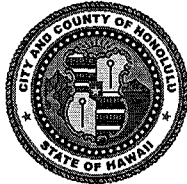


DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honolulu.gov • CITY WEB SITE: www.honolulu.gov

RICK BLANGIARDI
MAYOR



DEAN UCHIDA
DIRECTOR

DAWN TAKEUCHI APUNA
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

October 26, 2021

2021/ED-19(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: Chapter 25, Revised Ordinances of Honolulu
Draft Environmental Assessment (DEA)
Project: 1 Lumahai Street Project
Applicant: Alexandra Stanyon and Charles Anderson
Agent: Masa Fujioka and Associates (Kevin Dillon)
Location: 1 Lumahai Street - Maunalua
Tax Map Key (TMK): 3-9-013: 030

With this letter, the Department of Planning and Permitting hereby transmits the DEA and Anticipated Finding of No Significant Impact for the 1 Lumahai Street Project, located at 1 Lumahai Street in Maunalua (TMK 3-9-013: 030), in the Honolulu District on the Island of Oahu, for publication in the November 8, 2021, 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.

Should you 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.

Very truly yours,

A handwritten signature in black ink, appearing to be "Dean Uchida", written over a horizontal line.

FOR: Dean Uchida
Director

**NON-CHAPTER 343 DOCUMENT
PUBLICATION FORM
OFFICE OF ENVIRONMENTAL QUALITY CONTROL**

Project Name: 1 Lumahai Street

Applicable Law: Chapter 25, Revised Ordinances of Honolulu

Type of Document: Draft Environmental Assessment

Island: Oahu

District: Council District 4; East Honolulu Sustainable Communities Development Plan Area

TMK: (1) 3-9-013: 030

Permits Required: Special Management Area Use Permit, Grading, Grubbing,
Stockpiling, and Building Permits

Applicant or Proposing Agency:

(Address, Contact Person, Telephone, E-mail)

Alexandra Stanyon and Charles Anderson
c/o Fritz Johnson Architect
1021 Smith Street, Suite 400
Honolulu, Hawaii 96817

Approving Agency or Accepting Authority:

(Address, Contact Person, Telephone, E-mail)

Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813
Michael Kat - Land Use Permits Division
768-8013 michael.kat@honolulu.gov

Consultant:

(Address, Contact Person, Telephone, E-mail)

Masa Fujioka & Associates
98-021 Kamehameha Highway, #337
Aiea, Hawaii 96701
Kevin Dillon, REP
808-484-5366 Ext. 19 kdillon@masafujioka.com

Status: Draft, Anticipated Finding of No Significant Impact (AFNOSI)

Project Summary:

(Summarize proposed action and purpose/need in less than 200 words in the space below)

The proposed action consists of the construction of a new single-family residential dwelling on the property located at 1 Lumahai street, in the Portlock community of Honolulu. The property was previously developed as a single-family residence, but the former home was demolished in 2011. The current property owners seek to construct a new 4,224-square-foot two-story single-family dwelling with two-car garage and swimming pool on the subject property.

DRAFT ENVIRONMENTAL ASSESSMENT

**ALEX STANYON & SCOTT ANDERSON RESIDENCE
1 LUMAHAI STREET,
HONOLULU, OAHU, HAWAII**

TMK: (1) 3-9-013:030

Project Number 21734-001



**Prepared for:
Alex Stanyon & Scott Anderson c/o
Fritz Johnson Architects**

October 2021



Draft Environmental Assessment

Alex Stanyon & Scott Anderson Residence

October 2021

TMK: (1) 3-9-013:030
1 Lumahai Street, Honolulu, Oahu, Hawaii

APPLICANTS:

Alex Stanyon and Scott Anderson
c/o Fritz Johnson Architect
1021 Smith Street, Suite 400
Honolulu, Hawaii 96817

**DETERMINING
AGENCY:**

City and County of Honolulu
Department of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

CONSULTANT:

Masa Fujioka & Associates
98-021 Kamehameha Hwy, Unit 337
Aiea, Hawaii 96707

CLASS OF ACTION:

This document was prepared in general accordance with the Hawaii Environmental Policy Act, Hawaii Revised Statutes (HRS), Chapter 343, and Hawaii Department of Health, Hawaii Administrative Rules (HAR), Title 11 200.1,

ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

98-021 KAMEHAMEHA HIGHWAY, SUITE 337 • AIEA, HAWAII 96701-4908

PHONE: (808) 484-5366 • FAX: (808) 484-0007

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Appendix E.....East Honolulu Sustainable Communities Plan

Appendix F.....Compilation of Comments from External Sources



List of Acronyms and Abbreviations

| | |
|--|-------|
| Archaeological Inventory Survey..... | AIS |
| Best Management Practices..... | BMP |
| Carbon monoxide..... | CO |
| Centimeter or centimeters..... | cm |
| City and County of Honolulu..... | CCH |
| Clean Air Branch..... | CAB |
| Clean Water Branch..... | CWB |
| Coastal Zone Management..... | CZM |
| Department of Business, Economic Development, and Tourism..... | DBEDT |
| Department of Design and Construction..... | DDC |
| Department of Education..... | DOE |
| Department of Planning and Permitting..... | DPP |
| Department of Land and Natural Resources..... | DLNR |
| Division of Forestry and Wildlife..... | DOFAW |
| East Honolulu Sustainable Communities Plan..... | EHSCP |
| Environmental Assessment..... | EA |
| Environmental Impact Statement..... | EIS |
| Environmental Protection Agency..... | EPA |
| Extreme Tsunami Evacuation Zone..... | XTEZ |
| Federal Emergency Management Association..... | FEMA |
| Foot or Feet..... | ft |
| Finding of No Significant Impact..... | FONSI |
| Greenhouse Gas..... | GHG |
| Hawaiian Electric Company..... | HECO |
| Hawaii Administrative Rules..... | HAR |
| Hawaii Department of Health..... | HDOH |
| Hawaii Environmental Policy Act..... | HEPA |



| | |
|---|-----------------|
| Hawaii Revised Statutes..... | HRS |
| Honolulu Board of Water Supply..... | BWS |
| Honolulu Fire Department..... | HFD |
| Honolulu Police Department..... | HPD |
| Hour or Hours..... | hr |
| Intergovernmental Panel on Climate Change..... | IPCC |
| Koko Silt Loam..... | KsC |
| Land Use Ordinance..... | LUO |
| Marine Life Conservation District..... | MLCD |
| Masa Fujioka & Associates..... | MFA |
| Migratory Bird Treaty Act..... | MBTA |
| Miles per hour..... | mph |
| Millimeter or Millimeters..... | mm |
| National Ambient Air Quality Standards..... | NAAQS |
| National Flood Insurance Program..... | NFIP |
| National Oceanic and Atmospheric Administration..... | NOAA |
| National Weather Service..... | NWS |
| Nitrogen Dioxide..... | NO ² |
| Office of Environmental Quality Control..... | OEQC |
| Office of Planning and Sustainable Development..... | OPSD |
| Ozone..... | O ³ |
| Pacific Islands Ocean Observation System..... | PacIOOS |
| Particulate Matter..... | PM |
| Revised Ordinances of Honolulu..... | ROH |
| Sea Level Rise Exposure Area..... | SLRXA |
| Sea Level Rise Vulnerability and Adaptation Report..... | SLRVAR |
| Shoreline Setback Variance..... | SSV |
| Special Management Area..... | SMA |



| | |
|---|-----------------|
| State Ambient Air Quality Standards..... | SAAQS |
| State Historic Preservation Division..... | SHPD |
| State Land Use Commission..... | SLUC |
| State Land Use District..... | SLUD |
| Sulfur Dioxide..... | SO ² |
| Tax Map Key..... | TMK |
| Tsunami Evacuation Zone..... | TEZ |
| United States..... | US |
| United States of America..... | USA |
| University of Hawaii..... | UH |
| US Department of Agriculture..... | USDA |
| US Fish and Wildlife Service..... | USFWS |
| US Integrated Ocean Observing System..... | IOOS® |
| Year or Years..... | yr(s) |



1.0 INTRODUCTION

This Environmental Assessment (EA) was prepared in general accordance with the Hawaii Revised Statutes (HRS), Chapter 343, and Hawaii Department of Health (HDOH), Hawaii Administrative Rules (HAR), Title 11 200.1, which set forth the requirements for the preparation of EAs. The subject property is located within a special management area (SMA) and will require an SMA permit.

1.1 PROJECT INFORMATION SUMMARY

| | |
|--|---|
| Type of Document: | Environmental Assessment (EA) |
| Project Name: | Alex Stanyon & Scott Anderson Residence |
| Applicants: | Alex Stanyon & Scott Anderson |
| Agent: | Masa Fujioka & Associates (MFA) 98-021 Kamehameha Hwy, Unit 337 Aiea, Hawaii 96701-4914 |
| Accepting Authority: | City and County of Honolulu (CCH) Department of Planning and Permitting (DPP) 650 South King Street, 7th Floor Honolulu, Hawaii 96813 |
| EA Triggers: | Hawaii Revised Statutes (HRS) Chapter 205A, Part II Special Management Areas (SMA) and Revised Ordinances of Honolulu (ROH) Chapter 25, Special Management Area |
| Project Location: | 1 Lumahai Street, Honolulu, Hawaii 96825 |
| Tax Map Keys (TMK) and Landowners: | (1) 3-9-013:030, Alex Stanyon & Scott Anderson |
| Project Area: | 43,435-square feet |
| State Land Use District: | Urban District |
| City & County of Honolulu Zoning: | R-10 (Residential) |
| East Honolulu Sustainable Communities Plan: | State Urban District Residential |
| Special Management Area: | Subject property located within Special Management Area (SMA) |
| Flood Zone: | D/VE (44') |
| Anticipated Determination: | Finding of No Significant Impact (FONSI) |

1.2 OVERVIEW OF PLANNED PROJECT

The subject property site consists of a single, residentially zoned parcel, located on Lumahai Street in the Portlock community of Hawaii Kai, in the Maunaloa section of the East Honolulu



District, on the island of Oahu. The property Tax Map Key (TMK) identifier is (1) 3-9-013:030 (City and County of Honolulu, Department of Budget and Fiscal Services, Real Property Assessment Division [DBEDT], September 2021). The project location is depicted in Figure 1-1. The property is currently vacant. Foundation remnants from a previous single-family dwelling are visible on the property. The current property owners have elected to construct a new two-story single-family residential dwelling on the property. The proposed architectural design drawings for the project are shown in Figure 1-2.



Figure 1-1. Project location map.

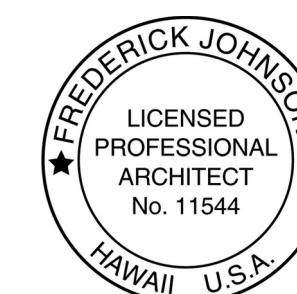




1 Lumahai Residence

A New 2-Story Single Family Dwelling for:

Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu, Hawaii 96825
TMK: 3-9-013:030



This work was prepared by me or under my supervision and construction of this project will be under my observation (Supervision of construction as defined in Section 16-62.2 of Title 16, Department of Commerce and Consumer Affairs - Chapter 62, Board of Professional Engineers, Architects and Surveyors of the State of HAWAII.)
Signature: _____ Date: 4/30/22

PROJECT INFORMATION

OWNER:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu, HI 96825

PROJECT ADDRESS:
1 Lumahai Street
Honolulu, HI 96825

TMK:
3-9-013-030

ZONING:
R-10 Residential

HEIGHT LIMIT:
25'

SETBACKS:
Front: 10'
Side: 5'
Rear: 5'
Shoreline: 40'

SMA AREA:
Yes

SLIDE AREA:
None

SPECIAL DISTRICT:
Not in Special District

STATE LAND USE:
Urban District

FLOOD ZONE:
D/VE

LOT AREA:
43,435 sq.ft.

