables: No update provided. Member Reilly requested a copy of the RFP for board review. Member Schreiner provided a brief update, and Member Nakoa shared a personal experience in trying to work with the current management.

Update on Kaiwi Coast Scenic Byway: Chair Mayor forwarded resident Liggett's latest update regarding Wawamalu Beach. Member Reilly commented that the situation mentioned by member Hollandsworth might become the new concern in the protection of the coastline. Member Hollandsworth mentioned she will be meeting with elected officials and representatives tomorrow morning to observe the severity of the situation posed by the encampment across from Wawamalu Beach Park. Member Nakoa mentioned threats to public safety based on this issue.

Update on Kamilo Nui Valley Agriculture: Member Reilly, Co-Chair of the Planning and Environment Committee, is the point person regarding the issues affecting Kamilo Nui Valley. Updates on the poor water pressure, the requirement to connect to the sewer system, and the end of the leases in 2025, were given earlier in the meeting. This item will remain on future agendas.

Update on Early Morning Hikers at Koko Head District Park: This item was discussed earlier under the Council Chair's report. It has become a community issue as individuals waiting to enter the park prior to the gates being opened, cause a disruption to the surrounding residents and community.

Candidate Forum: Chair Mayor asked if the board is interested in hosting a candidate forum prior to the general election, possibly in conjunction with a regular Neighborhood Board meeting, and possibly with Neighborhood Board #2. Additional information will be shared at the next board meeting. Members willing to volunteer to work on such a forum should let the chair know.

BOARD COMMITTEES: No reports given.



TREASURER'S REPORT: The Neighborhood Commission will be reassessing the Treasurer's report in the coming months.

APPROVAL OF REGULAR MEETING MINUTES: **The board ADOPTED the Tuesday, June 26, 2022, regular meeting minutes as presented by UNANIMOUS consent.**

CLOSING ANNOUNCEMENTS:

- Meeting: The next regular meeting is Tuesday, August 30, 2022, 7:00 p.m. at Hahai'one Elementary School cafeteria and via WebEx.
- Olelo: The Hawai'i Kai Neighborhood Board's regular meetings are cablecast on Olelo Ch. 49 on the 2nd Monday of the following month at 9:00 p.m., repeating on that month's 3rd Friday and the next month's 1st Friday at 7:00 a.m. Videos can also be seen online at [www.olelo.org/olelonet](http://www.olelo.org/olelonet) (search "Hawai'i Kai Board"), or via [www.honolulu.gov/nco/boards](http://www.honolulu.gov/nco/boards) ("Board Meeting Video Archive").

ADJOURNMENT – The meeting was adjourned by the Chair at 9:45 p.m.

Submitted By: Partner Akiona, Neighborhood Assistant  
Reviewed and Finalized By: Roberta Mayor, Chair

## **Hawaii Kai Neighborhood Board No. 01**

### **Questions Asked by the Neighborhood Board During the July 26, 2022 Meeting:**

1. Will you be blocking traffic during construction?  
Hawaii Engineering Group, Inc. response: Yes, during non-peak traffic hours between 9 am to 3 pm, just for ingress/egress onto the property. There is an existing driveway on the property that is 16 feet wide to support deliveries.
2. Please consider donating the materials from demolition to Re-Use Hawaii.  
Hawaii Engineering Group, Inc. response: I will convey the message. (Owner will consider it)
3. How much taller will the new house be?  
Hawaii Engineering Group, Inc. response: Existing house is 25 feet; new house will be approximately 29 feet.
4. How far back will the new house be from the shoreline?  
Hawaii Engineering Group, Inc. response: Setback from the shoreline high water mark is 40', but this is a narrow lot.
5. How far back is the existing house from the shoreline?  
Hawaii Engineering Group, Inc. response: Approximately 40'.
6. How many bedrooms and bathrooms will the new house have?  
Hawaii Engineering Group, Inc. response: 6 bedroom and 4 baths (Note: I miss counted)
7. This new house is so much larger than the old, how much larger is it?  
Hawaii Engineering Group, Inc. response: Current house is approximately 2,800 sq. ft., and the new house is approximately 4,700 sq. ft. The existing house is a two-story and too small for the new family. The owner has 5 children.
8. Is the new owner a local resident or looking to move into Hawaii?  
Hawaii Engineering Group, Inc. response: No, the owner currently lives on the mainland looking to live in the new residence.
9. Will he be a Hawaii resident?  
Hawaii Engineering Group, Inc. response: He's looking to move here.
10. There is nearby Fishpond that is culturally sensitive and former owner of the property used be the caretaker. What kind of cultural studies have you done on the property and the Fishpond?  
Hawaii Engineering Group, Inc. response: Not sure, but we engaged Ford & Associates to conduct an EA.

11. Can we have the opportunity to review the draft EA? Please provide it to us when available.

Hawaii Engineering Group, Inc. response: Yes, will provide it to you.

12. Vice Chair will contact me (Hawaii Engineering Group, Inc.) to introduce Chris who is the care taker of the Fish Pond.



DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET, 7<sup>TH</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-8000 • FAX: (808) 768-6041  
DEPT. WEB SITE: [www.honolulu.dpp.org](http://www.honolulu.dpp.org) • CITY WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)

RICK BLANGIARDI  
MAYOR



DAWN TAKEUCHI APUNA  
ACTING DIRECTOR

September ##, 20##

Mr. Alan Downer  
State Historic Preservation Division  
Department of Land and Natural Resources  
601 Kamokila Boulevard, Room 555  
Kapolei, Hawaii 96707

Dear Mr. Downer:

SUBJECT: Request for Comments

\_\_\_\_\_ Project Name \_\_\_\_\_  
\_\_\_\_\_ Project Location \_\_\_\_\_  
\_\_\_\_\_ Tax Map Key #-#-###: ### \_\_\_\_\_

On behalf of the proponent for the above-mentioned project, the Department of Planning and Permitting (DPP) hereby requests that the State Historic Preservation Division review and comment on the effect of the above-mentioned project on historic and cultural properties, in accordance with any and all applicable regulations. This request will help facilitate the processing of a pending or future land use approval.

Please note that this project has not been initiated by the DPP, and this letter should not be construed as a land use approval of any kind.

Should you have any questions, please contact our staff at (808) 768-8000 or [dpp@honolulu.gov](mailto:dpp@honolulu.gov), or contact the applicant or the applicant's agent for the project at:

\_\_\_\_ Name \_\_\_\_\_  
\_\_\_\_ Phone number \_\_\_\_\_  
\_\_\_\_ Email \_\_\_\_\_

Very truly yours,

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

Dawn Takeuchi Apuna  
Acting Director



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

In reply, please refer to:  
EMD/CWB

10001CEC.22

October 7, 2022

**MEMORANDUM**

SUBJECT: Clean Water Branch Standard Project Comments

TO: Agencies and Project Owners

FROM: ALEC WONG, P.E., CHIEF  
Clean Water Branch

A handwritten signature in cursive script that reads "Alec Wong".

**This memo is provided for your information and sharing. You are encouraged to share this memo with your project partners, team members, and appropriate personnel.**

The Department of Health (DOH), Clean Water Branch (CWB) will no longer be responding directly to requests for comments on the following documents (Pre-consultation, Early Consultation, Preparation Notice, Draft, Final, Addendums, and/or Supplements):

- Environmental Impact Statements (EIS)
- Environmental Assessments (EA)
- Stream Channel Alteration Permits (SCAP)
- Stream Diversion Works Permits (SDWP)
- Well Construction/Pump Installation Permits
- Conservation District Use Applications (CDUA)
- Special Management Area Permits (SMAP)
- Shoreline Setback Areas (SSA)

For agencies or project owners requiring DOH-CWB comments for one or more of these documents, please utilize the DOH-CWB Standard Comments below regarding your project's responsibilities to maintain water quality and any necessary permitting. DOH-CWB Standard Comments are also available on the DOH-CWB website located at: <http://health.hawaii.gov/cwb/>.

### **DOH-CWB Standard Comments**

The following information is for agencies and/or project owners who are seeking comments regarding environmental compliance for their projects with the Hawaii Administrative Rules (HAR), Chapters 11-53, 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for point source water pollutant discharges into State surface waters (HAR, Chapter 11-55). Point source means any discernible, confined, and discrete conveyance from which pollutants are or may be discharged.

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for a NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

The DOH, Environmental Health Administration (EHA) e-Permitting Portal received Cross-Media Electronic Reporting Rule (CROMERR) certification by the Environmental Protection Agency (EPA) for electronic signature. Currently, Applicants and Permittees may now certify and submit EHA Electronic Signature Forms electronically through the EHA e-Permitting Portal without the need to physically send in an ink signature and CD/DVD/flash drive.



Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature e-Permitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated.

The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at:

<https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-for-electronic-signature-approval-for-all-submissions-beginning-january-31-2023/>.

The NPDES NOI or application will be processed after the filing fees submitted and payable to the "State of Hawaii in the form of a pre-printed check, cashier's check, money order, or as otherwise specified by the director is received by the CWB.

Some of the activities requiring NPDES permit coverage include, but, are not limited to:

a. Discharges of Storm Water

- i. For Construction Activities Disturbing One (1) or More Acres of Total Land Area.

By HAR Chapter 11-55, an NPDES permit is required before the start of the construction activities that result in the disturbance of one (1) or more acres of total land area, including clearing, grading, and excavation. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale.

- ii. For Industrial Activities for facilities with primary Standard Industrial Classification (SIC) Codes regulated in the Code of Federal Regulations (CFR) at 40 CFR 122.26(b)(14)(i) through (ix) and (xi). If a facility has more than one SIC code, the activity that generates the greatest revenue is the primary SIC code. If revenue information is unavailable, use the SIC code for the activity with the most employees. If employee information is also unavailable, use the SIC code for the activity with the greatest production.
- iii. From a small Municipal Separate Storm Sewer System (along with certain non-storm water discharges).

- b. Discharges to State surface waters from construction activity hydrotesting or dewatering
- c. Discharges to State surface waters from cooling water applications
- d. Discharges to State surface waters from the application of pesticides (including insecticides, herbicides, fungicides, rodenticides, and various other substances to control pest) to State waters
- e. Well-Drilling Activities

Any discharge to State surface waters of treated process wastewater effluent associated with well drilling activities is regulated by HAR Chapter 11-55. Discharges of treated process wastewater effluent (including well drilling slurries, lubricating fluids wastewater, and well purge wastewater) to State surface waters requires NPDES permit coverage.

NPDES permit coverage is not required for well pump testing. For well pump testing, the discharger shall take all measures necessary to prevent the discharge of pollutants from entering State waters. Such measures shall include, if necessary, containment of initial discharge until the discharge is essentially free of pollutants. If the discharge is entering a stream or river bed, best management practices (BMPs) shall be implemented to prevent the discharge from disturbing the clarity of the receiving water. If the discharge is entering a storm drain, the discharger must obtain written permission from the owner of the storm drain prior to discharge. Furthermore, BMPs shall be implemented to prevent the discharge from collecting sediments and other pollutants prior to entering the storm drain.

- 3. A Section 401 Water Quality Certification (WQC) may be required if your project/activity:
  - a. Requires a federal license or permit; and
  - b. May result in a discharge into waters of the United States (WOTUS).

"License or permit" means any permit, certificate, approval, registration, charter, membership, statutory exemption, or other form of permission granted by an agency of the federal government to conduct any activity which may result in any discharge.

The term “discharge” is defined in Clean Water Act, Subsections 502(16), 502(12), and 502(6).

Examples of “discharge” include, but are not limited to, allowing the following pollutants to enter WOTUS from the surface, or in-water: solid waste, rock/sand/dirt, heat, sewage, construction debris, any underwater work, chemicals, fugitive dust/spray paint, agricultural wastes, biological materials, industrial wastes, concrete/sealant/epoxy, and washing/cleaning effluent.

Determine if your project/activity requires a federal permit, license, certificate, approval, registration, or statutory exemption by contacting the appropriate federal agencies (e.g. Department of the Army (DA), U.S. Army Corps of Engineers (COE), Pacific Ocean Division Honolulu District Office (POH) Tel: (808) 835-4303; U.S. Environmental Protection Agency, Region 9 Tel: (415) 947-8021; Federal Energy Regulatory Commission Tel: (866) 208-3372; U.S. Coast Guard Office of Bridge Programs Tel: (202) 372-1511). If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the COE-POH regarding their DA permitting requirements.

To request an individual Section 401 WQC, you must complete and submit the Section 401 WQC application together with \$1,000 filing fee made payable to the "State of Hawaii" in the form of a check or other method specified by the department. This application is available on the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

The processing of a Section 401 WQC application will begin after the CWB has received filing fee. The processing of a Section 401 WQC application is also subject to the compliance with 40 CFR §121 requirements.

Beginning January 31, 2023, the DOH-CWB will only utilize electronic signature e-Permitting forms and discontinue the hard-copy signature forms. All hard-copy signature certification e-Permitting forms, including compliance forms, will be inactivated.

The electronic signature forms will require electronic signature approval to submit a form to the CWB. For details on how to obtain the electronic signature approval please visit CWB website located at: <https://health.hawaii.gov/cwb/announcements/cwb-announces-new-requirement-for-electronic-signature-approval-for-all-submissions-beginning-january-31-2023/>.



Please see HAR, Chapters 11-53 and 11-54 for the State's Water Quality Standards and for more information on the Section 401 WQC. HAR, Chapters 11-53 and 11-54 are available on the CWB website at: <http://health.hawaii.gov/cwb/>.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapters 11-53 and 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation and up to two (2) years in jail.
5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:
  - a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.
  - b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g. minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
  - c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.

- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.



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

EDWIN H. SNIFFEN  
DIRECTOR

Deputy Directors  
DREANALEE K. KALILI  
TAMMY L. LEE  
ROBIN K. SHISHIDO  
JAMES KUNANE TOKIOKA

IN REPLY REFER TO:

DIR 0097  
HWY-PL 2.0904

March 7, 2023

Ms. Lori Ford  
Ford and Associates, Inc.  
928 Nuuanu Avenue, Suite 505  
Honolulu, Hawaii 96817

Dear Ms. Ford:

**Subject:** Pre-Assessment Consultation for Draft Environmental Assessment  
Single Family Dwelling  
Kalaniana'ole Highway – Hawaii Kai, Oahu  
Tax Map Key No: (1) 3-9-002: 031

Thank you for your letter received on February 7, 2023, requesting our comments for the preparation of an upcoming Draft Environmental Assessment (DEA) and a National Environmental Policy Act (NEPA). Your letter mentioned that this is to evaluate potential requirements by Chapter 343, Hawaii Revised Statutes related to construction and development of a residential parcel adjacent to the shoreline. However, it is unclear at this time whether this Environmental Assessment will be tied to any upcoming Special Management Area Permit application.

The proposed work includes the demolition of an existing residential dwelling and the construction of a new dwelling. State Kalaniana'ole Highway (Route 72) borders the front of the site and it is within proximity to the Maunalua Bay Beach west of the site. The letter did not provide any details related to the project access; however, it appears that there is currently one access driveway directly onto the State Kalaniana'ole Highway.

The Hawaii Department of Transportation has the following comments:

1. The DEA/NEPA should address any subdivision action and access changes relating to the new proposed site plan layout. The DEA/NEPA should show the adequacy and safety function of the access if there is any potential change or additional access to be proposed.



Ms. Lori Ford  
March 7, 2023  
Page 2

HWY-PL 2.0904

2. A permit to perform work upon state highways is required for any work within the state right-of-way.

If you have any questions, please contact Jeyan Thirugnanam, Systems Planning Engineer, Highways Planning Branch at (808) 587-6336 or by email at [jeyan.thirugnanam@hawaii.gov](mailto:jeyan.thirugnanam@hawaii.gov). Please reference file review number PL 2023-005.

Sincerely,



EDWIN H. SNIFFEN  
Director of Transportation

c: Roy Irei (Hawaii Engineering Group, Inc.)

## COORDINATION/REVIEW TRANSMITTAL

**DATE:** 2/7/23

**LOG NUMBER:** DIR 0097

**TO:** HWY-P

**CC:** HWY

**FROM:** STP *bp*

**SUSPENSE DATE:** 2/28/23

**SUBJECT:** Pre-Assessment Consultation for Draft Environmental Assessment and Environmental Review Record – NMG HI Properties LLC

**FOR:**

☐ **Comments and Recommendations**  
(STP to prepare Departmental Response)

☒ **Appropriate Attention and Action**  
(Division to prepare Departmental Response)

☐ **Information and File**

**OTHER DIVISIONS REVIEWING MATERIAL:** ☐ AIR ☐ HAR ☐ HWY

**SPECIAL INSTRUCTIONS:** STP has no record of prior review of the subject project.

**PROJECT INFORMATION:** NMG HI Properties LLC is proposing to demolish an existing structure and rebuild a new residential dwelling at a property located on the makai side of Kalanianaʻole Highway just before the Koko Marina area.

**BN:**

**Date:** 02/07/2023

**State of Hawaii  
DEPARTMENT OF TRANSPORTATION**

**Log No:** DIR 0097

**Suspense:** 02/21/2023

**FROM:** DIRECTOR

**TO:** STP

- |   |                                |
|---|--------------------------------|
| <input checked="" type="checkbox"/> DIR   | <input type="checkbox"/> AIR   |
| <input checked="" type="checkbox"/> DEP-S | <input type="checkbox"/> HAR   |
| <input type="checkbox"/> DEP-A            | <input type="checkbox"/> HWY   |
| <input type="checkbox"/> DEP-H            | <input type="checkbox"/> BUS   |
| <input type="checkbox"/> DEP-HWY          | <input type="checkbox"/> BUS-F |
| <input type="checkbox"/> DIR-CZ           | <input type="checkbox"/> BUS-O |
| <input type="checkbox"/> DIR-P            | <input type="checkbox"/> CON   |
| <input type="checkbox"/> OCR              | <input type="checkbox"/> CSS   |
| <input type="checkbox"/> PER              | <input type="checkbox"/> LEG   |
| <input type="checkbox"/> PMN              |                                |
| <input type="checkbox"/> PPB              |                                |
| <input checked="" type="checkbox"/> STP   |                                |
| <input type="checkbox"/> _____            |                                |

**FOR: COMMENT &  
RECOMMENDATIONS**

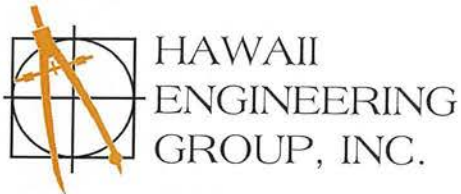
- ☐ Appropriate Attention & Action
- ☐ Arrange Meeting
- ☐ Investigate & Report Back
- ☒ Comments & Recommendations
- ☐ Draft Reply
- ☐ Final Reply for Gov's Sig
- ☐ Direct Action/Reply
- ☐ Information
- ☐ See Me
- ☐ Signature
- ☐ Submit Copy of Response
- ☐ File
- ☐ Review
- ☐ Return
- ☐ Phone Call \_\_\_\_\_
- ☐ Follow-up Interim Reply

**Subject:** PRE-ASSESSMENT CONSULTATION FOR DRAFT ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL REVIEW RECORD: PARCEL, TMK NOS. (1)3-9-002:031 HONOLULU, OAHU, HAWAII

- 1) DIR
- 2) DEP-S - EMAILED
- 3) STP, COMMENTS & RECOMMENDATIONS - EMAILED

***DO NOT REMOVE FROM CORRESPONDENCE***





**RECEIVED** By DOT-DIR  
9:25 am, Feb 07 2023

Consulting Civil Engineers, Structural Engineers, Land Surveyors, & Land Use Planning  
US (SBA) SDB & DBE Certified

Mr. Edwin Sniffen, Director  
State of Hawaii, Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813

Subject: Pre-Assessment Consultation for Draft Environmental Assessment and Environmental  
Review Record: Parcel, TMK Nos. (1) 3-9-002:031 Honolulu, O'ahu, Hawai'i

Dear Director Sniffen,

Ford & Associates Inc., on behalf of NMG HI Properties LLC, is in the process of preparing a Chapter 343 Hawaii Revised Statutes (HRS) Environmental Assessment (EA) and National Environmental Policy Act (NEPA), 24 Code of Federal Regulations (CFR) Part 58 Environmental Record Review (ERR) for the proposed demolition and re-building a new residential dwelling (TMK No. (1) 3-9-002:031 in Honolulu on the Island of O'ahu. Please see the enclosed Location Map. This document is being prepared to evaluate and document the possible environmental, social and economic consequences associated with the project scope.

We are in the project scoping phase and are seeking your input in terms of issues that would identify potential environmental impacts associated with the proposed project.

In conjunction with this work, we are requesting any written comments and/or information with respect to your area(s) of concern. Please send your written comments to the following by February 28, 2023:

Lori Ford  
Ford & Associates, Inc..  
928 Nuuanu Avenue, Suite 505  
Honolulu, Hawai'i 96817

Please send a copy of your comments to:

Roy Irei  
Hawaii Engineering Group, Inc.  
1088 Bishop Street, Suite 2506  
Honolulu, HI 96813

Thank you for participating in the planning stages of this important project. If you have any questions or need clarification, please contact me at [lford@fordassoc.com](mailto:lford@fordassoc.com) or 808-295-0604..

Sincerely,

Roy Irei

Encl.

Document Title  
Project Name  
Date  
Page 2 of 2



NGM HI Properties LLC  
Special Management Area Use Permit Application

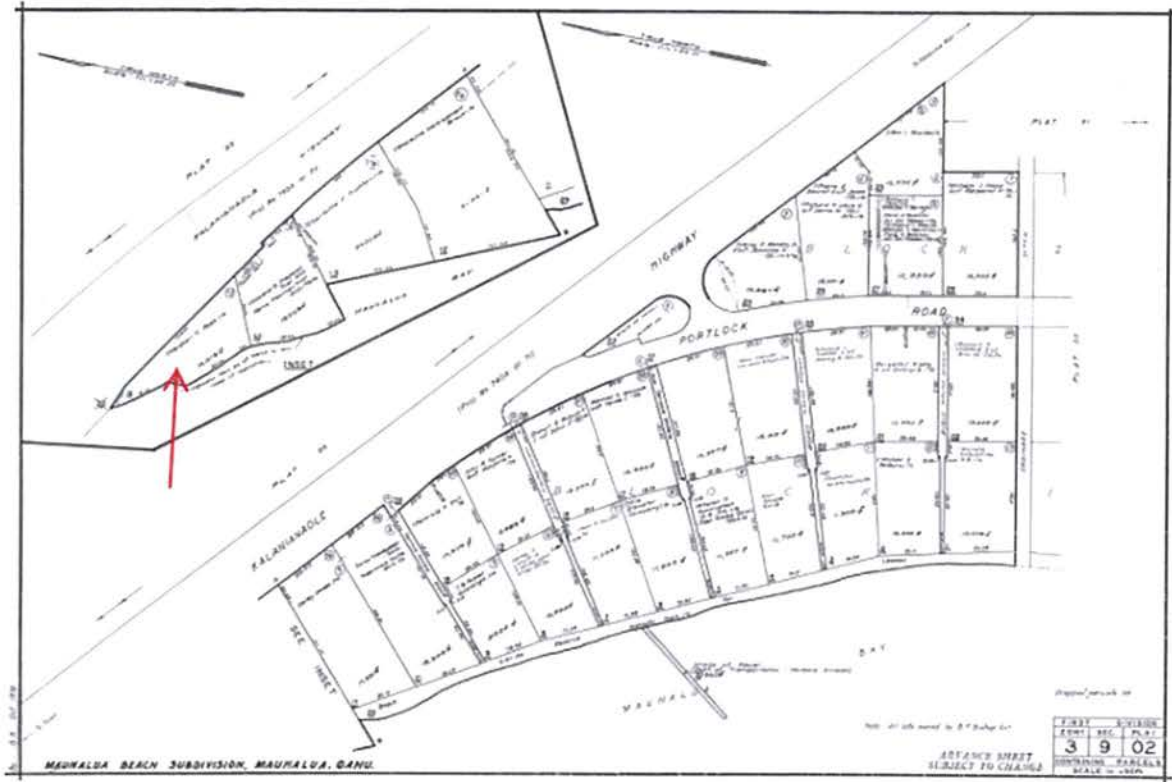


Figure 2-1 Project Location and Tax Map Key 3-9-002:031

JOSH GREEN, M.D.  
GOVERNOR | KE KIA'ĀINA

SYLVIA LUKE  
LIEUTENANT GOVERNOR | KA HOPE KIA'ĀINA



KA MOKU'ĀINA 'O HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
KA 'OIHANA KUMUWAIWAI 'ĀINA  
OFFICE OF CONSERVATION AND COASTAL LANDS  
P.O. BOX 621  
HONOLULU, HAWAII 96809

DAWN N.S. CHANG  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT

LAURA H.E. KAAKUA  
FIRST DEPUTY

M. KALEO MANUEL  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES  
ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

REF:OCCL:CM

Correspondence: OA 23-132

Mar 22, 2023

Lori Ford  
Ford and Associates, Inc.  
928 Nuuanu Avenue, Suite 505  
Honolulu, HI 96817

SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment (DEA)  
of Proposed NMG HI Properties LLC Residence Project Located at 6973  
Kalaniana'ole Highway; Maunalua Beach Subdivision, Oahu; Tax Map Key  
(TMK): (1) 3-9-002:031

Dear Ms. Ford,

The Office of Conservation and Coastal Lands (OCCL) has reviewed your correspondence regarding the proposed demolition and construction of a new home at the subject location. Accordingly, the project will include the demolition of an existing house and the re-building of a new dwelling. Staff's research identified the project site is in the State of Hawaii Urban Land Use District, and the City and County of Honolulu's R-10 Residential District. You are requesting a pre-consult for a DEA to determine possible environmental, social and economic impacts associated with the project.

The OCCL regulates land uses in the State Land Use Conservation District. Staff's research revealed that this property is currently not located in the Conservation District, however, the parcel abuts the shoreline area and may likely be impacted by future climate changes and sea level rise. A review of the Hawai'i State Sea Level Rise Viewer (<https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/>) indicates that the subject parcel lies within the sea level rise exposure area (SLR-XA). The OCCL has attached **Exhibit 1** regarding the SLR-XA for your information. We suggest that you include a thorough discussion of coastal hazards, climate change, sea level rise, and associated impacts in the EA. As the landowner's agent, you may want to consider reviewing the Hawaii Sea Level Rise Vulnerability and Adaptation Report (2017). A copy of the report can be obtained at <https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report-Dec2017.pdf>.

Potential structures should be sited away from the shoreline as private shoreline hardening structures are prohibited at sites having sand beaches under Act 16 (2020)



that amended HRS 205A. The OCCL also suggests the EA disclose any potential impacts to lateral shoreline access that the project may pose as well as how the landowner intends to support access along this stretch of coast.

OCCL notes that immediately west of the subject property is the boat entrance to the Hawaii Kai Marina. The shoreline of the boat entranceway is covered by a Land Office Deed No. 28553 issued to the Hawaii Kai Marina Community Association for a rock groin structure.

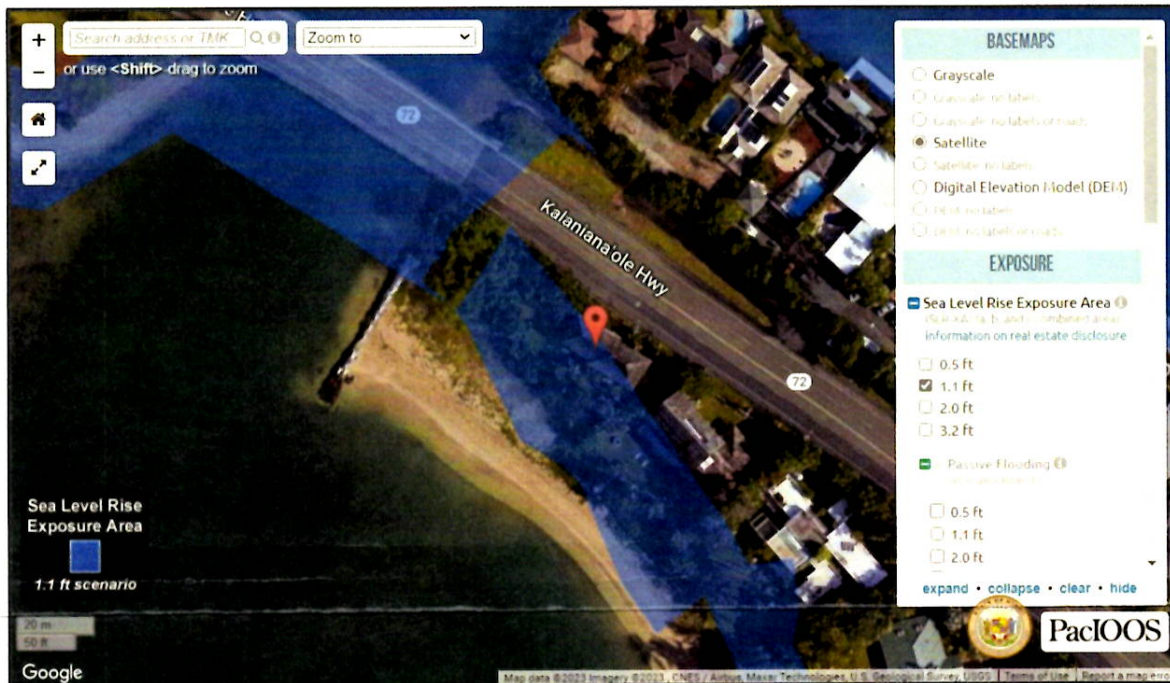
Should you have any questions regarding this correspondence, contact Cal Miyahara of the Office of Conservation and Coastal Lands at (808) 798-6147 or [calen.miyahara@hawaii.gov](mailto:calen.miyahara@hawaii.gov).

Sincerely,

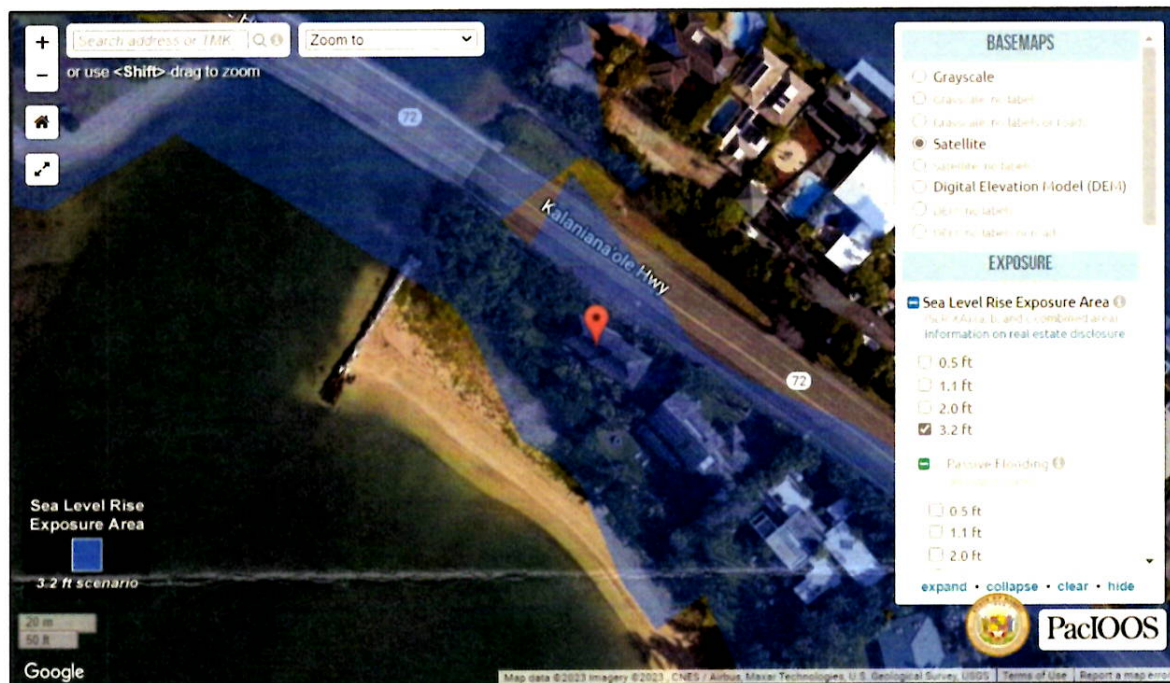
*S Michael Cain*

Michael Cain, Administrator  
Office of Conservation and Coastal Lands

C: ODLO  
City-Department of Planning and Permitting

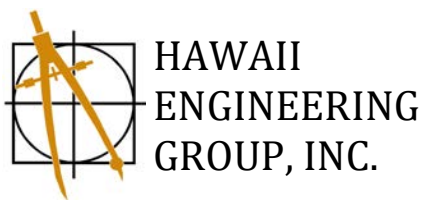


Note: 1.1-ft. sea level rise forecast shown in blue (approx. 2050). TMK: (1) 3-9-002:031.



Note: 3.2-ft. sea level rise forecast shown in blue (approx. 2100). TMK: (1) 3-9-002:031.

## Exhibit 1



Consulting Civil Engineers, Structural Engineers, Land Surveyors, & Land Use Planning  
US (SBA) SDB & DBE Certified

January 30, 2023

Lt. Col. Ryan Pevey  
U.S. Army Corp of Engineers  
Fort Shafter Bldg 230  
Fort Shafter, Hawaii 96858-5440

Subject: Pre-Assessment Consultation for Draft Environmental Assessment and Environmental  
Review Record: Parcel, TMK Nos. (1) 3-9-002:031 Honolulu, O'ahu, Hawai'i

Attn: Lt. Col. Pevey,

Ford & Associates Inc., on behalf of NMG HI Properties LLC, is in the process of preparing a Chapter 343 Hawaii Revised Statutes (HRS) Environmental Assessment (EA) and National Environmental Policy Act (NEPA), 24 Code of Federal Regulations (CFR) Part 58 Environmental Record Review (ERR) for the proposed demolition and re-building a new residential dwelling (TMK No. (1) 3-9-002:031 in Honolulu on the Island of O'ahu. Please see the enclosed Location Map. This document is being prepared to evaluate and document the possible environmental, social and economic consequences associated with the project scope.

We are in the project scoping phase and are seeking your input in terms of issues that would identify potential environmental impacts associated with the proposed project.

In conjunction with this work, we are requesting any written comments and/or information with respect to your area(s) of concern. Please send your written comments to the following by February 28, 2023:

Lori Ford  
Ford & Associates, Inc..  
928 Nuuanu Avenue, Suite 505  
Honolulu, Hawai'i 96817

Please send a copy of your comments to:

Roy Irei  
Hawaii Engineering Group, Inc.  
1088 Bishop Street, Suite 2506  
Honolulu, HI 96813

Thank you for participating in the planning stages of this important project. If you have any questions or need clarification, please contact me at [lford@fordassoc.com](mailto:lford@fordassoc.com) or 808-295-0604..

Sincerely,

Roy Irei

Encl.



1088 Bishop Street, Suite 2506 • Honolulu, Hawaii 96813  
Tel: 808.533.2092 • Fax: 808.533.2059  
Email: [heg@hawaiiengineering.net](mailto:heg@hawaiiengineering.net) • Web: [www.hawaiiengineering.net](http://www.hawaiiengineering.net)

**APPENDIX E**

**HAMER ENVIRONMENTAL REPORT**



Head Office

P.O. Box 2561

Mount Vernon, WA 98273

Tel: 360.899.5156

Fax: 360.899.5146

[www.HamerEnvironmental.com](http://www.HamerEnvironmental.com)

Hawai'i Field Office

P.O. Box 793

Kurtistown, HI 96760

July 6, 2022

Lori Ford, MS

Senior Project Manager

Ford & Associates, Inc.

928 Nuuanu Avenue, Suite 505, Honolulu, HI 96817

Subject: **Desktop Review of Terrestrial Flora and Fauna for proposed development  
Site: TMK: (1) 3-9-002: 031; 0.23-acres  
6973 Kalaniana'ole Hwy, Oahu Island, Hawai'i**

Hamer Environmental, L.P. conducted a desktop exploration of available wildlife, botanical, and ecological data for the 0.23-acre parcel at 6973 Kalaniana'ole Hwy, Oahu Island, Hawai'i. The purpose of this analysis is to identify the terrestrial flora and fauna species that could potentially be impacted from proposed development of this parcel. Only species that are federal- and state-listed as Threatened (T), Endangered (E), or are a Candidate for Listing (C) were considered in this review.

Federal status definitions for species are:

- Threatened (T): species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range;
- Endangered (E): species is in danger of extinction throughout all or a significant portion of its range;
- Candidate (C): Candidate species are plants and animals for which the U.S. Fish and Wildlife Service has enough information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA) (*see* Methods), but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the ESA, however, Hawai'i Administrative Rules (HAR) Chapters 13-107 and 13-124 list activities that are prohibited to conserve threatened and endangered species and indigenous wildlife.

## **SITE DESCRIPTION**

The parcel is situated on the southeastern shoreline of Oahu Island within Maunalua Bay. The property is at sea level (~25-feet elevation), latitude/longitude of 21° 16' 50.64" N, 157° 42' 39.48" W (Figure 1). Maunalua Bay is an elongated, semi-enclosed, coastal embayment that harbors a diverse variety of aquatic habitat types including open coastal waters, a barrier reef, reef crest, extensive reef flats, and boat access channels. The Bay is nestled within coastal mountain features: Koko Head Crater

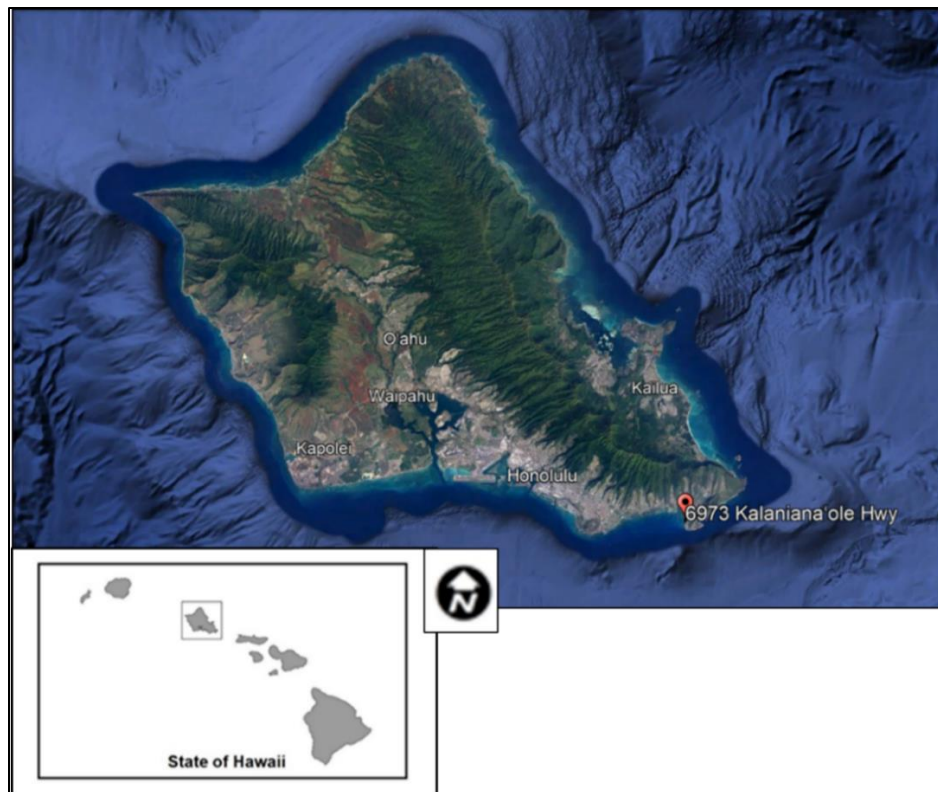


to the east, the crater of and waters of Hanauma Bay to the south, and the precipitous slopes of Hawai'i Kai to the north and Kalani Iki to the west; the Bay's narrow mouth opens to the southwest.

The parcel is on the ocean-side and at the apex of a barrier spit of land along Kalaniana'ole Highway. It abuts the short span of bridge situated southeast of Maunalua Bay Beach. Water leaving Maunalua Bay mixes with waters from the Paikō Lagoon over a half mile to the west of the parcel and enters the Marine Deepwater environment (Figure 3). The area surrounding the parcel is developed, suburban commercial and residential, and is described as southern sprawl from Honolulu and Waikiki to the west. Over 50,000 people live in the Bay area and because the shoreline and reef flats are easily accessible, the Bay supports a number of popular recreational fishing opportunities.

Climate in this region of Oahu is warm and dry with a mean maximum temperature of about 87° F (30.5° C) in the summer months and about 75° F (24° C) in the winter months. Annual rainfall averages about 25 in. (63.5 cm).

The parcel is currently developed with landscaping (trees and shrubs) and a two-story residential dwelling. The project proposes to demolish the existing residential development and construct a new 2-story residence. Filled and stacked sandbags currently line the north-northeast boundary of the property adjacent to the bridge for erosion control due to water flowing to/from Maunalua Bay and the ocean. Myriad coastal reef and shoreline protection measures, State setback codes, and landscaping (runoff prevention)/outdoor lighting requirements will apply to the demolition, construction, and post-development phases. These regulatory drivers are only indirectly addressed in this report in how they relate to and potentially impact terrestrial flora and fauna.



**Figure 1.** Site Location on Oahu Island's southeast coast.

## METHODS

We conducted a desktop review of available terrestrial wildlife, botanical, and ecological data to identify potential biological resources which may require further study or pose issues to development plans. Our analyses focused on two landscape levels (from smallest to largest): the TMK parcel's footprint and a 300 ft. (91.4 m) buffer surrounding the footprint, collectively called the Analysis Area (Figure 2).



**Figure 2.** Approximate 300-foot (91.4 m) buffer around property (yellow circle). Terrestrial species only are considered in this review.

### *Regulatory Framework*

Regulatory compliance is applicable to the project at federal and state levels. Marine waters and species and shoreline setback regulations are not addressed. The following regulations for terrestrial species are listed here and briefly summarized.

#### **1. Endangered Species Act (ESA)**

The purpose of the ESA is to protect and recover endangered and threatened species and the ecosystems upon which they depend. Section 9 of the ESA and Federal regulation pursuant to Section 4(d) of the ESA prohibit the “take” of endangered and threatened species without special exemption. Under the ESA, “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct (16 USC § 1532(19)). Further, “harm” includes significant habitat modification or degradation that results in death or injury to a listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3). “Incidental take” means take that is incidental to, and not the purpose of, the conduction of an otherwise lawful activity. Section 7(a)(2) of the ESA requires Federal agencies to ensure that actions, including the issuance of permits, do not jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. “Jeopardize the continued existence of...” pursuant to

50 CFR 402.2, means to engage in an action that would be expected, directly or indirectly, to appreciably reduce the likelihood of the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species.

## **2. Federal Migratory Bird Treaty Act (MBTA)**

The MBTA of 1918, as amended (16 USC § 703-712), prohibits the take of migratory birds and makes it unlawful to pursue, hunt, take, capture, kill, possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product without proper authorization. Pursuant to U. S. Fish and Wildlife (USFWS) policy, an Incidental Take Permit (ITP) also constitutes a Special Purpose Permit under 50 CFR § 21.27 for the take of ESA-listed migratory bird species so long as the permit holder maintains compliance with the ITP terms and conditions. Under those circumstances, the take of ESA-listed migratory birds would not be considered a violation of the MBTA.

## **3. HRS Chapter 343, the “Hawai’i Environmental Policy Act” and HAR Chapter 200.1**

The origin of the National Environmental Protection Act provided a model for the development of HRS Chapter 343 in 1974; it is commonly referred to as the “Hawai’i Environmental Policy Act” or HEPA. HEPA’s implementing regulations are contained in Hawai’i Administrative Rule (HAR) Title 11, Chapter 200.1. HEPA established environmental policies and guidelines for state and county agencies. HEPA mandated environmental assessments for all state and county projects and some private projects.

## **4. HRS Chapter 195D**

Chapter 195D of the HRS defines the State’s responsibilities, with respect to species listed as endangered or threatened, to protect and conserve native wildlife and their habitats including species federally listed as endangered or threatened. Under the provisions of HRS Chapter 195D, species listed as endangered or threatened pursuant to the ESA are also listed as endangered or threatened by the State of Hawai’i law (HRS §195D-4). Section 195D-2 defines “take” similarly to the Federal ESA. Section 195D-3 expressly prohibits, except as permitted by rules, any person to take, possess, transport, transplant, export, process, sell, offer for sale, or ship any species that the Department of Land and Natural Resources (DLNR) has deemed in need of protection (see also §195D-4(e)).

## ***Analysis Framework***

Analysis methods assessed the Likelihood of Occurrence (LOC) of TEC species in the Analysis Area. To determine LOC we first compiled lists of the terrestrial plant and animal TEC species that are known to occur on Oahu Island, and more specifically, known to occur in the same region and locale of the Analysis Area (Tables 3 and 4). Second, we used a ranking system (matrix) to analyze influential factors that would increase or decrease the probability (i.e., the LOC) of finding a particular species at a particular site (i.e., the Analysis Area). These influential factors included, but were not limited to, elevation, annual average temperature and rainfall, availability of food/nutrients, type and quality of habitats and wetlands, documented occurrences of species and known population numbers, species’ dispersal patterns, and the presence of any ‘essential features’ of federally-designated “critical habitat” for a particular TEC species.

Finally, based on the ranking system, we assigned an LOC for an individual species, or if applicable, to a taxonomic group of species. For example, an extremely rare species or a species that has narrowly defined, restrictive habitat requirements, would rank LOC=0 if the Analysis Area being assessed does



not contain such specialized habitat characteristics to support that species at any time during its life cycle.

The final LOC score was represented in the following way:

- 0 = No likelihood that species occur in the Analysis Area (no possibility of occurrence)
- 1 = Low likelihood that species occur in the Analysis Area (least likely to occur)
- 2 = Medium likelihood that species occur in the Analysis Area (likely to occur)
- 3 = High likelihood that species occur in the Analysis Area (known to occur)
- n/d = No data (insufficient evidence available to determine LOC)
- n/a = Not applicable (listing incorrect in database)

We used several sources of available data. A literature review was conducted using online sources of peer-reviewed scientific publications; federal- and state-agency reports, management plans, and natural resource inventories; and records of rare and incidental species observations. Databases of information used for this review included:

- The Environmental Conservation Online System (ECOS) U.S. Fish and Wildlife Service Critical Habitat for Threatened & Endangered Species Online Mapper (USFWS 2022);
- Exploring Species, U.S. Fish & Wildlife, Pacific Islands Fish and Wildlife Office (USFWS 2022b);
- The National Wetlands Inventory Online Wetlands Mapper (USFWS 2022c)
- Hawaii Ecosystems at Risk Project (HEAR) Species Information for Plants of Hawaii. (HEAR 2022);
- International Union for Conservation of Nature and Natural Resources. (IUCN) Red List of Threatened Species (IUCN 2022);
- NatureServe Explorer – Online Encyclopedia of Life (NatureServe 2022);
- Species of Greatest Conservation Need, Comprehensive Wildlife Conservation Strategy (CWCS) Fact Sheets, State of Hawaii, Division of Forestry and Wildlife, (Mitchell et al. 2005);
- USGS National Gap Analysis Project (GAP) for Species Distribution and Landcover Data (USGS 2022).

## RESULTS

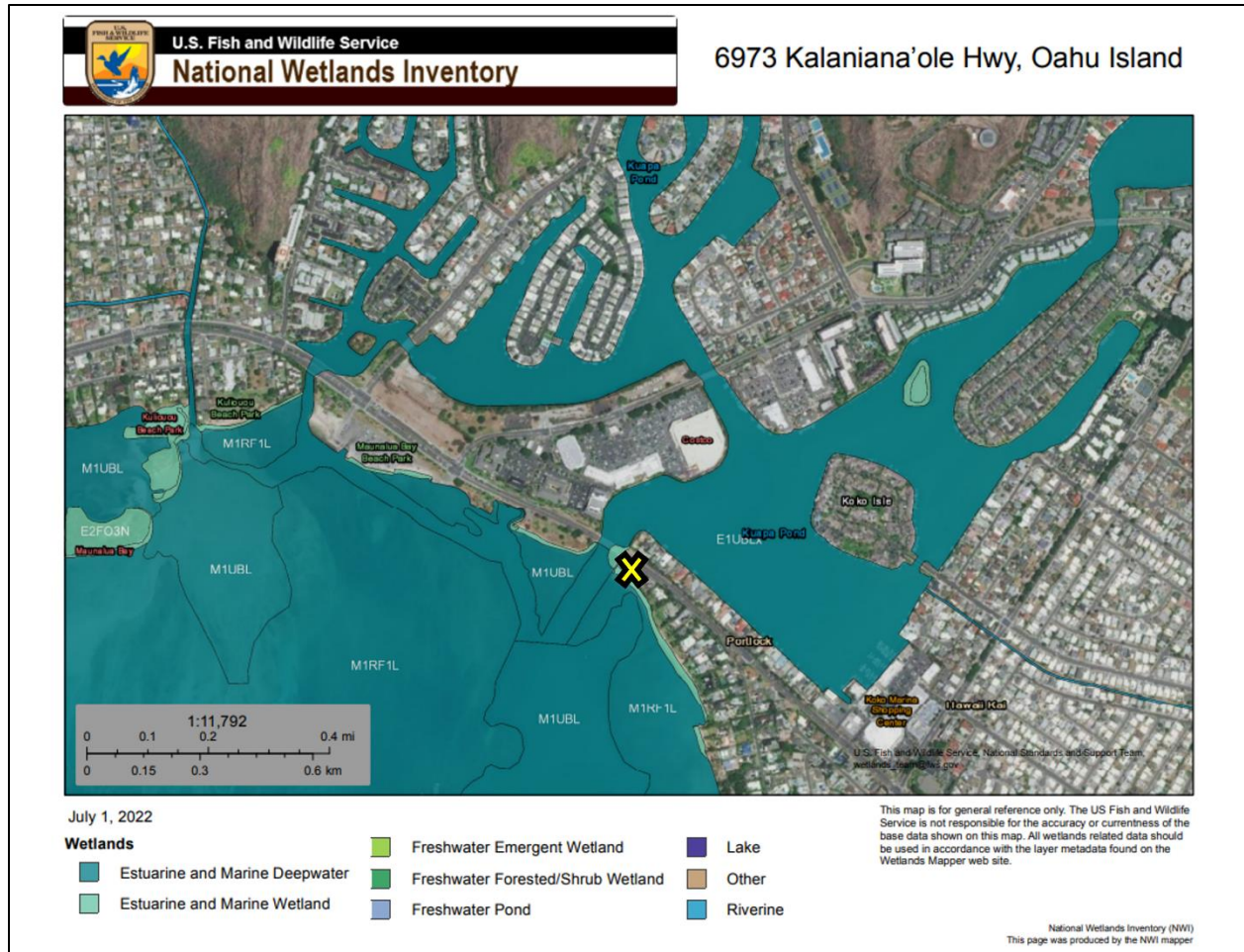
Our findings are presented in three separate tables: Species Analysis Summary (Table 1, below), and Species Assessment: Wildlife (Table 3) and Plants (Table 4) – included as attachments at the end of this report. Justification for assigned LOC values is summarized in the results section here and in Tables 3 and 4.

**Table 1.** Threatened, Endangered, and Candidate Species Analysis Summary.

TEC Species	LOC
<b>MAMMALS</b>	
Hawaiian Hoary Bat	Medium
<b>BIRDS</b>	
Passerines	None
Fresh & Brackish Water Species: Hawaiian Stilts	High
Migratory Shorebirds	High
Seabirds	Low
Short-eared Owl	Low
<b>INVERTEBRATES / INSECTS</b>	
Hawaiian Damselfly and Dragonfly Species	Low
Hawaiian Yellow-faced Bee	Low
Hawaiian Picture-wing Fly Species	None
Monarch Butterfly	Low
<b>PLANTS</b>	
TEC Plant Species (Oahu, Maunaloa Bay) – Hairy Purslane	Low

## Critical Habitat

No federal or state-designated critical habitats occur within the Analysis Area. Based on a desktop analysis using the National Wetlands Inventory, no wetlands, streams, riparian forests, or open freshwater habitats are mapped on the property or within the Analysis Area. The property footprint is adjacent to Estuarine and Marine Deepwater and Wetland habitats (Figure 3).



**Figure 3.** The property location (black/yellow “X”) and surrounding wetland habitat (Source: Wetland Classifications Map; USFWS Wetland Mapper [Accessed 7.1.22]).

## LIKELIHOOD OF OCCURANCE (LOC)

### MAMMALS

#### *Hawaiian Hoary Bat – Medium*

The Hawaiian hoary bat weighs only 0.5-0.75 oz. (14.2-21.3 g) with a wingspan of 10.5–13.5 in. (26.7-34.3 cm) It is the only native terrestrial mammal of Hawaii. Its brown and gray fur is tipped with a frosty or hoary white tinge. Females are larger than males; both sexes are nocturnal. They are solitary when roosting, except for a female with pups. Pupping season is 1-June to mid-September; during this time, roost disturbance to females and their flightless pups is greatest. This species is widespread at all elevations from 33-6,562 ft. (10-2000 m). Little is known about the Hawaiian hoary bat on Oahu, except for military-managed areas of the island where populations exist (Gorresen et al. 2015, OANRP and PCSU 2013, 2017, NFECP and HHFP 2011). On the island of Hawai‘i, bat activity varies with season and elevation; the greatest level of activity occurs at elevations below 4,000 ft. (1,280 m) from April-December.

Typically, the species ranges over very fragmented habitats and has adapted to using widely dispersed, multiple core use areas within a home range (USFWS 2011). The bats may occupy different habitat



types seasonally; lowland sites are generally most important during the pupping season and upland sites are used frequently during winter and spring. There is little to no available data on the seasonal and territorial movement patterns of this species on Oahu. They roost in native and non-native vegetation from 3-29 ft. (1-9 m) above ground level, in dense canopy foliage or the sub-canopy where foliage is less dense. They prefer trees with open access for launching into flight. Prime habitats for roosting include rain forests, disturbed habitats, xeric landscapes, and urban areas. They have been found roosting in ‘ōhi‘a (*Metrosideros polymorpha*), pu hala (*Pandanus tectorius*), coconut palms (*Cocos nucifera*), kukui (*Aleurites moluccana*), kiawe (*Prosopis pallida*), avocado (*Persea americana*), shower trees (*Cassia javanica*), pūkiawe (*Styphelia tameiameia*), and fern clumps; they are suspected to roost in Eucalyptus (*Eucalyptus spp.*) and Sugi pine (*Cryptomeria japonica*) stands.

They begin foraging either just before or after sunset and feed on a variety of native and non-native, night-flying insects including moths, beetles, crickets, mosquitoes, and termites. Coastlines and forest/pasture boundaries appear to be important foraging areas along with open landscapes, urban areas, and around river mouths near wet forests. Insects that congregate around the glow of artificial lights at night are an ideal food source that attracts bats (USFWS 2011). Local occurrence of bats is influenced by insect prey abundance (USDA 2009, Bonaccorso 2008).

The LOC for the Hawaiian hoary bat is medium (2). This LOC is based upon several factors:

- Presence has been documented in the area based on studies between 1990-2014 (Mitchell et al. 2005).
- The species can commute >7 mi. (11 km) from their roost to foraging areas. Home range size varies with habitat type and available prey, and territories may overlap (Bonaccorso 2008).
- Various foraging and roosting habitats exist in and around the Analysis Area including residential subdivisions, agricultural fields, open expanses of grasslands, and wetland habitats.
- There is roosting, pupping, and foraging habitat in the Analysis Area.
- The Analysis Area contains habitats with characteristics preferred by Hawaiian Bats (e.g., prey abundance, low elevation, low precipitation, and near urban areas), and foraging habitat suitability is related to bat occurrence.

## BIRDS

### *Passerines - None*

Hawai‘i hosts many TEC forest birds, most if not all facing extinction. These species typically have narrow and restrictive needs in terms of habitat, food, and breeding conditions, and these specific requirements limit their range of occurrence to extremely small patches of known locations. The Analysis Area does not contain the habitat conditions to harbor or host native TEC passerine species.

### *Fresh and Brackish Water Species – None; except Hawaiian Stilt – High*

The Hawaiian Duck, Hawaiian Stilt, Hawaiian Moorhen, and Hawaiian Coot prefer wetland habitats such as running streams, open ponds, tidal lagoons, and estuaries (Griffin et al. 1989) (Figure 4). These habitat types do not occur within the Analysis Area and therefore the action area is unlikely to attract and support these water bird species. All four Hawaiian waterbird species are ground nesters or more accurately described as over-water nesters. That is, all need some emergent vegetation to nest on or adjacent to open water. Importantly, all these species will use wetlands created incidental to human activities (e.g., reservoir and retention ponds, open culverts, and flooded lowlands).

The Hawaiian Stilt has a tolerance for saline wetland habitats like sandy coastal shorelines. As a result, this species could occur in the Analysis Area, although not for breeding purposes but more likely to rest, forage, or simply transit the area. Nesting by this species is known on Rim Island 2 within the Bay, approximately 1.35 miles (2.17 km) to the north-northeast of the Analysis Area. Foraging and nesting stilts and individual Hawaiian coots have been documented on Rim Island 2 (Roig 2005).

Species	Selected Habitat Characteristics
Hawaiian Coot	<ul style="list-style-type: none"> <li>• tall emergent vegetation with low stem density</li> <li>• optimal depth not reported; probably between moorhen and stilt requirements</li> <li>• fresh and brackish water</li> </ul>
Hawaiian Moorhen	<ul style="list-style-type: none"> <li>• dense emergent cover</li> <li>• water &lt;60 cm deep</li> <li>• fresh water</li> </ul>
Hawaiian Stilt	<ul style="list-style-type: none"> <li>• limited and low-growing vegetation</li> <li>• water &lt;15cm deep</li> <li>• fresh, brackish, or saline</li> </ul>
Koloa	<ul style="list-style-type: none"> <li>• dense terrestrial vegetation</li> <li>• water 2-12 cm deep</li> <li>• fresh water</li> </ul>

**Figure 4.** Summary of water depths, salinity and vegetative cover used by each of the endangered water birds in Hawai'i (Source: Engilis and Reid 1994, Reed et al. 2011).

### *Migratory Shorebirds – High*

Each year, millions of shorebirds migrate in waves from wintering grounds to their nesting grounds. In Hawai'i, migratory shorebirds are federally protected under the MBTA. These species spend their winters in areas of the Hawaiian Islands that provide habitat necessary for resting, foraging, shelter, and predator protection. Shorebirds most likely to occur in the Analysis Area are (PBIN 2005):

- Wandering tattler (*Tringa icana*)
- Ruddy turnstone (*Arenaria interpres*)
- Pacific golden plover (*Pluvialis fulva*)
- Long-billed Dowitcher (*Limnodromus scolopaceus*)
- Sanderling (*Calidris alba*)

The LOC is based upon several factors:

- The Analysis Area contains shoreline sandy habitat that may be used by migrating birds for resting purposes.
- The Analysis Area is in close proximity to the Paiko Lagoon Wildlife Sanctuary that does host migratory shorebirds during the winter months and during migration periods in the spring and fall.
- The inner Bay has habitat available for migratory shorebirds to forage and rest.

### *Seabirds – Low*

In September 2007, the Hawai'i Audubon Society was given a one-acre coastal property at Black Point on the Southern coast of O'ahu, approximately 5 miles (9 km) to the west of the Action Area for seabird conservation purposes. This area has been managed successfully to host nesting colonies of Wedge-tailed Shearwaters (*Ardenna pacifica*) (Friswold et. al. 2018); this species is not listed and therefore not protected under the ESA. Two listed species, Hawaiian Petrel and Newell's Shearwater,

have not been documented to occur the island's southern coastline, however, transit flights by these species over the mountainous areas surrounding the Bay may occur (Young et al. 2019). Seabirds would only occur on land in the Action Area if they were grounded for some reason (inclement weather (high winds), attracted to nighttime light, injury/illness). Otherwise, seabirds would instead be flying over the area. Grounding can be caused by urban nighttime light pollution, prevalent in the surrounding area, and hence there is some likelihood that grounded seabird occurrence could occur.

### *Short-eared Owl – Low*

This owl species is known as Pueo in Hawai'i. It is territorial and active during the day. This species occupies a variety of habitats including shrublands, urban areas, and montane forests; their preferred habitat is grasslands; Pueo also occur on lands where game birds are common (Price and Cotin 2018). This species nests on the ground in tall grass and thereby is easy prey for nonnative mammals. Pueo are carnivorous, favoring small insects and rodents. There is a lack of historical population data and information on the species' current, broad habitat use. Therefore, key habitat variables are difficult to determine (Mitchell et al. 2005). The Pueo is considered very rare on Oahu (Mitchell et al. 2005). In 2016, state officials increased efforts to track sightings of Pueo on Oahu (Price and Cotin 2018). The LOC for the Pueo is Low. This LOC is based upon several factors:

- Pueo numbers on Oahu is roughly estimated at 8-2,199 individuals, with a mean likely population size of 807 individuals (95% CI); most of the population appears to reside in the southern and southeastern parts of the island with sparse populations along the west coast (Price & Cotin 2018).
- Despite the small proportion of wetlands on Oahu (~1% of the total surface), a relatively high proportion of Pueo observations were made in wetland vegetation, however, the highest densities of owls were found in agricultural areas and native forests (Price & Cotin 2018).
- Based on modeled information, some potential for distribution across the Analysis Area occurs; owls may utilize habitat and food resources in the area, even if only infrequently.

## INVERTEBRATES / INSECTS

### *Hawaiian Damselfly and Dragonfly Species – Low*

These TEC species prefer inland aquatic and riparian habitats but can be attracted to areas where wetlands might be created incidentally because of human activities (*e.g.*, reservoir and retention ponds, open culverts, and flooded lowlands).

The order *Odonata* consists of two suborders, damselflies, and dragonflies. Damselflies are weak fliers; most species hold their wings close to the body at rest, while dragonflies are strong fliers and hold their wings away from the body at rest. Damselfly species in the genus *Megalagrion* are particularly well-studied; many are endemic to single islands or ridges; ten species in this genus are considered at risk including those found on Oahu (*M. leptodemas*, *M. nigrohamatum nigrolineatum*, *M. oahuense*, *M. oceanicum*, *M. pacificum*, and *M. xanthomelas*) (Mitchell et al. 2005). In 2012, three damselflies of Oahu were listed as endangered, the blackline (*M. nigrohamatum nigrolineatum*), crimson (*M. leptodemas*), and oceanic (*M. oceanicum*) Hawaiian damselflies (USFWS 2012). In 2014, the orange-black Hawaiian damselfly (*M. xanthomelas*) was denied listing by the USFWS yet remains as a candidate species (USFWS 2014).

Larvae and adults of *Odonata* occur in or near a wide range of aquatic habitats including streams, reservoirs, montane forests, and lowland habitats, many of which are threatened by habitat change and loss (USFWS 2011, Imada et al. 2011). Rare species of *Megalagrion* once thought to be restricted



to high elevation native forests have been found at low elevations in populated areas using nonnative trees and shrubs (e.g., the Blackline Hawaiian Damselfly). Other species thought to have been extirpated were later discovered in discrete, small populations existing in pools of intermittent streams (e.g., the Orange-black Hawaiian Damselfly) (Polhemus 1996, Englund 2000); *M. xanthomelas* historically ranged on Oahu from Honolulu, Kaimuki, Koko Head, Pearl City, Waialua, the Waianae mountains (Polhemus 1995), and Waianae (Williams 1936). While there are no freshwater pools of streams occur on or in the vicinity of the Analysis Area, the LOC is low because of the potential to attract these species during construction if temporary freshwater pools are formed.

#### *Hawaiian Yellow-faced Bee – Low*

Native Hawaiian Yellow-faced Bees are in the genus *Hylaeus*. These species have adapted to a wide array of native habitats ranging from coastal strand to high elevation wet forests. They are solitary bees and important pollinators of native Hawaiian plants and trees in every environment in which they occur. Yellow-faced Bees were once abundant across the Main Hawaiian Islands. Dramatic reductions in range and population sizes, and potentially extinctions, have occurred over the last 100 years. Hawaiian *Hylaeus* species almost exclusively visit native plants to collect nectar and pollen; they are very rarely found visiting nonnative plants (Magnacca 2007) and they are almost completely absent from habitats dominated by nonnative plant species (Daly and Magnacca 2003). Given that the flora in the Analysis Area is predominantly nonnative vegetation and at lower elevations than this species normally occurs, and that *Hylaeus* species are in small remnant populations on Oahu (Magnacca and King 2013), these species are not likely to occur in the Analysis Area.

#### *Hawaiian Picture-wing Fly Species – None*

*Drosophila aglaia*, *D. differens*, *D. hemipeza*, *D. heteroneura*, *D. montgomeryi*, *D. musaphilia*, *D. neoclavisetae*, *D. obatai*, *D. ochrobasis*, *D. substenoptera*, *D. tarphytrichia*, *D. mulli*

Twelve ESA-listed Hawaiian picture-wing fly species make up a small group in the genus *Drosophila*, a group that consists of 106 known species. In 2006, eleven species were listed as endangered and *D. mulli* as threatened. They are relatively large-sized insects with elaborate and colorful markings on otherwise transparent wings of both sexes. Flies in the *Drosophilidae* family are distributed throughout the higher-peaked Main Hawaiian Islands including Oahu (Table 2). No populations are found below 1,200 feet (366 meters) in elevation and all have specific host plants of which many are rare and federally protected as well (DOI 2007). The LOC is None because the Analysis Area does not contain the specific high elevation habitat and host plant requirements needed by these species.

**Table 2. DISTRIBUTION OF 12 HAWAIIAN PICTURE-WING FLIES BY ISLAND, GENERAL HABITAT TYPE, AND PRIMARY HOST PLANT(S)**

Species	Island	General habitat type	Primary host plant(s)
<i>Drosophila aglaia</i>	Oahu	Mesic forest	<i>Urera glabra</i>
<i>D. differens</i>	Molokai	Wet forest	<i>Clermontia</i> sp.
<i>D. hemipeza</i>	Oahu	Mesic forest	<i>Cyanea</i> sp., <i>Lobelia</i> sp., and <i>Urera kaalae</i>
<i>D. heteroneura</i>	Hawaii	Mesic to wet forest	<i>Cheirodendron</i> sp., <i>Clermontia</i> sp., <i>Delissea</i> sp.
<i>D. montgomeryi</i>	Oahu	Mesic forest	<i>Urera kaalae</i>
<i>D. mulli</i>	Hawaii	Wet forest	<i>Pritchardia beccariana</i>
<i>D. musaphilia</i>	Kauai	Mesic forest	<i>Acacia koa</i>
<i>D. neoclavisetae</i>	Maui	Wet forest	<i>Cyanea</i> sp.
<i>D. obatai</i>	Oahu	Dry to mesic forest	<i>Pleomele aurea</i> and <i>Pleomele forbesii</i>
<i>D. ochrobasis</i>	Hawaii	Mesic to wet forest	<i>Clermontia</i> sp., <i>Marattia</i> sp., and <i>Myrsine</i> sp.
<i>D. substenoptera</i>	Oahu	Wet forest	<i>Cheirodendron</i> sp. and <i>Tetraplasandra</i> sp.
<i>D. tarphytrichia</i>	Oahu	Mesic forest	<i>Charpentiera</i> sp.

Source: DOI 2006.

### *Monarch Butterfly - Low*

The orange and black coloring mixed with a little white, make monarch butterflies instantly recognizable. This species tends to favor open meadows and roadsides in search of their preferred food source, giant milkweed (*Calotropis gigantea*) or crown flower (Hawaiian name: pua kalaunu). In Hawai'i, the monarch butterfly breeding period peaks Dec-Jan-Feb, which is opposite to that of temperate regions. During other months in Hawai'i, the species is scarce, even where its host plant is present year-round (Etchegaray and Nashida 1975). Monarch butterflies are migratory; a single individual can cover thousands of miles of flight in one season. The monarch butterfly plays an important role as a pollinator, and numbers have been on the decline in Hawai'i populations. The LOC for this species is Low because:

- Presence is primarily where host plant occurs. Within the Analysis Area, *C. gigantea* is not present. However, as an ornamental plant that is encouraged on Oahu (e.g., Knudsen 2017), this plant's presence might occur in the vicinity that could attract monarch butterflies; and given the monarch's seasonal migratory behavior that is understood poorly on Oahu, and flight distance capabilities of the species, there is some LOC within the Analysis Area.

## PLANTS

### *Plant Species – None; Hairy Purslane - Low*

A list of individual TEC plants, their LOC, and corresponding information is provided in Attachment Table 4 (Plants). None of the Action Area's landscape is dominated by the region's historic native vegetation (Figure 11). Where these plant habitats do exist, they are located above about 1000 feet (305 m) elevation up the southwestern slopes of the Ko'olau Range that encloses the Maunaloa Bay. The Analysis Area and greater vicinity has been altered in the past by human activities (residential development, infrastructure, boat harbors, dredging, etc.). In determining the LOC for individual TEC plants, we accounted for, among other factors, the type and quality of habitat. Because nonnative plant communities can inconspicuously harbor TEC species and given that populations of TEC species often contain a small number of individuals and are typically isolated, habitat characteristics, even nonnative ones, can be important indicators to the presence of TEC species.

Only one plant, hairy purslane (*Portulaca villosa*) could occur in the Analysis Area given its preference for coastal, sparsely vegetated habitats. This plant was recorded along the southern coast of Oahu, from 'Ewa beach to Makapu'u (Bishop Museum 2020). The presence of this species would be obvious and easily protected during development.

## SUMMARY

The only species with a high LOC are shorebirds (migratory species) and Hawaiian Stilts. the Hawaiian hoary bat has a medium LOC. Species with a low LOC include Short-eared Owl, seabirds, other waterbird species (besides Hawaiian Stilt), Hawaiian yellow-faced bee, dragonfly/damselfly species, and the Monarch butterfly (Table 1). The only TEC terrestrial plant that may occur is the hairy purslane. All other species of terrestrial plants and wildlife considered in this analysis were ranked either zero (no possibility of occurring in the Analysis Area) or marked to indicate that insufficient data was available to assess LOC.

Below is a summary of findings:

- Habitat is present in and around the Analysis Area that could attract migratory shorebirds, seabirds, bats, owls, bees, and butterflies.
  - The residential neighborhood surrounding the parcel's footprint, though low in density, could harbor rodents and insects that may attract predators like bats and owls.
  - The residential neighborhood surrounding the parcel's footprint, though low in density, could harbor plants that attract and retain Monarch butterflies and Hawaiian yellow-faced bees.
- The dominant passerine, plant, and invertebrate species utilizing the site currently are nonnative. The TEC plant hairy purslane may occur on the site.
- The property is on the marine shoreline and has habitat for shorebirds (migratory species and Hawaiian Stilt). Shorebirds commonly use shorelines during transit flights (airspace corridor) and coastal habitats for foraging and resting. Seabirds, most commonly found far offshore over deep marine waters, will fly over coastal waters when they come ashore during their breeding season and fledglings can be light-attracted at night to fly toward land.