USE:
Dwellings, detached, one-family

Fritz Johnson Architect

Fritz Johnson Architect
1021 Smith Street Ste 400
Honolulu, HI 96811
P: 808.282.5955
F: 808.525.7160
info@fritzjohnsonarchitect.com



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1 Lumahai

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

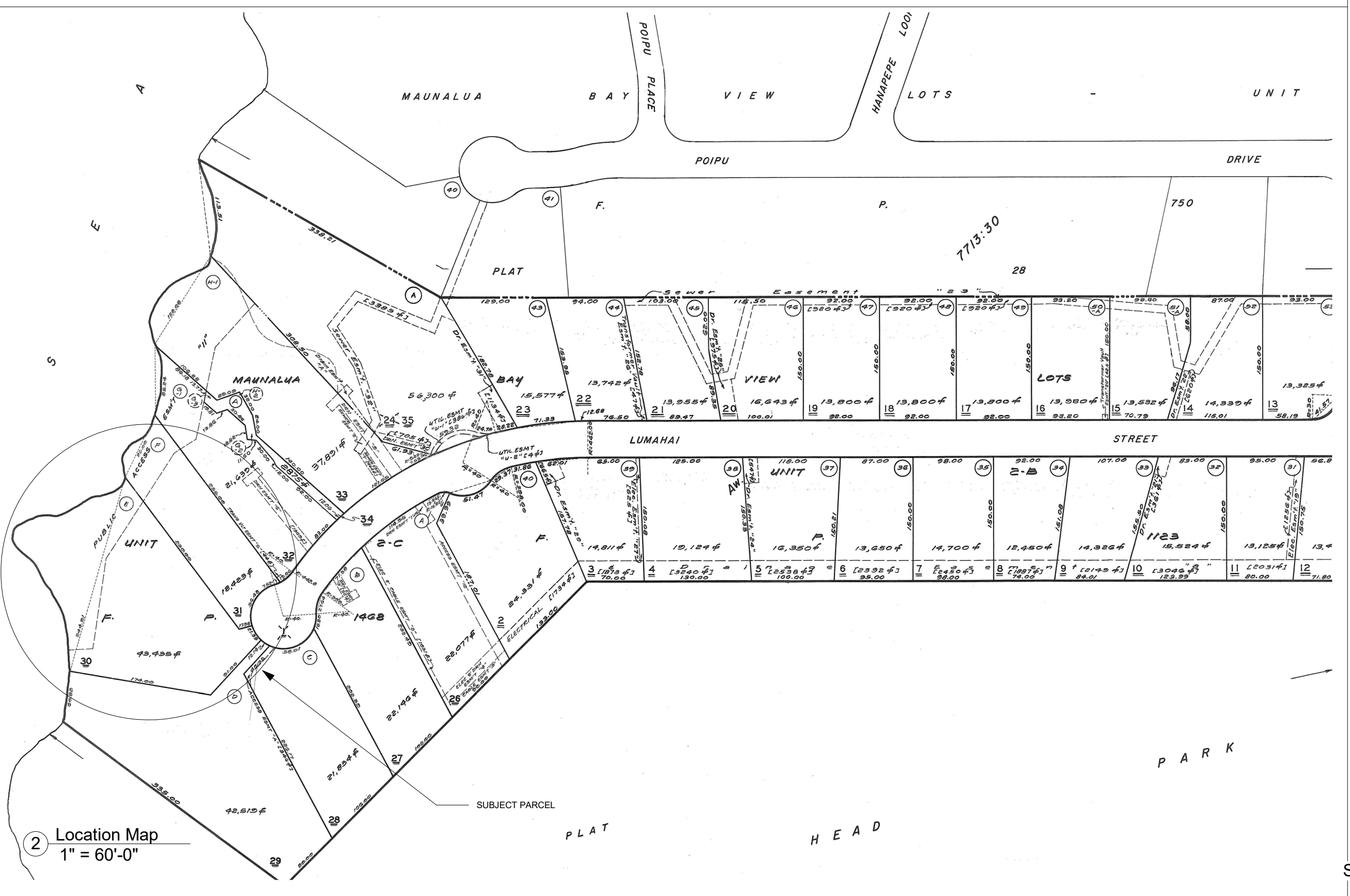
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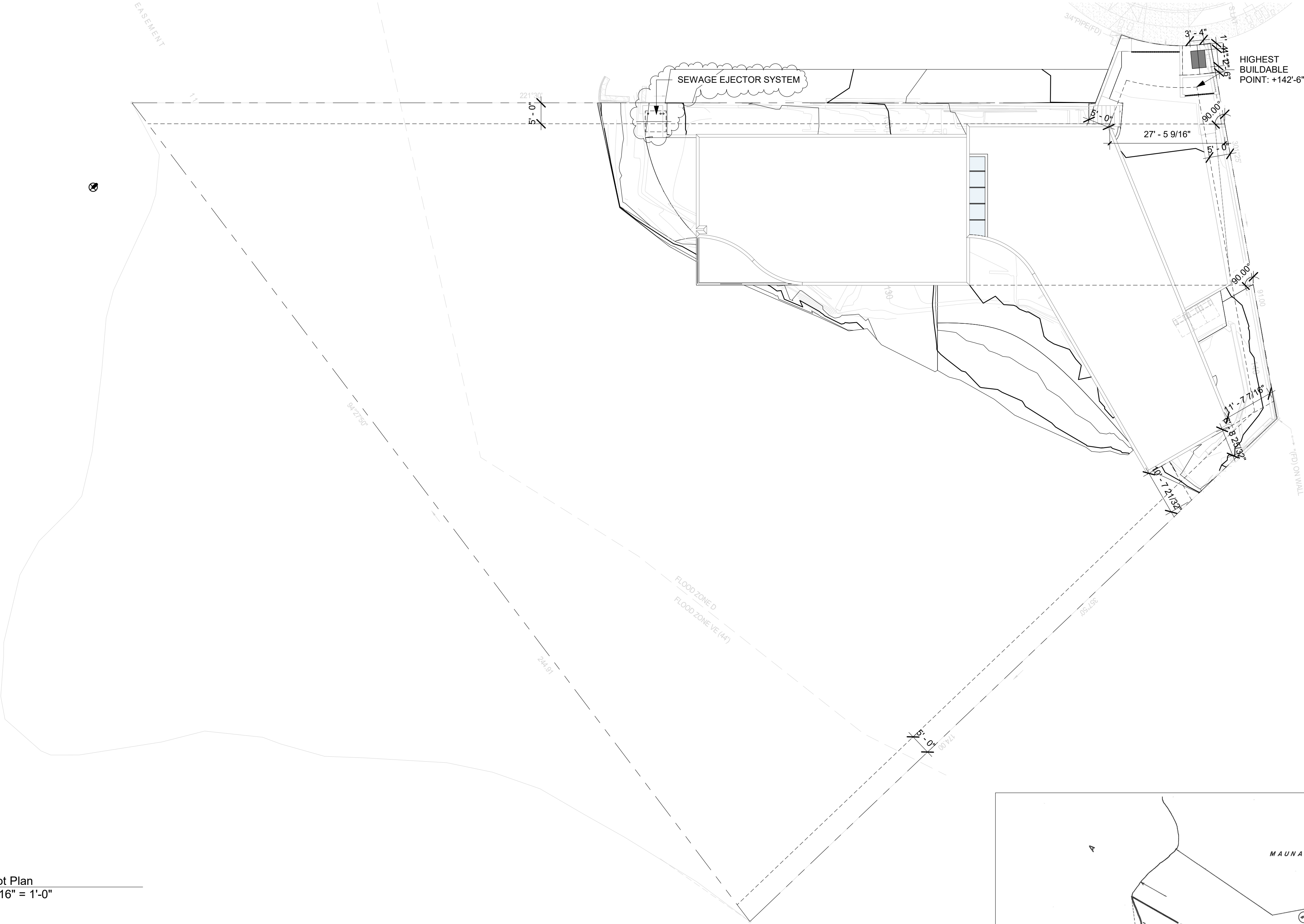
Site / Code
As indicated

A001

SHEET ISSUE DATE: 03/04/21



2 Location Map
1" = 60'-0"



1 Plot Plan
1/16" = 1'-0"

Fritz Johnson Architect

Fritz Johnson Architect
 1021 Smith Street Ste 400
 Honolulu, HI 96811
 P: 808.282.9995
 F: 808.625.7150
 info@fritzjohnsonarchitect.com



This work was prepared by me or under my supervision and construction of this project will be under my observation (Supervision of construction as defined in Section 16-82.2 of Title 16, Department of Commerce and Consumer Affairs - Chapter 62, Board of Professional Engineers, Architects and Surveyors of the State of Hawaii).

Signature: 4/30/22
 Expiration Date:

1 Lumahai

Client:
 Alex Stanyon & Scott Anderson
 1 Lumahai Street
 Honolulu HI 96825

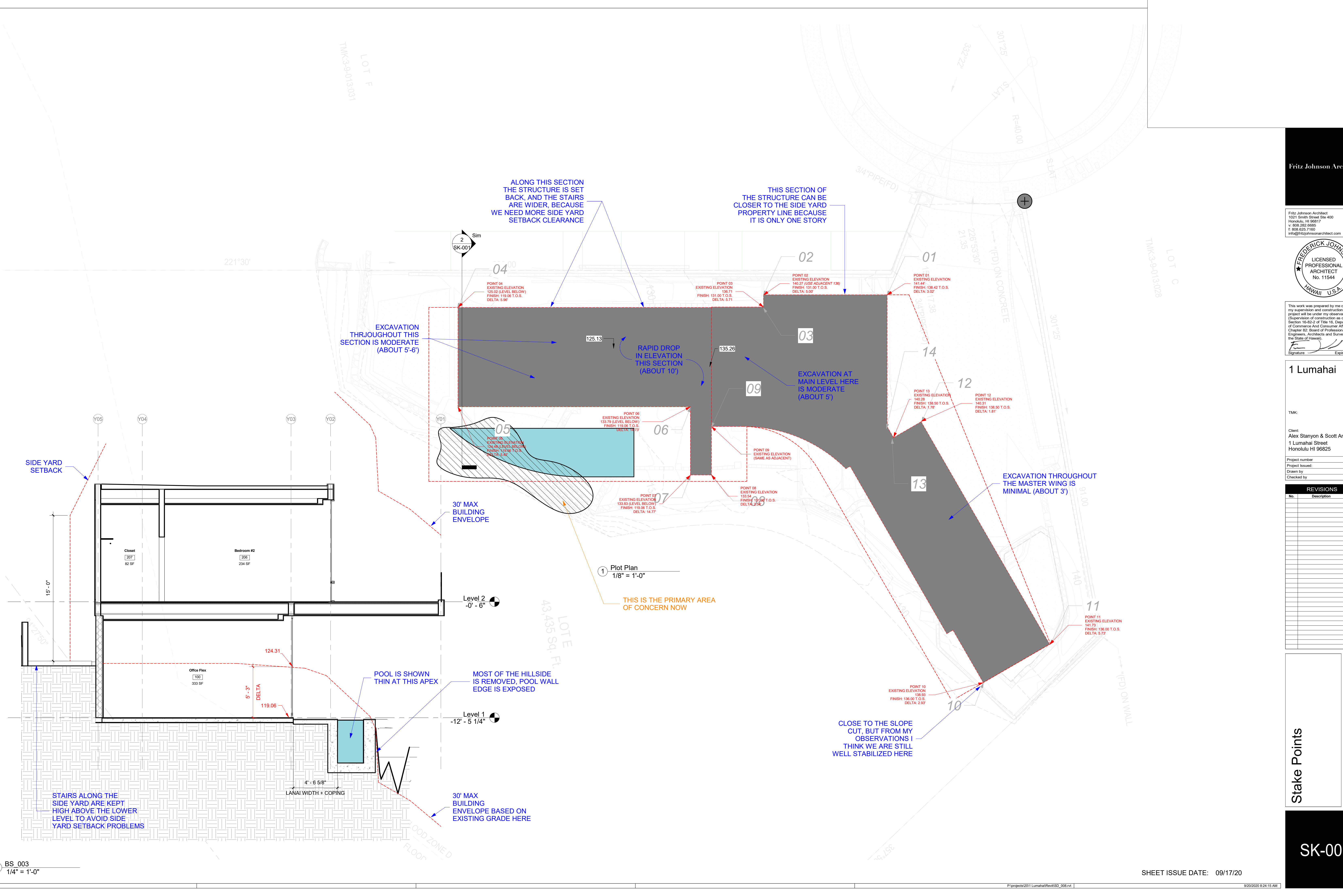
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Stake Points
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SK-001



2 BS_003
 1/4" = 1'-0"

SHEET ISSUE DATE: 09/17/20

PROJECT INFORMATION

OWNER:
 Alex Stanyon & Scott Anderson
 1 Lumahai Street
 Honolulu, HI 96825

PROJECT ADDRESS:
 1 Lumahai Street
 Honolulu, HI 96825

TMK:
 3-9-013-030

ZONING:
 R-10 Residential

HEIGHT LIMIT:
 25'

SETBACKS:
 Front: 10'
 Side: 5'
 Rear: 5'
 Shoreline: 40'

SMA AREA:
 Yes

SLIDE AREA:
 None

SPECIAL DISTRICT:
 Not in Special District

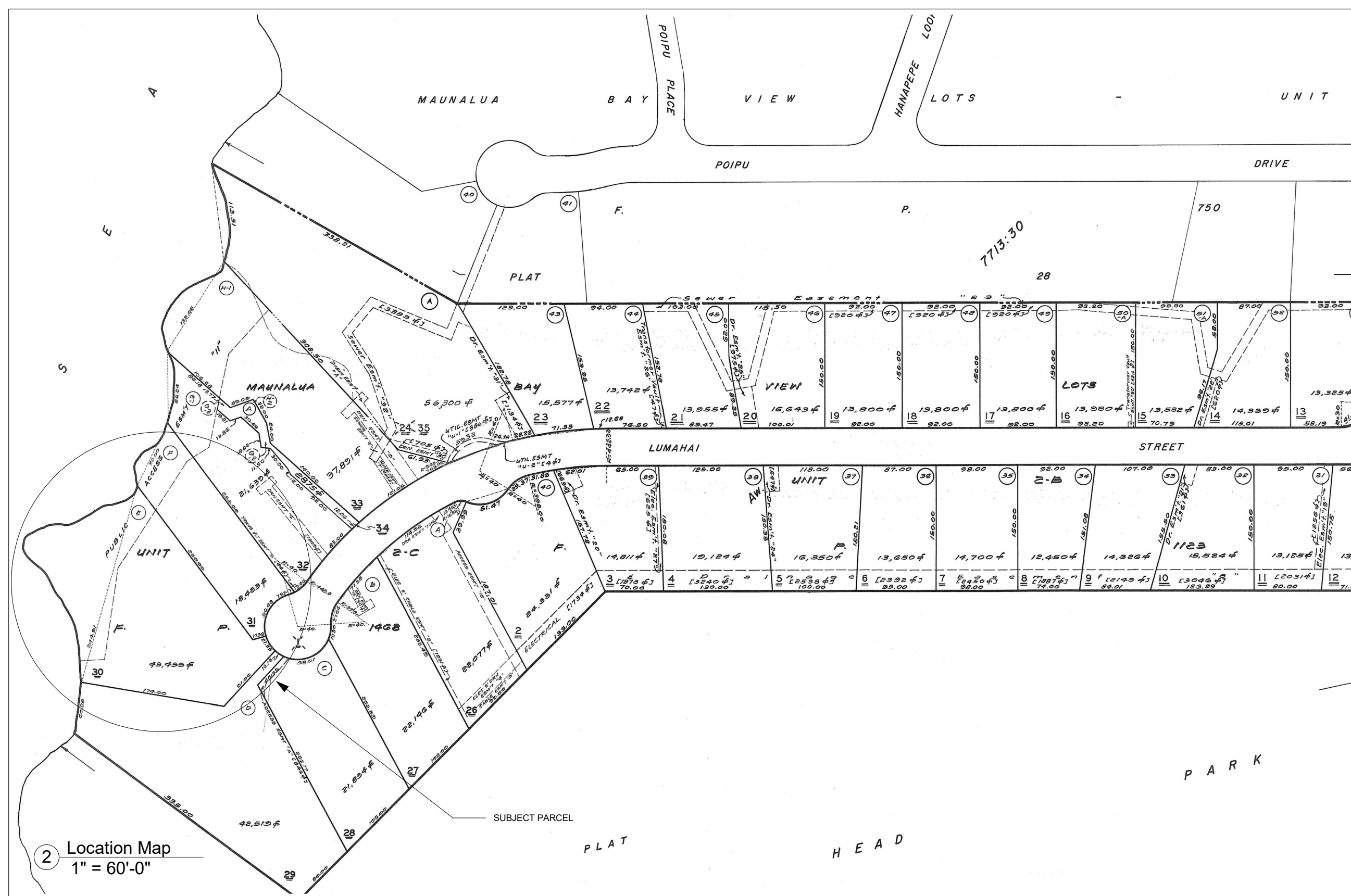
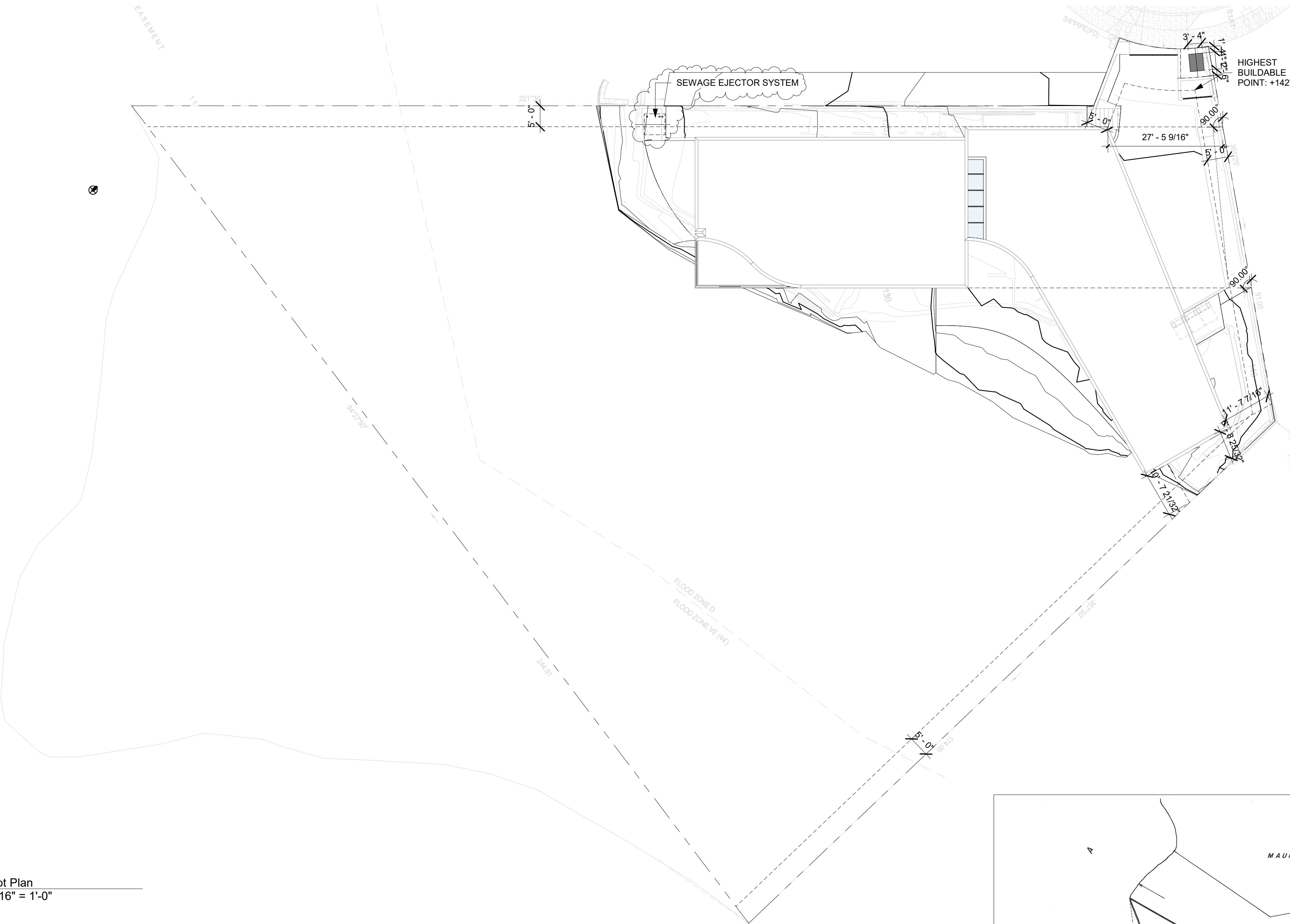
STATE LAND USE:
 Urban District

FLOOD ZONE:
 D/VE

LOT AREA:
 43,435 sq.ft.

USE:
 Dwellings, detached, one-family

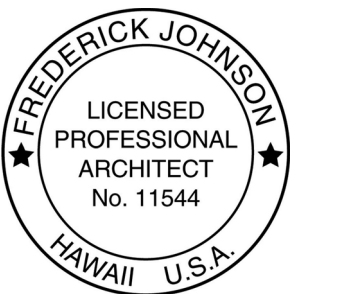
1 Plot Plan
 1/16" = 1'-0"



2 Location Map
 1" = 60'-0"

Fritz Johnson Architect

Fritz Johnson Architect
 1021 Smith Street Ste 400
 Honolulu, HI 96811
 P: 808.282.5595
 F: 808.525.7160
 info@fritzjohnsonarchitect.com



This work was prepared by me or under my supervision and construction of this project will be under my observation. (Supervision of construction as defined in Section 16-82.2 of Title 16, Department of Commerce and Consumer Affairs - Chapter 62, Board of Professional Engineers, Architects and Surveyors of the State of Hawaii.)

Signature: *[Signature]* 4/30/22
 Expiration Date: _____

1 Lumahai

TMK:

Client:
 Alex Stanyon & Scott Anderson
 1 Lumahai Street
 Honolulu HI 96825

| | |
|----------------|------------|
| Project number | 20.003 |
| Project Issued | Issue Date |
| Drawn by | Author |
| Checked by | Checker |

REVISIONS

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Site / Code
 As indicated

A001

F:\projects\2011 Lumahai\Revised_011.rvt 4/27/2021 9:53:05 AM

NOTES

- FIRM DATA**
FLOOD ZONE: DIVE(44)
COMMUNITY NO: 150001

FIRM INDEX DATE: 11/05/2014
LETTER OF MAP CHANGE: NONE
FEMA FIRM PANEL: 15003C0393G
PANEL EFFECTIVE DATE: 1/19/2011

(TAKEN FROM STATE OF HAWAII - NFIP, FLOOD HAZARD ASSESSMENT TOOL
<http://gis.hawaii.gov/fip/>)
- PARKING**
TOTAL PARKING STALLS: 0
DESIGNATED AS HANDICAPPED: 0
- BUILDING SETBACK LINES**

LAND USE ORDINANCE ZONING: R-10 (RESIDENTIAL)
TABLE: 21-3.2
FRONT YARD SETBACK: 10-FT
REAR AND SIDE YARD SETBACKS: 5-FT

(TAKEN FROM LAND USE ORDINANCE, CITY AND COUNTY OF HONOLULU)

4. ALL VISIBLE UTILITY STRUCTURES HAVE BEEN LOCATED IN THE FIELD, HOWEVER, CONNECTION OF UNDERGROUND UTILITY LINES AS SHOWN ARE AND COMPILED FROM EXISTING DATA. UN-VERIFIED

UNDERGROUND UTILITIES SHOWN HEREON ARE FOR INFORMATION ONLY. HAVING BEEN OBTAINED FROM THE BEST AVAILABLE SOURCES, BUT FROM OTHERS NOT CONNECTED WITH THIS COMPANY. THEREFORE, NO GUARANTEE IS MADE ON THE ACCURACY OR COMPLETENESS OF SAID INFORMATION.