Based on our desktop review and analysis, we recommend the following conservation and minimization measures for terrestrial flora and fauna:

1. During construction and post-development, structures with lighting used/needed for nighttime illumination should follow state and city codes to protect nocturnal species (bats, seabirds, owls) and avoid potential negative impacts (bats=light attracts food insect food source increasing potential human conflict that causes mortality; seabirds=injury/death from light attraction or temporary blindness, owls=for a crepuscular hunter becoming illuminated and made visible to prey hinders foraging success). Hawai'i State Department of Natural Resources provides information on seabird-friendly lighting options:  
<https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>.
2. To avoid and minimize negative impacts to shorebirds:
  - a. Stop work if shorebirds are present. Resting and feeding behaviors should be allowed and work can resume once species leave the area on their own.
3. To avoid and minimize negative impacts to the Hawaiian hoary bat:
  - a. Do not disturb, remove, or trim woody plants (trees and shrubs) greater than 15-feet tall during the bat breeding season (1-June through 15-September). Surveying for pupping bats should be conducted prior to clearing or removing woody vegetation over 15-feet tall.
  - b. Avoid using/installing fence lines that use barbed wire, especially for the top two strands.
4. To avoid and minimize negative impacts to the Hawaiian Stilt, migratory shorebirds, and dragonfly/damselfly species:
  - a. During construction, avoid creating temporary sources of standing water such as retention ponds or ditches, and open pools of water commonly used during construction activities (for cleaning, cement mixing, etc.). Such open water sources could attract species.
  - b. The proposed project design should avoid work within the shoreline buffer and wetland buffer, unless permitted.
5. It is unknown if Monarch butterfly occur, or if its host plant and larvae are being privately cultivated in the region. Given that the state and private entities have collectively provided funding and conservation management measures to increase populations of this species, the possibility exists.



6. To avoid and minimize negative impacts to the Hawaiian yellow-faced bee (as well as bats, owls, and Monarch butterflies):
  - a. Minimize habitat disturbance and vegetation removal by confining construction impacts strictly to the area necessary to construct the project.
  - b. Native plants are recommended for use when new plantings for landscaping occurs. No invasive-type plant species should be used; an invasive-type plant is a non-native species that causes or could cause harm to agriculture, natural resources, economy, or human health. These plants are capable of rapidly spreading into native habitats, outcompeting native plant species, and potentially impacting whole ecosystems. Invasive plants would include species like Japanese honeysuckle vine (*Lonicera japonica*), yellow flag iris (*Iris pseudacorus*), periwinkles (*Vinca major* and *V. minor*), coral ardisia (*Ardisia crenata*), and mimosa tree (*Albizia julibrissin*). A more comprehensive list can be found on the State of Hawai'i Invasive Species website:  
<https://dlnr.hawaii.gov/hisc/info/invasive-species-profiles/>.
7. To avoid and minimize negative impacts to the plant hairy purslane:
  - a. If the plant is found onsite, it should be marked and flagged so disturbance to it does not occur.

Further recommendations to reduce impact to species:

1. Minimize the project construction footprint to the area necessary to construct the project and use the previously disturbed/developed areas where feasible for the new development.
2. Avoid work and development within any shoreline/wetland buffers and setback areas.
3. The duff layer, native topsoil, and natural vegetation should be retained in an undisturbed state as much as feasible. Minimize native vegetation removal. Where possible, leave stumps where tree clearing is required. Any new plantings shall be comprised of native species approved by the local jurisdiction.
4. Locate large staging areas and temporary storage of materials during construction in uplands and as far as practicable from shorelines and marine waters.
5. Use Best Management Practices (BMPs) for stormwater control throughout construction. BMPs may include secondary containment, high visibility silt fencing, straw wattle, compost socks, (BMPs adapted as needed), and daily equipment checks for leaks. Implement additional BMPs as necessary to ensure adequate erosion and sediment control. Contractors should be appropriately trained in BMP installation and maintenance.
6. Construction contractors should adhere to all applicable noise regulations, working hour limitations and notification requirements and best practices.
7. Contractors should comply with local dust control requirements.
8. Inform project personnel and contractors about the potential presence of endangered species on-site and nearby.
9. Obtain a Biologist to conduct appropriate flora and fauna surveys throughout the project if/as needed.
10. If active pupping by bats or active nesting by owls or Hawaiian Stilt are encountered during construction, stop work and call Hamer Environmental to discuss next steps.

The native flora and fauna of Oahu has undergone extreme alterations because of past and present land use and other activities. Intentional and inadvertent introductions of nonnative plant and animal species to the island has contributed to the reduction in range of many native and endemic species.

Databases for Hawaiian flora and fauna were sometimes lacking in up-to-date local and regional species information for use in this review.

Hamer Environmental appreciates the opportunity to assist you on this project.

Sincerely,

Cary Deringer, Senior Environmental Scientist and Endangered Species Biologists/Ornithologist  
and

Vanessa Rogers, NEPA Director and Environmental Biologist  
Hamer Environmental, L.P.



---

**Attachment: Table 3.**

Federal- and State-Listed and Candidate Wildlife Species of Oahu (Maunaloa Bay region) and  
LOC

**Attachment: Table 4.**

Federal- and State-Listed and Candidate Plant Species of Oahu (Maunaloa Bay region) and  
LOC

## SOURCES USED

Bishop Museum. 2020. Offshore islet project: Ka'ula Islet.

<http://www2.bishopmuseum.org/HBS/islets/index.asp?isl=Kaua%27i%20and%20Ni%27ihau&id=-21495405>, Accessed 1 July 2022.

Bonaccorso, F. 2008. Paper presented at the Lyman Museum, Hilo, HI, 11 August 2008.

DAR. 2008. Ulehawa Watershed. Atlas of Hawaiian Watersheds and Their Aquatic Resources. State of Hawaii, Department of Aquatic Resources. DAR Watershed Code: 35002. 8pp.

Daly, H. V., and K. N. Magnacca. 2003. Insects of Hawaii, Vol. 17: Hawaiian Hylaeus (Nesoprosopis) Bees (Hymenoptera: Apoidea). University of Hawaii Press, Honolulu. 234 pp.  
[https://dlnr.hawaii.gov/ecosystems/files/2013/07/hylaeus\\_mana.pdf](https://dlnr.hawaii.gov/ecosystems/files/2013/07/hylaeus_mana.pdf).

DOI 2006. Endangered and Threatened Wildlife and Plants; Determination of Status for 12 Species of Picture-Wing Flies from the Hawaiian Islands. 50 CFR Part 17 Federal Register. Rules and Regulations. 71(89):26835-26852.

--- 2007. Endangered and Threatened Wildlife and Plants; Revised Proposed Designation of Critical Habitat for 12 Species of Picture-Wing Flies from the Hawaiian Islands. 50 CFR Part 17. Federal Register. Proposed Rules. 72(228):67428-

Engilis, A., Jr., and F. A. Reid. 1994. Hawaiian Waterbirds Recovery Plan, 3rd Revision. U. S. Fish and Wildlife Service, Portland, Oregon.

Englund, R.A., D.J. Preston, R. Wolff, S.L. Coles, L.G. Eldredge, and K. Arakaki. 2000. Biodiversity of Freshwater and Estuarine Communities in Low Pearl Harbor O'ahu, Hawaii with Observations on Introduced Species. Prepared for the U.S. Navy. Hawaii Biological Survey, Bishop Museum. Technical Report No. 16.

Etchegaray, J.B. and T. Nashida. 1975. Reproductive activity, seasonal abundance, and parasitism of the monarch butterfly, *Danaus plexippus* (Lepidoptera: Danaidae) in Hawaii. University of Hawaii, Honolulu, HI. Proc Hawaiian Entomol Soc XXII(1):33-39.

Friswold, B., M. Enzweiler, and R. Tom. 2018. Engineering Coastal Habitat: past, present, and future of water and seabird habitat in Maunaloa Bay. Scholar Space: Communities and Collections. [Accessed 7-1-22]. <https://scholarspace.manoa.hawaii.edu/items/4ba9924e-7a13-4d9c-9944-f56ebbd7eb86>.

Gorresen, M., P.M. Cryan, M.M. Huso, C.D. Hein, M.R. Schirmacher, J.A. Johnson, K.M. Montoya-Aiona, K.W. Brink, and F.J. Bonaccorso. 2015. Behavior of the Hawaiian hoary bat (*Lasiurus cinereus semotus*) at wind turbines and its distribution across the north Ko'olau Mountains, O'ahu. Hawai'i Cooperative Studies Unit, University of Hawai'i at Hilo Technical Report HCSU-064. 68 pp.

Griffin, C.R., R.J. Shallenberger, and S.I. Fefer. 1989. Hawaii's endangered waterbirds: A resource management challenge. Pages 155-169 in Proceedings of freshwater wetlands and wildlife symposium (R.R. Sharitz and J.W. Gibbons, Eds.). Savannah River Ecology Laboratory, Aiken, Georgia.

HDLNR 2020. *Abutilon menziesii* HCP 2019-2020 Status Report. Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife August 2020. 20pp.  
<https://dlnr.hawaii.gov/wildlife/files/2021/01/Abutilon-menzeisii-HCP-August-2020-report-FINAL20200930.pdf>.

HEAR 2018. Hawaii Ecosystems at Risk Project (HEAR) Species Information for Plants of Hawaii. <http://www.hear.org/species/>, Accessed October 10-23, 2018.

Imada, C., P. Clifford, and J.Q.C. Lau. 2011. Final Report: 2010 Rare Plant Survey, O'ahu Forest National Wildlife Refuge, Waipi'o, O'ahu. Hawaii Biological Survey Bishop Museum Technical Report No. 55. Contribution No. 2011-022 to the Hawaii Biological Survey. 91 pgs.

IUCN 2018. International Union for Conservation of Nature and Natural Resources, The IUCN Red List of Threatened Species. <http://www.iucnredlist.org>, Accessed October 10-23, 2018.

Juvik, S.P. and J.O. Juvik (Eds.) 1998. *Atlas of Hawai'i*. Third Edition. University of Hawai'i Press, Honolulu, Hawai'i.

Knudsen, G. 2017. Raising Monarchs in Hawaii. Honolulu, HI. Accessed: 20-October-2018. <https://www.glorious-butterfly.com/raising-monarchs-in-hawaii.html>.

Magnacca K.N. 2007. Conservation status of the endemic bees of Hawaii, Hylaeus (Nesoprosopis) (Hymenoptera: Colletidae). Pacific Science, 61, 173–190.

Magnacca, K.N. and C.B.K. King. 2013. Assessing the presence and distribution of 23 Hawaiian yellow-faced bee species on lands adjacent to military installations on O'ahu and Hawai'i Island. Technical Report No. 185.



Pacific Cooperative Studies Unit, University of Hawai'i, Honolulu, Hawai'i. 39 pp.  
<http://manoa.hawaii.edu/hpicesu/techr/185/v185.pdf>.

Mitchell, C., C. Ogura, D.W. Meadows, A. Kane, L. Strommer, S. Fretz, D. Leonard, and A. McClung. 2005. Hawaii's Comprehensive Wildlife Conservation Strategy. Department of Land and Natural Resources. Honolulu, Hawaii. 722 pgs.

Monsanto Hawaii. 2016. Monarch Butterflies Flourish at Monsanto Hawaii Farms. 8-June Press Release. <http://www.monsantohawaii.com/monarch-butterflies-flourish-at-monsanto-hawaii-farms/>

Montgomery, S.L. 1975. Comparative breeding site ecology and the adaptive radiation of picture-winged *Drosophila* (Diptera: *Drosophilidae*) in Hawaii. Proceedings of the Hawaiian Entomological Society 22(1): 65–103.

NatureServe 2018. NatureServe Explorer. <http://explorer.natureserve.org/index.htm> October 10-23, 2018.

NFECF and HHFP 2011. Final Integrated Natural Resource Management Plan for Joint Base Pearl Harbor-Hickam, Pearl Harbor Naval Complex, Naval Magazine Pearl Harbor Lualualei and West Loch Branches, Naval Computer and Telecommunications Area Master Station Pacific Wahiawa, Naval Radio Transmitter Facility Lualualei, Navy-retained Lands at Kalaeloa, and Hickam Air Force Base. O'ahu, State of Hawai'i. Prepared by Naval Facilities Engineering Command, Pacific, and Helber Hastert & Fee Planners, Inc. Prepared for Commander, Navy Region Hawaii. September 2011. 708 pp.

OANRP and PCSU. 2013. 2013 Makua and Oahu Implementation Plan Status Report. Oahu Army Natural Resource Program U.S. Army Garrison, Hawaii and Pacific Cooperative Studies Unit Schofield Barracks, Hawaii. 154 pgs.

OANRP and PCSU. 2015. 2015 Makua and Oahu Implementation Plan Status Report. Oahu Army Natural Resource Program U.S. Army Garrison, Hawaii and Pacific Cooperative Studies Unit Schofield Barracks, Hawaii. 133 pgs.

OANRP and PCSU. 2017. 2017 Makua and Oahu Implementation Plan Status Report. Oahu Army Natural Resource Program U.S. Army Garrison, Hawaii and Pacific Cooperative Studies Unit Schofield Barracks, Hawaii. 231 pgs.

Parham, J.E., Higashi, G.R., Lapp, E.K., Kuamo'o, D.G.K., Nishimoto, R.T., Hau, S., Fitzsimons, J.M., Polhemus, D.A., Devick, W.S., 2008. Atlas of Hawaiian Watersheds & Their Aquatic Resources. Bishop Museum & Division of Aquatic Resources, Island of Hawai'i.

PBIN (Pacific Basin Information Node). 2005. WebGIS Service. <http://pbin.nbii.gov/maps/interface.html> (last accessed 7-1-22).

Polhemus, D.A. 1995. New Heteroptera and Odonata (Insecta) records and range extensions in the Hawaiian Islands. Bishop Mus. Occas. Pap. 42:42-43.

Polhemus, D.A. 1996. The Orange-black Hawaiian Damselfly, *Megalagrion xanthomelas* (Odonata: Coenagrionidae): Clarifying the Current Range of a Threatened Species. Bishop Museum Occasional Papers: No. 45, Honolulu, HI.

Polhemus D.A. 2012. Critical species of Odonata in the Hawaiian Islands. International Journal of Odonatology 7(2):133-138.

Price and Cotin. 2018. Population size, distribution and habitat use of the Hawaiian Short-eared Owl (*Asio flammeus sandwichensis*) on O'ahu. The Pueo Project Final Report April 2017 – March 2018. 38 pp.

Ralph, C. John; Sauer, John R.; Droege, Sam, technical editors. 1995. Monitoring Bird Populations by Point Counts. Gen. Tech. Rep. PSW-GTR-149. Albany, CA: Pacific Southwest Research Station, Forest Service, US. Department of Agriculture; 187 pp.

Reed, J.M., N. Fefferman, C.S. Elphick, D.W. DesRochers, and M. Silbernagel. 2011. MESHH: Managing Endangered Species Habitat in Hawaii, Version 1.0. <http://meshh.uit.tufts.edu/MESHH1.0UserDocument.pdf>.

Rohrer, J., V. Costello, J. Tanino, L. Bialic-Murphy, M. Akamine, J. Sprague, S. Joe, C. Smith. 2016. Development of tree snail protection enclosures: From design to implementation. Pacific Cooperative Studies Unit, University of Hawaii at Manoa. Department of Botany. Technical Report, 194. Honolulu, HI. 58 pgs. Wetlands map: <https://www.fws.gov/wetlands/data/mapper.html>.

Roig, Suzanne. 2005. "Dredging Work at Marina Could Disturb Native Bird," Honolulu Advertiser, March 2, 2005. [http://www.hawaiikaihui.org/104734.html?session\\*id=key\\*session\\*id=val\\*](http://www.hawaiikaihui.org/104734.html?session*id=key*session*id=val*) (Accessed 7-1-22).

Simek, K. 2016. Monsanto Hawaii Monarch Butterfly Program. Living 808; Khon2 news. Published 1-June-2016. Accessed 10-21-18. [https://www.khon2.com/living808/monsanto-hawaii-monarch-butterfly-program\\_20180309123444935/1025920649](https://www.khon2.com/living808/monsanto-hawaii-monarch-butterfly-program_20180309123444935/1025920649).

State of Hawaii. 2018. State of Hawaii, Division of Forestry and Wildlife. Native Ecosystems Protection and Management. Hawaii Invertebrate Program. Yellow-Faced Bee Survey Project. <https://dlnr.hawaii.gov/ecosystems/hip/projects/yellow-faced-bee/>.

University of Hawaii. 2020. Rainfall Atlas of Hawai'i. Geography Department, University of Hawai'i at Manoa, Copyright 2011. <http://rainfall.geography.hawaii.edu/interactivemap.html>. (Accessed between 10- and 22-October-2018).

USDA. 2009. Bats of the U.S. Pacific Islands. U.S. Department of Agriculture. Natural Resources Conservation Service. Pacific Islands Area. Biology Technical Note No. 20. 34 pgs.

USGS 2022. United States Geological Survey National Gap Analysis Project, <https://gapanalysis.usgs.gov>, Accessed October 10-20, 2018.

USFWS 1995. Waianae Plant Cluster Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 207 pp.

USFWS. 2011. Ope'ape'a or Hawaiian hoary bat (*Lasiurus cinereus semotus*): 5-year review summary and evaluation in U.S. Fish and Wildlife Service, editor. Honolulu, HI: pp. 13.

USFWS 2012. Endangered and Threatened Wildlife and Plants; Endangered Status for 23 Species on Oahu and Designation of Critical Habitat for 124 Species. Citation 77 FR 57647. CFR: 50 CFR 17. Federal Register Docket No. FWS-R1-ES-2010-0043: 4500030114. Page: 57647-57862 (216 pages). <https://www.federalregister.gov/documents/2012/09/18/2012-19561/endangered-and-threatened-wildlife-and-plants-endangered-status-for-23-species-on-oahu-and>.

USFWS. 2014. Orange-black Hawaiian damselfly. Species Assessment and Listing Priority Assignment Form. 14 pgs. [https://esadocs.cci-dev.org/ESAdocs/candidate/I063\\_I01.pdf](https://esadocs.cci-dev.org/ESAdocs/candidate/I063_I01.pdf).

University of Hawaii 2021. Rainfall Atlas of Hawai'i. Geography Department, University of Hawai'i at Manoa, Copyright 2011. <http://rainfall.geography.hawaii.edu/interactivemap.html>. (Accessed between 8/1 and 8/15/2018).

USFWS 2022. Environmental Conservation Online System (ECOS): <https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=HI&status=listed>. Accessed October 2018.

USFWS 2022b. Exploring Species, U.S. Fish & Wildlife, Hawaii Biodiversity and Mapping Program, Pacific Islands Fish and Wildlife Office, <https://www.fws.gov/pacificislands/promo.cfm?id=177175836>. Accessed October 2018.

USFWS 2022c. National Wetlands Inventory Online Wetlands Mapper, U.S. Fish and Wildlife Service, <https://www.fws.gov/wetlands/data/mapper.html>. Accessed October 2018.

USFWS 2018. Species Status Assessment: Monarch Butterfly. Endangered Species Act Petition. 3-July 2018. <https://www.fws.gov/savethemonarch/pdfs/MonarchSSAFactSheet.pdf>.

Wagner, Warren L., Darrel R. Herbst, and S. H. Sohmer. 1990. *Manual of the flowering plants of Hawai'i*. 2 vols., Bishop Museum Special Publication 83. Honolulu: University of Hawaii Press and Bishop Museum Press. p. 1142-1144.

Williams, F.X. 1936. Biological studies in Hawaiian water-loving insects. Part 1. Coleptera or beetles. Part 2. Odonata or dragonflies. Proc. Hawaii. Entomol. Soc. 9:235-345.

Young, L.C., E.A. VanderWerf, M.McKown, P.Robers, J.Schleuter, A.Vorsino, D.Sischo. 2019. Evidence of Newell's Shearwater and Hawaiian Petrels on Oahu, Hawaii. *The Condor* 121:1-7.



## Attachments: Tables of Species Reviewed for 6973 Kalaniana'ole Hwy, Oahu Island, Hawai'i

Note: All species were identified from available species lists, including USFWS ECOS species range mapping program. Notes indicate research made to determine any Likelihood of Occurrence (LOC). LOC is scored in the following way:

- 0 = No likelihood that species occur in the study area
- 1 = Low likelihood that species occur in the study area
- 2 = Medium likelihood that species occur in the study area
- 3 = High likelihood that species occur in the study area
- n/d = No data (insufficient evidence to make determination)
- n/a = Not applicable (Listing incorrect in database)

### ESA- and State-Listed Status (*see* METHODS)

- E = Endangered
- T = Threatened
- C = Candidate for listing
- SOC = Species of Concern

**Table 3: Wildlife**

Scientific Name	Common Name	Hawaiian Name	Type	LOC	ESA-listed	State-listed	Modeled Data Abbr.	Notes
<i>Anas wyvilliana</i>	Hawaiian duck	koloa māoli	Bird	0	E	E - Endemic	HAWDx	Source(s): Mitchell et al. 2005 (Map of home range (1976-present)), and DOD 2005 ( <a href="https://semspub.epa.gov/work/09/2327020.pdf">https://semspub.epa.gov/work/09/2327020.pdf</a> ). Range of species includes both Oahu sites; generally found in wetland habitats from sea level to 9,900 ft (3,000 m) elevation.
<i>Asio flammeus sandwichensis</i>	Hawaiian short-eared owl	Pueo	Bird	0	-	E (Endemic at subspecies level)	HSEOs (no Range Data)	Source(s): NAVFAC 2014, Price & Cotin 2018, DOD 2005, and Mitchell et al. 2005 ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ): Found on all the Main Hawaiian Islands from sea level to 2,450 meters (8,000 feet). Occupies a variety of habitats; most common in open habitats such as grasslands, shrublands, and montane parklands, including urban areas and those actively managed for conservation. Pueo occur in many areas that are managed by the State of Hawai'i or Federal agencies.
<i>Branta sandvicensis</i>	Hawaiian Goose	nēnē	Bird	0	E	E- Endemic	HAGOx	Source(s): Mitchel et al. 2005 (Map of detections, home range & critical habitat (1976-present)) ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ). On Oahu, occurs in very low numbers and is not known to occur in this region.

Scientific Name	Common Name	Hawaiian Name	Type	LOC	ESA-listed	State-listed	Modeled Data Abbr.	Notes
<i>Chasiempis sandwichensis ibidis</i>	'elepaio	Oahu 'elepaio	Bird	0	E	E	ELEPo	Source(s): NFECP and HHFP 2011; Mitchell et al. 2005 ( <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-oahu-elepaio.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-oahu-elepaio.pdf</a> ). The Oahu 'elepaio is by far the rarest of the three 'elepaio species. The range of the Oahu 'elepaio is small and divided into several isolated fragments totaling only 5,187 ha; 100–550 m elevation in southern and central Ko'olau Mountains, and 500–850 m elevation in Wai'anae Mountains. The largest remaining subpopulations occur in the central and southern Ko'olau Mountains.
<i>Danaus plexippus plexippus</i>	Monarch butterfly		Insect	1	Under Review			Source(s): Simek 2016, USFWS 2018, and Etchegaray and Nashida 1975. Species would only occur in areas where the host plant giant milkweed ( <i>Calotropis gigantea</i> ) or crown flower (Hawaiian name: Pua Kalaunu) is present. Neighboring communities may harbor host plants as garden ornamentals as a hobby or as part of the state's program to increase Monarch populations.
<i>Drepanis coccinea</i>	'i'iwi	'i'iwi	Bird	0	T	Endemic	IIWlx	Source(s): Mitchell et al. 2005 (Map of home range (1976-present)) <a href="http://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-iiwi.pdf">http://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-iiwi.pdf</a> . Range does not include Haleiwa site. Three small, isolated populations occur on O'ahu. Surveys in 1996 suggested O'ahu supports less than 50 birds. Occupies mesic and wet forest dominated by 'ōhi'a, and koa (Acacia koa). Loss and degradation of habitat and high densities of cold-intolerant Culex mosquitoes, an important disease vector, in lowland areas restrict most birds to elevations above 4,100 ft. (1,250 m).
<i>Fulica americana alai</i>	Hawaiian coot	'alaie kea	Bird	0	E	E - Endemic	HACOX	Source(s): Mitchell et al. 2005 (Map of home range (1976-present)) ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ), DOD 2005 ( <a href="https://semispub.epa.gov/work/09/2327020.pdf">https://semispub.epa.gov/work/09/2327020.pdf</a> ), Tetra Tech 2017, and Riggs 2016. Generally found in wetland habitats from sea level to 9,900 ft. (3,000 m) elevation. An estimated 500-1,000 birds are on Oahu. Population size has increased in recent decades as wetland protection and management efforts have increased. No wetlands in the Analysis Area or near vicinity to attract coots.

Scientific Name	Common Name	Hawaiian Name	Type	LOC	ESA-listed	State-listed	Modeled Data Abbr.	Notes
<i>Gallinula chloropus sandvicensis</i>	Hawaiian moorhen/gallinule	'ālae 'ula	Bird	0	E	E - Indigenous	Not Avail for D/L, checked online	Source(s): Mitchell et al. 2005 (Map of home range (1976-present)) ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ), Tetra Tech 2017, and Group70 International, Inc. 2017. Generally, occur in wetland habitats below 410 ft. (125 m) elevation. They are generally sedentary; however, they readily disperse in spring, presumably to breed. Dispersal may occur in relation to dry and wet periods.
<i>Himantopus mexicanus knudseni</i>	Hawaiian stilt	ae'o	Bird	1	E	E - Indigenous	HASTk	Source(s): NFECP and HHFP 2011, Mitchell et al. 2005 ). Map of home range (1976-present)) ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ). Species prefers wetland habitats below 660 ft. (200 m) elevation; range overlaps. No wetlands occur within the Analysis Area or in the vicinity. Shoreline and beach habitat in the Analysis Area could provide stilts with resting habitat.
<i>Hylaeus kuakea</i>	Hawaiian yellow-faced bee		Insect	0	E		n/a	Source(s): Mitchell et al. 2005 ( <a href="https://dlnr.hawaii.gov/ecosystems/hip/projects/yellow-faced-bee/">https://dlnr.hawaii.gov/ecosystems/hip/projects/yellow-faced-bee/</a> ), NFECP and HHFP 2011, and ( <a href="https://xerces.org/hylaeus-kuakea/">https://xerces.org/hylaeus-kuakea/</a> ). The full range is unknown. All yellow faced-bees are in decline and little is known of existing populations and distributions. Many varieties can be found in small, isolated habitat areas. Unknown rare populations may exist. None are known to occur in the outer coastal areas of Maunaloa Bay.
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat	Ōpea'ape'a	Mammal	2	E	E - Indigenous (Endemic at the subspecies level)	HOBAX (not modeled in Hawaii)	Source(s): Gorresen, et al 2015 ( <a href="http://dspace.lib.hawaii.edu/bitstream/10790/2585/1/TR64_Gorresen_Bats_Final.pdf">http://dspace.lib.hawaii.edu/bitstream/10790/2585/1/TR64_Gorresen_Bats_Final.pdf</a> ), Mitchell et al. 2005, and NFECP and HHFP 2011.
<i>Manduca blackburni</i>	Blackburn's sphinx Moth		Insect	n/d	E	E - Endemic	n/a	Source(s): Mitchell et al. 2005 and USFWS 2003. Prefers dry and mesic habitats between the elevations of sea level and 5,000 ft. (1,525 m) and receiving between 10-100 in. (25-250 cm) of annual precipitation. Historically occurred on Oahu with most records from coastal or lowland dry forest habitats in areas receiving less than 127 cm (50 inches) annual rainfall. Would only occur if host plants were present. Known populations occur only on Maui and Hawai'i.



Scientific Name	Common Name	Hawaiian Name	Type	LOC	ESA-listed	State-listed	Modeled Data Abbr.	Notes
<i>Megalagrion nigrohamatum nigrolineatum</i>	Blackline Hawaiian Damselfly		Insect	0	E		n/a	Source(s): <a href="https://xerces.org/blackline-hawaiian-damselfly/">https://xerces.org/blackline-hawaiian-damselfly/</a> ). On Oahu, some populations are robust.
<i>Megalagrion pacificum</i>	Pacific Hawaiian Damselfly		Insect	0	E		n/a	Source(s): ( <a href="https://xerces.org/pacific-hawaiian-damselfly/">https://xerces.org/pacific-hawaiian-damselfly/</a> ).
<i>Megalagrion xanthomelas</i>	Orange-black Hawaiian Damselfly		Insect	1	C	Endemic	n/a	Source(s): USFWS 2014. Historically occurred in an area Honolulu. Prefers wetland habitats.
<i>Puffinus auricularis</i>	Newell's shearwater	a'o	Bird	1	T	T - Indigenous	NESH	Source(s): Pyle & Pyle 2017 ( <a href="http://hbs.bishopmuseum.org/birds/rlp-monograph/pdfs/02-Galliformes-Procellariiformes/NESH.pdf">http://hbs.bishopmuseum.org/birds/rlp-monograph/pdfs/02-Galliformes-Procellariiformes/NESH.pdf</a> ), and Mitchell et al. 2005 ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ). Breeding in west O'ahu (indicated by flight paths perpendicular to the coast) may occur in the western flanks of the northern Wai'anae Mountains, and not in the southern portion of Nu'uau Valley (Young et al. 2019). Species may still transit over the nearshore waters on flight paths that run parallel to the coast.
<i>Pterodroma sandwichensis</i>	Hawaiian Petrel	'ua'u	Bird	0	E	Endemic	HAPE	Source(s): Pyle & Pyle 2017 ( <a href="http://hbs.bishopmuseum.org/birds/rlp-monograph/pdfs/02-Galliformes-Procellariiformes/NESH.pdf">http://hbs.bishopmuseum.org/birds/rlp-monograph/pdfs/02-Galliformes-Procellariiformes/NESH.pdf</a> ), and Mitchell et al. 2005 ( <a href="http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/">http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/fact-sheets/</a> ). Breeding in west O'ahu (indicated by flight paths perpendicular to the coast) may occur in the western flanks of the northern Wai'anae Mountains, and not in the southern portion of Nu'uau Valley (Young et al. 2019). Species may still transit over the nearshore waters on flight paths that run parallel to the coast.
	Damselfly / Dragon fly (general species)		Insect	0			n/a	Source(s): Mitchell et al. 2005. On Oahu, known TEC Odonata populations do not occur in the Analysis Area.
	Yellow Faced Bee (general species)		Insect	1			n/a	Source(s): Mitchell et al. 2005 ( <a href="https://dlnr.hawaii.gov/ecosystems/hip/projects/yellow-faced-bee/">https://dlnr.hawaii.gov/ecosystems/hip/projects/yellow-faced-bee/</a> ). All yellow faced-bees are in decline, and little is known of existing populations and distributions. Many varieties can be found in small, isolated habitat areas. Unknown rare populations may exist.

Scientific Name	Common Name	Hawaiian Name	Type	LOC	ESA-listed	State-listed	Modeled Data Abbr.	Notes
	Oahu Tree Snails (general species)		Snail	0			n/a	Source(s): Rorher et al. 2016. Species occurs in upland habitats of native forest.
<i>Drosophila</i> (12 species). <i>D. mulli.</i>	Hawaiian picture-wing fly		Insect	0	E T		n/a	Montgomery (1975) reported that the larvae of this species may need specific host plants for survival. Eleven species were ESA listed as Endangered in 2006 and a twelfth was listed as Threatened (DOI 2006). Most are specific to elevations above 1,200 feet (forest habitats with cool temperatures and not marine coastal xeric landscapes).
<i>Paroreomyza maculata</i>	O'ahu creeper	O'ahu 'alauahio	Bird	0	E	E - Endemic	OAAMx	Source(s): Mitchel et al. 2005 (Map of incidental sightings (1990-91)) ( <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-oahu-alauahio.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-sheet-oahu-alauahio.pdf</a> ). Probably extinct. The last well-documented sighting was of two birds in 1985. O'ahu was not included in the Hawai'i Rare Bird Search in the late 1990s, so it is possible that the O'ahu 'alauahio still exists in remote valleys.

**Table 4: Plants**

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Abutilon menziesii</i>	Ko'oloa'ula	Ko'oloa'ula	0	E	E	Sources: <a href="https://ecos.fws.gov/docs/recovery_plan/950929a.pdf">https://ecos.fws.gov/docs/recovery_plan/950929a.pdf</a> ; <a href="https://ecos.fws.gov/ecp0/reports/implementation-activity-status-ore-report?documentId=400258&amp;entityId=617">https://ecos.fws.gov/ecp0/reports/implementation-activity-status-ore-report?documentId=400258&amp;entityId=617</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Abutilon+menziesii">http://explorer.natureserve.org/servlet/NatureServe?searchName=Abutilon+menziesii</a> ; and NFECP and HHFP 2011. Distribution: Oahu, Maui, and Lanai. Dry shrublands, including ones that are now dominated by alien plant species. Gulches, plateau lands, and old lava flows.
<i>Abutilon sandwicense</i>	No common name		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7482">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7482</a> <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Abutilon+sandwicense">http://explorer.natureserve.org/servlet/NatureServe?searchName=Abutilon+sandwicense</a> ; and NFECP and HHFP 2011 Found at elevations < 3,281 ft. (< 1,000 m) and with annual precipitation 50-75 in. (127-191 cm). Found on steep slopes in dry forest in the Waianae Mountains.
<i>Achyranthes splendens</i> <i>var. rotundata</i>	Round-leaved chaff-flower		0	E	E	Sources: <a href="http://hbs.bishopmuseum.org/endangered/ach_spl.html">http://hbs.bishopmuseum.org/endangered/ach_spl.html</a> ; <a href="https://plants.usda.gov/factsheet/pdf/fs_acsp3.pdf">https://plants.usda.gov/factsheet/pdf/fs_acsp3.pdf</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Achyranthes+splendens">http://explorer.natureserve.org/servlet/NatureServe?searchName=Achyranthes+splendens</a> ; NFECP and HHFP 2011; and <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4709">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4709</a> . Distribution: Oahu, Maui, Molokai, Lanai; located sea level to 100 ft. (30.5 m), but up to 1,000 ft. (305 m) on western coast of Oahu. Habitat: low elevation, open, dry forest remnants and open thickets, on talus or rocky slopes, and on coralline plains (Wagner et al., 1990). It is currently known from two general areas on the island of O'ahu (Barbers Point and Ka'ena Point), that are also considered critical habitat areas.
<i>Alectryon macrococcus</i> <i>var. macrococcus</i>	Mahoe	Mahoe	0	E	E	Sources: <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Alectryon+macrococcus">http://explorer.natureserve.org/servlet/NatureServe?searchName=Alectryon+macrococcus</a> ; NFECP and HHFP 2011; and <a href="http://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">http://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . Distribution Oahu, Molokai, Kauai, Maui. Located in mountains of Oahu not lower than 1,200 ft. (366 m) elevation. Critical habitat on Maui, Lanai & Molokai. Habitat is mesic forests in gulch bottoms and on gulch slopes, or on old lava flows; can occur in areas dominated by non-native plants. On Lualualei DOD Base, last observed in 2004.
<i>Asplenium dielfalcatum</i> (syn. <i>Diellia falcata</i> )	Sickle Island-spleenwort		0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8198">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8198</a> ; NFECP and HHFP 2011; and <a href="http://www.iucnredlist.org/details/78774610/0">http://www.iucnredlist.org/details/78774610/0</a> . Between 1,312-3281 ft. (400-1,000 m) elevation in the Wai'anae Mountains on the island of O'ahu. Habitat deep shade or open understory on moderately steep slopes and gulch bottoms in mesic forest.
<i>Bobaea sandwicensis</i>	'Ahakea	'Ahakea	0	C	-	Sources: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4908#petitions">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4908#petitions</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Bobea+sandwicensis">http://explorer.natureserve.org/servlet/NatureServe?searchName=Bobea+sandwicensis</a> . Species is present in dry, coastal mesic and mixed mesic forests at 328-4,003 ft. (100-1,220 m) elevation.
<i>Bonamia menziesii</i>	Hawai'i lady's nightcap		0	E	E	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; NFECP and HHFP 2011; and <a href="http://nativeplants.hawaii.edu/plant/view/Bonamia_menziesii">http://nativeplants.hawaii.edu/plant/view/Bonamia_menziesii</a> . Found on Kauai, Oahu, Lanai, Maui and Hawaii. Occurs in 150-2,000 ft. (46-610 m) elevation dry to mesic lowland dry & mesic shrub/forest and cliff habitats, vining plant in full sun.
<i>Cenchrus agrimonioides</i>	Agrimony Sandbur	Kamanomano	0	E	E	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=Q1U4">https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=Q1U4</a> . Grass found in lowland mesic shrub/forest & dry cliff ecosystems of Waianae mountains.
<i>Centaurium (Schenkia) sebaeoides</i>	'Awiwi	'Awiwi	0	E	E	Sources: <a href="http://eol.org/pages/581938/overview">http://eol.org/pages/581938/overview</a> ; and <a href="https://ecos.fws.gov/docs/five_year_review/doc4200.pdf">https://ecos.fws.gov/docs/five_year_review/doc4200.pdf</a> . Dry shrublands, primarily at coastal sites with coralline or basalt substrates.
<i>Colubrina oppositifolia</i>	Kauila	Kauila	0	E	E	Sources: <a href="http://www.iucnredlist.org/details/30915/0">http://www.iucnredlist.org/details/30915/0</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Colubrina+oppositifolia">http://explorer.natureserve.org/servlet/NatureServe?searchName=Colubrina+oppositifolia</a> . Historically a dominant forest tree, but now very limited population of plants, found in lowland mesic forests of Waianae Mtns Oahu, Hawaii & Molokai, with critical habitat on Maui. Dry and moist forests. Gulch slopes on the older islands; old, forested lava flows on the island of Hawaii.



Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Ctenitis squamigera</i>	Pauoa	Pauoa	0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=289">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=289</a> ; and <a href="http://www.iucnredlist.org/details/44128/0">http://www.iucnredlist.org/details/44128/0</a> . Found on Kauai, Oahu, Maui, Lanai & Molokai. Small populations of ferns at 1240 ft. (378 m) elevation and above. Moist forests on gulch slopes and in gulch bottoms.
<i>Cyanea calycina</i>	Haha	Haha	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2031">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2031</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Found in lowland mesic, lowland wet, montane wet and wet cliff ecosystems. In the Waianae Mountains, <i>C. calycina</i> occurs in Acacia-Metrosideros-Dicranopteris (koaohia-uluhe) forests at elevations between 1,800-3,920 ft. (550-1,195 m), and in the Koolau Mountains this species occurs in wet Metrosideros Dicranopteris forest and shrubland at elevations between 1,830-3,000 ft (558-900 m) (HBMP 2008).
<i>Cyanea grimesiana ssp. obatae</i>	Haha	Haha	0	E	SOC	Sources: <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Cyanea-grimesiana-subsp-obatae.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Cyanea-grimesiana-subsp-obatae.pdf</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="https://ecos.fws.gov/docs/five_year_review/doc4154.pdf">https://ecos.fws.gov/docs/five_year_review/doc4154.pdf</a> ; USFWS 1995; and <a href="https://ecos.fws.gov/docs/five_year_review/doc1128.pdf">https://ecos.fws.gov/docs/five_year_review/doc1128.pdf</a> . Found on Oahu at 1,640-8,858 ft. (500-2,700 m) elevation and in areas of 48-100 in. (123-254 cm) of rain per year. Typically grows on steep, moist, shaded slopes in diverse mesic to wet forests. Associated plants include mamaki, <i>Charpentiera</i> (papala), <i>Claoxylon sandwicense</i> (poola), papala kepau, koa, and various ferns.
<i>Cyanea lanceolata ssp. calycina</i>	Oahu Cyanea	Haha	0	C	C	Source: <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Cyanea+calycina">http://explorer.natureserve.org/servlet/NatureServe?searchName=Cyanea+calycina</a> . Shrub located on Oahu only. Terrestrial Habitat(s): forest/hardwood, forest/woodland, mesic to wet forest 984-2,953 ft. (300-900 m) elevation.
<i>Cyanea lanceolata ssp. lanceolata</i>	Lanceleaf Cyanea	Haha	0	C	C	Source: <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Cyanea+lanceolata">http://explorer.natureserve.org/servlet/NatureServe?searchName=Cyanea+lanceolata</a> . Endemic to the Koolau Mountains on Oahu. The remaining plants number fewer than 123. Wet and mesic forests 984-3,002 ft. (300-915 m) elevation.
<i>Cyperus trachysanthos</i>	Pu`uka`a	Pu`uka`a	0	E	E	Sources: <a href="https://ecos.fws.gov/docs/recovery_plan/990710.pdf">https://ecos.fws.gov/docs/recovery_plan/990710.pdf</a> ; <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400380&amp;entityId=1108">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400380&amp;entityId=1108</a> ; and NFECP and HHFP 2011. Found on Oahu, Molokai and Kauai; critical habitat on Molokai. In dry regions, often coastal, but in wet or seasonally wet situations such as in marshes, seeps, seasonally flooded wetlands, and clay soil which is wet during the winter but which dries out during the summer.
<i>Delissea undulata ssp. undulata</i>	No common name		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1565">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1565</a> ; and <a href="http://www.iucnredlist.org/details/34040/0">http://www.iucnredlist.org/details/34040/0</a> . Considered extinct. Occurred in montane mesic forest 1,600-8,800 ft. (488-2,682 m). Elevation and 48-100 in. (122-254 cm) of rain per year.
<i>Eugenia koolauensis</i>	Koolau Eugenia	Nioi	0	E	E	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Eugenia+koolauensis">http://explorer.natureserve.org/servlet/NatureServe?searchName=Eugenia+koolauensis</a> ; and USFWS 1998 ( <a href="https://ecos.fws.gov/docs/recovery_plan/980810.pdf">https://ecos.fws.gov/docs/recovery_plan/980810.pdf</a> ). Found on Oahu & Molokai, with critical habitat designated on Molokai. Currently extremely rare and now found in the northern Ko'olau Mountains on the north fork of the Kamananui Stream, Waimea Valley and from Pūpūkea-Paumalū, O'ahu. Terrestrial habitats: forest/hardwood, forest/woodland, moist lowland forests on gulch (Waianae) slopes, and dry-mesic shrubland/forest with rainfall 39-78 in. (99-198 cm) per year.

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Euphorbia celastroides</i> var. <i>kaenana</i> (syn. <i>Chamaesyce c. var. k.</i> )	`Akoko (`Ekoko)	`Akoko (`Ekoko)	0	E	-	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="http://www.iucnredlist.org/details/33600/0">http://www.iucnredlist.org/details/33600/0</a> . Approximately 10 subpopulations, consisting of about 545 individuals in total, are located principally at Kaena Point but with small subpopulations in Alau Gulch, Waianae Kai and Keawaula. Coastal and lowland dry shrubland, and lowland mesic stands, arid talus slopes near the ocean, and sometimes inland and/or on vertical on cliffs on O`ahu.
<i>Euphorbia kuwaleana</i> (syn. <i>Chamaesyce k.</i> )	`Akoko (`Ekoko)	`Akoko (`Ekoko)	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6308">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6308</a> ; and NFECP and HHFP 2011. Endemic to the island of O`ahu, with critical habitat designated at Kaena Point, Waianae Mtns and other coastal areas of Oahu. Dry cliff habitat and mesic ridges only (historically also coastal). The estimated 2,000 existing plants are all found in dry cliff habitat. They are threatened by alien plants and fire.
<i>Euphorbia skottsbergii</i> var. <i>skottsbergii</i>	Ewa Plains `akoko	`Akoko	0	E	-	Source: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6793">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6793</a> . Located on Ewa Plains, Oahu in lowland dry ecosystem.
<i>Flueggea neowawraea</i>	Mehamehame	Mehamehame	0	E	E	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; NFECP and HHFP 2011; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Flueggea+neowawraea+">http://explorer.natureserve.org/servlet/NatureServe?searchName=Flueggea+neowawraea+</a> . Known from Kauai, Oahu, Molokai, Maui & Hawaii. Approximately 13 populations in north-west Kauai, the Waianae Mts. on Oahu, Molokai, where the one specimen known has died, the south-west slope of Haleakala on Maui and the Kona coast on Hawaii. Found in lowland mesic and dry cliff ecosystems on Oahu. Moist forests in gulch bottoms and on gulch slopes. On East Maui and Hawaii: growing on old, forested lava flows.
<i>Gardenia brighamii</i>	Hawaiian gardenia	Na`u	0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6853">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6853</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Gardenia+brighamii">http://explorer.natureserve.org/servlet/NatureServe?searchName=Gardenia+brighamii</a> ; and <a href="https://ecos.fws.gov/docs/five_year_review/doc4395.pdf">https://ecos.fws.gov/docs/five_year_review/doc4395.pdf</a> . Found on Oahu and Lanai. Nānākuli Valley in the southern Wai`anae Mountains, where a single living tree is known in the northern branch of Nānākuli Valley which was found in 2001. Prefers dry forest, rocky gulches, or on plateau lands with deep soils.
<i>Gouania meyenii</i>	No common name		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3893">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3893</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Found on Kauai and Oahu, with critical habitat designated on Oahu in Waianae and Koolau mountains and coastal areas. On Oahu, this species was historically found in the lowland dry and lowland mesic ecosystems of the Waianae Mountains, and the lowland dry ecosystem at Diamond Head (HBMP 2008). At the time we designated critical habitat in 2003, the 4 known occurrences in the Waianae Mountains contained 63 individuals. Currently, this species is found in 3 occurrences totaling fewer than 70 individuals in the dry cliff ecosystem in the Waianae Mountains (U.S. Army 2006; TNC 2007; HBMP 2008).
<i>Hedyotis fluvialis</i>	Water Bluet	Kamapua`a	0	E	C	Source: USFWS 1998; <a href="https://www.ctahr.hawaii.edu/hawnprop/plants/hed-fluv.htm">https://www.ctahr.hawaii.edu/hawnprop/plants/hed-fluv.htm</a> (2001); and Wagner 1990. Endemic to the island of Kauai, and the Koolau Mountains of Oahu. It is a rare shrub that grows in moist to wet forests at elevations ranging from 160 ft. (49 m) to almost 4,000 ft. (1,219 m). It occurs on Kauai and on O`ahu in the Ko`olau Mountains from Pupukeya to Manoa. This species is currently known from 11 locations, with fewer than 1,500 plants.

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Hesperomannia arbuscula</i>	aster spp.		0	E	E	Source: <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Hesperomannia-arbuscula.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Hesperomannia-arbuscula.pdf</a> . This species is currently known to be extant on the Makaha-Waianae Kai Ridge on O'ahu. The two known populations on O'ahu are about 0.8 mi. (1 km) apart. Including the 3 populations from West Maui, this species numbers about 50 individuals. Typically grows on slopes and ridges in mesic to wet forest dominated by koa and 'ōhi'a at an elevation of 1,200-3,000 ft. (350-900 m). Associated native species include <i>Bidens</i> (ko'oko'olau), <i>Alyxia oliviformis</i> (maile), and <i>Psychotria</i> (kopiko). Alien species that have invaded these habitats include blackberry, Christmas berry, Koster's curse, and strawberry guava.
<i>Hibiscus brackenridgei</i> ssp. <i>Mokuleianus</i>	Native yellow hibiscus	Ma'o hau hele	0	E	E	Sources: <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Hibiscus-brackenridgei-subsp-mokuleianus.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Hibiscus-brackenridgei-subsp-mokuleianus.pdf</a> ; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4075">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4075</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . On O'ahu, scattered in the Wai'anae Mountains from Pu'u Pane to Kealia-Kawaihapai, and Dillingham Military Reservation; prefers lowland dry-mesic forests. Approximately 100-300 individuals total are known to remain.
<i>Isodendron pyriformis</i>	Kula wahine noho	Kula wahine noho	0	E	E	Sources: <a href="https://ecos.fws.gov/docs/recovery_plan/960926a.pdf">https://ecos.fws.gov/docs/recovery_plan/960926a.pdf</a> ; <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400308&amp;entityId=741">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400308&amp;entityId=741</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . Found on Niihau, Oahu, Moloka, Maui, Lanai & Hawaii with designated critical habitat on Molokai and west Maui. No current known populations on Oahu, but previously known to occur in lowland dry (dry shrublands), and dry cliff ecosystems of Waianae mountains.
<i>Kadua coriacea</i>	Kio'ele	Kio'ele	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5504">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5504</a> ; <a href="https://ecos.fws.gov/docs/recovery_plan/970729.pdf">https://ecos.fws.gov/docs/recovery_plan/970729.pdf</a> ; and <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400298&amp;entityId=725">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400298&amp;entityId=725</a> . Found on west Oahu and west Maui, with critical habitat designated on west Maui. No known occurrences currently on Oahu, but historic range includes lowland mesic ecosystem in the Waianae and Koolau Mountains.
<i>Joinvillea ascendens</i> ssp. <i>ascendens</i>	'Ohe	'Ohe	0	E	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2412">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2412</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Joinvillea+ascendens+ssp.+ascendens">http://explorer.natureserve.org/servlet/NatureServe?searchName=Joinvillea+ascendens+ssp.+ascendens</a> . Found on Kauai, Oahu, Molokai, Maui & Hawaii. Found in moist to mesic lowland and montane forests and along intermittent streams. This subspecies is known from 44 widely scattered populations totaling approximately 200 individuals. Plants are typically found as only one or two individuals, with miles between populations.
<i>Labordia kaalae</i> (syn. L. K. var. <i>forsbergii</i> )	No common name	Kāmakahala	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7587">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7587</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Labordia+kaalae">http://explorer.natureserve.org/servlet/NatureServe?searchName=Labordia+kaalae</a> ; and NFECP and HHFP 2011. Found on Oahu in the Waianae Mountains in mesic forests from 1,903-3,806 ft. (580-1,160 m) on ridge crests, gulch slopes and gulch bottoms.
<i>Lepidium arbuscula</i>	'Anaunau	'Anaunau	0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2670">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2670</a> ; and NFECP and HHFP 2011. Endemic to the Hawaiian Islands, between 1,083-1,706 ft. (330-520 m) elevation (or lower at Lualualei) on the island of O'ahu. The taxon is a shrub found in Hawaiian dry forest, dry cliff ecosystem in the Wai'anae Mountains on O'ahu. Occurs in dry to mesic habitats, in open shrubby or grassy areas, sparsely vegetated cliffs, and sometimes in scrubby forest.



Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Lipochaeta lobata</i> var. <i>leptophylla</i>	Shrubland Nehe	Nehe	0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5211">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5211</a> ; and NFECP and HHFP 2011. Coastal and montane dry shrublands, and in dry to mesic habitats on open grassy or shrubby ridges and cliffs.
<i>Lobelia niihauensis</i>	Niihau Lobelia		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2278">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2278</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Endemic to Niihau, Kauai, and Oahu. The restriction of most populations of <i>Lobelia niihauensis</i> to virtually inaccessible cliffs suggests that goat predation may have eliminated this species from more accessible locations and thus may have played a role in limiting its distribution. Elevation < 3,281 ft. (< 1,000 m), and 50-75 in. (127-191 cm) annual precipitation. Critical habitat in Waianae and Koolau mountains of Oahu.
<i>Lobelia yuccoides</i>			0	SOC	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3229">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3229</a> ; NFECP and HHFP 2011; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=lobelia+yuccoides">http://explorer.natureserve.org/servlet/NatureServe?searchName=lobelia+yuccoides</a> . Found on Oahu and Kauai in mesic forests and shrublands from 2,297-4,035 ft. (700-1,230 m) elevation.
<i>Marsilea villosa</i>	Ihi'ihī		0	E	E	Sources: <a href="https://ecos.fws.gov/docs/recovery_plan/960418.pdf">https://ecos.fws.gov/docs/recovery_plan/960418.pdf</a> ; <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400260&amp;entityId=1200">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400260&amp;entityId=1200</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Found on Niihau, Molokai, and Oahu in coastal and lowland dry ecosystems near the Waianae and Koolau mountains; are frequently found in seasonal wetlands. Prefers areas less than 984 ft. (300 m) in elevation and less than 20 in. (51 cm) precipitation.
<i>Mariscus (Cyperus) pennatiformis</i> ssp. <i>pennatiformis</i>	No common name		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6868">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6868</a> <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> <a href="http://www.iucnredlist.org/details/78786326/0">http://www.iucnredlist.org/details/78786326/0</a> Found on Kauai, Oahu Hawaii & east Maui. Rare, in open sites on coastal dunes, grasslands, and open sites in lowland mesic forest. Critical habitat on coastal Maui. Last observed on Oahu in 1930s.
<i>Melanthera tenuifolia</i>	Slender-leaf Nehe	Nehe	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2407">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2407</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Endemic to the northern Waianae Mountains of Oahu. It is estimated that there are fewer than 3,000 plants of this species in the 11 current occurrences. Terrestrial habitats: forest/hardwood, forest/woodland, shrubland/chaparral; dry and moist shrublands and forests, as well as ridge tops, sides of ridges, steep slopes, and cliffs. Typically occurs at elevation < 3281 ft. (< 1,000 m) and annual precipitation < 50 in. (< 127 cm).
<i>Melicope christophersenii</i>	No common name		0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4185">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4185</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Melicope+christophersenii">http://explorer.natureserve.org/servlet/NatureServe?searchName=Melicope+christophersenii</a> ; and NFECP and HHFP 2011. Endemic to the Waianae Mountains of Oahu in montane wet and wet cliff ecosystems. Habitat: wet forests and shrublands on ridgecrests and gulch slopes, and also on flat to gently sloped terrain on the summit plateau of Ka'ala (mountain); and northern Wai'anae Mountains in dry and mesic forests from 1,197-2,953 ft (365-900 m).
<i>Melicope hiiakae</i>	Alani	Alani	0	E	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6577">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=6577</a> ; and <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Melicope-hiiakae.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Melicope-hiiakae.pdf</a> . Only 20 plants have been found in the Ko'olau mountains of Oahu.

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Mezoneuron kavaense</i>	Uhi uhi	Uhi uhi	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7129">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7129</a> ; <a href="http://www.iucnredlist.org/details/33606/0">http://www.iucnredlist.org/details/33606/0</a> ; and <a href="https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Caesalpinia-kavaensis.pdf">https://dlnr.hawaii.gov/wildlife/files/2013/09/Fact-Sheet-Caesalpinia-kavaensis.pdf</a> . Is found only on O'ahu in the Wai'anae range, and on the island of Hawai'i on the slopes of Mt. Hualalai, and on Lana'i. Eight subpopulations are known, totaling approximately 50-60 individuals; however, many of these are probably non-reproductive due to various problems. Less than 10 individuals total remain in the two populations on O'ahu. Terrestrial habitat(s): forest/hardwood, forest/woodland, shrubland/chaparral; dry and moist forests and shrublands. On gulch slopes and, on Hawaii, on old lava flows. It occurred throughout dry forest ecosystems, ranging in elevation from 250-3,000 ft. (78-910 m).
<i>Microlepia strigosa</i> var. <i>mauiensis</i> ( <i>Microlepia mauiensis</i> )	Maui fern		0	E	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4737">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4737</a> ; <a href="http://nativeplants.hawaii.edu/plant/view/Microlepia_strigosa_strigosa">http://nativeplants.hawaii.edu/plant/view/Microlepia_strigosa_strigosa</a> ; and areas mapped on ECOS, USDA and Nature Serve. Variable in family of bracken fern. Extremely hairy endemic that is uncommon to rare in mesic to wet forests. Hawai'i botanist Joel Lau notes of its range on O'ahu that he has seen it in three locations: West Makaleha, Mākaha, and Palikea.
<i>Neraudia angulata</i>	Angular-fruit Neraudia		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2750">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2750</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Endemic to the Waianae Mountains of Oahu. Currently about 15 occurrences are known, with a total of fewer than 150 plants. Occurs between 919-2,707 ft. (280-825 m) elevation on the island of O'ahu. This taxon is a short-lived shrub found in dry to mesic forest habitats, typically on or around cliffs. Found at sites with annual precipitation < 75 in. (< 191 cm) and < 3281 ft. (< 1,000 m) elevation.
<i>Neraudia melastomifolia</i>	No common name	Ma'aloa	0	SOC	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7416">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7416</a> ; NFECP and HHFP 2011; <a href="https://ecos.fws.gov/docs/federal_register/fr2425.pdf">https://ecos.fws.gov/docs/federal_register/fr2425.pdf</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Neraudia+melastomifolia">http://explorer.natureserve.org/servlet/NatureServe?searchName=Neraudia+melastomifolia</a> . Found on Oahu, Kauai, and west Maui. Occurs in mesic and sometimes wet forests at elevations ranging from 902-4,003 ft (275-1,220 m) on gulch slopes and gulch bottoms.
<i>Nototrichium humile</i>	Kulu'i		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1001">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1001</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and NFECP and HHFP 2011. Current range: Waianae Mountains of Oahu and central to eastern Maui with critical habitat designated in south Maui. On Oahu, this species is now found almost exclusively on the leeward side of the Waianae Mountain range in lowland dry, lowland mesic and dry cliff ecosystems. It is thought that fewer than 2,000 plants remain. Terrestrial habitat(s): cliff, forest/hardwood, forest/woodland; open areas, remnant dry or mesic forest, on cliff faces, in gulches, or on steep slopes. Its area of occupancy is 90 km <sup>2</sup> and declining. Site conditions are found at < 3,281 ft. (< 1,000 m) elevation in areas with precipitation less than 50 in. (127 cm) annually.
<i>Nothocestrum latifolium</i>	`Aiea	`Aiea	0	E	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1061">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1061</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Nothocestrum+latifolium">http://explorer.natureserve.org/servlet/NatureServe?searchName=Nothocestrum+latifolium</a> . Endemic to Oahu and Maui Lanai and Molokai; rare and declining. Prefers dry to mesic conditions above 1,000 ft. (305 m). On Oahu, Molokai and West Maui occurs on ridges and in gulches. On East Maui: old lava flows. On Lanai: mostly on plateau lands with deep soil.
<i>Peucedanum sandwicense</i>	Makou	Makou	0	T	T	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5579">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5579</a> ; and <a href="http://www.nativeplants.hawaii.edu/plant/view/Peucedanum_sandwicense">http://www.nativeplants.hawaii.edu/plant/view/Peucedanum_sandwicense</a> . Found from 3-820 ft. (0.91-250 m) on windward cliffs on Kaua'i, O'ahu (Wai'anae Mts.), Moloka'i (including Mōkapu and Huelo islets), West Maui, and Keōpuka and Makolaka islets off the coast of East Maui. Critical habitat on Molokai & Maui - dry cliff habitats.

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Plantago princeps</i>	Kuahiwi laukahi	Kuahiwi laukahi	0	E	E	Sources: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=4926">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=4926</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="http://manoa.hawaii.edu/hpicesu/DPW/RPP/plapri.pdf">http://manoa.hawaii.edu/hpicesu/DPW/RPP/plapri.pdf</a> . Found in lowland mesic, lowland wet and dry cliff ecosystems and lowland wet and wet cliff ecosystems of Koolau Mountains.
<i>Platydesma cornuta</i> var. <i>cornuta</i>	No common name		0	C	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=8345">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=8345</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . Found in Koolau mountains of Oahu. It occurs in wet forest, shrubland, and gulches in the lowland wet ecosystem of the Koolau Mountains, at elevations between 1,903-2,493 ft. (580-760 m).
<i>Platydesma cornuta</i> var. <i>decurrens</i>	No common name		0	C	C	Sources: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=8345">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=8345</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . It occurs in lowland mesic and dry cliff ecosystems, at elevations between 1,968-2,953 ft. (600-900 m).
<i>Pleomele forbesii</i>	Forbe's Dracaena	Hala pepe	0	E	C	Sources: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=5965#rangeInfo">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=5965#rangeInfo</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . The species total is under 350 plants in 20 known occurrences. There are 290 to 307 individuals in the Waianae Mountains and a few individuals in the Koolau Mountains. Found in mesic & dry forest and shrubland in the lowland dry, lowland mesic and dry cliff ecosystems between 787-2,953 ft. (240-900 m) elevation. The species' center of abundance is in drier native forests and shrublands.
<i>Polyscias lydgatei</i> (syn. <i>P. oahuensis</i> , <i>Tetraplasandra l.</i> )	‘Ohe mauka	‘Ohe mauka	0	E - Endemic		Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=2751">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=2751</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="http://www.dtic.mil/dtic/tr/fulltext/u2/a336412.pdf">http://www.dtic.mil/dtic/tr/fulltext/u2/a336412.pdf</a> ; and <a href="http://www.nativeplants.hawaii.edu/plant/view/Polyscias_oahuensis">http://www.nativeplants.hawaii.edu/plant/view/Polyscias_oahuensis</a> . Plant is widespread and variable from 785-5000 ft. (239-1,524 m) in mesic to wet forest, with critical habitat designated in the Waianae and Koolau mountains. Prefers mesic/wet habitats at their low-elevation ranges.
<i>Portulaca villosa</i>	Hairy Purslane	Ihi	1	E	-	Sources: <a href="https://www.gpo.gov/fdsys/pkg/FR-2015-09-30/pdf/2015-24305.pdf">https://www.gpo.gov/fdsys/pkg/FR-2015-09-30/pdf/2015-24305.pdf</a> ; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=4886">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=4886</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Portulaca+villosa+">http://explorer.natureserve.org/servlet/NatureServe?searchName=Portulaca+villosa+</a> . Found on Kauai, Lehua, Oahu, Lanai, Kahoolawe, Maui, and Hawaii. Dry grasslands, shrublands, and (less often) in forests. Usually in coastal habitats; less frequently inland. Most sites are sparsely vegetated, exposed, and rocky. Found at elevations from sea level to 984 ft. (300 m) elevation, typically within 328 ft. (100 m) of the coast, with less than 40 in. (102 cm) of annual precipitation.
<i>Pritchardia bakeri</i>	Baker's Loulu	Loulu	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=9615">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=9615</a> ; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2015-09-30/pdf/2015-24305.pdf">https://www.gpo.gov/fdsys/pkg/FR-2015-09-30/pdf/2015-24305.pdf</a> ; and NFECP and HHFP 2011. Known from the northern end (Pupukea) and southern end (Kuliouou) of the Ko'olau Mountain range, Oahu. Total population is < 75 individuals. Terrestrial habitat is forest/woodland. Found in lowland mesic habitats below 3,281 ft. (1,000) m elevation, with precipitation of 50-75 in. (127-191 cm) annually. This species occurs in the lowland mesic ecosystem from 1,500-2,100 ft (457-640 m) in disturbed, windswept, and mostly exposed shrubby or grassy areas, and sometimes on steep slopes in these areas (Bacon et al. 2012, pp. 1–17; Hodel 2012, pp. 71–73).
<i>Pseudognaphalium</i> (=Gnaphalium) <i>sandwicensium</i> var. <i>molokaiense</i>	‘Ena`ena	‘Ena`ena	0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=5993">https://ecos.fws.gov/ecp0/profile/speciesProfile?sld=5993</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23112.pdf">https://www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23112.pdf</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Pseudognaphalium+sandwicensium+var.+molokaiense">http://explorer.natureserve.org/servlet/NatureServe?searchName=Pseudognaphalium+sandwicensium+var.+molokaiense</a> . Extinct on Oahu.



Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
<i>Schenkia sebaeoides</i> (syn. <i>Centaurium sebaeoides</i> )	Awiiwi		0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7103">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=7103</a> ; <a href="https://ecos.fws.gov/docs/recovery_plan/990710.pdf">https://ecos.fws.gov/docs/recovery_plan/990710.pdf</a> ; <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400380&amp;entityId=1093">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400380&amp;entityId=1093</a> ; NFECP and HHFP 2011; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . Found in coastal and near-coastal areas of Kauai, Oahu, Molokai, Lanai, and west Maui with critical habitat designated on Lanai. Currently occurs on Oahu in the coastal ecosystem at Kaena Point and Halona (Waianae and Koolau Mountains) in 2 occurrences totaling between 40 and 50 individuals (TNC 2007; HBMP 2008). Habitat includes coastal and lowland dry shrublands with coralline or basaltic substrates with < 20 in. (< 51 cm) of annual precipitation and < 984 ft. (< 300 m) elevation.
<i>Schiedea hookeri</i>	No common name		0	E	-	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1705">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1705</a> ; and NFECP and HHFP 2011. Endemic to Oahu and Maui, occurs mainly in the central and northern Wai'anae Mountains in dry and mesic forests from 1,197-2,953 ft (365-900 m). Currently on Oahu, found in 17 occurrences totaling approximately the same number of individuals, in the lowland dry, lowland mesic, lowland wet, dry cliff, and wet cliff ecosystems in the Waianae Mountains (U.S. Army 2006; TNC 2007; HBMP 2008).
<i>Schiedea kealiae</i>	Ma'oli'oli		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3679">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=3679</a> ; <a href="https://ecos.fws.gov/docs/recovery_plan/980810.pdf">https://ecos.fws.gov/docs/recovery_plan/980810.pdf</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400358&amp;entityId=603">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400358&amp;entityId=603</a> . Found on Oahu in coastal foothills. Currently found in 1 occurrence totaling between 50-100 individuals in the coastal and lowland dry ecosystems in the Waianae Mountains (U.S. Army 2006; TNC 2007; HBMP 2008). Found at elevations < 984 ft. (< 300 m) and with annual precipitation < 20 in (< 51 cm).
<i>Schiedea pentamera</i> (syns. <i>S. pubescens</i> var. <i>purpurascens</i> , <i>S. pentandra</i> )	Ma'oli'oli	Ma'oli'oli	0	E	C	Source: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4030">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=4030</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Schiedea+pubescens">http://explorer.natureserve.org/servlet/NatureServe?searchName=Schiedea+pubescens</a> . Found on Oahu where it is endemic to the Waianae Mountains. Found in hardwood mesic to wet forests from 535-975 m elevations.
<i>Sesbania tomentosa</i>	Oahu Riverhemp	'Ohai	0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8453">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8453</a> ; NFECP and HHFP 2011; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> . Found on Niihau, Kauai, Oahu, Maui, Kaho'olawe and Hawaii, with critical habitat designated on Molokai, Maui and Kaho'olawe. The number of individuals at any one location varies widely, depending on rainfall (TNC 2007; NTBG 2009k). Often coastal, less often inland. Found on calcareous beaches and sand dunes, rocky ridges and slopes, deep red soil, and on soil pockets on lava. Basaltic and calcareous substrates. Found in elevations of < 984 ft. (< 300 m) and annual precipitation < 20 in. Prefers plateau lands with deep soils. It used to grow in dry areas at elevations below 2,500 feet on all of the main islands. However, destruction of these habitats has greatly diminished its natural occurrence within its former range.
<i>Silene lanceolata</i>	Lanceolate Catchfly		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5746">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=5746</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Silene+lanceolata">http://explorer.natureserve.org/servlet/NatureServe?searchName=Silene+lanceolata</a> . Found on Kauai, Oahu, Molokai, Lanai, and Hawaii with critical designated on Molokai. Found in lowland mesic and dry cliff ecotypes. Terrestrial habitats: cliff, forest/hardwood, forest/woodland, shrubland/chaparral; dry and moist forests and shrublands. Elevations < 3281 ft. (< 1,000 m) and annual precipitation < 75 in (< 191 cm).
<i>Solanum nelsonii</i>	Popolo		0	E	C	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2281">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2281</a> ; NFECP and HHFP 2011; and <a href="https://www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23112.pdf">https://www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23112.pdf</a> . Found in coastal areas of Niihau, Kauai, Oahu, Molokai, Maui, and Hawaii. Typical habitat is coral rubble or sand in coastal sites up to 492 ft. (150 m) from the shore. As

Scientific Name	Common Name	Hawaiian Name	L O C	ESA- listed	State- listed	Notes
						of 2016, known to occur in the coastal ecosystem on the islands of Hawaii and Molokai (approximately 50 individuals), and on the Northwest Hawaiian Islands of Kure (unknown number of individuals), Midway Atoll (approximately 260 individuals on Sand, Eastern, and Spit islands), Laysan (approximately 490 individuals), Pearl and Hermes (30-100 individuals), and Nihoa (8,000-15,000 individuals) (Aruch 2006, in litt.; Rehkemper 2006, in litt.; Tangalin 2006, in litt.; Bio 2008 a and 2008b, in litt.; Vanderlip 2011, in litt.; Conry 2012, in litt.; PEPP 2013, pp. 190–191).
<i>Spermolepis hawaiiensis</i>	No common name		0	E	E	Sources: NFECP and HHFP 2011; <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1670">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=1670</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="http://explorer.natureserve.org/servlet/NatureServe?searchName=Spermolepis+hawaiiensis">http://explorer.natureserve.org/servlet/NatureServe?searchName=Spermolepis+hawaiiensis</a> . Found on Kauai, Oahu, Molokai, Lanai, Maui and Hawaii, with critical habitat designated on Molokai and Maui. On Oahu in 2003 there were 6 occurrences totaling between 110 and 910 individuals in the Waianae and Koolau Mountains (Diamond Head), in the lowland dry and dry cliff ecosystems. Currently found in 4 occurrences totaling several hundred to thousands of individuals, depending on annual weather conditions (U.S. Army 2006; TNC 2007; HBMP 2008). It grows in forest, woodland, shrubland, and chaparral. It is present at Diamond Head on Oahu and the Pohakuloa Training Area on Hawaii. Occurs in dry shrublands and forests from 1,000-6,398 ft (305-1,950 m).
<i>Tetramolopium lepidotum</i> ssp. <i>lepidotum</i>	No common name		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2944">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=2944</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; <a href="https://ecos.fws.gov/docs/recovery_plan/980810.pdf">https://ecos.fws.gov/docs/recovery_plan/980810.pdf</a> ; NFECP and HHFP 2011; and <a href="https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400358&amp;entityId=848">https://ecos.fws.gov/roar/pub/planImplementationStatus.action?documentId=400358&amp;entityId=848</a> . Found on Oahu and Lanai, with critical habitat designated in the Waianae mountains of Oahu. At the time critical habitat was designated in 2003, there were 5 occurrences of approximately 15 individuals. Currently, this species is found in 3 occurrences totaling 65 individuals, in the lowland mesic and dry cliff ecosystems in the Waianae Mountains (U.S. Army 2006; TNC 2007; HBMP 2008). Lowland mesic habitat on Oahu is at elevations of < 3,281 ft. (< 1,000 m) and annual precipitation of 50-75 in. (127-191 cm).
<i>Vigna o-wahuensis</i> (V. <i>owahuensis</i> )	O'ahu cowpea		0	E	E	Sources: <a href="https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8445">https://ecos.fws.gov/ecp0/profile/speciesProfile?slid=8445</a> ; <a href="https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf">https://www.gpo.gov/fdsys/pkg/FR-2012-09-18/pdf/2012-19561.pdf</a> ; and <a href="https://ecos.fws.gov/docs/five_year_review/doc4582.pdf">https://ecos.fws.gov/docs/five_year_review/doc4582.pdf</a> . Found on Oahu, Molokai, Lanai, Kahoolawe, Maui & Hawaii. Endemic though a very rare and seldom seen vine known to grow primarily in dry grassland and shrubland from 30 ft. (9 m) to about 4500 ft. (1,372 m).