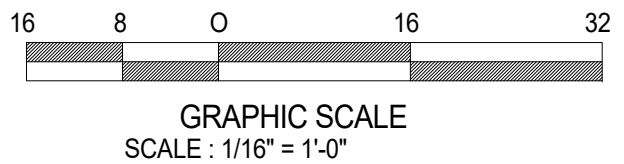
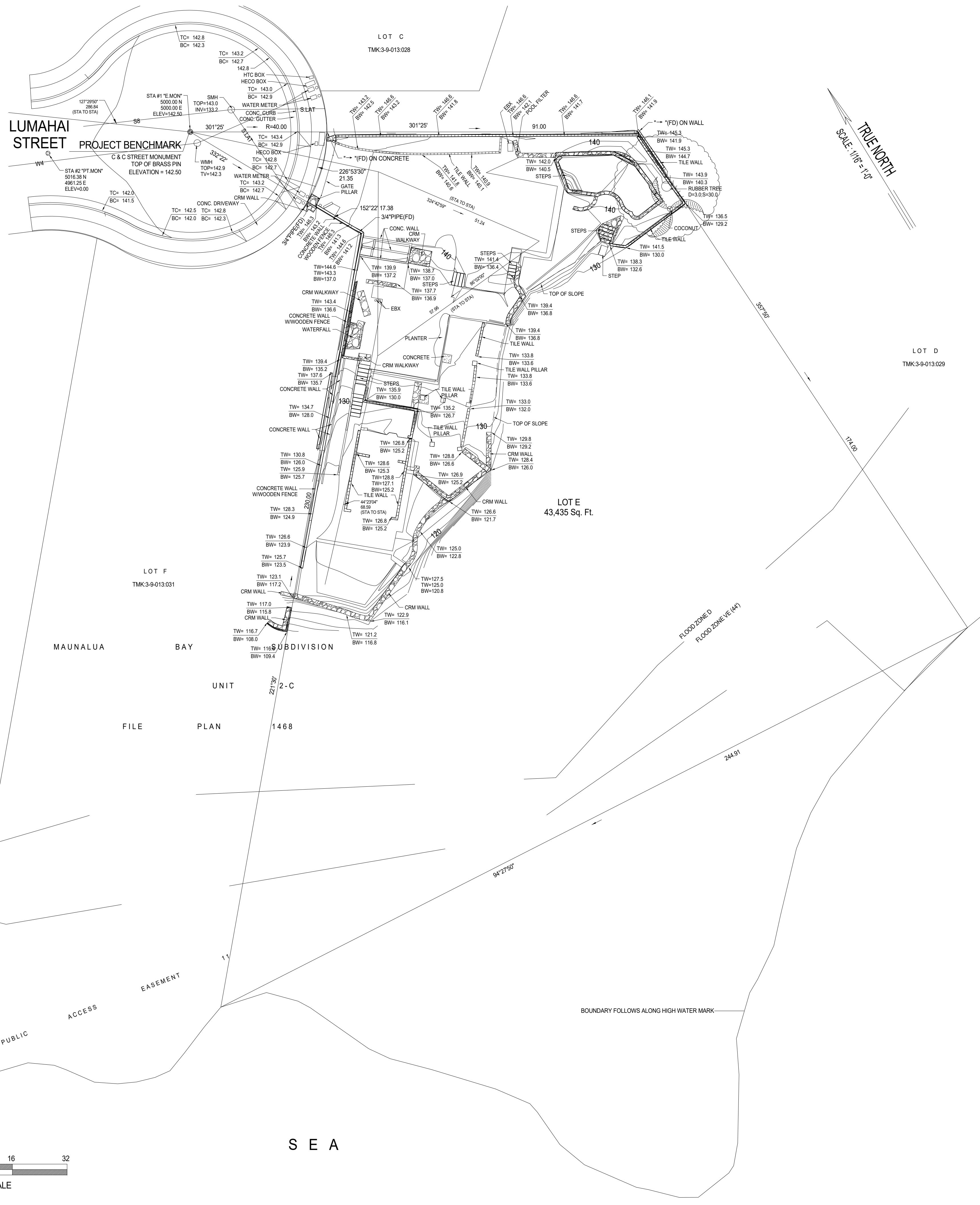
LEGEND

LINEWORK

| | |
|----------|-----------------------------|
| (---) | PRIMARY BOUNDARY LINE |
| (--- | TITLE LINE |
| (--- | SUPPLEMENTARY BOUNDARY LINE |
| (--- | EASEMENT LINE |
| (--- --- | BUILDING LINE |
| (-G- | UNDERGROUND GASLINE |
| (-W- | UNDERGROUND WATER |
| (-S- | UNDERGROUND SEWER |
| (-D- | UNDERGROUND STORM DRAIN |
| (--- | FENCE LINE |
| (--- | PARKING/STRIPING LINE |
| (--- | FLOOD ZONE |
| (--- | TOP OF SLOPE |

SYMBOLS

| | |
|------|-----------------------------------|
| A.C | ASPHALTIC CONCRETE |
| ACU | AIR CONDITIONING UNIT |
| AL | AREA LIGHT |
| ARV | AIR RELIEF VALVE |
| ASP | AUTO SPRINKLER (FIRE PROTECTION) |
| BFP | BACK FLOW PREVENTER |
| CATV | CABLE TELEVISION BOX |
| CB | CATCH BASIN |
| CBMH | CATCH BASIN MANHOLE |
| COMM | COMMUNICATIONS BOX |
| DI | DRAIN INLET |
| EBX | ELECTRICAL BOX |
| FH | FIRE HYDRANT |
| GTMH | GREASE TRAP MANHOLE |
| GV | GUY WIRE |
| HECO | HAWAIIAN ELECTRIC COMPANY |
| HEMH | HAWAIIAN ELECTRIC MANHOLE |
| HTCO | HAWAIIAN TEL.COM (COMMUNICATIONS) |
| HTMH | HAWAIIAN TEL.COM MANHOLE |
| ICB | IRRIGATION CONTROL BOX |
| ICV | IRRIGATION CONTROL VALVE |
| LP | LAMP POST |
| MW | MONITORING WELL |
| NWMH | NONPOTABLE WATER MANHOLE |
| NWV | NONPOTABLE WATER VALVE |
| PALM | PALM TREE |
| PP | POWER POLE |
| SDMH | STORM DRAIN MANHOLE |
| SLB | STREET LIGHT BOX |
| SMH | SEWER MANHOLE |
| SP | SIGN POST |
| STL | STREET LIGHT |
| TSB | TRAFFIC SIGNAL BOX |
| TYP | TYPICAL FEATURE |
| UBX | UTILITY BOX |
| UMH | UTILITY MANHOLE |
| UP | UTILITY POLE |
| WCR | WHEEL CHAIR RAMP |
| WM | WATER METER |
| WMH | WATER MANHOLE |
| WV | WATER VALVE |



1 Plot Plan
1/16" = 1'-0"

JOHN R. K. AKIMA
LICENSED PROFESSIONAL LAND SURVEYOR
No. 16252
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
John R. K. Akima
Exp. 04/30/22

**MAP SHOWING
TOPOGRAPHIC SURVEY
AFFECTING
LOT E
MAUNALUA BAY VIEW SUBDIVISION
UNIT 2C
FILE PLAN 1468
AT MAUNALUA, HONOLULU, OAHU, HAWAII**

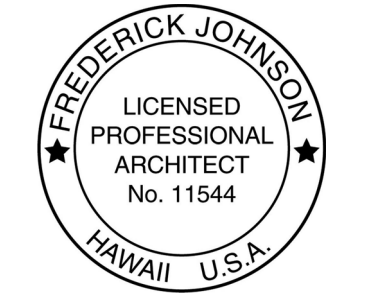
SCALE: 1/16" = 1' - 0"
JULY 8, 2020 WALTER P. THOMPSON, INC.



SHEET ISSUE DATE: 03/04/21

Fritz Johnson Architect

Fritz Johnson Architect
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Signature: 4/30/22
Expiration Date:

1 Lumahai

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

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| Project number: | 20.003 |
| Project Issued: | Issue Date |
| Drawn by: | Author |
| Checked by: | Checker |

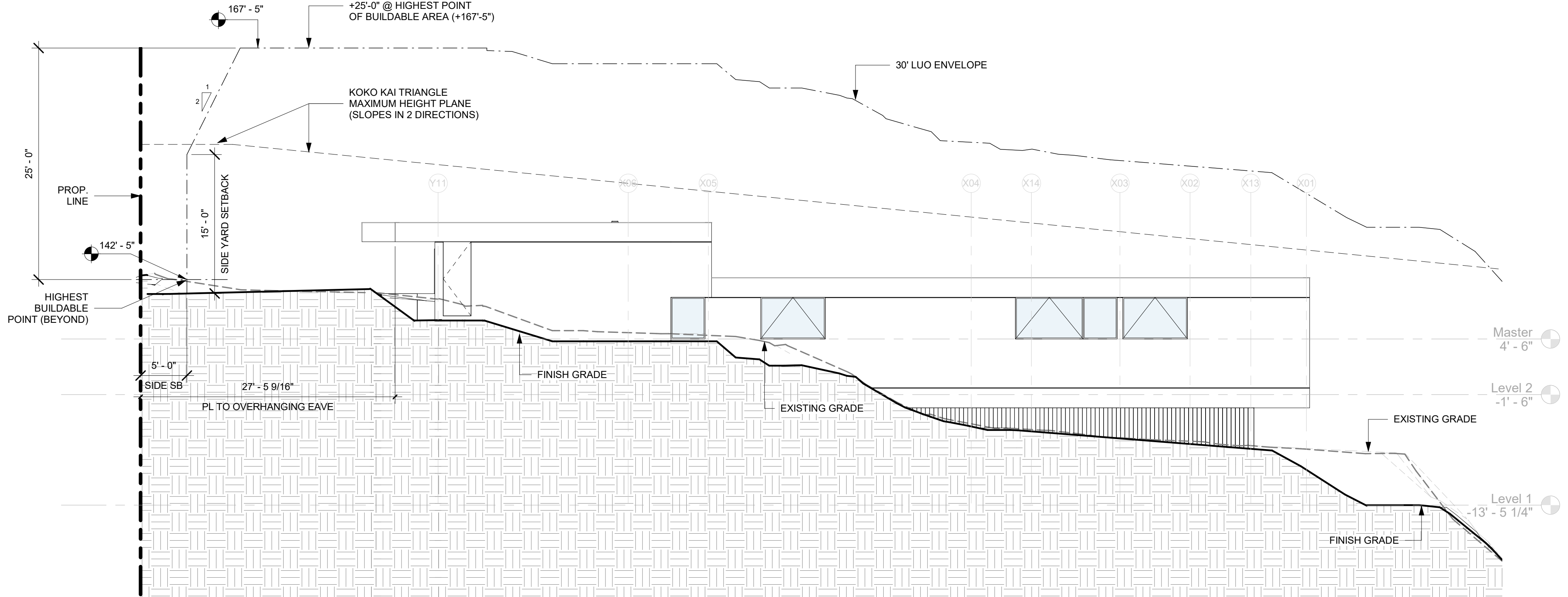
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Plot Plan

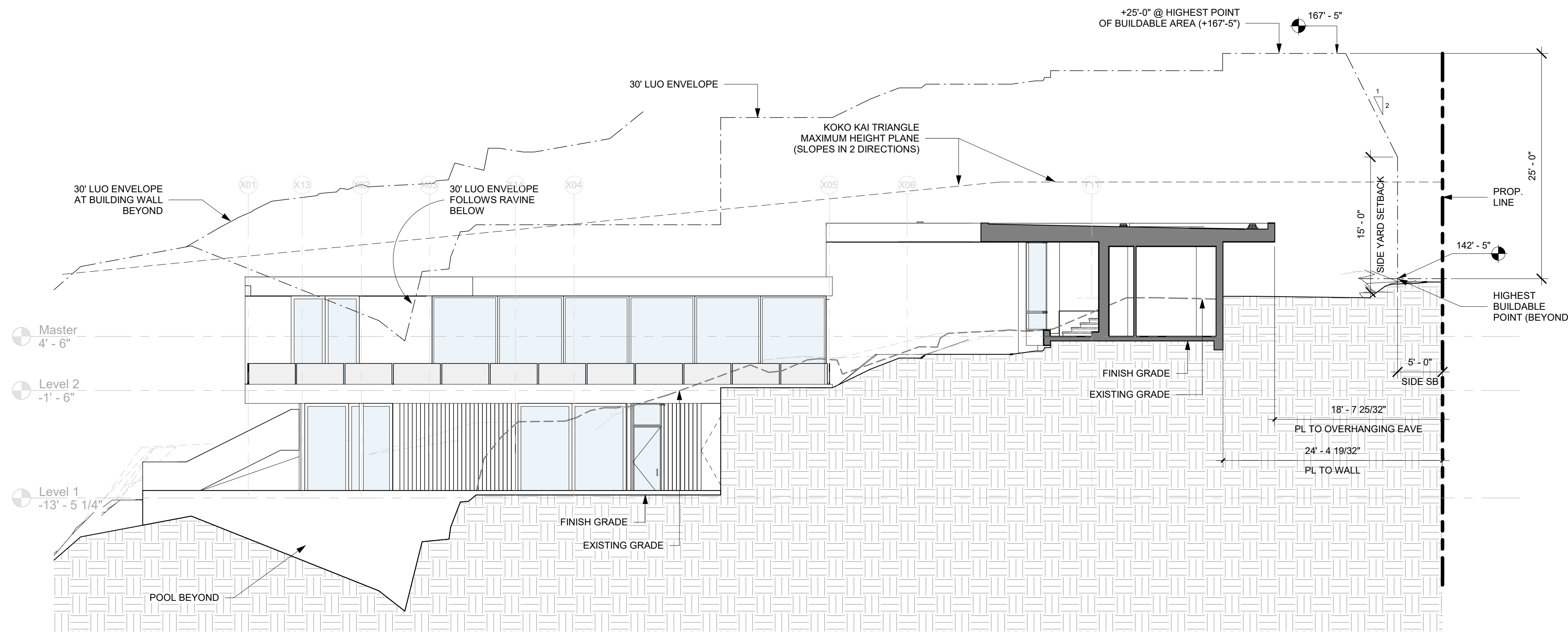
1/16" = 1'-0"

A002

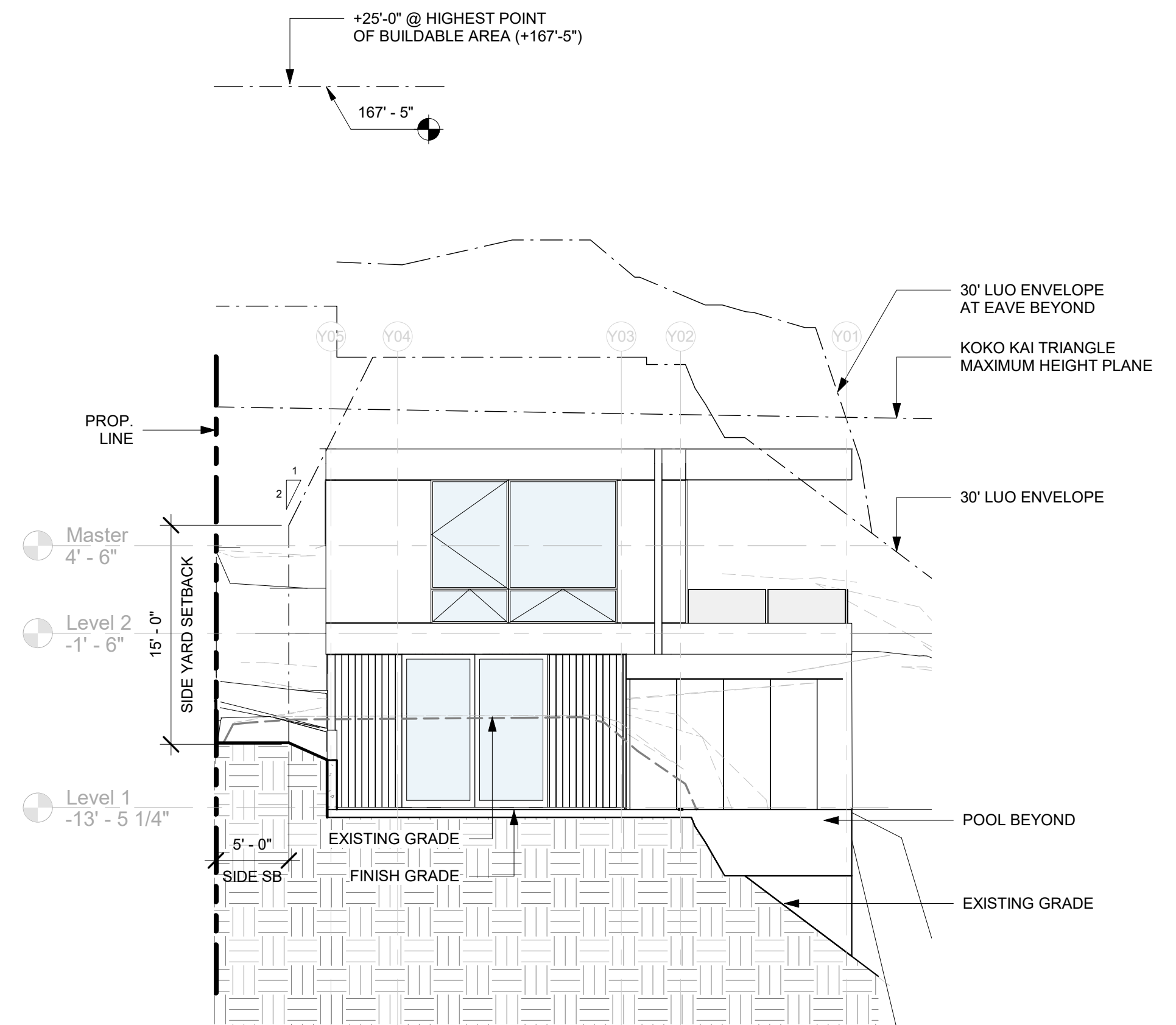
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1 Building Elevation
1/8" = 1'-0"



2 Building Elevation
1/8" = 1'-0"



3 Building Elevation
1/8" = 1'-0"

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Signature: [Signature]
4/30/22
Expiration Date

1 Lumahai

TMK:

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

| | |
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| Project number | 20.003 |
| Project Issued: | Issue Date |
| Drawn by | Author |
| Checked by | Checker |

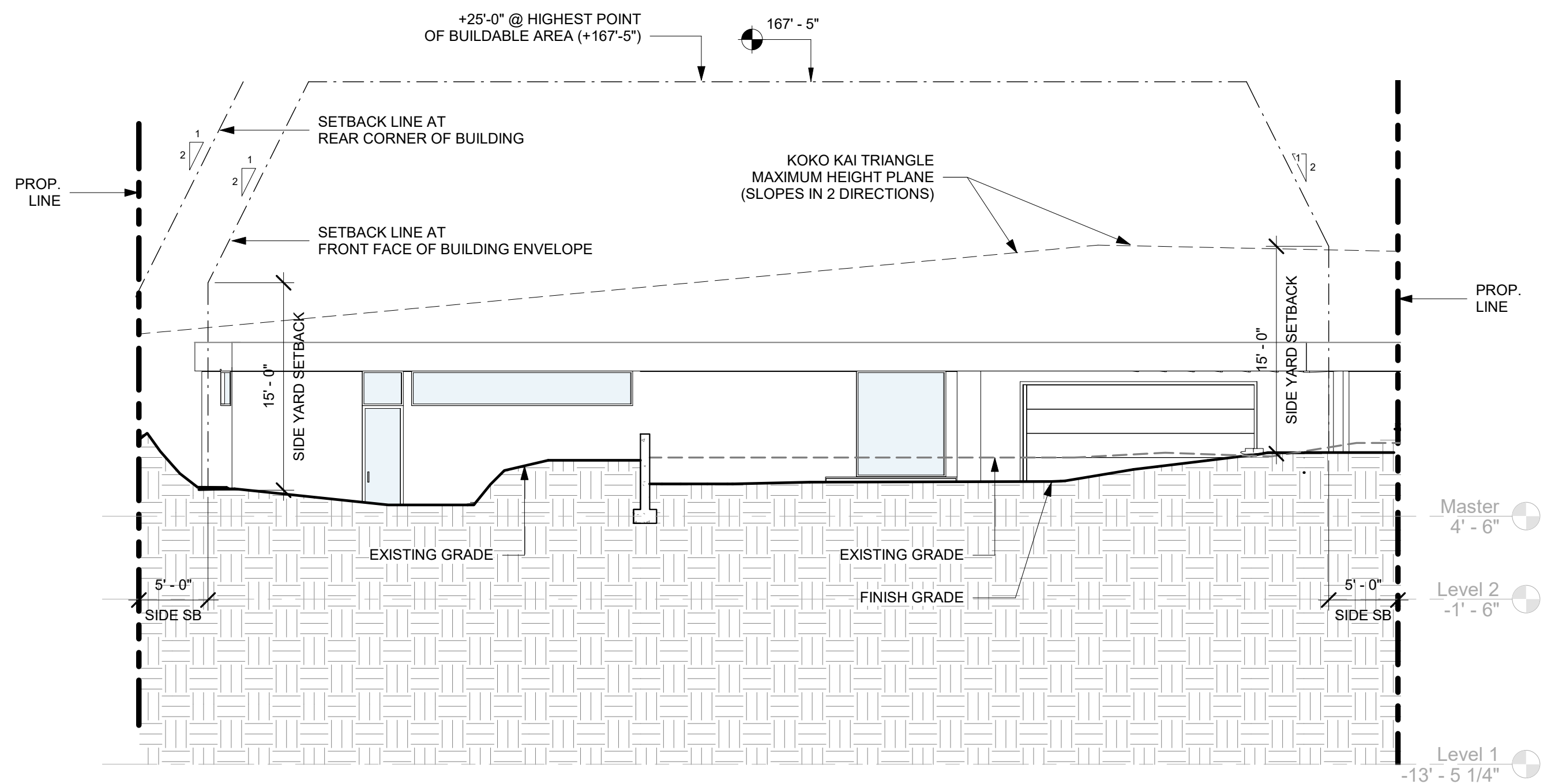
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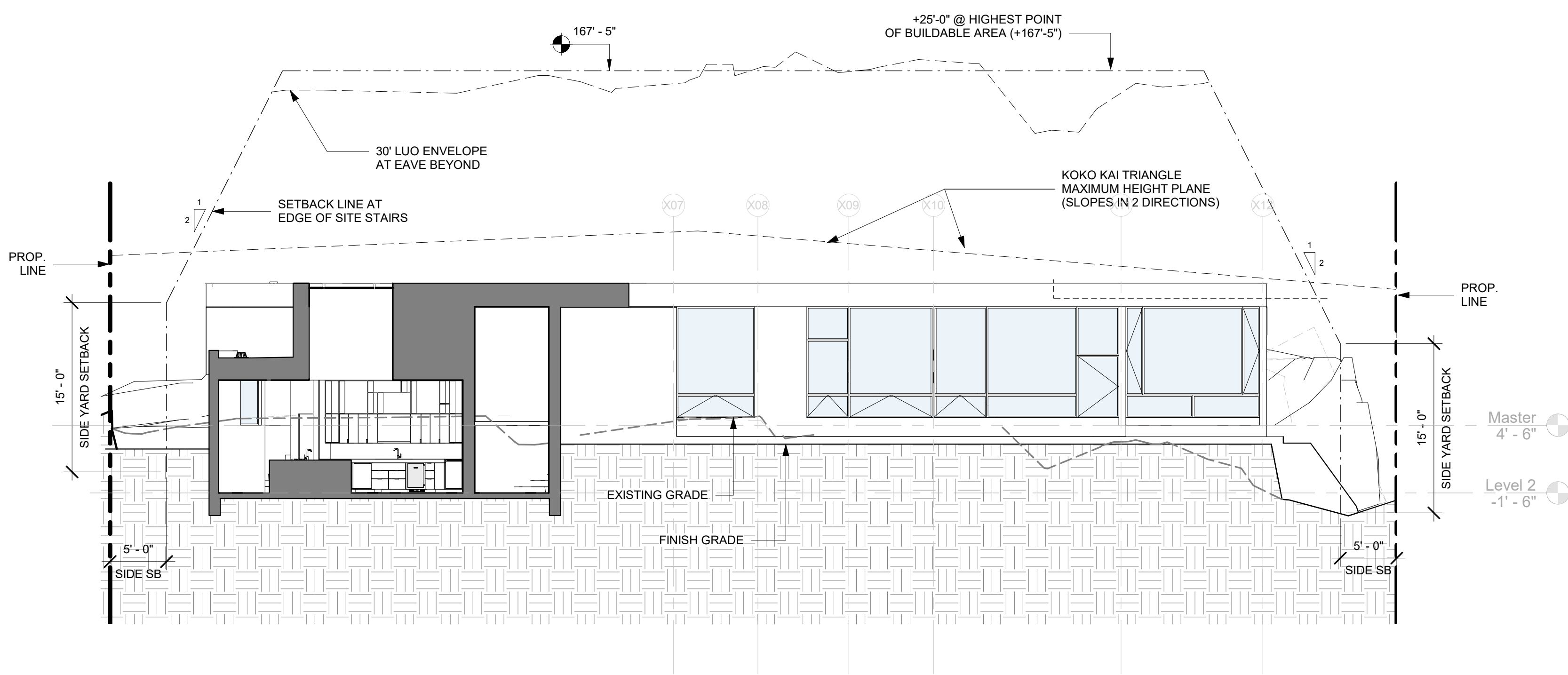
LUO Diagrams