**APPENDIX F**

**DLNR-DOFAW CORRESPONDENCE**

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
DIVISION OF FORESTRY AND WILDLIFE  
1151 PUNCHBOWL STREET, ROOM 325  
HONOLULU, HAWAII 96813

SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA  
FIRST DEPUTY

M. KALEO MANUEL  
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES  
BOATING AND OCEAN RECREATION  
BUREAU OF CONVEYANCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
CONSERVATION AND RESOURCES ENFORCEMENT  
ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAHOOLAWE ISLAND RESERVE COMMISSION  
LAND  
STATE PARKS

September 20, 2022

Lori Ford, MS  
Senior Project Manager  
Ford & Associates, Inc.  
928 Nuuanu Avenue, Suite 205  
Honolulu, HI 96817  
Attn: [lford@fordassoc.com](mailto:lford@fordassoc.com)

Log no. 3791  
FAI Project No. 22-2030

Dear Ms. Lori Ford,

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your request for comments for the proposed Garg Residence Project (FAI Project No. 22-2030) located at 6973 Kalaniana'ole Highway, Honolulu, on the island of O'ahu; TMK: (1) 3-9-002: 031. The proposed project consists of demolishing the existing two-story single-family residential dwelling and constructing an approximately 4,756 square feet (s.f.) two-story residential dwelling with an approximate 515 s.f. garage, a pool, various paved/tiled lanais and walkways, and landscaping on a 10,106 s.f. parcel.

DOFAW concurs with the mitigation measures included in the request for comments letter intended to avoid construction and operational impacts to State-listed species including the Hawaiian Hoary bat or 'Ōpe'ape'a (*Lasiurus cinereus semotus*). DOFAW provides the following additional comments regarding the potential for the proposed work to affect listed species in the vicinity of the project area.

We concur with mitigation proposed for the Hawaiian stilt (*Himantopus mexicanus knudseni*). Other State-listed waterbirds such as the Hawaiian coot (*Fulica alai*) and Hawaiian Duck (*Anas wyvilliana*) could also potentially occur at or in the vicinity of the proposed project site. It is against State law to harm or harass these species. We would also recommend, that if any of these species are present during construction, then all activities within 100 feet (30 meters) should cease, and the bird or birds should not be approached. Work may continue after the bird or birds leave the area of their own accord. If a nest is discovered at any point, please contact the O'ahu Branch DOFAW Office at (808) 973-9778.

Artificial lighting can adversely impact seabirds that may pass through the area at night by causing them to become disoriented. This disorientation can result in their collision with manmade structures or the grounding of birds. For nighttime work that might be required, DOFAW recommends that all lights used to be fully shielded to minimize the attraction of seabirds. 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. Permanent lighting also poses a risk of seabird attraction, and as such should be minimized or eliminated to protect seabird flyways and preserve the night sky. For illustrations and guidance related to seabird-friendly light styles that also protect seabirds and the dark starry skies of Hawai'i please visit <https://dlnr.hawaii.gov/wildlife/files/2016/03/DOC439.pdf>.



The State threatened White Tern (*Gygis alba*) or Manu o Kū is known to nest in the vicinity of the proposed project. If tree trimming or removal is planned, DOFAW strongly recommends a qualified biologist survey for the presence of White Terns prior to any action that could disturb the trees. White Tern pairs typically lay their single egg on a tree branch with no nest. Eggs and chicks can be dislodged by construction equipment or workers that contact trees in which White Terns are nesting. As such, a tree protection program should be in place for any mature trees with nesting or roosting White Terns. If a nest is discovered, please notify DOFAW staff for assistance.

The State endangered Hawaiian Short-eared owl or pueo (*Asio flammeus sandwichensis*) could potentially occur in the project vicinity. Pueo are most active during dawn and dusk twilights. Before clearing any vegetation, DOFAW recommends twilight pre-construction surveys by a qualified biologist. If pueo nests are present, DOFAW staff should be notified and a buffer zone should be established in which no clearing occurs until nesting is completed.

The State endangered Hawaiian Monk Seal (*Monachus schauinslandi*) and threatened Green Sea Turtle (*Chelonia mydas*) could potentially occur or haul out onshore within the vicinity of the proposed project site. If either species is detected within 100 meters of the project area all nearby construction operations should cease and not continue until the focal animal has departed the area on its own accord.

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 also 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>). Please refer to [www.plantpono.org](http://www.plantpono.org) for guidance on the selection and evaluation of landscaping plants.

DOFAW recommends minimizing the movement of plant or soil material between worksites. Soil and plant material may contain pathogens, pests such as Little Fire ants and/or Coconut Rhinoceros beetles, or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O'ahu Invasive Species Committee (OISC) at (808) 266-7994 to help plan, design, and construct the project, learn of any high-risk invasive species in the area, and ways to mitigate their spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species.

We appreciate your efforts to work with our office for the conservation of our native species. These comments are general guidelines and should not be considered comprehensive for this site or project. It is the responsibility of the applicant to do their own due diligence to avoid any negative environmental impacts. 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) 295-1123 or [paul.m.radley@hawaii.gov](mailto:paul.m.radley@hawaii.gov).

Sincerely,

*Lainie Berry*

LAINIE BERRY  
Wildlife Program Manager

**APPENDIX G**

**SCIENTIFIC CONSULTANT SERVICES REPORT**

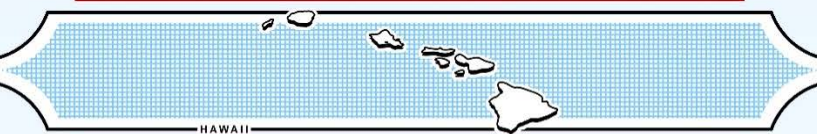
**AN ARCHAEOLOGICAL FIELD INSPECTION AND LITERATURE REVIEW  
FOR A RESIDENTIAL PROJECT AT 6973 KALANIANA'OLE HIGHWAY IN  
HONOLULU, MAUNALUA AHUPUA'A, KONA MOKU, O'AHU MOKUPUNI,  
HAWAI'I [TMK: (1) 3-9-002:031]**

Prepared by  
**Gloria C. A. Lee, B.A.,  
Kaitlyn Lowrance, M.A.,  
and  
Robert L. Spear, Ph.D.,**

SEPTEMBER 2022  
**DRAFT**

Prepared for  
**Ford & Associates, Inc.**  
928 Nu'uani Avenue, Suite 505  
Honolulu, HI 96813

**SCIENTIFIC CONSULTANT SERVICES, Inc.**



**1357 Kapiolani Blvd., Suite 850**

**Honolulu, Hawai'i 96814**

## **TABLE OF CONTENTS**

<b>INTRODUCTION.....</b>	<b>1</b>
<b>ENVIRONMENTAL SETTING .....</b>	<b>6</b>
<b>LOCATION.....</b>	<b>6</b>
<b>SOILS.....</b>	<b>6</b>
<b>CLIMATE AND HYDROLOGY .....</b>	<b>7</b>
<b>VEGETATION .....</b>	<b>7</b>
<b>CULTURAL AND HISTORICAL CONTEXT .....</b>	<b>7</b>
<b>PLACE NAMES AND MYTHOLOGY .....</b>	<b>9</b>
<b>PRE-CONTACT PERIOD.....</b>	<b>11</b>
<b>EARLY POST-CONTACT PERIOD .....</b>	<b>13</b>
<b>THE MĀHELE .....</b>	<b>14</b>
<b>LATE POST-CONTACT PERIOD TO TODAY .....</b>	<b>15</b>
<b>PREVIOUS ARCHAEOLOGY.....</b>	<b>16</b>
<b>KULI‘OU‘OU.....</b>	<b>16</b>
<b>KALUANUI RIDGE &amp; HAHAI‘ONE VALLEY .....</b>	<b>19</b>
<b>KALANIANA‘OLE HIGHWAY WIDENING PROJECT .....</b>	<b>20</b>
<b>HAWAI‘I KAI MARINA.....</b>	<b>21</b>
<b>PORTLOCK.....</b>	<b>21</b>
<b>FIELD INSPECTION METHODOLOGY AND RESULTS .....</b>	<b>21</b>
<b>DISCUSSION AND RECOMMENDATIONS.....</b>	<b>22</b>
<b>REFERENCES.....</b>	<b>30</b>
<b>APPENDIX A: PORTION OF THE CONSTRUCTION PLANS .....</b>	<b>A</b>



## LIST OF FIGURES

Figure 1: Portion of USGS topographic map showing the project area location.....	2
Figure 2: Tax Map Key [TMK (1) 3-9-002] showing the project area location.....	3
Figure 3: Google aerial photograph showing the project area location.....	4
Figure 4: The project area overlaid on an aerial photograph of East Honolulu (Tessmer 2019).....	5
Figure 5: Google aerial photograph showing soil series in project area location and its vicinity.....	8
Figure 6: The project area in the context of Maunalua Ahupua‘a and eastern Kona District (Wilson 2017) ..	10
Figure 7: A USGS aerial photograph (imagery date: May 26, 1952) showing the state of the environment before the development of Hawaii Kai in the following decade .....	17
Figure 8: Portion of a 1999 USGS topographic map (Koko Head HI quadrangle) showing previous archaeology in the vicinity of the project area.....	18
Figure 9: Overview of the project area from its southwest corner (view to northeast).....	23
Figure 10: Overview of the project area from its northwest corner (view to southeast).....	24
Figure 11: Overview of the project area from the north showing the two-story structure, patio, and yard (view to south).....	25
Figure 12: View of the project area from the northeastern corner of the concrete patio (view to northwest) ..	26
Figure 13: Milled-wood pergola attached to the two-story, masonry framed structure covering the concrete patio (view to south).....	27
Figure 14: Small, milled-wood deck on the western boundary of the property (view to northwest) .....	28
Figure 15: <i>Mauka</i> side wall constructed of cinder blocks and plywood boards, with small, rounded basalt cobblestones piled at base (view to northeast).....	29

## **INTRODUCTION**

At the request of Ford & Associates, Inc., Scientific Consultant Services, Inc. (SCS) conducted a literature review for a residential project at 6973 Kalanianaʻole Highway in Honolulu, Maunaloa Ahupuaʻa, Kona Moku, Oʻahu Moku, Hawaiʻi [TMK: (1) 3-9-002:031] (Figures 1 through 4). The 10,016 square foot (sq ft) property lies in the neighborhood of Portlock in a residential area known as Hawaiʻi Kai or Maunaloa. The structure in the property is a three-bedroom and three-bathroom home consisting of 2,760 sq ft (2,390 sq ft interior space and a 370 sq ft *lanai*, or patio). The building permit was issued in 1975 and closed as complete in 1979.

This project involves demolishing the existing two-story structure in order to build a three-story one atop the concrete base. The new building will be 4,756 sq ft and constructed primarily of wood and steel framing with a foundation of continuous and isolated reinforced concrete footings. A pulley style elevator will also be installed.

An archaeological field inspection of the project area was conducted through a pedestrian survey and ground surface inspection to assess the potential presence of historic properties including archaeological sites, buildings, structures, and cultural materials. No archaeological subsurface testing was conducted. The archaeological field inspection was conducted on July 26, 2022 by SCS archaeologist Kaitlyn Lowrance, M.A., under the supervision of Principal Investigator Robert L. Spear, Ph.D. No archaeological sites or features were identified during the field inspection.

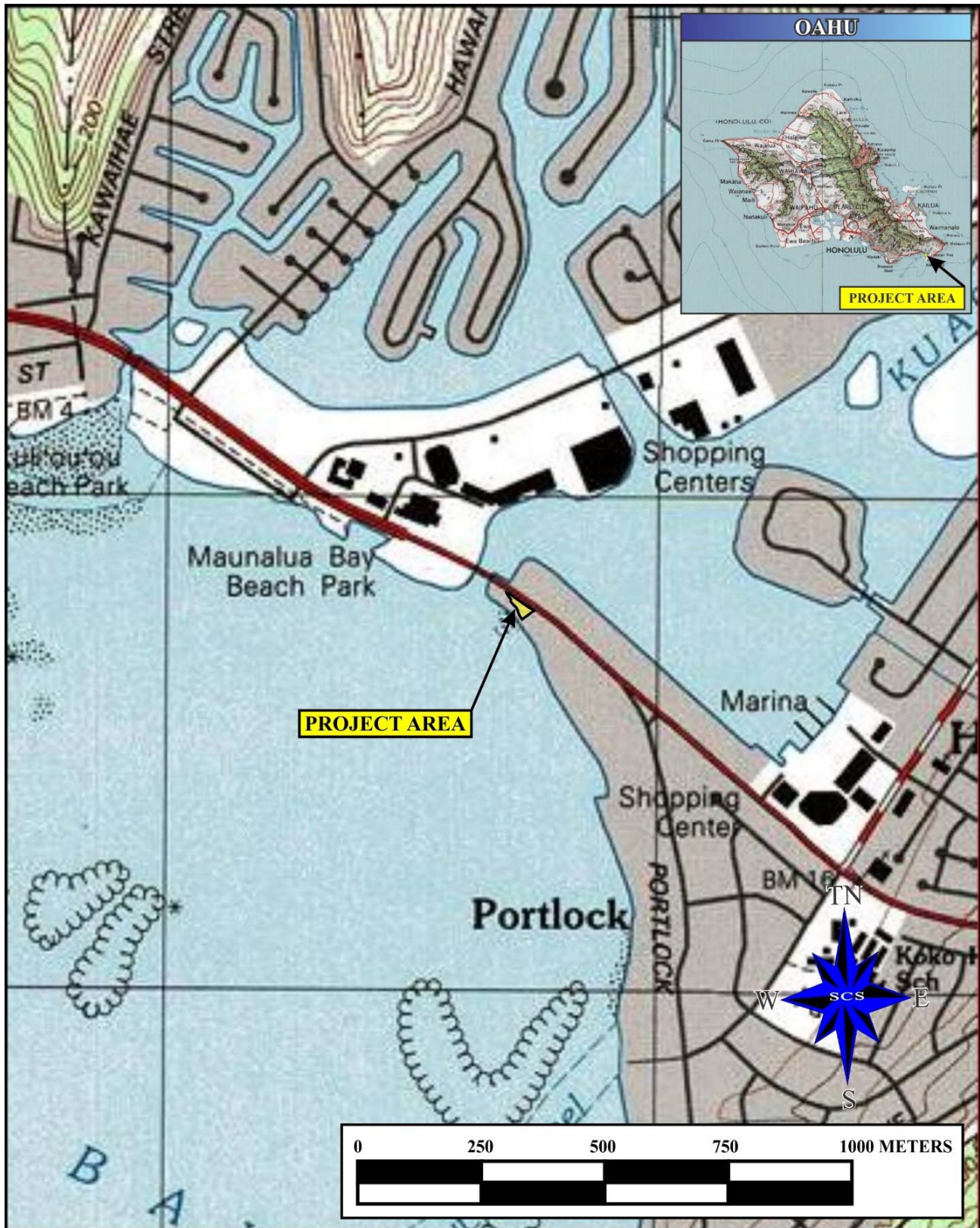


Figure 1: Portion of 1999 USGS topographic map (Koko Head HI quadrangle) showing the project area location

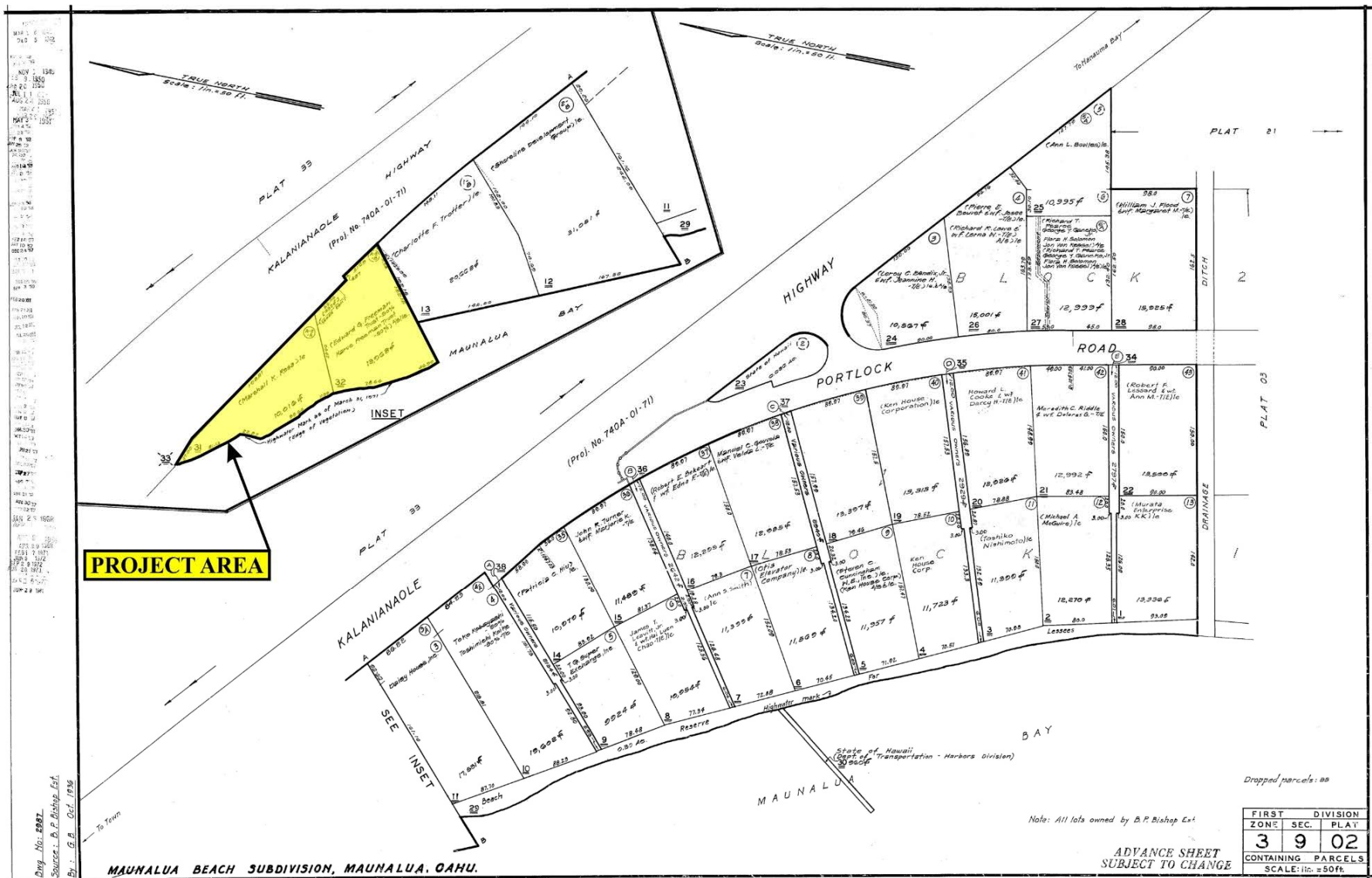


Figure 2: Tax Map Key [TMK (1) 3-9-002] showing the project area location





**Figure 3: Google aerial photograph showing the project area location**



**Figure 4: The project area overlaid on an aerial photograph of East Honolulu (Tessmer 2019)**



## **ENVIRONMENTAL SETTING**

At 597 sq. miles (1,545 km<sup>2</sup>), O‘ahu is the third largest Hawaiian island and the most populated in the archipelago. The name “O‘ahu” does not seem to have a meaning in Hawaiian (Pūku‘i et al. 1974:168), but the island is commonly called “the Gathering Place” because of its geographically central location and both political and economic importance.

O‘ahu was formed by two ancient shield volcanoes: the older Wai‘anae, rising to 1,227 m (4,025 ft) above mean sea level (amsl) and located to the west, and the younger Ko‘olau 960 m (3,150 ft amsl) to the east. The Central O‘ahu plain connects the two mountain ranges remaining from these prehistoric volcanoes. These orographic features determine the common geographic divisions of the island into a windward section, a leeward section, housing the population center Honolulu, and the central plain. Over millennia, the rain-bringing trade winds and the resultant constant water erosion have carved amphitheater-headed valleys and rugged passes (Macdonald et al. 1986:218-223), providing access from one side of the Ko‘olau Range to the other. Numerous late volcanic eruptions created a number of today’s well-known landmarks, including Mōkapu Peninsula on the windward side, and Ka‘au Crater, Pūowaina (Punchbowl), ‘Ualaka‘a (Tantalus), Lē‘ahi (Diamond Head), Hanauma Bay, Kohelepelepe (Koko Crater) and Koko Head on leeward O‘ahu (Stearns 1966:86-87; Macdonald et al. 1986:434).

### **LOCATION**

The 0.23-acre project area is located in the southeast of O‘ahu, just south of Ko‘olau Range, and on Portlock Peninsula, which separates the Pacific Ocean from the former marsh and fishpond Kuapā Pond, a central feature of Hawai‘i Kai. Along with the crater of Kawaiaha‘o and Kalama Valley, the peninsula forms the eastern limits of residential development. The built environment in the vicinity of the project area is the residential neighborhood of Portlock. The project area is easily accessible via Kalaniana‘ole Highway (Route 72). Elevation is 1 m (3 ft) amsl.

### **SOILS**

According to Foote et al. (1972; Figure 5), the majority of the project area is located over Jaucas sand, specifically the phase of 0 to 15 percent slopes (JaC). The Jaucas series consists of excessively drained, calcareous soils adjacent to the ocean. The JaC variety features rapid permeability with very slow to slow runoff and slight erosion (Foote et al. 1972:48). A small portion of the project area is Fill land, mixed (FL). It is often present in areas filled with dredging material and also is mostly adjacent to the ocean (Foote et al. 1972:31). Sandy soil matrices such as these in the project area and its vicinity suggest the potential for encountering historic properties including human burials and cultural deposits in subsurface contexts (Kirch 1985:240).

In preparation for this project, JPB Engineering, Inc. conducted a geotechnical study of the project area in 2020 and recorded surficial soils identified as fill to a maximum of three feet deep. This fill was underlain by gray-brown and dark-gray poorly-graded sand with gravel inclusions to the maximum depth explored of 15 feet below surface (Tabuso 2020:3).

## **CLIMATE AND HYDROLOGY**

Average annual air temperature in Portlock is 23.7 °C (74.6°F). January and February are the coldest months with an average air temperature around 21.7 °C (71 °F), and August is the hottest with an average temperature of 25.6° C (78.2 °F) (Giambelluca et al. 2014). Mean annual rainfall is estimated at around 746 mm (29.4 in.). Most of it occurs in the winter months of October through March. The wettest month is December with an average rainfall of about 115 mm (4.5 in.), while the driest is June, with an average of 21 mm (0.82 in.) (Giambelluca et al. 2014).

## **VEGETATION**

As the project area is an entirely built over environment, the majority of the vegetation is introduced. Notable non-native species include the cultivated papaya (*Carica papaya*), foxtail palm (*Wodyetia bifurcata*), and fire croton (*Codiaeum variegatum*). Observed naturalized non-native species were Cook pine (*Araucaria columnaris*), snake plant (*Dracaena trifasciata*), and Spanish moss (*Tillandsia usneoides*). Polynesian-introduced were a number of *niu* (coconut, *Cocos nucifera*), while the only indigenous species was *milo* (portia tree, *Thespesia populnea*).

## **CULTURAL AND HISTORICAL CONTEXT**

Archaeological data suggest that initial settlement of the Hawaiian Islands occurred on the windward shores between 850 and 1100 C.E., with populations eventually moving into the drier leeward areas in later periods (Kirch 2011:3, 22). According to Patrick Kirch, fertile windward areas were the concentration of early settlement, but because of the long history of agriculture and population expansion it is unlikely that initially settled sites will be recovered (Kirch 1985:67).

Traditionally, the division of O‘ahu into districts (*moku*) and sub-districts (*ahupua‘a*) was understood to originate from the time of legendary king (*mō‘ī*) Ma‘ilikūkahi, progenitor of the island’s chiefly line (Fornander 1878:189-195; Kirch and Sahlins 1992, Vol. 1:21-23). He created the six O‘ahu districts (Kona, Ko‘olaupoko, Ko‘olaupoko, Wahiawa, Wai‘anae, and ‘Ewa) and instituted the district chiefs (*ali‘i ‘ai moku*). Land was property of the king or *ali‘i ‘ai moku*, which he held in trust for the gods. The title of *ali‘i ‘ai moku* ensured rights and responsibilities, but did not confer absolute ownership because island rulers kept the parcels they wanted. Higher chiefs received large parcels from the *mō‘ī* and in turn distributed smaller parcels to lesser chiefs. The *maka‘āinana* (commoners) worked individual plots of land.





**Figure 5: Google aerial photograph showing soil series in project area location and its vicinity**

The terms *moku*, *ahupua'a*, *'ili* or *'ili' āina*, and *mo'o* were used to delineate various land sections. A district (*moku*) contained smaller land divisions (*ahupua'a*) that were meant to incorporate the natural resources relevant to traditional subsistence stretching from the ocean to the mountain peaks (Lyons 1875:111). These ancient divisions have remained the same and are still commonly used to locate and refer to geographical features of the islands, even though land tenure has gone through radical changes. The *'ili* were smaller land divisions administered by the chief who controlled the corresponding *ahupua'a* (Lyons 1875:33; Lucas 1995:40). Finally, the *mo'o* were narrow strips of land within an *'ili*. The land holding of a tenant (*hoa 'āina*) was called a *kuleana* (right, privilege) (Lucas 1995:61).

The project area is located in the *ahupua'a* of Maunalua, Kona District (Figure 6). According to Elspeth Sterling and Catherine Summers (1978:257), Maunalua was also an *'ili* traditionally part of Waimānalo Ahupua'a and originally belonged to Ko'olaupoko Moku. Notably, Maunalua had a trail that connected with Waimānalo (McAllister 1933:59).

## PLACE NAMES AND MYTHOLOGY

Today's Portlock neighborhood is named after British captain Nathaniel Portlock (c. 1748–1817) who along with George Dixon was among the first to describe the vicinity of the project area. Although Portlock unsuccessfully attempted to name Maunalua Bay “King George's Bay,” the cape 2.26 km (1.41 miles) south of the project area which had been known by the native name “Lae o Kawaihoa” is now usually referred to as “Portlock Point” (Clark 1977:33). The name “*Maunalua*” translates as “two mountains” (Pūku'i et al. 1974:149), likely referring to Koko Head and Koko Crater, whose original name is “Kohēlepelepe” (“labia minor;” Pūku'i et al. 1974:115; Clark 1977:32). The name of the district of Kona translates to “leeward” (Pūku'i et al. 1974:117). John Clark associates the prevalence of the Hawaiian word “*koko*” (blood) in local names with a former canoe landing near what today is Portlock Road southeast of the project area:

A Hawaiian legend tells how the ground there came to be red. A chief and chiefess of the nearby district of Wai'ālae had a daughter whom they gave up in adoption. When the girl reached maturity, she went one day to the home of her real parents to visit with them. They were not there when she arrived. While waiting for them to return, she picked a stalk of sugarcane and ate it. Then she went out to the point now called Koko Head and swam in the sea. The unfortunate maiden did not realize that her parents had a shark god whose duty was to kill anyone who molested [*sic*] the foodplants they had cultivated. While she was swimming, the shark attacked her, and the blood from her wounds spurted upon the land. From that time on, this place was called *koko*, or “blood.” [Clark 1977:32]



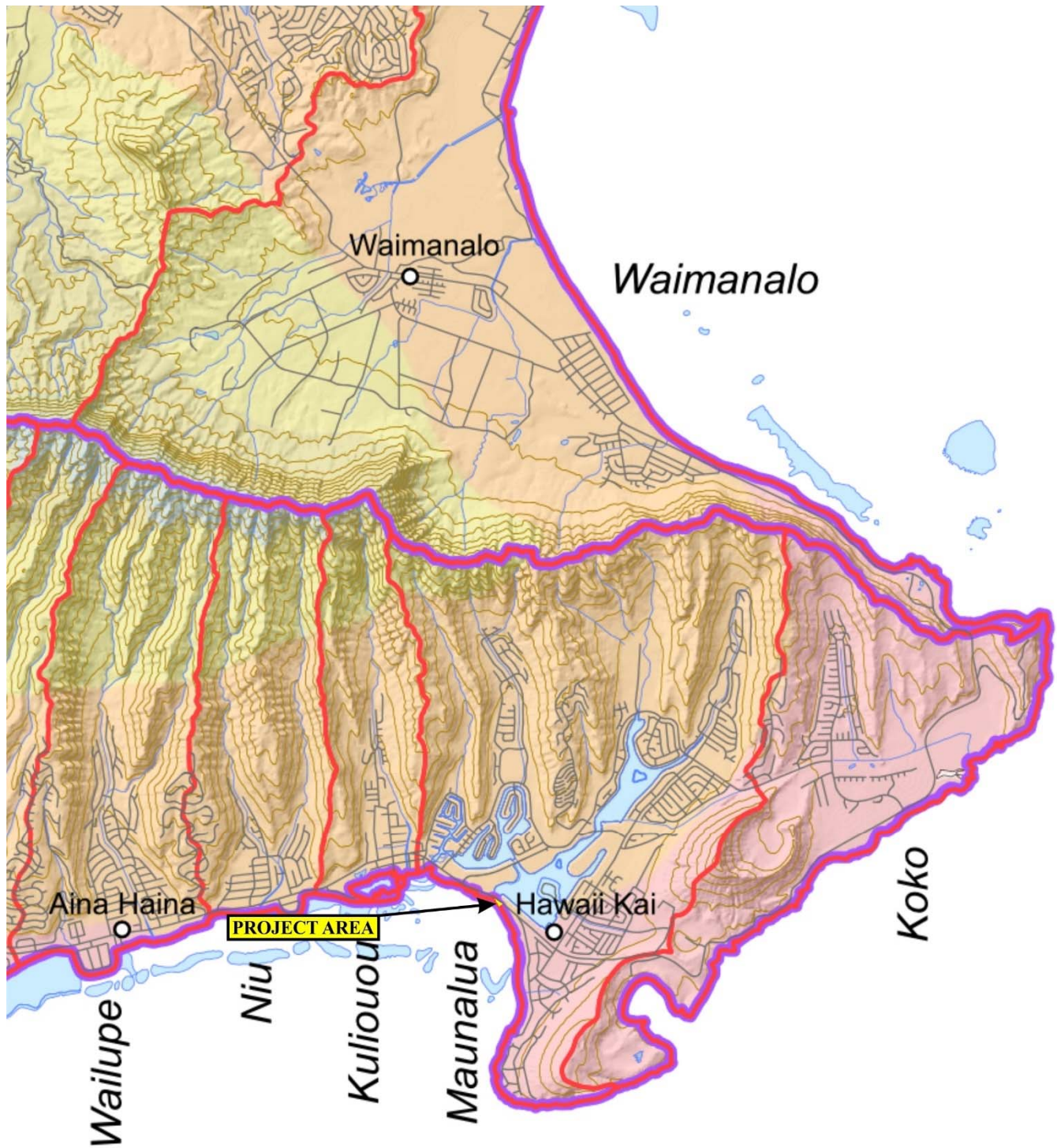


Figure 6: The project area in the context of Maunaloa Ahupua'a and eastern Kona District (Wilson 2017)

The prominent volcanic remnants of Koko Head dominate the landscape, and the mythology of the region accordingly contains references to the volcano goddess Pele. The activities of Pele and her sisters are a basis for many of the landmarks and place names in Maunaloa (Takemoto et al. 1975:6). According to one tradition, Pele was in constant strife with Kamapua‘a, the god of forests. Since Maunaloa is an arid region and was believed to be a domain of Pele, the adjacent forested windward region of Ko‘olau was considered Kamapua‘a’s realm (Kelly et al. 1984:23). After Pele attacked Kamapua‘a near Kalapana on the island of Hawai‘i, according to one legend her youngest sister, Hi‘iaka used a distraction to save Pele from a counter attack (Kelly et al. 1984:23). In her *Hawaiian Mythology*, Martha Beckwith narrates the same story explaining the name “Kohelepelepe” but associating it with another sister:

Pele’s sister Kapo, aware of Pele’s peril, sends her own wandering vagina (kohe-lele) to light upon a tree and attract Kamapua‘a from her sister. He follows it to Oahu, where its impression may be seen today on the Makapu‘u side of Koko head where it rested before Kapo withdrew it and hid it in Kalihi valley. [Beckwith 1970:212–213]

William Westervelt’s account of the story may explain the discrepancy with the practice to name all of Pele’s sisters as “Hi‘iaka” (1915:270). Westervelt adds that “there were at least six Hiiakas, and some legends give many more” (1915:270).

In another Hawaiian legend recorded by Abraham Fornander (1918–19:146), Maunaloa is referred to as a place settled by fishermen. He writes, “that afternoon the men and women came along the shore in the pools to catch minnows [*nehu*, *Encrasicholina purpurea*] for bait, for aku [skipjack tuna, *Katsuwonus pelamis*] fishing for tomorrow” (1918–19:146).

## **PRE-CONTACT PERIOD**

According to 19<sup>th</sup> century historian Samuel Kamakau, the chiefly line of O‘ahu is believed to originate in the mythical *mō‘ī* Māweke (Kamakau 1992:449), whose reign is estimated to have been in the 11<sup>th</sup> century C.E. In his *The Rise and Fall of the O‘ahu Kingdom*, Ross Cordy traces the formation of district-based polities to the early 1300s. By 1320–1340 C.E. “the sons of Māweke were in control over three powerful polities – ‘Ewa, Kona and Ko‘olaupoko” (Cordy 2002:21). Kumuhonua of Māweke’s line was a ruler approximately 1340–1360 C.E., by which time the separation between leadership and commoners had become complete and a more rigid caste system had appeared. By then “an ‘*aha ali‘i*’ council required proven ties to the ruler within 10 generations,” and temple worship became more restricted to rulers and chiefs (Cordy 2002:21–22). Indications of this include the construction of major religious structures in ruling centers and economic-demographic hubs where rulers lived or visited (Cordy 2002:22–23).



In the 15<sup>th</sup> century O‘ahu was unified under ‘Ewa District and its ruler La‘akona (c. 1420–1440 C.E.), whose power first expanded to Wai‘anae and Wailua before he was recognized in the east. Successive rulers came from the senior Māweke-Kumuhonua line until the reign of Haka (c. 1520–1540 C.E.), who according to oral history was a greedy and cruel chief (Fornander 1880:88). The council killed him and replaced him with Mā‘ilikūkahi who controlled Kona District and established Waikīkī as his capital (Fornander 1880:89). Along with the *ahupua‘a* system, Mā‘ilikūkahi’s reign likely introduced at least three levels of administration: an island-wide ruler, high chiefs over one or more districts or communities, and local chiefs (Cordy 2002:24). Over the next centuries, the leadership of Maui, Kaua‘i, and O‘ahu intermarried and further isolated the ruling class from commoners (Cordy 2002:26), as O‘ahu was becoming prosperous and its population was increasing (Fornander 1880:89). Wet taro agriculture in Ko‘olaupoko in particular was expanding in the 16<sup>th</sup> century to keep up with the population boom (Cordy 2002:28–29).