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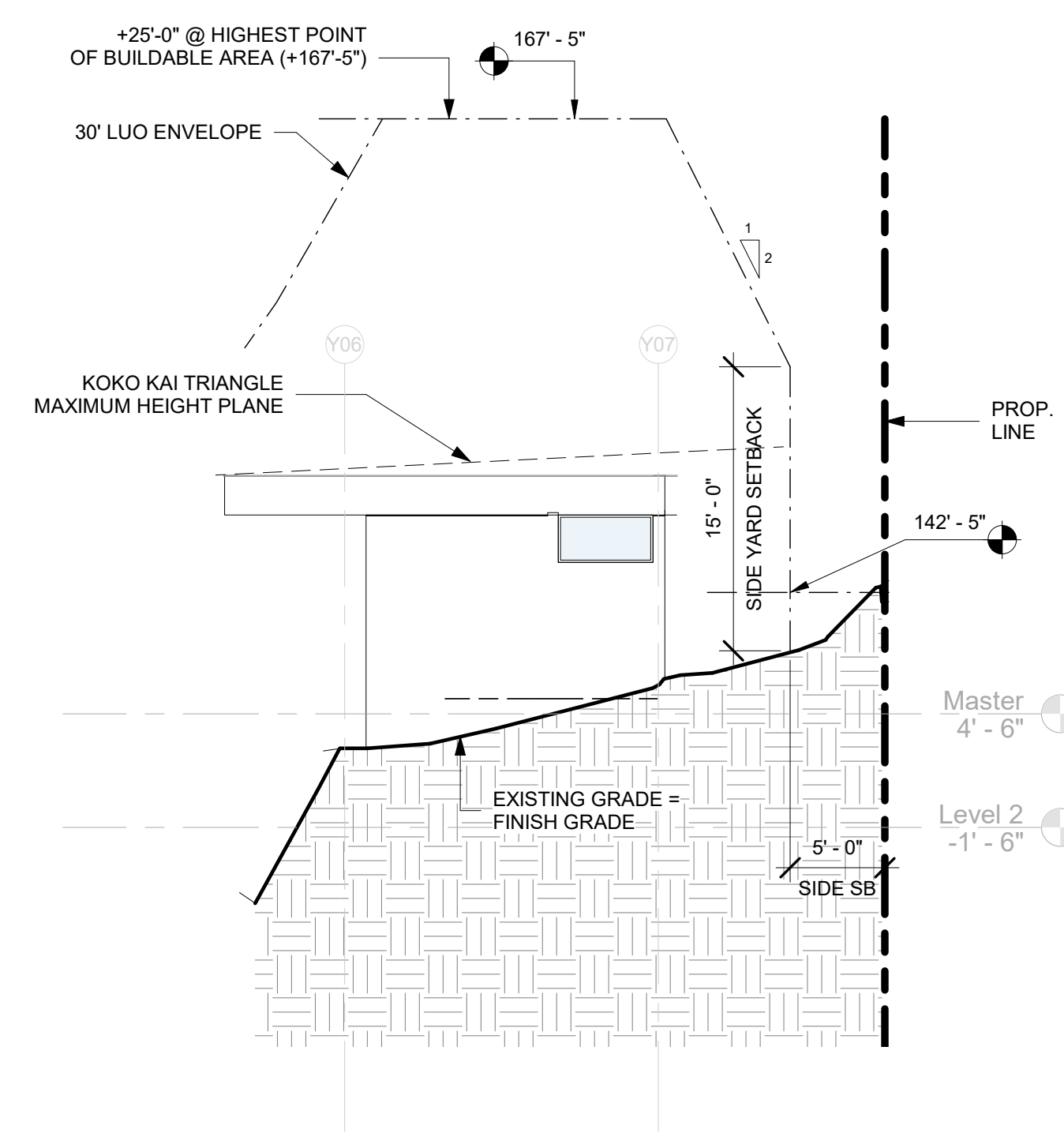
A003



2 Building Elevation
1/8" = 1'-0"

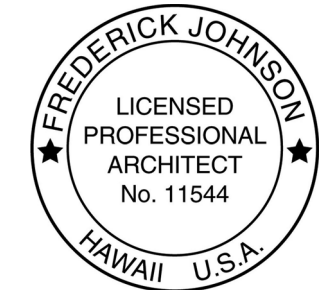


3 Building Elevation
1/8" = 1'-0"



1 Building Elevation
1/8" = 1'-0"

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1 Lumahai

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Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

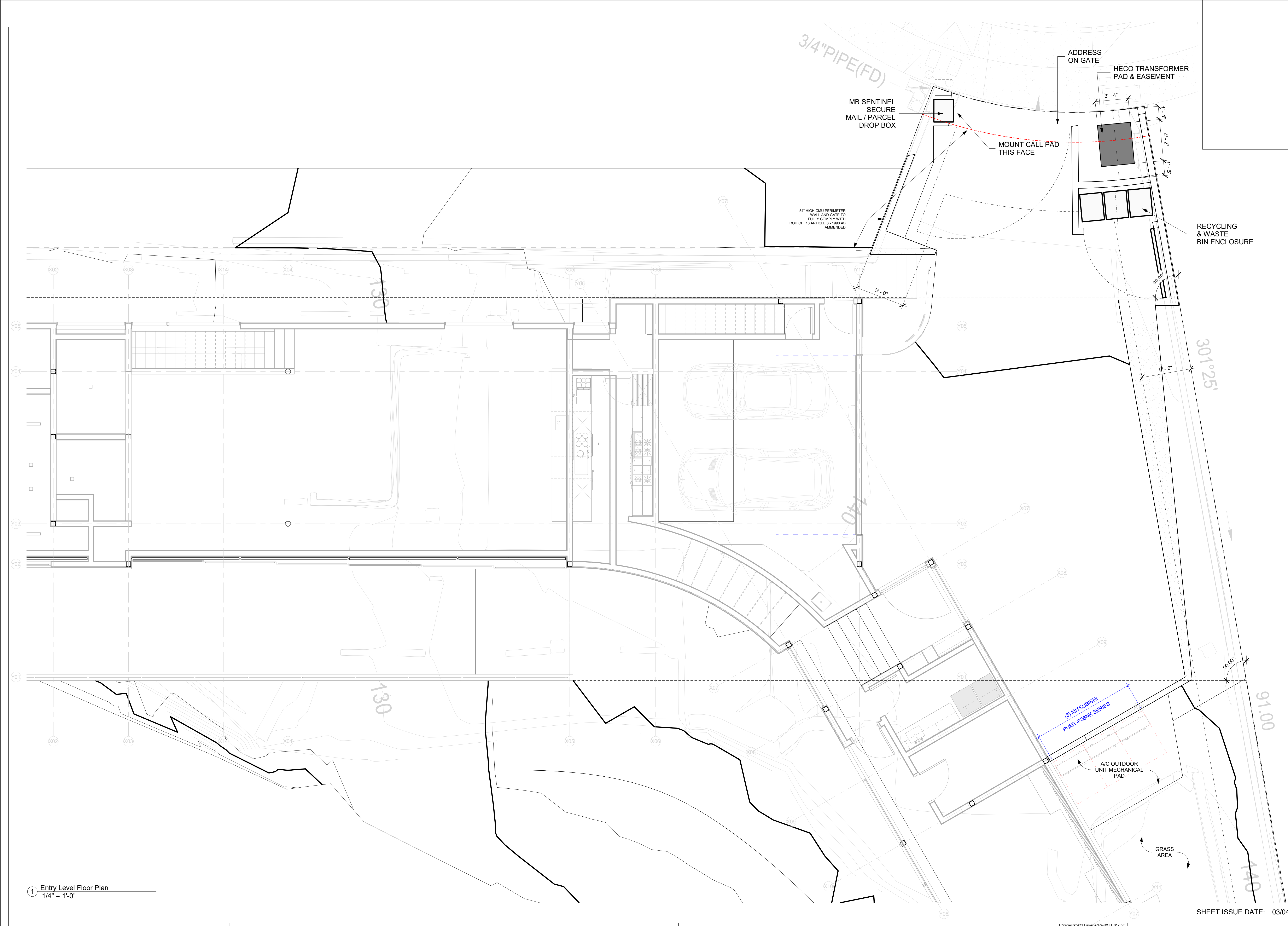
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LUO Diagrams
1/8" = 1'-0"

A004



1 Entry Level Floor Plan
1/4" = 1'-0"

SHEET ISSUE DATE: 03/04/21

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Fritz Johnson 4/30/22
Signature Expiration Date

1 Lumahai

TMK:

Client:
Alex Stanyon & Scott Anderson
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Honolulu HI 96825

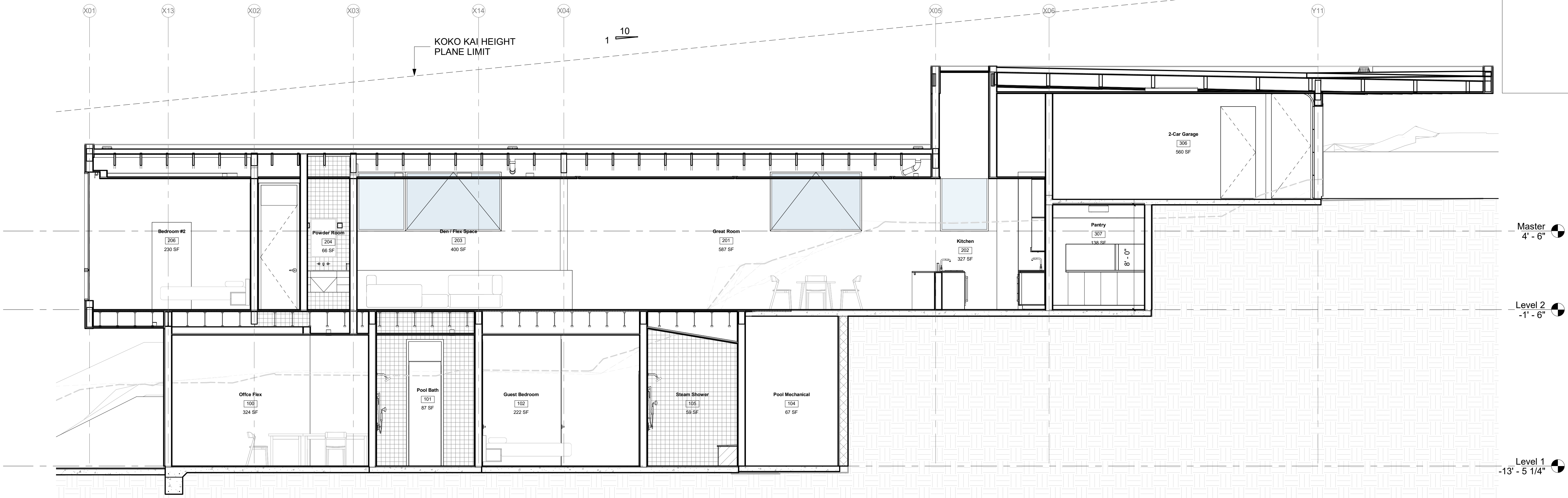
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| Project Issued | Issue Date |
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| Checked by | Checker |

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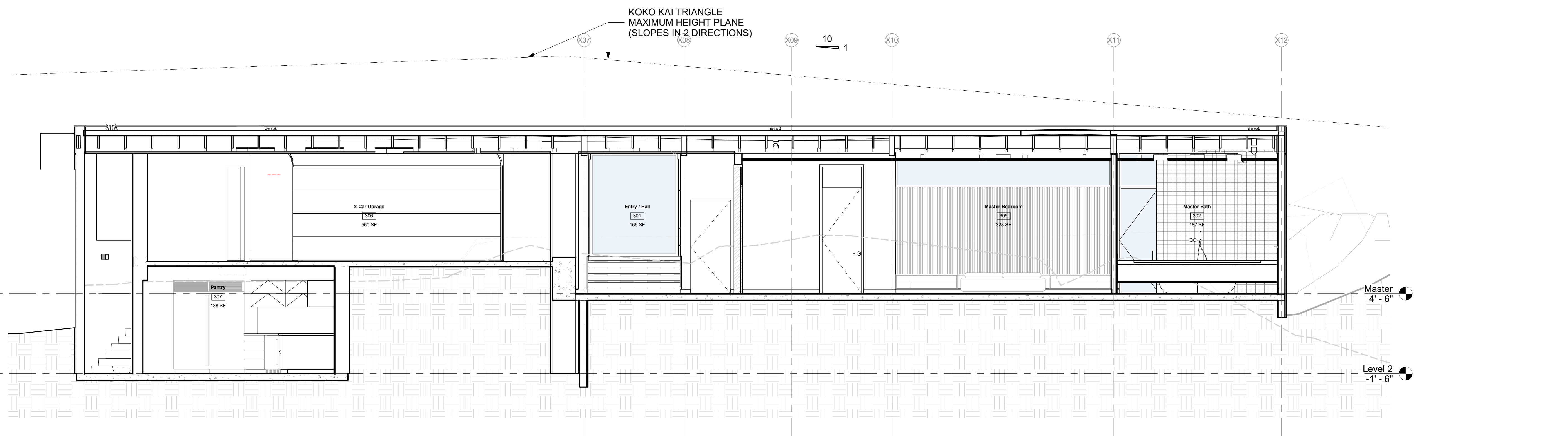
Partial Plan @ Driveway

1/4" = 1'-0"

A005



① Building Section
1/4" = 1'-0"



② Building Section
1/4" = 1'-0"

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FREDERICK JOHNSON
LICENSED PROFESSIONAL ARCHITECT
No. 11544
HAWAII U.S.A.