At the beginning of the 17<sup>th</sup> century, ruler of O‘ahu became Queen Kala‘imanuia, who resided in ‘Ewa District. It was remembered that “peace prevailed in her time, and she traveled around the island inspecting her lands and rebuilding *heiau* ... particularly noted for having built fishponds” (Cordy 2002:30). Her son was the “poorly-liked” Kūamanuia (c. 1620–1640) who ruled out of Waikīkī and controlled only the districts of Kona and Ko‘olaupoko (Cordy 2002:31). Dissension among his siblings briefly split the kingdom until Kākuhihewa gained power around 1640 to 1660 and reunified the kingdom (Cordy 2002:31). Rulers over the next three generations gradually lost power to the districts. According to the oral record, the high chiefs of Kona and ‘Ewa–Wai‘anae operated “fairly independently,” while the *mō‘ī* of O‘ahu retained a nominal power over the island out of their seat at Ko‘olaupoko (Fornander 1880:278; Cordy 2002:31–32).

The Kingdom of O‘ahu may have reached the height of its political power in the early 1700s with chief Kualī‘i (ruling c. 1720). Having defeated the chiefs of Kona and then those of ‘Ewa, Kualī‘i reestablished his power and even managed to expand it to Kaua‘i, Moloka‘i, and Hawai‘i (Cordy 2002:32).

Kualī‘i’s heir Kapiōho‘okalani continued the aggressive, expansionary policy, leading to his invasion of Moloka‘i in 1736. Hawai‘i chief Alapa‘inui, however, came to defend Moloka‘i which was ruled by his relatives. In the bloody Battle of Kawela Alapa‘inui defeated the O‘ahu invaders and killed Kapiōho‘okalani. In retaliation Alapa‘i landed his forces on O‘ahu. The remaining chiefs of O‘ahu asked Pele‘iōholani of Kaua‘i (1740–1779) to assist Kapiōho‘okalani’s son, the six-year-old Kanahaokalani. Pele‘iōholani and Alapa‘i struck a peace treaty negotiated by chief Na‘ili of Wai‘anae (Kamakau 1992:71–73). According to Kamakau, the Hawaiian chief Alapa‘i hosted the chiefs on Mōkapu Peninsula:

So it was that Pele-oi-holani and Alapa'i met at Naoneala'a in Kane'ohe, Ko'olaupoko, on Ka'elo 13, 1737, corresponding to our January. The two hosts met, splendidly dressed in cloaks of bird feathers and in helmet-shaped head coverings beautifully decorated with feathers of birds. Red feather cloaks were to be seen on all sides. Both chiefs were attired in a way to aspire admiration and awe, and they day was one of rejoicing for the end of a dreadful conflict. The canoes were lined up from Ki'i to Mokapu to Naoeala'a, and there on the shore line they remained, Alapa'i going ashore alone. [Kamakau 1992:72]

The 18<sup>th</sup> century was marked by rivalries, especially between the chiefdoms of Maui and Hawai'i. O'ahu was not immune to external aggression: in 1783, the ambitious and ruthless Maui chief Kahekili II (c. 1737–1794) landed in Waikīkī with the intention to invade and conquer. Kahekili's struggle to take O'ahu from his nephew Kahahana took a few years, but resulted in the chief's brief rule over Moloka'i, Maui, and O'ahu. While the center of chiefly power on O'ahu was traditionally Waikīkī, Kahahana occasionally preferred to rule from the resource-rich Kane'ohe and the sacred Mōkapu Peninsula, which had the function of a second capital.

## EARLY POST-CONTACT PERIOD

The first Europeans landed at Maunalua during the last years of Kahekili's reign. Under the commands of Nathaniel Portlock and George Dixon, the *King George* and *Queen Charlotte*, anchored in Maunalua Bay in May 1786. When the two captains were searching for freshwater sources ashore, they came upon a salt water river, which was likely the waterway between Kuapā Fishpond and Maunalua Bay (Takemoto et al. 1975:13-15), also known as "Ku'i Channel." Portlock described the Maunalua landing site in the vicinity of the project area as:

the low land and vallies being in a high state of cultivation, and crowded with plantation of taro, sweet potatoes, sugar cane & interspersed with great number of cocoa-nut trees. [Takemoto et al. 1975:14]

American Protestant missionary Levi Chamberlain (1792–1849) made two tours of O'ahu in 1826 and in 1828 to inspect and reinforce newly founded mission schools. On his first tour, he approached the settlement at Kuapā Fishpond (Keawa'awa) where he addressed 30 people (Handy and Handy 1972:483). On his second tour, he indicated that Maunalua was undergoing steady depopulation. As Maunalua is rather arid and *kalo* (taro, *Colocasia esculenta*) is difficult to grow, traditional subsistence in both the Pre-Contact and the Early Post-Contact periods seems to have depended on marine exploitation and 'uala (sweet potato, *Ipomoea batatas*) cultivation (Handy and Handy 1972:483–84).

After Contact, economic activities focused on cultivating crops that could be exchanged with foreign vessels, specifically those of the whaling industry which flourished between 1820 and 1850. The nearby Hawaiian village of Keawaʻawa was also involved in the trading industry because of the abundance of sweet potatoes. In *The Hawaiian Planter*, Edward Handy notes:

According to the last surviving *kamaaina* of Maunalua, sweet potatoes were grown in the small valleys, such as Kamilonui, as well as on the coastal plain. The plain below Kamiloiki and Kealakipapa was known as Ki-kula-o-Kamauwai. This was the famous potato-planting place from which came the potatoes traded to ships that anchored off Hahaione in whaling days. The village at this place, traces of which may still be seen, was called Wawamalu. [Handy 1940:155]

The trade maintained Hawaiian settlements and populations during the epidemics and relocation of inhabitants to growing towns such as Honolulu. By 1852, the Hawaiian government passed legislation requiring taxes from all foreign vessels, which reduced the number of ships that anchored at smaller landing sites such as Maunalua. This resulted in a depopulation of Maunalua and a decline in its economic independence (Jones 1996:21; Takemoto et al. 1975:20).

## THE MĀHELE

In the 1840s, traditional land tenure shifted drastically with the introduction of private land ownership based on Western legal practices. The transition from communal land use to private ownership is commonly called the “Māhele” (“division”). It set the stage for consequential changes to property possession in Hawai‘i. Prior to the changes, a *konohiki* was a superintendent of an *ahupuaʻa* under a chief and was responsible for the management of resources. After the Māhele, the *konohiki* (*ahupuaʻa* headmen) and his or her lands were distributed, and the position was replaced by a land commissioner, or *komikina hoʻonāina* (Lucas 1995:56).

As early as 1841, the legislature allowed island governors to lease lands to foreigners for up to fifty years. These leases were then to be registered “in writing so that there be no misunderstandings about terms and rents” (Daws 1974:125). The question of land reform was set aside in 1843 because of the five-month occupation of the islands by British naval officer George Paulet, but once the kingdom was stable again and Kūikeyaouli felt secure at its helm it was brought back. By 1844, many chiefs were warming up to the proposal for a formal land division, and, in 1845, the Board of Commissioners to Quiet Land Titles (the Land Commission), was established for “the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any land property” (Chinen 1961:8). The Commission had no authority to divide lands or change their tenure but was created solely for approval of land claims (Kuykendall 1938:280).

The Māhele of 1848 instituted private land ownership through awarded parcels called Land Commission Awards (LCAs). Once lands were made available, the *maka‘āinana* (commoners) were able to claim the plots on which they had been living and cultivating through the Kuleana Act of 1850. These claims did not include any previously cultivated fallow land, stream fisheries, or many other resources necessary for traditional survival strategies (Kame‘eleihiwa 1992:295). If occupation could be established through the testimony of two witnesses, the petitioners were awarded the claimed LCA and issued a Royal Patent after which they could take legal possession of the property (Chinen 1961:16). Foreigners could acquire land through the Alien Landownership Act of 1850, and many took advantage of the opportunity: by 1900, “white men owned four acres of land for every one owned by a native” (Daws 1974:125). Hawaiians could only make claims if they were aware of foreign procedures such as the awarding of *kuleana* lands and LCAs. These procedures were found lengthy and cumbersome by many. Between 1850 and 1893, Hawaiians still were able to purchase an estimated 167,290 acres of land (Beamer and Tong 2016).

According to the Kipuka database (Office of Hawaiian Affairs n.d.) one LCA lies in the project area. In 1861, Victoria Kamāmalu (1838–1866), a great-granddaughter of Ke‘eamoku and a granddaughter of Kamehameha I, was awarded the entire ‘*ili* of Maunalua via LCA 7713:30 under Patent Grant #4475. This information was also confirmed in Hawaiian Government survey maps by Lyons in 1875 and Wall in 1902. No *kuleana* land grants were granted within the ‘*ili*.

## **LATE POST-CONTACT PERIOD TO TODAY**

In 1856, Kamāmalu leased all of her Maunalua lands to rancher William Webster for 30 years. After Kamāmalu’s death in 1866, the lands were transferred to philanthropist and noble Bernice Pauahi Bishop (1831–1884). The fishing rights to the Kuapā Fishpond and Maunalua’s offshore were leased out and sold to various individuals until 1900. The high lease rates suggest that they were productive and highly valued (Takemoto et al. 1975). Anne Takemoto et al. note:

By 1900, Maunalua Ranch and Yit Lee Company, who owned a big fishing complex, employed most of the inhabitants. Maunalua Ranch had over 1500 head of cattle, ten oxen, sixty-four horses, thirteen mules and six pigs roaming throughout Maunalua. Five Chinese families were working for the Damons [who held the lease for Maunalua at the time], probably as ranch hands. Five other Chinese families worked for Yit Lee. There existed only one independent Chinese family not under Damon or Yit Lee. The eight Hawaiian families on the land, including one blind man, were truck farmers of some sort since all but two owned carts used for bringing goods to Honolulu.... Thus by the turn of the century most families in the *ili* were ranch hands, fishermen, or truck farmers living a relatively quiet life in an area which would be considered the country. [Takemoto et al. 1975:25]



After 1900, Maunalua was modernizing as the expansion of ranching demanded new infrastructure. The construction of Kalanianaʻole Highway started in the late 1920s and was completed by 1932 when it connected Waimānalo and Wawamalu. Following its completion bridges, coastal, and access roads to Hanauma Bay and Koko Crater were constructed. Road infrastructure provided easy access for marine exploitation and facilitated ranching. In addition, there was a growth in the population due to the job opportunities associated with agriculture.

The development of Hawaii Kai is associated with American industrialist Henry J. Kaiser (1882–1967). In the late 1950s and early 1960s, Kaiser transformed the natural landscape of Kuapā Pond and its surroundings (Figure 7), infilling parts of it and building retaining walls and bridges to create the communities of Hawaii Kai, Hawaii Kai Marina, and Koko Marina (Young 2020). Kaiser also developed Maunalua Bay Beach Park located northwest from the project area and across Kuʻi Channel out of materials dredged from the bottom of the bay (Clark 1977:33). Along with the rest of Hawaii Kai, Portlock is a highly developed and urbanized residential area.

## **PREVIOUS ARCHAEOLOGY**

Early archaeological investigations on Oʻahu were conducted by Thomas Thrum and John F.G. Stokes, whose focus was on *heiau* (traditional temples) and the walled fish-traps of Pearl Harbor. The first archaeological work in Maunalua was conducted by J. Gilbert McAllister (1933) during his island-wide survey in 1930. He located and mapped 45 archaeological sites consisting mostly of features typical to coastal settlements and Post-Contact ranching and road construction (McAllister 1933:57–69). Near Kuapā Fishpond in the west of Maunalua McAllister’s recorded *heiau*, burial caves, rock shelters, petroglyphs, and agricultural fields (Sites 39 through 49). Intensive archaeological investigations in East Honolulu did not begin in earnest until the 1950s urbanization. Figure 8 shows previous archaeological work in the vicinity of the project area.

### **KULIʻOUʻOU**

In the 1950s, Kenneth Emory and his students at University of Hawaiʻi at Mānoa (Emory and Sinoto 1961) excavated the Kuliʻouʻou rock shelter (Site O1) as part of an archaeological methods course. Described as a remnant lava tube that formed a spacious shelter, the feature measured 15.5 m long. Field notes and profile sketches also indicate numerous ash lenses in addition to pit and fire features. The only profile represents four layers consisting of Post-Contact materials in the upper portion and a darker matrix (compact dark brown sediments) where both indigenous Hawaiian and European-American artifacts were recovered. Emory and Sinoto (1961) described the numerous artifacts as hand tools (broken handle of a shark-tooth knife, stone tools, etc.) and items utilized for fishing (fishhooks, coral files, etc.).



**Figure 7: A USGS aerial photograph (imagery date: May 26, 1952) showing the state of the environment before the development of Hawaii Kai in the following decade**

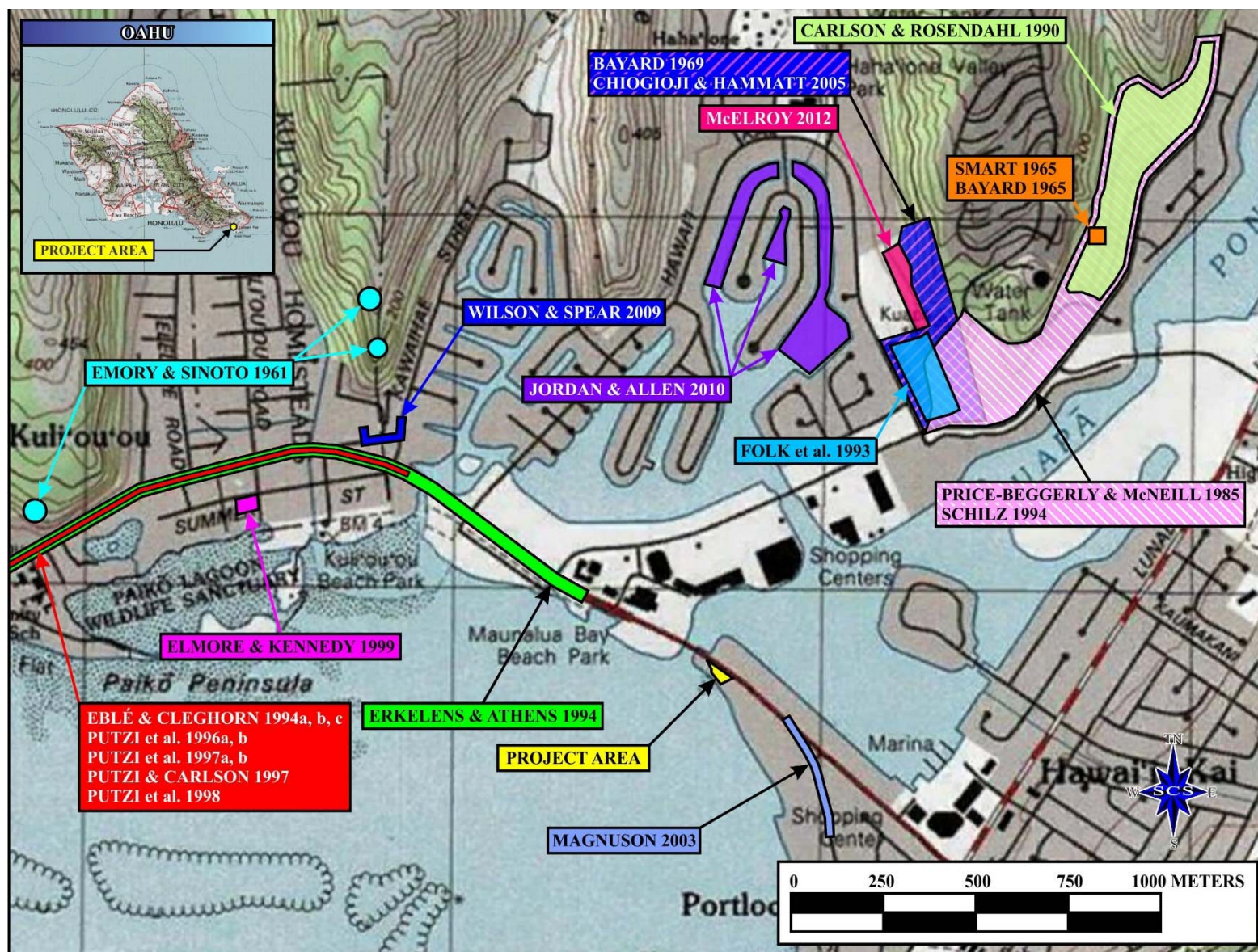


Figure 8: Portion of a 1999 USGS topographic map (Koko Head HI quadrangle) showing previous archaeology in the vicinity of the project area



Following the initial identification by State Historic Preservation Division (SHPD), archaeologists (Collins 1999), Archaeological Consultants of the Pacific, Inc. (Elmore and Kennedy 1999) prepared a burial treatment for a disturbed burial. The human remains were inadvertently encountered during the excavation of a foundation pit for the Gedatsu Church of Hawaii. The remains collected from the back dirt were combined with the disinterred *in situ* remains, re-buried, and designated as a State Inventory of Historic Places (SIHP) Site 50-80-15-05774. The remains were determined to represent a single individual of Native Hawaiian ancestry and to date to the Pre-Contact Period because of the provenience of the burial in a sand matrix.

In 2009, Scientific Consultant Services, Inc. (SCS) conducted a program of archaeological monitoring during the Kuli'ou'ou Wastewater Pump Station Modifications and Force Main Replacement project on May Way and Kawaihae Street in Kuli'ou'ou Ahupua'a (Wilson and Spear 2009). No historic properties were identified.

### **KALUANUI RIDGE & HAHAI'ONE VALLEY**

In the early 1960s, the University of Hawai'i at Mānoa (Smart 1965; Bayard 1965) conducted excavations at a site known as O-5 (SIHP Site 50-80-15-02908), a cave at the foot of Kaluanui Ridge. A number of cultural materials were identified and dated. The earliest samples were determined to date to before the 14<sup>th</sup> century C.E. The most recent of the five occupation periods was found to extend into Post-Contact times.

Donn Bayard (1969) conducted a field school including surveying at Site O-16, located on the western and southern portions of Kaluanui Range at the mouth of Hahai'one Valley. The findings revealed an abundance of archaeological features, including rock shelters, a house platform, stone cairns, and a wall identified as a part of the site. Bayard noted that the identified features dated from the Late Pre-Contact Period up to the late 1990s, making it difficult to provide definitive conclusions.

In 1985, an archaeological reconnaissance survey in Kaluanui Ridge was conducted by International Archaeological Research Institute, Inc. (Price-Beggerly and McNeill 1985). A total of 36 acres were surveyed for the proposed Marina Zoning Project, and 12 archaeological sites were identified. Findings included five caves, two platforms, a terraced platform with petroglyphs, a set of low terraces believed to be part of Hāwea Heiau (SIHP Site 50-80-15-00042), six stone cavities, and a historical house site. It is not clear if the identified stone cavities were utilized. One of the caves recorded during this survey was Site O-5, which had previously been identified by Bayard (1965).



In 1990, Paul H. Rosendahl, Inc. (Carlson and Rosendahl 1990) conducted a supplemental archaeological inventory survey for the Kaluanui-1 subdivision. They reevaluated sites identified by Price-Beggerly and McNeill (1985) and found some of them no longer culturally significant.

In 1993, Cultural Surveys Hawai'i, Inc. (Folk et. al 1993), performed an archaeological survey on five acres at the mouth of Haha'ione Valley south of Kaluanui Ridge for the proposed Kaluanui Park Development. No new sites were recorded, and a number of sites identified by Price-Beggerly and McNeill (1985), Bayard (1969), and McAllister (1933) were relocated. Subsurface testing revealed them as a multi-use site including traditional stone tool production. SIHP Site 50-80-15-02900 (U-shape enclosure) yielded a radiocarbon date of 1800-1940, revealing the site's Post-Contact use, reflective of Maunalua's prominence in the victualing trade.

Ogden Environmental and Energy Services Company, Inc. (Schilz 1994) conducted an archaeological assessment and evaluation of Kaluanui Parcels 1, 2, and 3, areas previously studied by Price-Beggerly and McNeill (1985). This assessment aimed to identify whether or not grubbing had an impact on archaeological sites located in Kaluanui Parcel 3. The survey found that some sites remained intact while others were partially or fully destroyed because of grubbing.

In 2005, Cultural Surveys Hawai'i, Inc. (Chiogioji and Hammatt 2005) conducted an archaeological literature review and field inspection on a portion of Kalaniana'ole Highway. The area between Keāhole Street and Hawai'i Kai Drive was determined to not need further work, although it was recommended that improvements report cultural material to SHPD.

Keala Pono Archaeological Consulting, LLC (McElroy 2012) performed an archaeological inventory survey for an expansion of Oahu Club. The surveyed 1.8 acres revealed five sites. A complex of three traditional habitation terraces (SIHP Site 50-80-15-07317) and a possible Post-Contact water control feature were identified. Three sites were recorded outside of the project area: a stone stack, another complex of terraces and enclosures, and an L-shaped stone wall.

## **KALANIANA'OLE HIGHWAY WIDENING PROJECT**

International Archaeological Research Institute, Inc., (Erkelens and Athens 1994) conducted a site visit for the Kalaniana'ole Highway Widening project from 'Āina Haina to Niu Valley. The skeletal remains of at least 14 people were documented (SIHP Site 50-80-15-04497). Four burials were also documented in Wailupe Ahupua'a, specifically one individual at the *makai* (oceanward) end of Nenuē Street and the remains of three people at East Hind Drive. Ten burials were documented in Niu Vally, including seven coffin burials and two pit burials. The coffin burials were part of a family cemetery for the Adams, Cassiday, and Pflueger families.

Between 1994 and 1998, the Phase II widening of Kalanianaʻole Highway between East Halemaʻumaʻu Road and Keāhole Street was monitored by BioSystems Analysis and Garcia and Associates (Eblè and Cleghorn 1994a, 1994b, 1994c; Putzi et al. 1996a, Putzi et al. 1996b; Putzi et al. 1997a, and Putzi et al. 1997b; Putzi and Carlson 1997; Putzi et al. 1998). The project extended through the *ʻili* of Niu, Kuliʻouʻou, and Maunalua. A total of 29 (MNI=29) inadvertent findings of human skeletal remains were discovered during the project (Eblè and Cleghorn 1994a, 1994b, 1994c; Putzi et al. 1996a, 1996b; Putzi et al. 1997a, 1997b; Putzi and Carlson 1997). The findings were interpreted as a cemetery extending 110 meters east from Kuliʻouʻou Stream and bounded on the northern and southern edges of Kalanianaʻole Highway. The cemetery appears to have been used from the Pre-Contact into the Post-Contact Period and contains groups of burials and isolated individuals throughout. The site has been subsequently designated as SIHP Site 50-80-15-04841.

## **HAWAIʻI KAI MARINA**

In 2010, International Archaeological Research Institute, Inc. (Jordan and Allen 2010) conducted an archaeological assessment in various locations of the Hawaiʻi Kai Marina. It was determined that three historic sites might be affected: Kuapā Fishpond (SIHP Site 50-80-15-00049), a traditional habitation site (SIHP Site 50-80-15-00043), and an undesignated fish trap. Their preservation was recommended.

## **PORTLOCK**

In 2003, an archaeological survey and monitoring was conducted by International Archaeological Research, Inc. (Magnuson 2003) for a residential property in the vicinity of the project area at 251 Portlock Road. Human remains and possible cultural layer were encountered. A total of two skeletal fragments were identified.

## **FIELD INSPECTION METHODOLOGY AND RESULTS**

The field inspection was conducted on July 26, 2022, by SCS archaeologist Kaitlyn Lowrance, M.A., under the supervision of principal investigator Robert L. Spear, Ph.D. The purpose of the archaeological field inspection was to identify and locate potential historic properties (archaeological sites, buildings, structures, and other cultural materials), in association with a residential project at Portlock in Hawaiʻi Kai. The field inspection consisted of a 100% pedestrian survey of the project area. Field notes were recorded on SCS standard field forms (i.e., photo log, site description forms, site feature forms, etc.). Digital photographs from ground level were captured during the survey.

The project area consists of an irregularly-shaped, 10,016 sq ft residential property lot located on the *makai* side of Kalanianaʻole Highway. The property is wedged between Kalanianaʻole Highway on the northeast and the Pacific Ocean on the west.

The inspection identified several modern construction elements: a two-story, masonry-framed structure, an attached milled-wood pergola covering a concrete patio, and a small milled-wood deck located approximately three meters west of the patio edge (Figures 9 to 14). There is also a wall along the *mauka* (mountainward) side of the property that is constructed of cinder-blocks and plywood boards with small, rounded basalt cobbles piled at its base (Figure 15).

## **DISCUSSION AND RECOMMENDATIONS**

As a result of residential development and expansion, Maunalua has undergone many fill events to stabilize the ground and has experienced several archaeological investigations that show evidence of both Pre- and Post-Contact land use. Nonetheless, no archaeological sites or features have been previously identified in the project area and its immediate vicinity. This field inspection likewise did not encounter evidence of any historic properties on the surface.

No further archaeological work is recommended for this project. It should be noted, however, that historic properties—such as traditional Hawaiian and historic artifacts and human remains—are occasionally encountered in landfill materials. As a precautionary measure, personnel involved in the renovations and improvement activities in the project area should be informed that SHPD must be notified about any potential historic properties encountered during work for this project.



**Figure 9: Overview of the project area from its southwest corner (view to northeast)**





**Figure 10: Overview of the project area from its northwest corner (view to southeast)**





**Figure 11: Overview of the project area from the north showing the two-story structure, patio, and yard (view to south)**





**Figure 12: View of the project area from the northeastern corner of the concrete patio (view to northwest)**





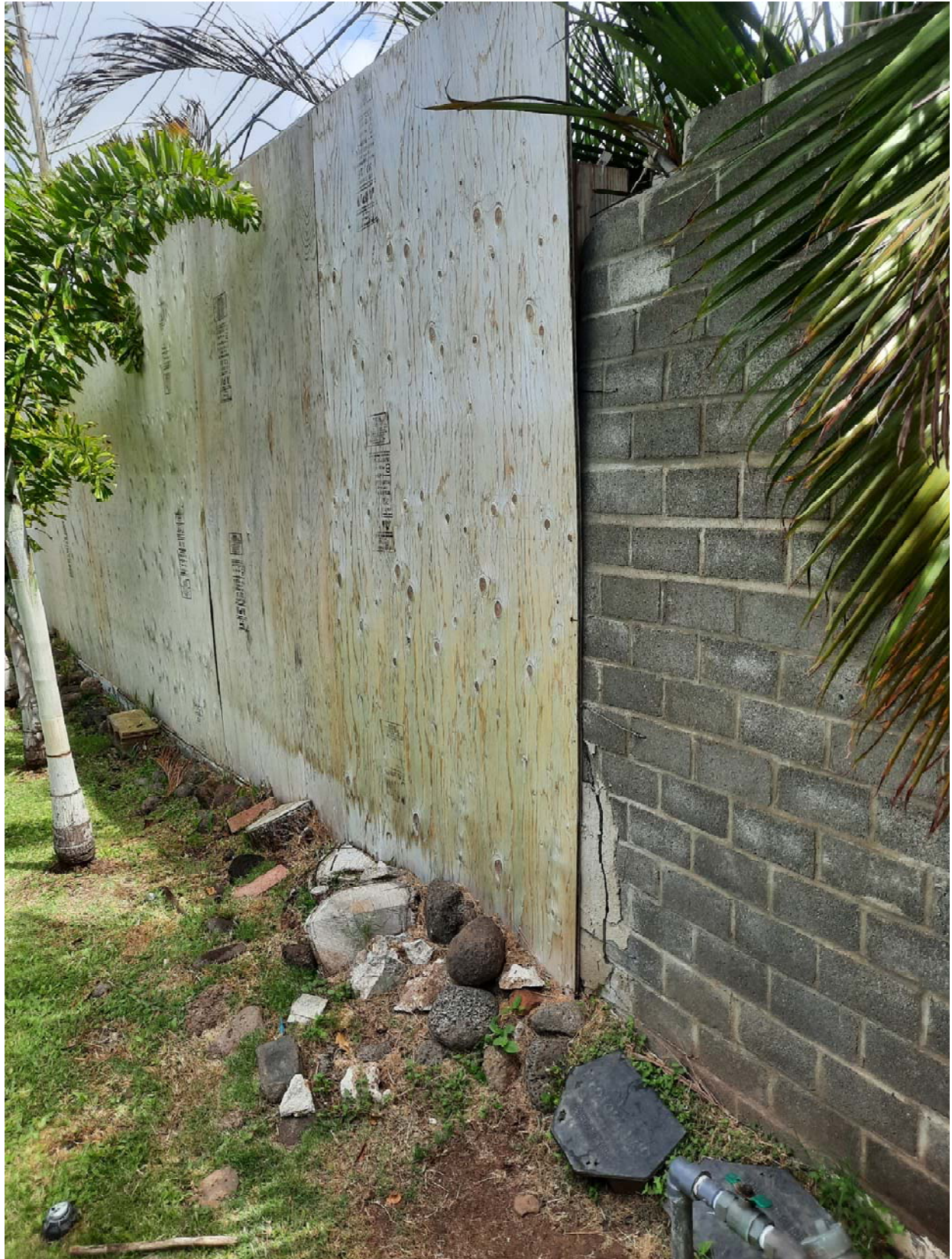
**Figure 13: Milled-wood pergola attached to the two-story, masonry framed structure covering the concrete patio (view to south)**





**Figure 14: Small, milled-wood deck on the western boundary of the property (view to northwest)**





**Figure 15: *Mauka* side wall constructed of cinder blocks and plywood boards, with small, rounded basalt cobbles piled at base (view to northeast)**

## REFERENCES

Bayard, Donn T.

- 1965 *Hawai'i Kai: Artifacts*. (Report O-324). Ms. on file, State Historic Preservation Division, Kapolei.
- 1969 *Limited Survey and Excavation at Site O-16, Hawai'i Kai, Maunaloa, O'ahu: October 1966 – July 1967*. Department of Anthropology, University of Hawai'i at Mānoa, Honolulu.

Beamer, Kamanamaikalani and N. Wahine'aipohaku Tong

- 2016 "The Māhele Did What? Native Interest Remains." *Hūlili: Multidisciplinary Research on Hawaiian Well-Being, Vol. 10*. Shawn Kana'iaupuni, Brandon Ledward, and RaeDeen Keahiolalo, eds. pp. 125-145. Kamehameha Publishing, Honolulu, HI.

Beckwith, Martha

- 1970 *Hawaiian Mythology*. University of Hawai'i Press, Honolulu.

Carlson, Arne K. and Paul H. Rosendahl

- 1990 *Supplemental Archaeological Inventory Survey, Kaluanui-1 Subdivision: Land of Maunaloa Honolulu (Kona) District, Island of O'ahu*. Paul H. Rosendahl, Ph.D., Inc., Hilo.

Chinen, Jon Jitsuzo

- 1961 *Original Land Titles in Hawaii*. Library of Congress Catalogue Card No. 61-17314. <http://www.llmc.com/openaccess/docdisplay5.aspx?textid=39920489>

Chiogioji, Rodney and Hallett H. Hammatt

- 2005 *Archaeological Literature Review and Field Inspection for a Highway Improvement Project on an Approximately 305-meter Long Section of Kalaniana'ole Highway Between Keāhole Street and Hawai'i Kai Drive, Maunaloa Ahupua'a, O'ahu Island [TMK 3-9-017:020]*. Cultural Surveys Hawai'i, Inc., Kailua.

Clark, John R.K.

- 1977 *The Beaches of O'ahu*. University of Hawai'i Press, Honolulu.

Collins, Sara

- 1999 *Inadvertent Discovery of Human Remains at 6077, 6091, and 6095 Summer St., Kuli'ou'ou, Kona, O'ahu*. State Historic Preservation Division, Kapolei.

Cordy, Ross

- 2002 *The Rise and Fall of the O'ahu Kingdom*, Honolulu: Mutual Publishing.



Daws, Gavan

- 1974 *Shoal of Time: History of the Hawaiian Islands*. University of Hawai'i Press, Honolulu.

Eblè, Francis, and Paul L. Cleghorn

- 1994a *First Incidence of Human Skeletal Remains (Burial No.2) Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. BioSystems Analysis, Kailua.
- 1994b *Second Incidence of Human Skeletal Remains (Burial No. 3) Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. Biosystems, Inc. On file at the State Historic Preservation Division, Kapolei.
- 1994c *Third Incidence of Human Skeletal Remains (Burial No.4 Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. BioSystems Analysis, Kailua.

Elmore, Michele, and Joseph Kennedy

- 1999 *A Report Concerning the Inadvertent Discover of Human Remains at Kuli'ou'ou, TMK: (1) 3-8-03:12, 42 & 63 in Kul'iou'ou 1 Ahupua'a, Honolulu District, Island of O'ahu*. Archaeological Consultants of the Pacific, Inc., Hale'iwa.

Emory, Kenneth P., and Yoshiko H. Sinoto

- 1961 *Hawaiian Archaeology: O'ahu Excavations*. Bernice Pauahi Bishop Museum Special Publication 49. Bishop Museum Press, Honolulu.

Erkelens, Conrad and J. Stephens Athens

- 1994 *Burials, Highway, History Archaeology along Kalaniana'ole Highway, East Honolulu, O'ahu, Hawai'i*. International Archaeological Research Institute, Inc., Honolulu.

Folk, William H., Douglas F. Borthwick, and Hallett H. Hammatt

- 1993 *Archaeological Survey for the Proposed 5-Acre Kaluanui Park Development at Maunalua, Kona District, O'ahu (TMK 3-9-008:por. 013)*. Cultural Surveys Hawai'i, Inc., Kailua.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens

- 1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Department of Agriculture Soil Conservation Service, Government Printing Office, Washington, D.C.

Fornander, Abraham

- 1878 *An Account of the Polynesian Race, Its Origins and Migrations*. Vol. 1. Trübner & Co. London, U.K.
- 1880 *An Account of the Polynesian Race, Its Origin and Migrations, and the Ancient History of the Hawaiian People, Vol. II*. Trübner and Co. London.

- 1918-19 *Fornander Collection of Hawaiian Antiquities and Folk-Lore: The Hawaiians' Account of their Islands and Origin of their Race, with the Traditions of their Migrations, etc. as gathered from Original Sources. Vol. V.* Bishop Museum Press, Honolulu.
- Giambelluca, T.W., X. Shuai, M.L. Barnes, R.J. Alliss, R.J. Longman, T. Miura, Q. Chen, A.G. Frazier, R.G. Mudd, L. Cuo, and A.D. Businger.
- 2014 *Evapotranspiration of Hawai'i*. Final report submitted to the U.S. Army of Corps of Engineers. Honolulu District and the Commission on Water Resource Management, State of Hawai'i. Accessed July 2022.
- Google Earth
- 2022 Aerial photographs of Hawai'i. Google Inc., 1600 Amphitheatre Parkway, Mountain View, CA. Available at [www.google.com/earth.html](http://www.google.com/earth.html).
- Handy, Edward S. Craighill
- 1940 *The Hawaiian Planter, Volume 1: His Plants, Methods, and Areas of Cultivation*. Bernice Pauahi Bishop Museum Bulletin No. 161. Bishop Museum Press, Honolulu.
- Handy, Edward S. Craighill and Elizabeth Green Handy
- 1972 *Native Planters in Old Hawai'i: Their Life, Lore, and Environment*. Bernice Pauahi Bishop Museum Bulletin No. 233. Bishop Museum Press, Honolulu.
- Jones, Bruce A.
- 1996 *Aspects of Inland Settlement in the Hawai'i Kai Region: Results of an Archaeological Inventory Survey of Nine Parcels, Ahupua'a of Maunalua, Honolulu District, Island of O'ahu (TMK: 3-9-8: Por. 13 and 3-9-10: Por. 1)*. Aki Sinoto Consulting, Honolulu.
- Jordan, Nichole, and Jane Allen
- 2010 *Archaeological Assessment and Section 106 Review, Hawai'i Kai Marina and Channel Maintenance Dredging, Maunalua Ahupua'a, Kona District, O'ahu, Hawai'i, TMK: (1) 3-9-3:37, 7:11, 8:11, 8:37, 17:33,29:75, 32:61, 34:62, 50:27, 52:56, 52:57, 58:59,68:15*. International Archaeological Research Institute, Inc., Honolulu.
- Kamakau, Samuel M.
- 1992 *Ruling Chiefs of Hawaii*. Revised edition. Kamehameha Schools Press, Honolulu.
- Kame'elehiwa, Lilikalā
- 1992 *Native Land and Foreign Desires: How Shall We Live in Harmony?* Bishop Museum Press, Honolulu.

Kelly, Marion, H. Kurashina, and Akihiko Sinoto

- 1984 *Cultural Resources Overview for the Queen's Beach Park Feasibility Study, Maunalua, Kona, O'ahu, Part I: Legends of Maunalua, O'ahu and Part III: Historical Notes on Queen's Beach and Other Places in Maunalua, O'ahu.* Department of Anthropology, Bernice Pauahi Bishop Museum, Honolulu.

Kirch, Patrick V.

- 1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory.* University of Hawaii Press, Honolulu.
- 2011 "When Did the Polynesians Settle Hawai'i? A Review of 150 Years of Scholarly Inquiry and a Tentative Answer," in *Hawaiian Archaeology*. 12 (2011) pp. 3-26.

Kirch, Patrick V. and Marshall Sahlins

- 1992 *Anahulu*. Vol. 1 and 2. University of Chicago Press, Chicago.

Kuykendall, Ralph S.

- 1938 *The Hawaiian Kingdom: 1778-1854, Vol. 1.* University of Hawai'i Press, Honolulu.

Lucas, Paul F. Nahoa (Ed.)

- 1995 *A Dictionary of Hawaiian Legal Land-Terms.* Native Hawaiian Legal Corporation. University of Hawai'i Committee for the Preservation and Study of Hawaiian Language, Art and Culture. University of Hawai'i Press, Honolulu.

Lyons, Curtis J.

- 1875 "A Land Matters in Hawaii." *The Islander*, Volume I, Honolulu.

Macdonald, Gordon A., Agatin T. Abbott, and Frank L. Peterson

- 1986 *Volcanoes in the Sea* (2<sup>nd</sup> Edition). University of Hawai'i Press, Honolulu.

Magnuson, Coral M.

- 2003 *Archaeological Survey and Monitoring at 251 Portlock Road (TMK 3-9-002:002), Honolulu, Hawai'i.* International Archaeological Research Institute, Inc., Honolulu.

McAllister, J. Gilbert

- 1933 *Archaeology of Oahu.* Bernice Pauahi Bishop Museum Bulletin No. 104. Bishop Museum Press, Honolulu.

McElroy, Windy

- 2012 *Archaeological Inventory Survey at the Oahu Club, Maunalua Ahupua'a, Kona District, Island of O'ahu, TMK: (1) 3-9-008:005 (por.).* Keala Pono Archaeological Consulting, LLC, Hau'ula.

Office of Hawaiian Affairs

- n.d. Kipuka Online Database (<http://kipukadatabase.com/kipuka>). Accessed July 2022.



Price-Beggerly, P. and J.R. McNeill

- 1985 *Archaeological Reconnaissance of the Proposed Marina Zoning Project, Kaluanui 1, 2 and 3 (Hawai'i Kai)*. International Archaeological Research Institute, Inc., Honolulu.

Pūku'i, Mary K. and Samuel H. Elbert

- 1986 *Hawaiian Dictionary: Hawaiian-English, English-Hawaiian*. University of Hawai'i Press, Honolulu.

Pūku'i, Mary K., Samuel H. Elbert, and Esther Mo'okini

- 1974 *Place Names of Hawai'i*. University of Hawai'i Press, Honolulu.

Putzi, Jeffrey L. and Ingrid K. Carlson

- 1997 *Report of Burials 24-29, Human Skeletal Remains Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i, State Site No. 50-80-15-4841*. Garcia and Associates, Honolulu.

Putzi, Jeffrey L., Tim Denham, Francis J. Eblé, and Jeffrey Pantaleo

- 1998 *Archaeological Monitoring Report for Phase II Widening of Kalaniana'ole Highway, East Halema'uma'u Road to Keāhole Street, East Honolulu, O'ahu Island (TMK: 3-07-10:6; 3-08-01:62; 3-08-02:79; 3-08-03:21; 3-08-03:29; 3-08-03:40; 3-08-04:11; 3-08-07:26)*. Garcia and Associates, Honolulu.

Putzi, Jeffrey L., M. Paul McIntosh, and Ingrid K. Carlson

- 1996a *Report of Burials 6-10, Human Skeletal Remains Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. BioSystems Analysis, Kailua.
- 1996b *Report of Burial 18, Human Skeletal Remains Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. BioSystems Analysis, Kailua.
- 1997a *Report of Burials 12-17, Human Skeletal Remains Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. Garcia and Associates, Honolulu. Ms. on file, State Historic Preservation Division, Kapolei.
- 1997b *Report for Burials 19, 20, and 21, Human Skeletal Remains Uncovered as a Result of Construction Activities for Phase II Widening of Kalaniana'ole Highway, Honolulu, Hawai'i*. Garcia and Associates, Honolulu.

Schilz, Allan

- 1994 *Archaeological Assessment and Evaluation of Kaluanui Parcel 1 and Kaluanui Parcels 2 and 3, and an Evaluation of the Impact of Previously Recorded Archaeological Sites by Grubbing in Kaluanui Parcel 3, Hawai'i Kai, O'ahu*. Ogden Environmental and Energy Services Company, Inc., Honolulu.

- Smart, C.  
1965 *Draft Excavation Report of Site O-5 (50-80-15-2908)*. Report O-324. Ms. on file, State Historic Preservation Division, Kapolei.
- Stearns, Harold T.  
1966 *Geology of the State of Hawai‘i*. Pacific Book Publishers, Palo Alto, CA.
- Sterling, Elspeth P. and Catherine C. Summers  
1978 *Sites of O‘ahu*. Bishop Museum Press, Honolulu.
- Tabuso, Brian T.  
2020 *Geotechnical Report, Garg Residence, 6973 Kalaniana‘ole Highway, Hawai‘i Kai, Honolulu, Hawai‘i*. JPB Engineering, Inc.
- Takemoto, Anne H., Pauline K. Joerger, Merie-Ellen F. Mitchell, and Cassandra E. Bareng  
1975 “Historical/Cultural Essay Report on the Kuapā Pond Area.” Joerger-Takemoto Historical Research for United States Army Corps of Engineers. Ms. on file, State Historic Preservation Division, Kapolei.
- Tessmer, Eric  
2019 “View Maunalua Bay to Hawaii Kai.” *Wikimedia Commons*. ([https://commons.wikimedia.org/wiki/File:View\\_Maunalua\\_Bay\\_to\\_Hawaii\\_Kai.jpg](https://commons.wikimedia.org/wiki/File:View_Maunalua_Bay_to_Hawaii_Kai.jpg)) May 10, 2019. Accessed July 2022.
- Westervelt, William D.  
1915 *Legends of Old Honolulu: Collected and Translated from Hawaiian*. Geo. H. Ellis Co., Boston, MA.
- Wilson, Juan  
2017 “Mokupuni O Oahu.” *IslandBreath.org*. Accessed July 2022.
- Wilson, Jon and Robert L. Spear  
2009 *An Archaeological Monitoring Report for the Kuli‘ou‘ou Wastewater Pump Station Modifications and Force Main Replacement on May Way and Kawaihae Street, Kuli‘ou‘ou Ahupua‘a, Kona District, Island of O‘ahu, Hawai‘i [TMK: (1) 3-8-04 and 3-9-35]*. Scientific Consultant Services, Inc., Honolulu.
- Young, Peter  
2020 “Henry J Kaiser.” *Images of Old Hawai‘i*. (<https://imagesofoldhawaii.com/henry-j-kaiser/>) January 7, 2020. Accessed July 2022.

## **APPENDIX A: PORTION OF THE CONSTRUCTION PLANS**







PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM WITH I.B.C 2006 STATE, AND LATEST CITY AND HONOLULU AMENDMENT AND ORDINANCES.
2. CONTRACTOR SHALL VERIFY APPROVED JOBSITE BLUEPRINTS SITE AND DIMENSIONS BEFORE COMMENCEMENT. CONTRACTOR WILL NOTIFY ARCHITECT OR ENGINEER OF ANY CONFLICTS PRIOR TO STARTING CONSTRUCTION.
3. CONTRACTOR SHALL VERIFY THE SITE AND ALL INFORMATION INCLUDING DISTANCE, LOT DIMENSIONS AND EXACT PROPERTY LINES TO ACCURATELY LOCATE PROPOSED PROJECT WITHIN THE MINIMUM REQUIRED SETBACK AREA.
4. GENERAL CONTRACTOR SHALL PROTECT ADJOINING LAND, BUILDING AND OTHER IMPROVEMENTS SITUATED THEREON. ANY DAMAGES OCCURRED SHALL BE REPAIRED AT NO COST TO THE OWNER OR ARCHITECT OR ENGINEER.
5. ANY CONDITIONS, MATERIALS, DEVICES, OR DETAILS NOT SPECIFICALLY SHOWN ON THE DRAWINGS OR SPECIFIED SHALL BE CLARIFIED WITH THE ARCHITECT OR ENGINEER BEFORE BIDDING, CONSTRUCTION, INSTALLATION, AND COMPLETION.
6. ALL FINISHED GRADE LEVELS AND/OR SPOT ELEVATIONS ARE ASSUMED TO BE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL CONDITIONS.
7. ALL REINFORCED STEEL TO BE ASTM A615 GRADE 60. WELDED WIRE MESH TO BE A-185 OR EQUAL.
8. THE CONTRACTOR SHALL PROVIDE ADEQUATE BRACING AND SHORING FOR ALL STRUCTURAL MEMBERS DURING ALL PHASES OF CONSTRUCTION.
9. THE ARCHITECT OR ENGINEER IS NOT RESPONSIBLE FOR THE CONTRACTORS METHODS, PROCEDURES, OR CONDITIONS ON JOBSITE THAT MAY DEVELOP.
10. THE DRAWINGS INTENT TO SHOW FINISHED CONCEPT ONLY. CHANGES TO THE DRAWINGS MAY BE REQUIRED DUE TO UNFORESEEN CONDITIONS.
11. ANY STRUCTURAL CHANGES BY THE CONTRACTOR SHALL BE APPROVED BY THE ENGINEER.
12. OWNER OR CONTRACTOR MUST NOTIFY ENGINEER 48 HOURS PRIOR TO POURING CONCRETE AND CLOSING OF ALL WALLS FOR INSPECTION. IF ANY WALLS ARE CLOSED IN BEFORE AN INSPECTION IS MADE YOU MAY BE ASKED BY BUILDING INSPECTOR OR THE ENGINEER TO REOPEN THE WALLS AT YOUR OWN EXPENSE.
13. FOUNDATION DESIGN IS FOR SOIL WITH BEARING PRESSURE OF 2000 P.S.F (NON-ADOBE).
14. ALL CONCRETE SHALL HAVE A 28 DAY COMPRESSION STRENGTH OF 3000 P.S.I.
15. ALL FOOTING SHALL REST ON FIRM UNDISTURBED SOIL.
16. IF SOFT OR EXPANSIVE SOIL IS ENCOUNTERED THE SOIL SHALL BE REMOVED AND REPLACED WITH NON-EXPANSIVE STRUCTURAL FILL COMPACTED TO 95% AS PER ASTM D-1557.
18. ALL WINDOWS AT BEDROOMS SHALL HAVE A MINIMUM SILL HEIGHT OF 44" AND A MINIMUM NET CLEAR AND OPENABLE AREA OF 5.7 SQUARE FEET. 24" HEIGHT MINIMUM AND 20A WIDTH MINIMUM AS PER I.R.C 310.1.
19. PAINT ALL NEW INTERIOR AND EXTERIOR SURFACES (COLOR SELECTION BY OWNER) UNLESS OTHERWISE AGREED BETWEEN OWNER AND CONTRACTOR.
20. INSTALL R-30 INSULATION IN CEILING AND R-13 INSULATION IN ALL EXTERIOR WALLS TYP.
21. WALL COVERING ON STUD WALLS NOTED AS SHEAR WALLS SHALL BE CONTINUED UP TO ROOF DECKING.
22. EXTERIOR SHEETING SHALL BE NAILED W/8d NAILS @ 4' O.C. AT EDGES W/ 8d @ 10' O.C. IN FIELD.
23. THERE ARE NO FIRE SPRINKLERS OF IRRIGATION CONNECTED TO THE WATER METER.
24. ALL WALLS AND CEILING6S OR BATH AREAS OR EXTERIOR DRYWALL TO BE APPROVED WATERPROOF TYPE GYPSUM BOARD.
25. GARAGE, STORAGE ROOMS, AND MECHANICAL WALLS & CEILINGS SHALL BE MINIMUM 5/8" TYPE 'X' GYPSUM BOARD.
26. ALL WATER FIXTURES TO BE LOW FLOW.
27. ALL UTILITY AREAS CONTAINING LAUNDRY FACILITIES SHALL BE FINISHED ON WALLS WITH WATER PROOF GYPSUM BOARD OR OTHER APPROVED WATER RESISTANT MATERIAL. NAIL ALL SHEETROCK AS PER I.R.C.
28. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL HIDDEN PLUMBING, AND ELECTRICAL ELEMENTS PRIOR TO STARTING NEW WORK.
29. PAINT ALL NEW INTERIOR AND EXTERIOR SURFACES (COLOR SELECTION BY OWNER) UNLESS OTHERWISE AGREED BETWEEN OWNER AND CONTRACTOR.
30. ALL HANDRAILS SHALL BE 34" IN HEIGHT AND SHALL BE INSTALLED AS PER I.R.C 311.5.6.1.
31. ALL WATER FIXTURES TO BE LOW FLOW.
32. INSTALL R-19 INSULATION IN CEILING TYP.
33. THERE ARE NO FIRE SPRINKLERS (OR A) IRRIGATION CONNECTED TO THIS WATER METER.
34. ALL WORK & MATERIALS SHALL BE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL RESIDENTIAL CODE, AS AMENDED AND/OR LOCAL CODES, LAWS, ORDINANCES AND STATUTES. NOTHING IN THE DRAWING OR SPECIFICATIONS IS TO BE CONSTRUCTED AS REQUIRING OR PERMITTING WORK CONTRARY TO THESE RULES, REGULATIONS AND CODES.
35. THE DRAWINGS INDICATE LOCATION, DIMENSIONS, REFERENCE AND TYPICAL DETAILS OF CONSTRUCTION. THE DRAWINGS DO NOT ILLUSTRATE EVERY CONDITION. WORK NOT PARTICULARLY DETAILED SHALL BE REPORTED TO THE ARCHITECT FOR RESOLUTION.
36. DO NOT SCALE THE DRAWINGS. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD. WHERE DISCREPANCIES BETWEEN THE DRAWING DIMENSIONS AND THE FIELD CONDITIONS OCCUR, THEY SHALL BE REPORTED TO THE ARCHITECT FOR RESOLUTION.
37. DETAILED DRAWINGS AND LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALL SCALE DRAWINGS. PREFERENCE SHALL BE GIVEN TO THE DIMENSIONS ON THE DRAWINGS, GENERAL NOTES AND SPECIFICATIONS WHICH ARE INTENDED TO AGREE AND SUPPLEMENT EACH OTHER ANYTHING INDICATED ON ONE AND NOT IN THE OTHER SHALL BE EXECUTED AS IF BOTH. IN CASES OF DIRECT CONFLICT, THE MOST RESTRICTIVE SHALL GOVERN (CONTACT ARCHITECT FOR RESOLUTION).
38. ALL CONTRACTORS SHALL VISIT THE SITE AND VERIFY THAT ALL EXISTING CONDITIONS AGREE WITH THE INFORMATION SHOWN. ALL CONTRACTORS SHALL BE DEEMED TO HAVE INSPECTED THE SITE AND SATISFIED HIMSELF AS TO THE TRUE CONDITION UNDER WHICH THE WORK IS TO BE PERFORMED. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR RESOLUTION PRIOR TO THE START OF CONSTRUCTION.

RESIDENTIAL CODE DATE

JURISDICTION: CITY & COUNTY OF HONOLULU  
CODES: IRC 2012  
OCCUPANCY: RESIDENTIAL  
PROPERTY CLASS: RESIDENTIAL  
TMK: 3-9-002: 031  
CONSTRUCTION TYPE: WOOD FRAME-TYPE 5  
SEISMIC ZONE:  
WIND LOADS: 105 EXPOSURE "D"  
ZONE: R-10 RESIDENTIAL DISTRICT  
LOT SIZE: 10,016 SQ. FT.

DEMOLITION NOTES

1. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL HIDDEN PLUMBING, AND ELECTRICAL ELEMENTS PRIOR TO ANY DEMOLITION OR MODIFICATIONS TO EXISTING CONSTRUCTION.
2. CONTRACTOR SHALL REROUTE ALL EXISTING PLUMBING AND ELECTRICAL WORK INTO NEW WALLS AS REQUIRED AS PER STANDARD PRACTICE.
3. CONTRACTOR TO VERIFY WITH OWNER ANY FINISHES, FURNISHINGS, OR EQUIPMENT TO BE SAVED FROM EXISTING CONSTRUCTION. ANY SALVAGEABLE ITEMS REMOVED SHALL BE STOCKPILED AS PER OWNERS INSTRUCTIONS.
4. FIRE SAFETY: STRUCTURAL UNDERGROUND CONSTRUCTION, ALTERATION OR DEMOLITION OPERATIONS, INCLUDING THOSE IN UNDERGROUND LOCATIONS, SHALL COMPLY WITH NFPA 241, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION AND DEMOLITION OPERATIONS, AND THE CHAPTER 2006 NFPA I.

CONSULTANTS

TOPOGRAPHIC SURVEYOR

AUSTIN, TSUTSUMI & ASSOCIATES, INC.  
ERIK S. KANESHIRO  
501 SUMNER STREET, STE. 521  
HONOLULU, HI 96817  
(808) 533-3646

GEOTECHNICAL ENGINEERING

JPB ENGINEERING, INC  
JONATHAN BRANDT  
47-388 HUI IKA STREET, STE 16  
KANELOE, HI 96744  
(808) 436-8108

STRUCTURAL ENGINEERING

JPB ENGINEERING, INC  
JONATHAN BRANDT  
47-388 HUI IKA STREET, STE 16  
KANELOE, HI 96744  
(808) 436-8108

LANDSCAPE ARCHITECT

ZUCKER DESIGN ASSOCIATES, INC.  
SCOTT ZUCKER  
26691 PARISO DRIVE  
MISSION VIEJO, CA 92691  
(714) 478-0565

CIVIL ENGINEERING

HAWAII ENGINEERING GROUP, INC  
GREGORY D. SANTORO  
1088 BISHOP ST., STE 2506  
HONOLULU, HI 96813  
(808) 533-2042

PROJECT DESCRIPTION

NEW CUSTOM 2-STORY SFD (4,756 SQ. FT.) and CARPORT (515 SQ. FT.)

OWNER: SUSHIL GARG  
STREET ADDRESS: 6973 KALANIANA'OLE HIGHWAY, HONOLULU, HI 96825  
T.M.K. NUMBER: (1) 3-9-002: 031  
LOT AREA: 10,016 SQ. FT.  
GROSS AREA: 9 SQ. FT.  
LESS EROSION: 10,007 SQ. FT.  
NET AREA: 10,007 SQ. FT.

MAX. LOT COVERAGE: 10,007/2 = 5,003.50 SQ.FT.

MAX. TOTAL FLOOR AREA: 10,007x.59 = 5,904.13 SQ.FT.

ZONING (LUO): R-10 RESIDENTIAL DISTRICT  
FLOOD ZONE: VE-100 YEAR FLOOD, COASTAL, WAVE ACTION, BASE ELEVATION DETERMINED  
SETBACKS: FRONT 10'-0" MIN  
SIDE 5'-0" MIN  
REAR 5'-0" MIN

LOWER FLOOR CARPORT AREA: 515.00 SF  
LOWER FLOOR ELEC/MECH/L AREA: 36.00 SF  
MAIN FLOOR LIVING AREA: 2,888.51 SF  
MAIN FLOOR LANAI AREA: 545.63 SF  
MAIN FLOOR BALCONY AREA: 143.17 SF  
UPPER FLOOR LIVING AREA: 1,854.00 SF  
UPPER FLOOR LANAI AREA: 235.00 SF  
UPPER FLOOR BALCONY AREA: 14.00 SF  
PROPOSED LIVING AREA (TOTAL): 4,747.51 SF  
PARKING: CARPORT - 4 (PROVIDED)

SPECIAL INSPECTION  
IRC, IBC, CODE 2006, AS AMENDED

☒ COMPLETE LOAD PATH AND UPLIFT TIES  
☒ TERMITE PROTECTION  
☐ OTHER

SIGNATURE \_\_\_\_\_ DATE: \_\_\_\_\_  
NAME OF ARCHITECT  
ARCHITECT LICENSE NO.

DEPARTMENT OF PLANNING AND PERMITTING  
BUILDING DIVISION  
CITY AND COUNTY OF HONOLULU

ACCEPTANCE:	DATE
ZONING:	
ZONING CODE:	
ELECTRICAL:	
PLUMBING:	
BUILDING:	
PROJECT:	
TMK:	PERMIT:
APPLICATION #	

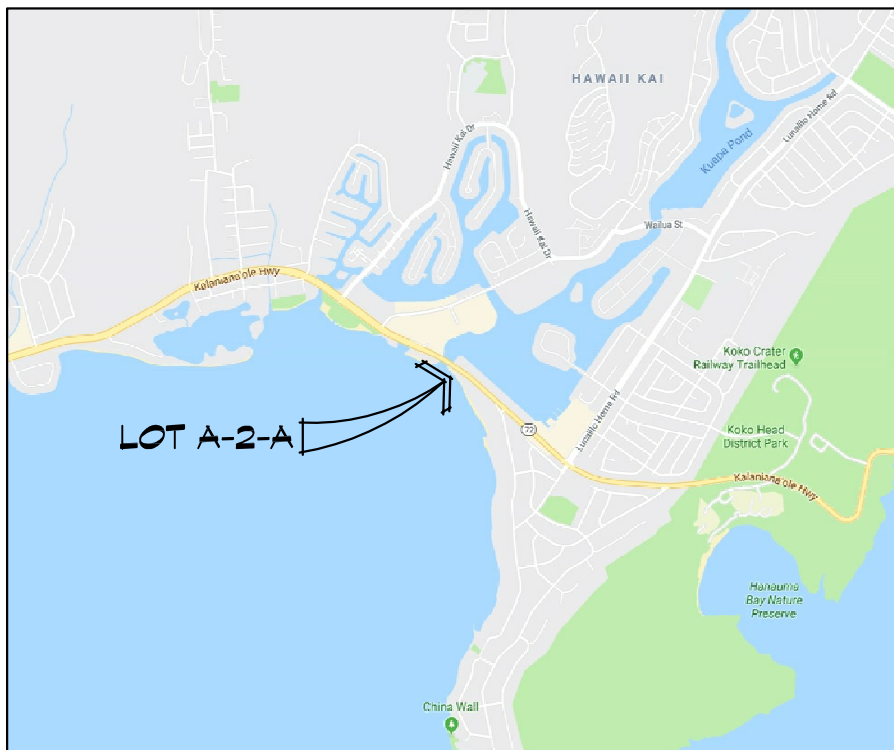
INDEX OF SHEETS

A001	COVER SHEET, INDEX OF SHEETS, PROJECT LOCATION, GENERAL NOTES
A002.1	SITE PLAN
A002.2	DEMOLITION PLAN
A003	GENERAL NOTES & SPECIFICATIONS
A004	DOOR & WINDOW SCHEDULE
A005	FLOOR PLAN KEYNOTES
A006	LOWER FLOOR PLAN
A007	MAIN FLOOR PLAN
A008	UPPER FLOOR PLAN
A009	ROOF PLAN
A010	EXTERIOR ELEVATIONS
A011	EXTERIOR ELEVATIONS
A012	BUILDING SECTIONS
A013	BUILDING SECTIONS
A014	STAIR PLANS
A015	STAIR SECTION
A016	SLAB EDGE PLAN
A017	ELECTRICAL SYMBOLS, ELECTRICAL NOTES & GENERAL NOTES
A018	LOWER FLOOR ELECTRICAL LAYOUT
A019	MAIN FLOOR ELECTRICAL LAYOUT
A020	UPPER FLOOR ELECTRICAL LAYOUT
A021	LOWER FLOOR REFLECTED CEILING PLAN
A022	MAIN FLOOR REFLECTED CEILING PLAN
A023	UPPER FLOOR REFLECTED CEILING PLAN
A024	ARCHITECTURAL DETAILS
A025	ARCHITECTURAL DETAILS
A026	ARCHITECTURAL DETAILS
A027	ARCHITECTURAL DETAILS
A028	ARCHITECTURAL DETAILS
A029	LOWER FLOOR FAR CALCULATION
A030	MAIN FLOOR FAR CALCULATION
A031	UPPER FLOOR FAR CALCULATION
S001	GENERAL NOTES
S100	FOUNDATION PLAN
S101	FIRST FLOOR FRAMING PLAN
S102	SECOND FLOOR FRAMING PLAN
S103	LOWER ROOF FRAMING PLAN
S300	STRUCTURAL DETAILS
S301	STRUCTURAL DETAILS
S302	STRUCTURAL DETAILS
S303	STRUCTURAL DETAILS
S304	STRUCTURAL DETAILS
	SHORELINE CERTIFICATION MAP
C-1.0	CONSTRUCTION PLAN
CD-1.0	CONSTRUCTION DETAILS
CD-1.1	CONSTRUCTION DETAILS
CD-1.2	CONSTRUCTION DETAILS
CD-1.3	CONSTRUCTION DETAILS
P-1.0	PLANTING PLAN
P-1.1	PLANTING PLAN
L-1.0	LIGHTING PLAN

LOCATION MAP



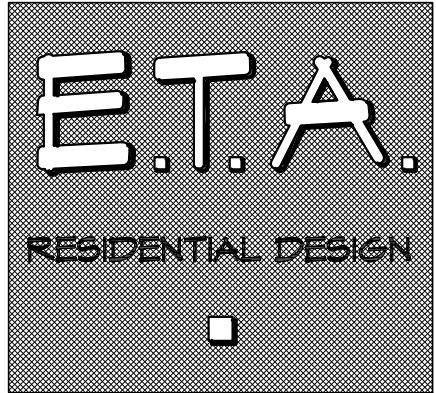
VICINITY MAP



0 2' 5' 10' 15'  
SCALE: 1/4"=1'-0"

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII)

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-9-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:

10-15-20 CITY SUB I  
05-14-21 CITY RESUB  
10-01-21 CITY RESUB  
04-25-22 CITY RESUB  
- -22 CITY RESUB

REVISIONS:

01-06-20 OWNER'S CHANGES - JT  
01-18-21 BLDG PC1 - CT  
07-13-21 BMS PC1 - CT  
01-11-22 WNB PC2 - CT  
04-07-22 BMS PC - CT  
05-18-22 BLDG PC2 - CT  
11-10-22 PLANNING PC1 - CT

COVER SHEET

STYLE: CONTEMPORARY

DATE 01.24.2019

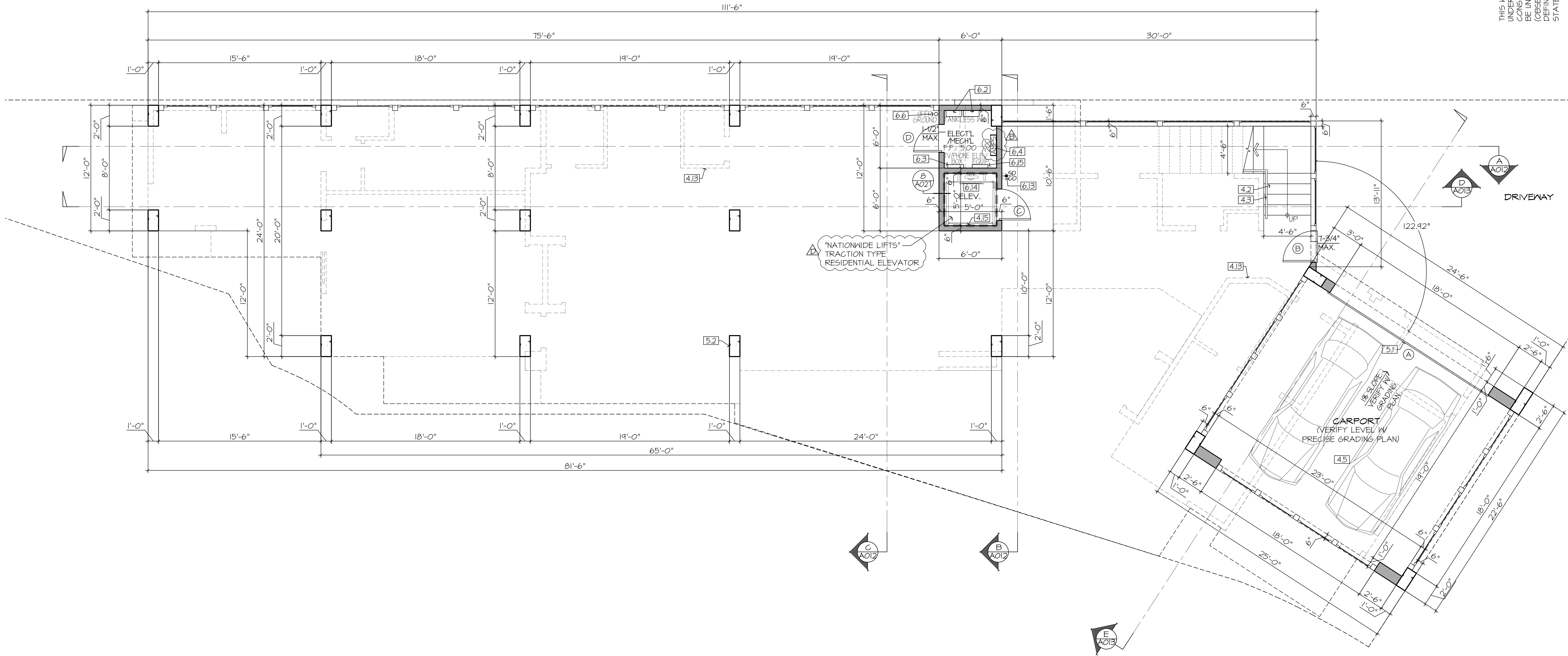
DRAWN BY: GT

JOB NO: A001-COVER

SCALE

SHEET A001



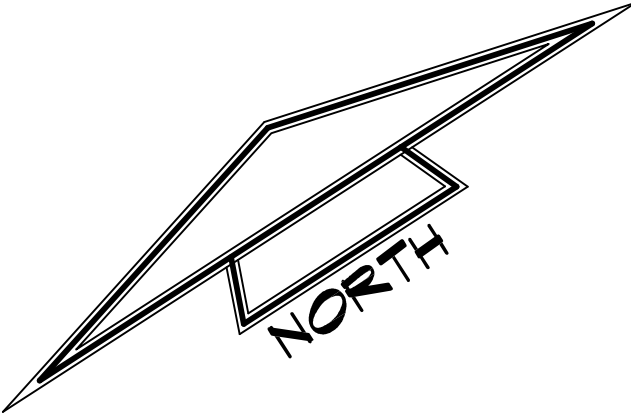
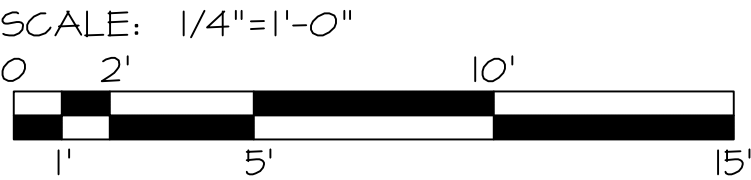


FLOOR PLAN LEGEND

1-HOUR FIRE RATED SEPARATION  
EXTERIOR WALL TO BE MINIMUM OF 2X6

FLOOR PLAN NOTE

FOR FLOOR PLAN KEYNOTES, PLEASE REFER TO ARCHITECTURAL SHEET A005.

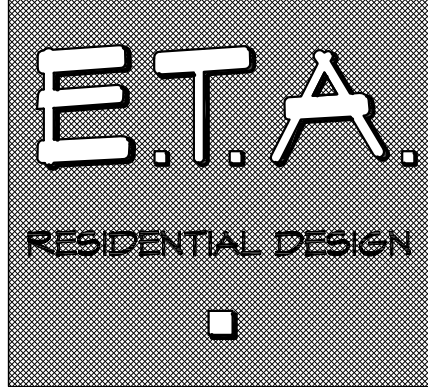


LOWER FLOOR PLAN

STYLE: CONTEMPORARY  
DATE: 01.24.2019  
DRAWN BY: JT  
JOB NO: A006-LOWER FLOOR PLAN  
SCALE: 1/4"= 1'-0"  
SHEET: A006

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII)

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-9-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:

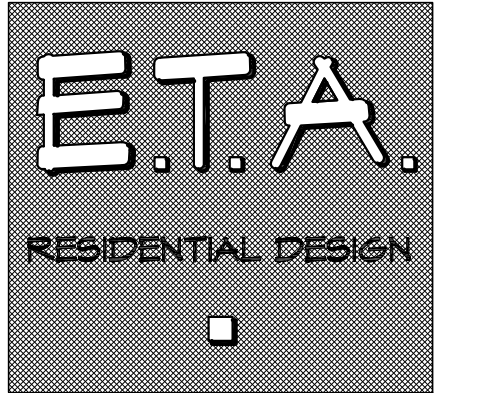
REVISIONS:

01-18-21  
BLDG PG1 - CT  
01-11-22  
WMB PG2 - CT



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII)

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-4-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE  
FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:

REVISIONS:  
A 01-06-20 OWNER'S CHANGES - JT  
B 01-11-22 WBS PC2 - CT  
C 05-18-22 BLDG PC2 - CT  
D 11-10-22 PLANNING PC1 - CT

MAIN FLOOR  
PLAN

STYLE: CONTEMPORARY

DATE 01.24.2019

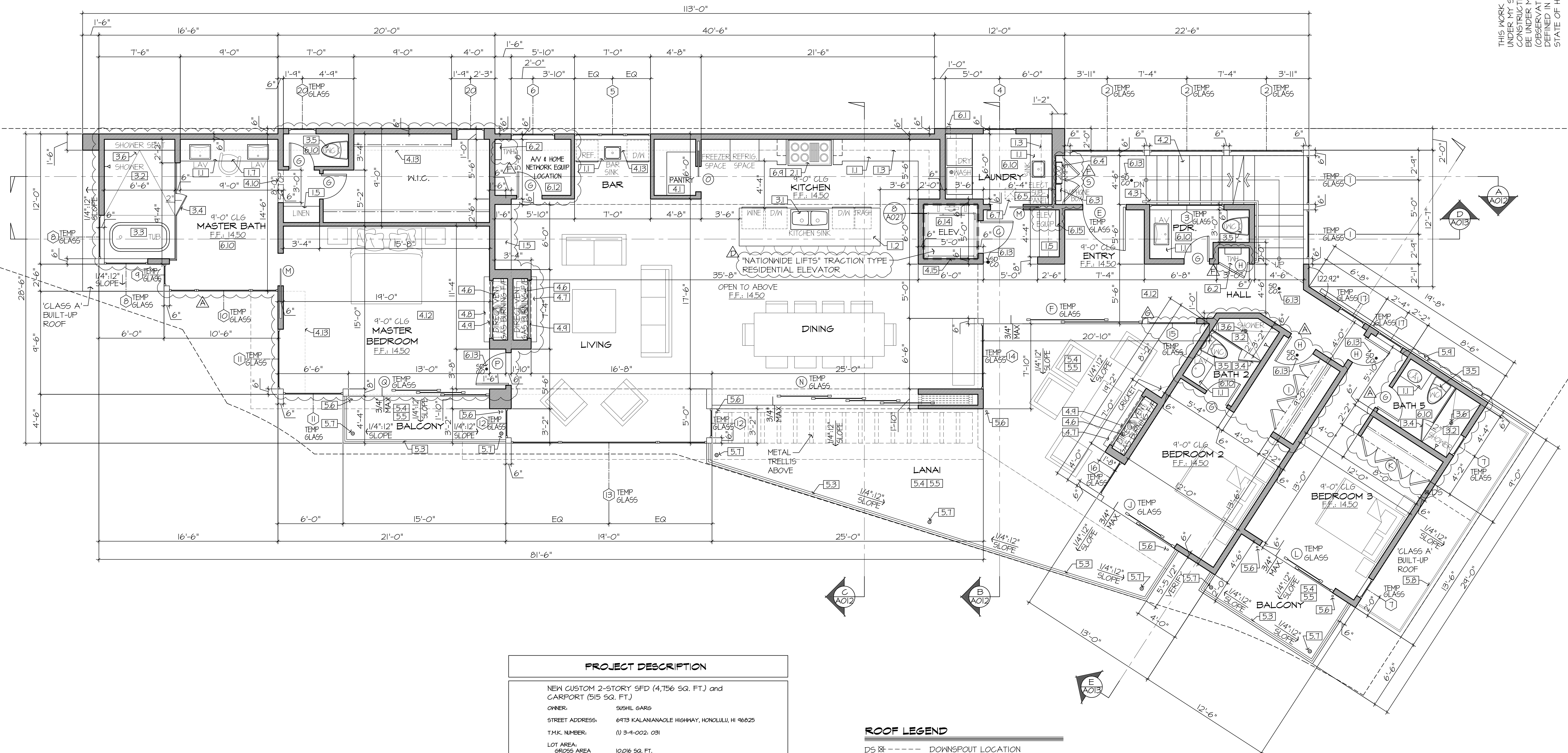
DRAWN BY: JT

JOB NO: A007-MAIN FLOOR PLAN

SCALE 1/4"= 1'-0"

SHEET A007

11/10/2022 4:58:52 PM, etas



### PROJECT DESCRIPTION

NEW CUSTOM 2-STORY SFD (4,756 SQ. FT.) and  
CARPORT (515 SQ. FT.)