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4/30/22
Expiration Date

1 Lumahai

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

Project number: 20.003
Project Issued: Issue Date
Drawn by: Author
Checked by: Checker

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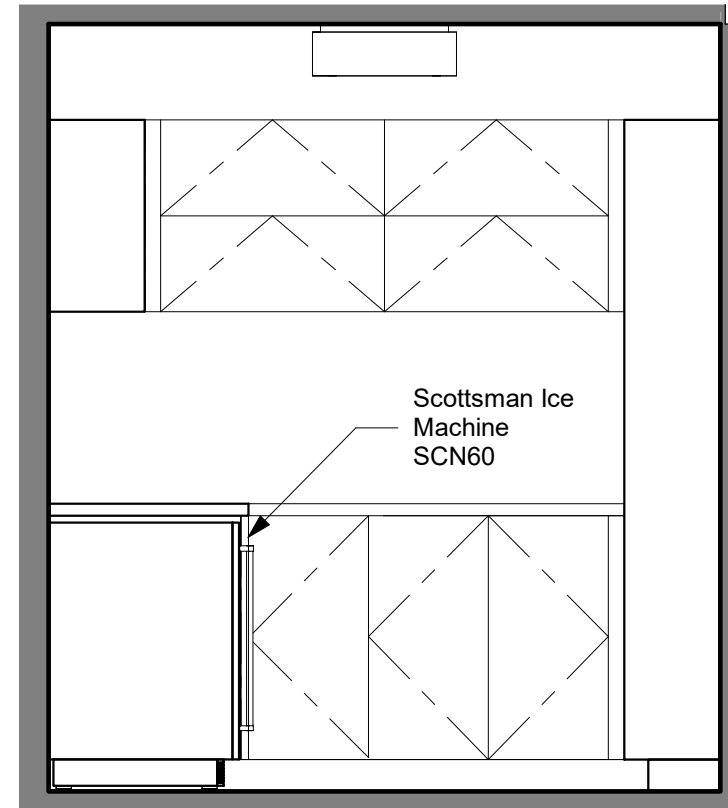
Building Sections

A205

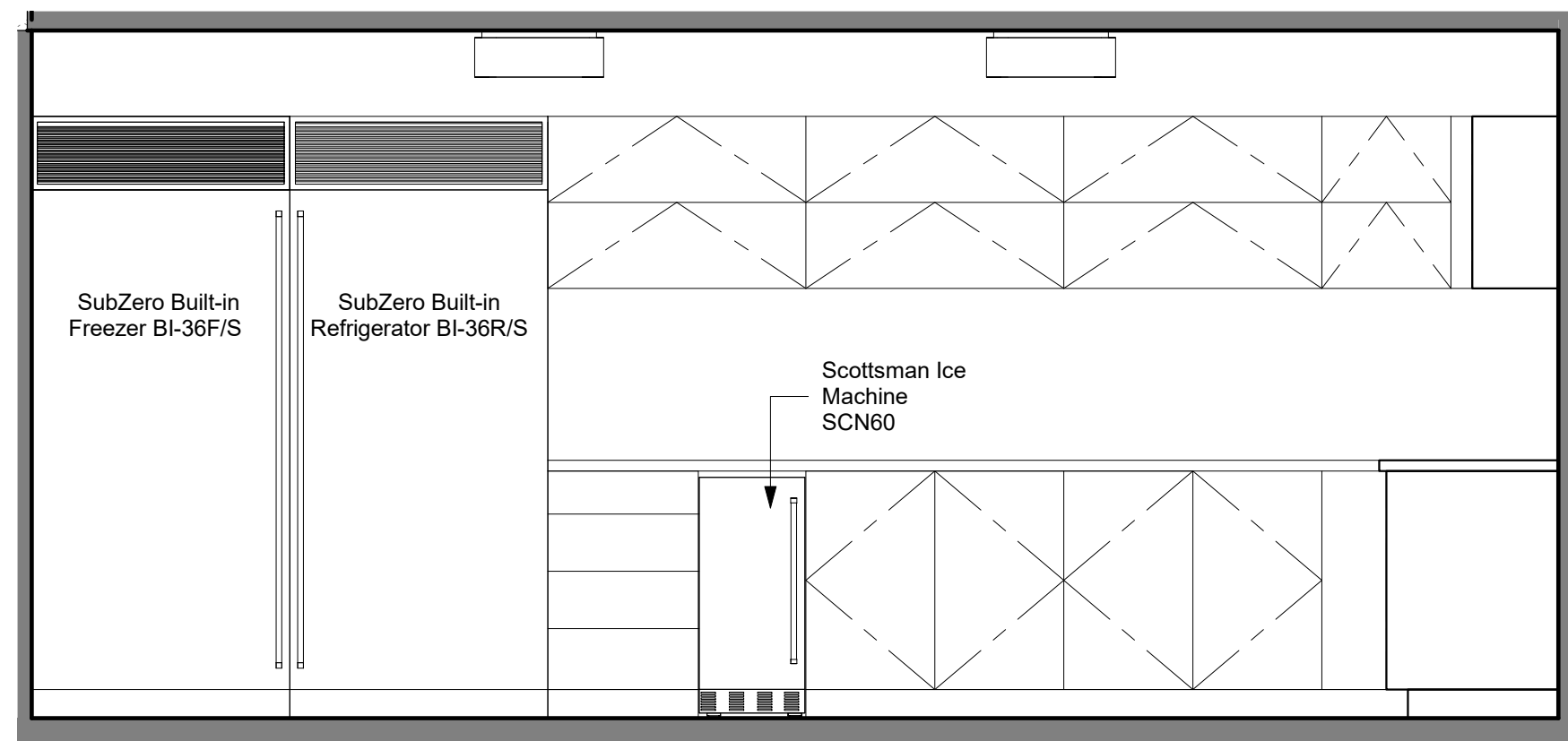
SHEET ISSUE DATE: 03/04/21



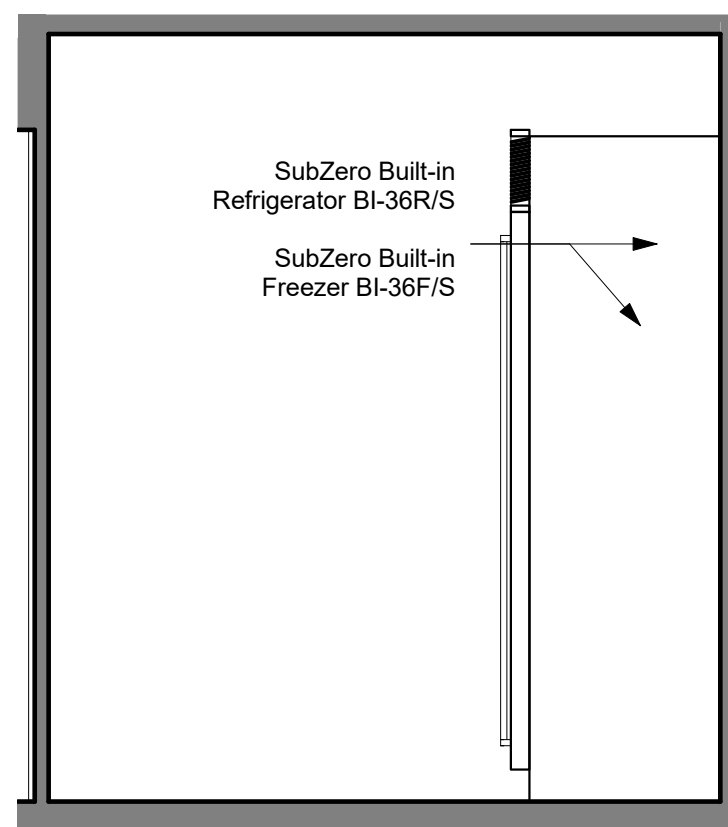
11 Pantry Elev. D
1/2" = 1'-0"



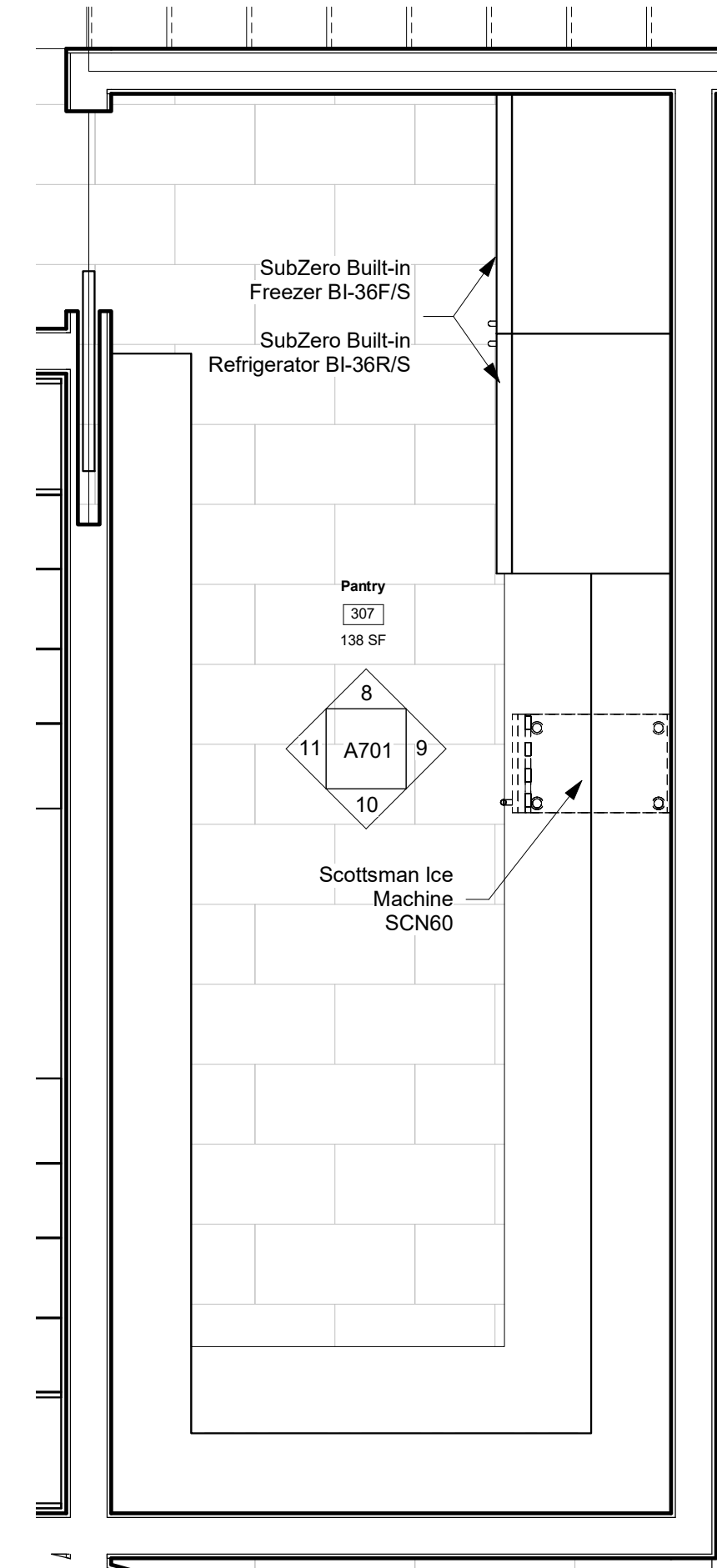
10 Pantry Elev. C
1/2" = 1'-0"



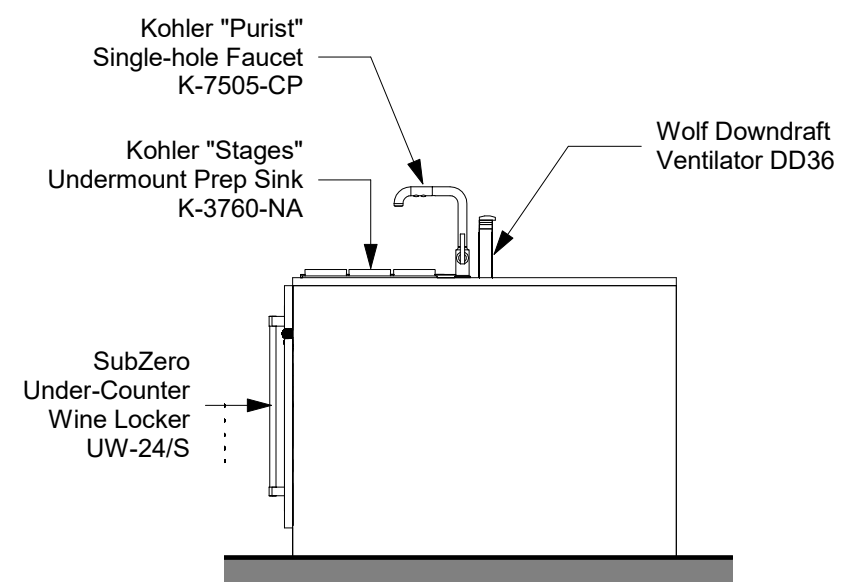
9 Pantry Elev. B
1/2" = 1'-0"