OWNER: SUSHIL GARG  
STREET ADDRESS: 6973 KALANIANA'OLE HIGHWAY, HONOLULU, HI 96825  
TMK. NUMBER: (1) 3-4-002: 031  
LOT AREA: 10,016 SQ. FT.  
GROSS AREA: 4,756 SQ. FT.  
LESS EROSION: 4,756 SQ. FT.  
NET AREA: 10,001 SQ. FT.  
MAX. LOT COVERAGE: 10,001/12 = 5,003.50 SQ.FT.  
MAX. TOTAL FLOOR AREA: 10,001x.51 = 5,104.13 SQ.FT.  
ZONING (L.U.): R-10 RESIDENTIAL DISTRICT  
FLOOD ZONE: VE-100 YEAR FLOOD, COASTAL, WAVE ACTION, BASE ELEVATION DETERMINED  
SETBACKS: FRONT 10'-0" MIN  
SIDE 5'-0" MIN  
REAR 5'-0" MIN

LOWER FLOOR CARPORT AREA: 515.00 SF  
LOWER FLOOR ELEC/MECH. AREA: 36.00 SF  
MAIN FLOOR LIVING AREA: 2,200.51 SF  
MAIN FLOOR LANAI AREA: 515.63 SF  
MAIN FLOOR BALCONY AREA: 143.11 SF

UPPER FLOOR LIVING AREA: 1,294.00 SF  
UPPER FLOOR LANAI AREA: 235.00 SF  
UPPER FLOOR BALCONY AREA: 74.00 SF

PROPOSED LIVING AREA (TOTAL): 4,741.51 SF

PARKING: CARPORT - 4 (PROVIDED)

### ROOF LEGEND

DS --- DOWNSPOUT LOCATION

### ROOF MATERIAL NOTES

- BUILT-UP ROOF:  
UL TGFUR306 "GAF" OR APPROVED EQ.  
CLASS "A" ROOFING SYSTEM  
BUILT-UP ROOFING TO BE CRUSHED  
ROOFING MATERIAL OVER ONE LAYER OF  
APP. GRANULATED 80 LB. MODIFIED  
CAPSHEET USING A TORCH OVER ONE  
LAYER 28 LB. FIBERGLASS BASE SHEET  
MECHANICALLY FASTENED.  
COLOR TO BE LIGHT TAN GRAVEL.
- ADJUSTABLE LOWERED ROOF SYSTEM
- METAL TRELLIS
- TILE NAILING SHALL COMPLY WITH IBC 2006.
- ROOF DRAINAGE SYSTEM & DOWNSPOUT  
SHALL NOT BE COPPER.
- ROOF DRAINAGE SYSTEM MUST BE TIED TO  
LOT AREA DRAIN.
- RADIANT BARRIERS TO BE ATTACHED TO  
UNDERSIDE OF ROOF DECKING

### FLOOR PLAN LEGEND

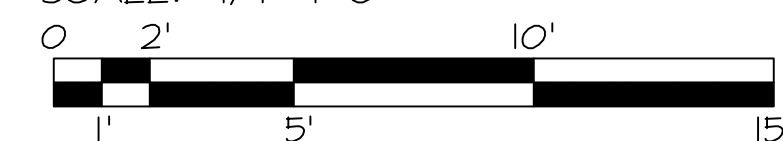
1-HOUR FIRE RATED  
SEPARATION

EXTERIOR WALL TO  
BE MINIMUM OF 2X6

### FLOOR PLAN NOTE

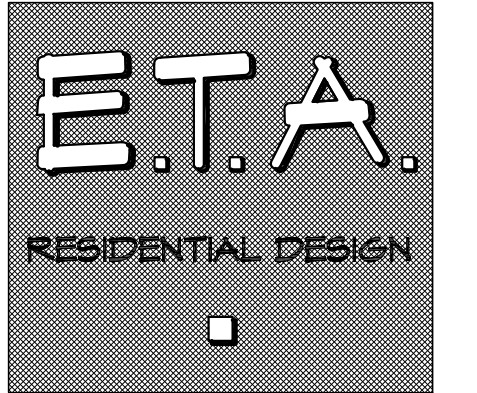
FOR FLOOR PLAN KEYNOTES,  
PLEASE REFER TO ARCHITECTURAL  
SHEET A005.

SCALE: 1/4"= 1'-0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. (OBSERVATION OF CONSTRUCTION AS DEFINED IN SECTION 16-115-2 OF THE STATE OF HAWAII)

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-9-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE  
FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:

REVISIONS:

01-06-20 OWNER'S CHANGES - JT  
01-11-22 WMB PG2 - CT

UPPER FLOOR  
PLAN

STYLE: CONTEMPORARY

DATE: 01.24.2019

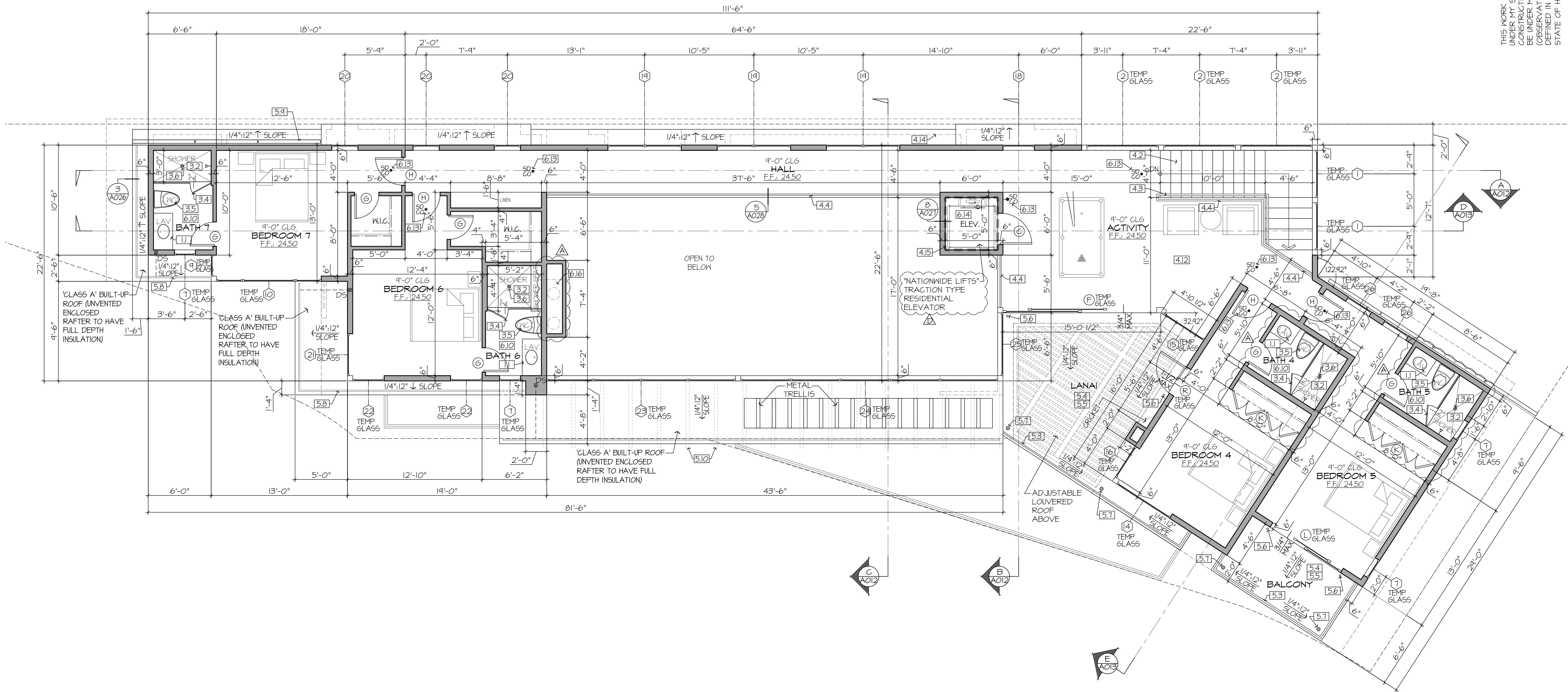
DRAWN BY: JT

JOB NO: A008-UPPER FLOOR PLAN

SCALE: 1/4"=1'-0"

SHEET: A008

1/11/2022 10:29:40 AM, etas



#### ROOF LEGEND

DS --- DOWNSPOUT LOCATION

#### ROOF MATERIAL NOTES

- BUILT-UP ROOF:  
UL TGFUR1306 "GAF" OR APPROVED EQ.  
CLASS "A" ROOFING SYSTEM  
BUILT-UP ROOFING TO BE CRUSHED  
ROOFING MATERIAL OVER ONE LAYER OF  
APP. GRANULATED 80 LB. MODIFIED  
CAPSHEET USING A TORCH OVER ONE  
LAYER 28 LB. FIBERGLASS BASE SHEET  
MECHANICALLY FASTENED.  
COLOR TO BE LIGHT TAN GRAVEL.
- ADJUSTABLE LOUVERED ROOF SYSTEM
- METAL TRELLIS
- TILE NAILING SHALL COMPLY WITH IBC 2006.
- ROOF DRAINAGE SYSTEM & DOWNSPOUT  
SHALL NOT BE COPPER.
- ROOF DRAINAGE SYSTEM MUST BE TIED TO  
LOT AREA DRAIN.
- RADIANT BARRIERS TO BE ATTACHED TO  
UNDERSIDE OF ROOF DECKING

#### FLOOR PLAN LEGEND

1-HOUR FIRE RATED  
SEPARATION

EXTERIOR WALL TO  
BE MINIMUM OF 2X6

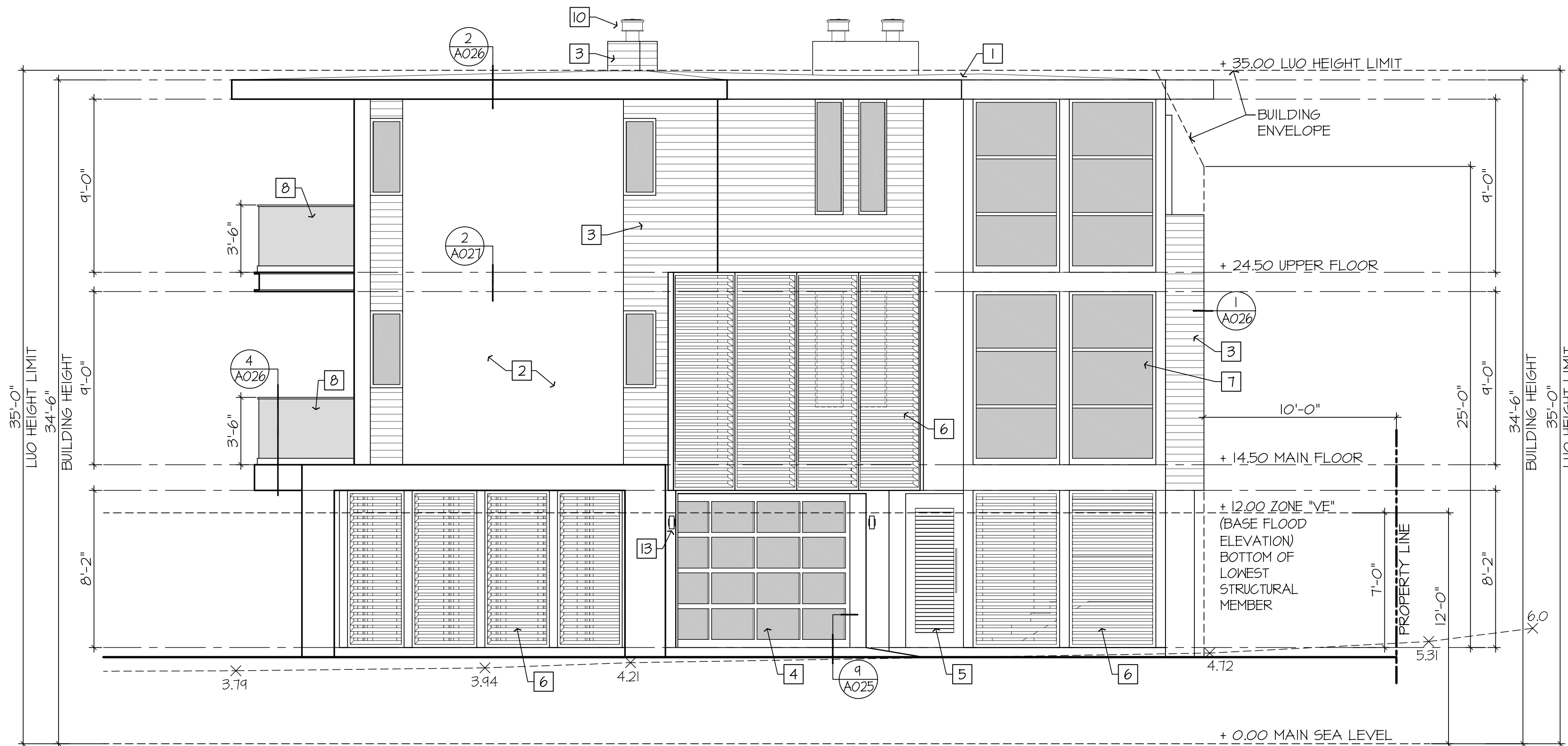
#### FLOOR PLAN NOTE

FOR FLOOR PLAN KEYNOTES,  
PLEASE REFER TO ARCHITECTURAL  
SHEET A005.

SCALE: 1/4"=1'-0"







LEFT ELEVATION

NOTE: ALL BATHROOM WINDOWS SHALL BE OBSCURE

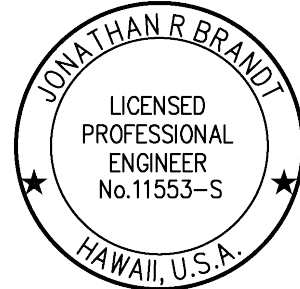
ELEVATION KEYNOTES

- BUILT-UP ROOF:  
UL TGFUR1306 "GAF" OR  
APPROVED EQ.  
CLASS "A" ROOFING SYSTEM  
BUILT-UP ROOFING TO BE CRUSHED  
ROOFING MATERIAL OVER ONE  
LAYER OF APP. GRANULATED 80  
LB. MODIFIED CAPSHEET USING A  
TORCH OVER ONE LAYER 28 LB.  
FIBERGLASS BASE SHEET  
MECHANICALLY FASTENED,  
COLOR TO BE LIGHT TAN GRAVEL.
- 1/8" THICK STUCCO ON CORROSION  
RESISTANT METAL LATH O/ 60 MIN,  
2 LAYERS OF GRADE D' BUILDING  
PAPER
- WOOD SIDINGS TO BE IPE HARDWOOD
- GARAGE DOOR TO BE ALUMINUM  
FRAME WITH WHITE LAMINATED  
TEMPERED GLASS
- ALUMINUM LOUVER DOOR
- ALUMINUM SCREEN LOUVER
- EXTERIOR DOORS & WINDOWS TO  
BE "WESTERN WINDOW SYSTEMS"
- 42" MIN. HIGH TEMP. GLASS  
GUARDRAIL PER ELEV.
- I-BEAM STEEL CANOPY PER ELEVATION
- FIREPLACE VENT
- 4" DRYER VENT LOCATION PER PLAN.  
14" MAX. IN TWO 90° BENDS FOR  
METAL DUCT; 6" MAX. FOR FLEX GAS  
CONNECTOR
- HOUSE STREET NUMBER VISIBLE &  
LEGIBLE FROM STREET. MINIMUM  
4" HIGH x 1" WIDE AND  
ILLUMINATED AT NIGHT.
- EXTERIOR LIGHT FIXTURE
- EXPOSED WOOD RAFTER
- ADJUSTABLE LOUVERED ROOF

NOTES

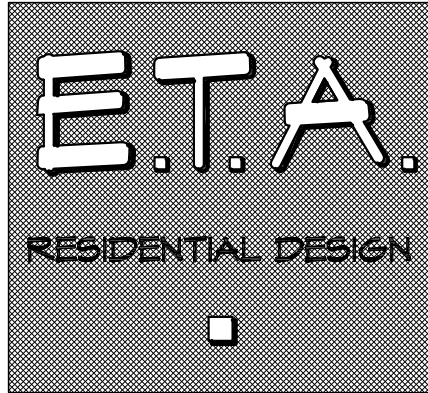
- ANY CHANGES TO THE SHAPE, SIZE AND DIVISIONS  
OF WINDOWS & DOORS MUST BE REVIEWED &  
APPROVED BY DESIGNER.
- THE MUNTIN BARS FOR ALL THE DOOR AND  
WINDOW BREAK-UPS SHALL BE PROVIDED WITH A  
MINIMUM OF 1-1/4".
- ROOF GUTTERS SHALL BE PROVIDED WITH THE  
MEANS TO PREVENT ACCUMULATION OF LEAVES &  
DEBRIS.
- ALL PLUMBING & EQUIPMENT VENTS MUST BE  
CONSOLIDATED & LOCATED IN AREAS THAT  
MINIMIZE THEIR VISIBILITY. VENTS MUST BE AS  
LOW IN HEIGHT AS ALLOWED BY CODE & SATISFY  
THE REQUIREMENTS OF THE DESIGN GUIDELINES.
- FIELD CUTTING ENDS, NOTCHES, AND DRILLED  
HOLES OF PRESERVATIVE TREATED WOOD SHALL  
BE TREATED IN FIELD.
- KEEP SCREED SHALL BE OF MINIMUM NO. 26  
GALVANIZED SHEET GAGE, CORROSION-RESISTANT  
LOCATED BELOW FOUNDATION PLATE LINE AND  
4-INCHES ABOVE GRADE ON ALL EXTERIOR STUD  
WALLS OR 2-INCHES ABOVE PAVED AREAS.
- ALL WOOD FRAMING MEMBERS THAT REST ON  
CONCRETE OR MASONRY EXTERIOR FOUNDATION  
WALLS & ARE LESS THAN 8" TO THE EXPOSED  
GROUND SHALL BE PRESSURE TREATED OR  
NATURALLY DURABLE TO DECAY.
- SILLS & SLEEPERS IN DIRECT CONTACT WITH  
CONCRETE OR MASONRY THAT IS IN DIRECT  
CONTACT WITH THE GROUND & GIRDERS WITH LESS  
THAN 1/2" CLEARANCE TO MASONRY & CONCRETE  
SHALL BE PRESURE TREATED OR NATURALLY  
DURABLE TO DECAY.
- ATTIC & FOUNDATION VENTILATION OPENINGS IN  
VERTICAL WALLS & ATTIC ROOF VENTS SHALL BE  
FULLY COVERED WITH MINIMUM OF  
CORROSION-RESISTANT, NONCOMBUSTIBLE WIRE  
MESH WITH 1/8-INCH OPENING.
- EXTERIOR WALLS SHALL BE APPROVED  
NONCOMBUSTIBLE OR IGNITION-RESISTANT  
MATERIAL, HEAVY TIMBER, OR LOG WALL  
CONSTRUCTION OR SHALL PROVIDE PROTECTION  
FROM THE INTRUSION OF FLAMES & EMBERS.
- EXTERIOR GLAZING & WINDOW WALLS: EXTERIOR  
WINDOWS, WINDOW WALLS, GLAZED DOORS &  
GLAZED OPENINGS WITHIN EXTERIOR DOORS  
SHALL BE INSULATING-GLASS UNITS WITH A  
MINIMUM OF ONE TEMPERED PANE, OR GLASS  
BLOCK UNITS, OR HAVE A FIRE-RESISTIVE RATING  
OF NOT LESS THAN 20 MINUTES.
- PROVIDE HOUSE STREET NUMBER VISIBLE &  
LEGIBLE FROM STREET. MINIMUM 4" HIGH x 1" WIDE  
AND ILLUMINATED AT NIGHT.

THIS WORK WAS PREPARED BY ME OR  
UNDER MY SUPERVISION.  
CONSTRUCTION OF THIS PROJECT WILL  
BE UNDER MY OBSERVATION.  
(OBSERVATION OF CONSTRUCTION AS  
DEFINED IN SECTION 16-115-2 OF THE  
STATE OF HAWAII)



THIS WORK WAS PREPARED BY ME OR  
UNDER MY SUPERVISION AND  
CONSTRUCTION OF THIS PROJECT WILL  
BE UNDER MY OBSERVATION.  
10/7/2020

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-9-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE  
FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:


REVISIONS:


ELEVATIONS

STYLE: CONTEMPORARY

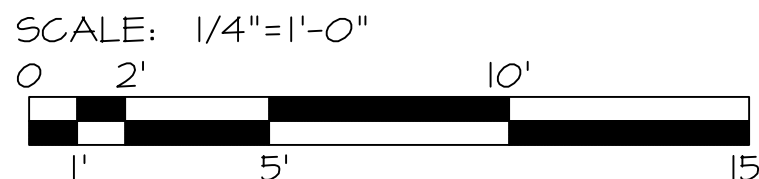
DATE: 01.24.2019

DRAWN BY: JT

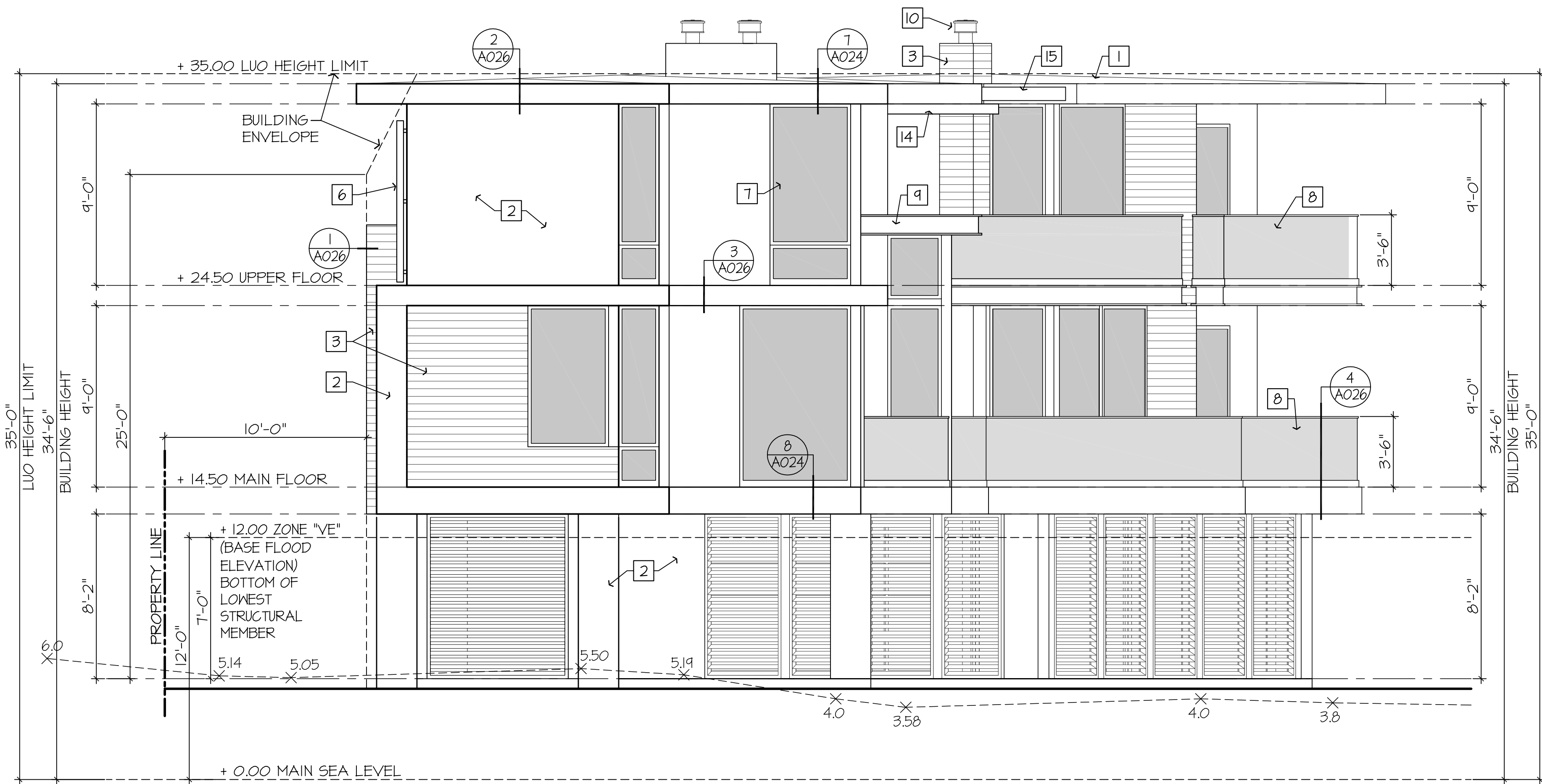
JOB NO: A010-ELEVATIONS

SCALE: 1/4"= 1'-0"

SHEET: A010







RIGHT ELEVATION

NOTE: ALL BATHROOM WINDOWS SHALL BE OBSCURE

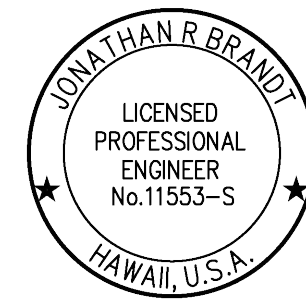
ELEVATION KEYNOTES

- 1 BUILT-UP ROOF:  
UL TGFUR1306 "GAF" OR  
APPROVED EQ.  
CLASS "A" ROOFING SYSTEM  
BUILT-UP ROOFING TO BE CRUSHED  
ROOFING MATERIAL OVER ONE  
LAYER OF APP. GRANULATED 80  
LB. MODIFIED CAPSHEET USING A  
TORCH OVER ONE LAYER 28 LB.  
FIBERGLASS BASE SHEET  
MECHANICALLY FASTENED,  
COLOR TO BE LIGHT TAN GRAVEL.
- 2 1/8" THICK STUCCO ON CORROSION  
RESISTANT METAL LATH O/ 60 MIN,  
2 LAYERS OF GRADE D' BUILDING  
PAPER
- 3 WOOD SIDINGS TO BE IPE HARDWOOD
- 4 GARAGE DOOR TO BE ALUMINUM  
FRAME WITH WHITE LAMINATED  
TEMPERED GLASS
- 5 ALUMINUM LOUVER DOOR
- 6 ALUMINUM SCREEN LOUVER
- 7 EXTERIOR DOORS & WINDOWS TO  
BE "WESTERN WINDOW SYSTEMS"
- 8 42" MIN. HIGH TEMP. GLASS  
GUARDRAIL PER ELEV.
- 9 I-BEAM STEEL CANOPY PER ELEVATION
- 10 FIREPLACE VENT
- 11 4" DRYER VENT LOCATION PER PLAN.  
14" MAX. IN TWO 90° BENDS FOR  
METAL DUCT; 6" MAX. FOR FLEX GAS  
CONNECTOR
- 12 HOUSE STREET NUMBER VISIBLE &  
LEGIBLE FROM STREET. MINIMUM  
4" HIGH x 1" WIDE AND  
ILLUMINATED AT NIGHT.
- 13 EXTERIOR LIGHT FIXTURE
- 14 EXPOSED WOOD RAFTER
- 15 ADJUSTABLE LOUVERED ROOF

NOTES

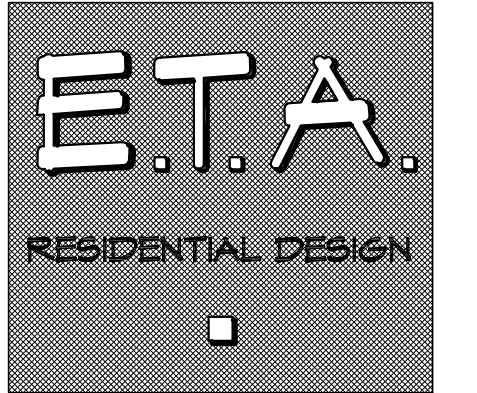
1. ANY CHANGES TO THE SHAPE, SIZE AND DIVISIONS  
OF WINDOWS & DOORS MUST BE REVIEWED &  
APPROVED BY DESIGNER.
2. THE MUNTIN BARS FOR ALL THE DOOR AND  
WINDOW BREAK-UPS SHALL BE PROVIDED WITH A  
MINIMUM OF 1-1/4".
3. ROOF GUTTERS SHALL BE PROVIDED WITH THE  
MEANS TO PREVENT ACCUMULATION OF LEAVES &  
DEBRIS.
4. ALL PLUMBING & EQUIPMENT VENTS MUST BE  
CONSOLIDATED & LOCATED IN AREAS THAT  
MINIMIZE THEIR VISIBILITY. VENTS MUST BE AS  
LOW IN HEIGHT AS ALLOWED BY CODE & SATISFY  
THE REQUIREMENTS OF THE DESIGN GUIDELINES.
5. FIELD CUTTING ENDS, NOTCHES, AND DRILLED  
HOLES OF PRESERVATIVE TREATED WOOD SHALL  
BE TREATED IN FIELD.
6. KEEP SCREED SHALL BE OF MINIMUM NO. 26  
GALVANIZED SHEET GAGE, CORROSION-RESISTANT  
LOCATED BELOW FOUNDATION PLATE LINE AND  
4-INCHES ABOVE GRADE ON ALL EXTERIOR STUD  
WALLS OR 2-INCHES ABOVE PAVED AREAS.
7. ALL WOOD FRAMING MEMBERS THAT REST ON  
CONCRETE OR MASONRY EXTERIOR FOUNDATION  
WALLS & ARE LESS THAN 8" TO THE EXPOSED  
GROUND SHALL BE PRESSURE TREATED OR  
NATURALLY DURABLE TO DECAY.
8. SILLS & SLEEPERS IN DIRECT CONTACT WITH  
CONCRETE OR MASONRY THAT IS IN DIRECT  
CONTACT WITH THE GROUND & GIRDERS WITH LESS  
THAN 1/2" CLEARANCE TO MASONRY & CONCRETE  
SHALL BE PRESSURE TREATED OR NATURALLY  
DURABLE TO DECAY.
9. ATTIC & FOUNDATION VENTILATION OPENINGS IN  
VERTICAL WALLS & ATTIC ROOF VENTS SHALL BE  
FULLY COVERED WITH MINIMUM OF  
CORROSION-RESISTANT, NONCOMBUSTIBLE WIRE  
MESH WITH 1/8-INCH OPENING.
10. EXTERIOR WALLS SHALL BE APPROVED  
NONCOMBUSTIBLE OR IGNITION-RESISTANT  
MATERIAL, HEAVY TIMBER, OR LOG WALL  
CONSTRUCTION OR SHALL PROVIDE PROTECTION  
FROM THE INTRUSION OF FLAMES & EMBERS.
11. EXTERIOR GLAZING & WINDOW WALLS: EXTERIOR  
WINDOWS, WINDOW WALLS, GLAZED DOORS &  
GLAZED OPENINGS WITHIN EXTERIOR DOORS  
SHALL BE INSULATING-GLASS UNITS WITH A  
MINIMUM OF ONE TEMPERED PANE, OR GLASS  
BLOCK UNITS, OR HAVE A FIRE-RESISTIVE RATING  
OF NOT LESS THAN 20 MINUTES.
12. PROVIDE HOUSE STREET NUMBER VISIBLE &  
LEGIBLE FROM STREET. MINIMUM 4" HIGH x 1" WIDE  
AND ILLUMINATED AT NIGHT.

THIS WORK WAS PREPARED BY ME OR  
UNDER MY SUPERVISION.  
CONSTRUCTION OF THIS PROJECT WILL  
BE UNDER MY OBSERVATION.  
(OBSERVATION OF CONSTRUCTION AS  
DEFINED IN SECTION 16-115-2 OF THE  
STATE OF HAWAII)



THIS WORK WAS PREPARED BY ME OR  
UNDER MY SUPERVISION AND  
CONSTRUCTION OF THIS PROJECT WILL  
BE UNDER MY OBSERVATION  
EXP. 4/30/2022

ERIC TRABERT & ASSOCIATES



9521 IRVINE CENTER DRIVE  
IRVINE, CALIFORNIA 92618

TEL: 949.861.2244  
FAX: 949.861.2233  
www.etadesign.com

SUSHIL GARG

6973 KALANIANA'OLE HIGHWAY  
HONOLULU, HI 96825  
TMK: (1) 3-9-002: 031

PROJECT DESCRIPTION:  
NEW CUSTOM 2-STORY SINGLE  
FAMILY DWELLING

PROPOSED NEW DWELLING FOR:  
M/M SUSHIL GARG  
6973 KALANIANA'OLE HIGHWAY,  
HONOLULU, HI 96825  
TMK: 3-9-002: 031

SUBMITTALS:

REVISIONS:

ELEVATIONS

STYLE: CONTEMPORARY

DATE 01.24.2019

DRAWN BY: JT

JOB NO. A011-ELEVATIONS

SCALE 1/4"= 1'-0"

SHEET A011