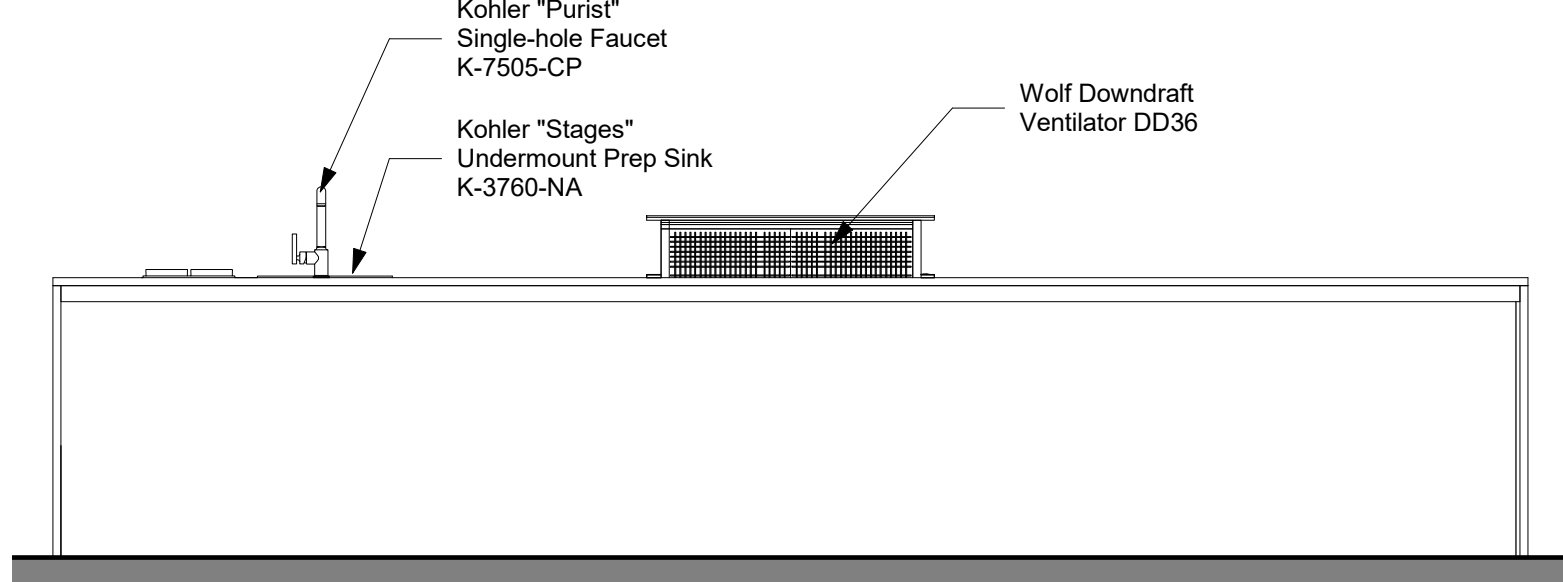
8 Pantry Elev. A
1/2" = 1'-0"



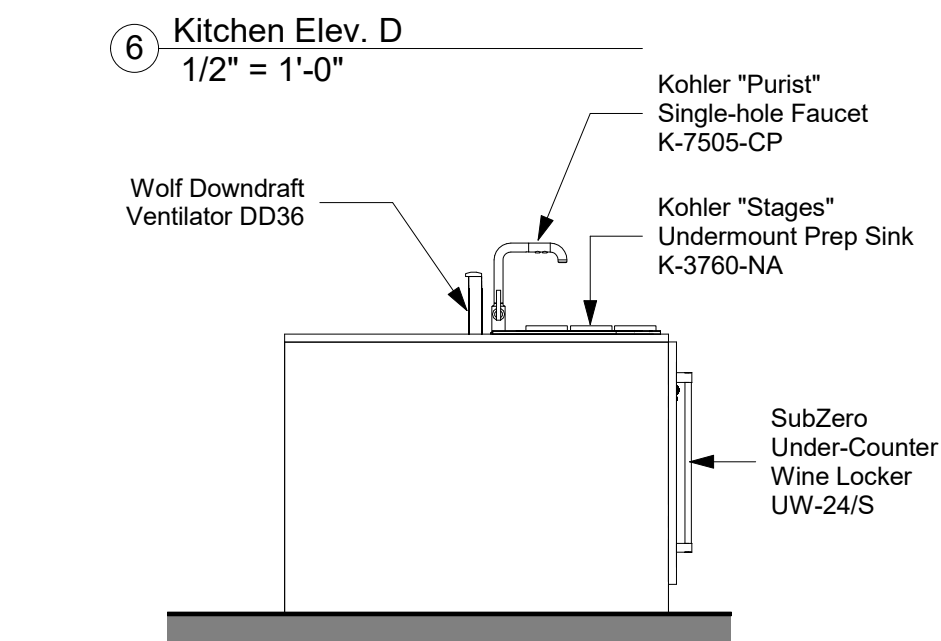
7 Partial Plan @ Pantry
1/2" = 1'-0"



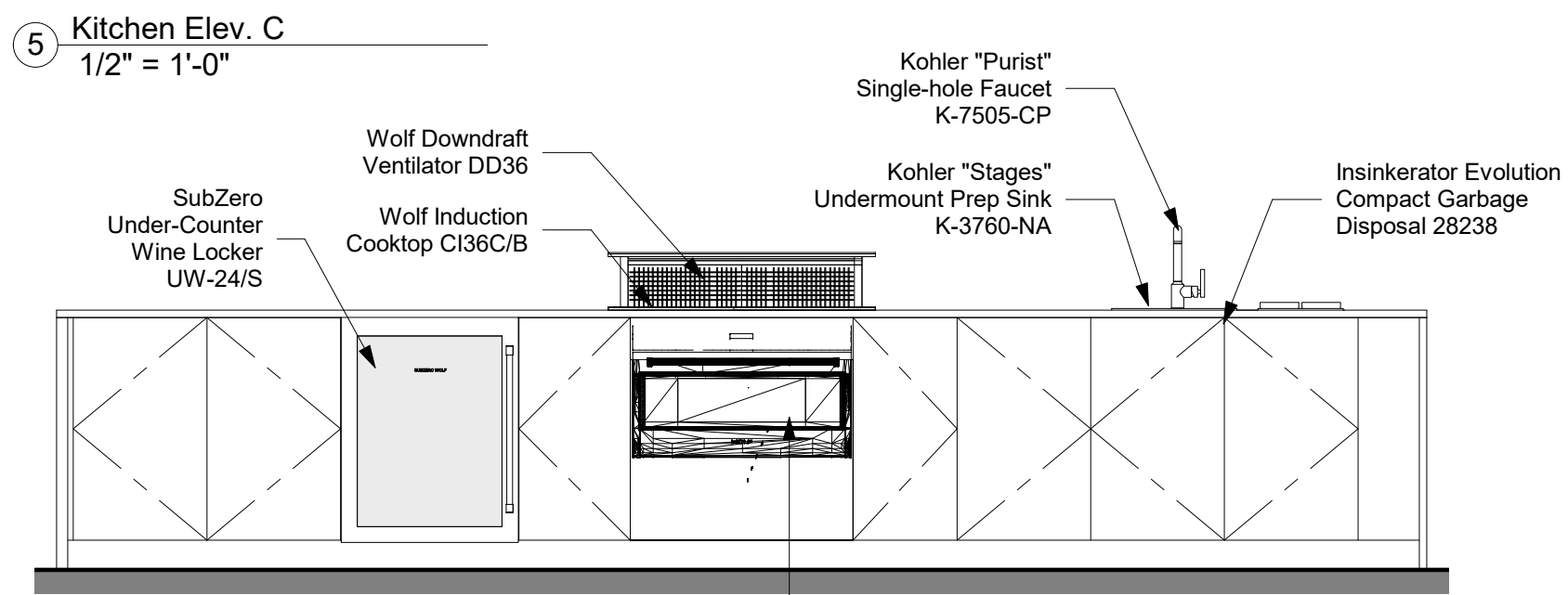
6 Kitchen Elev. D
1/2" = 1'-0"



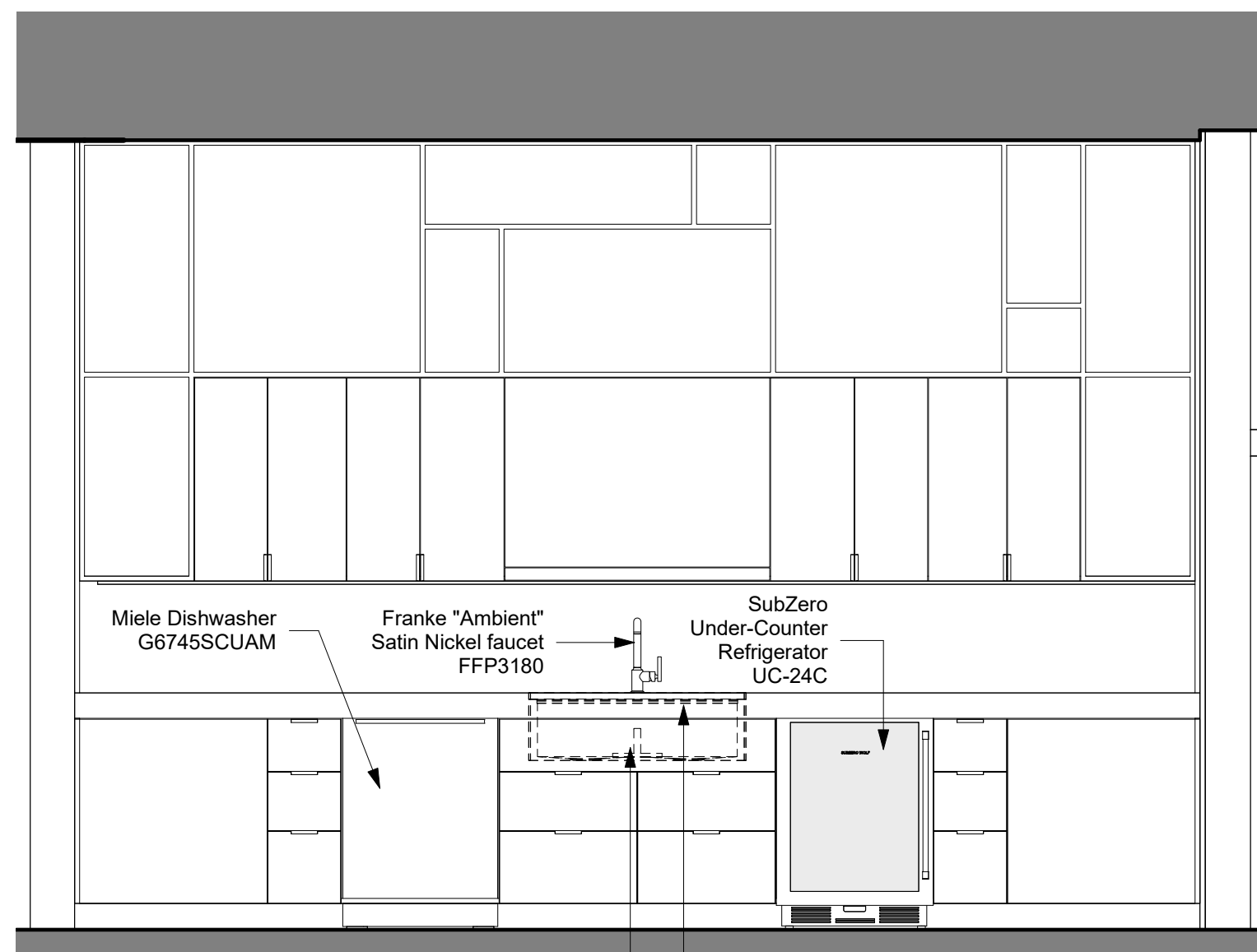
5 Kitchen Elev. C
1/2" = 1'-0"



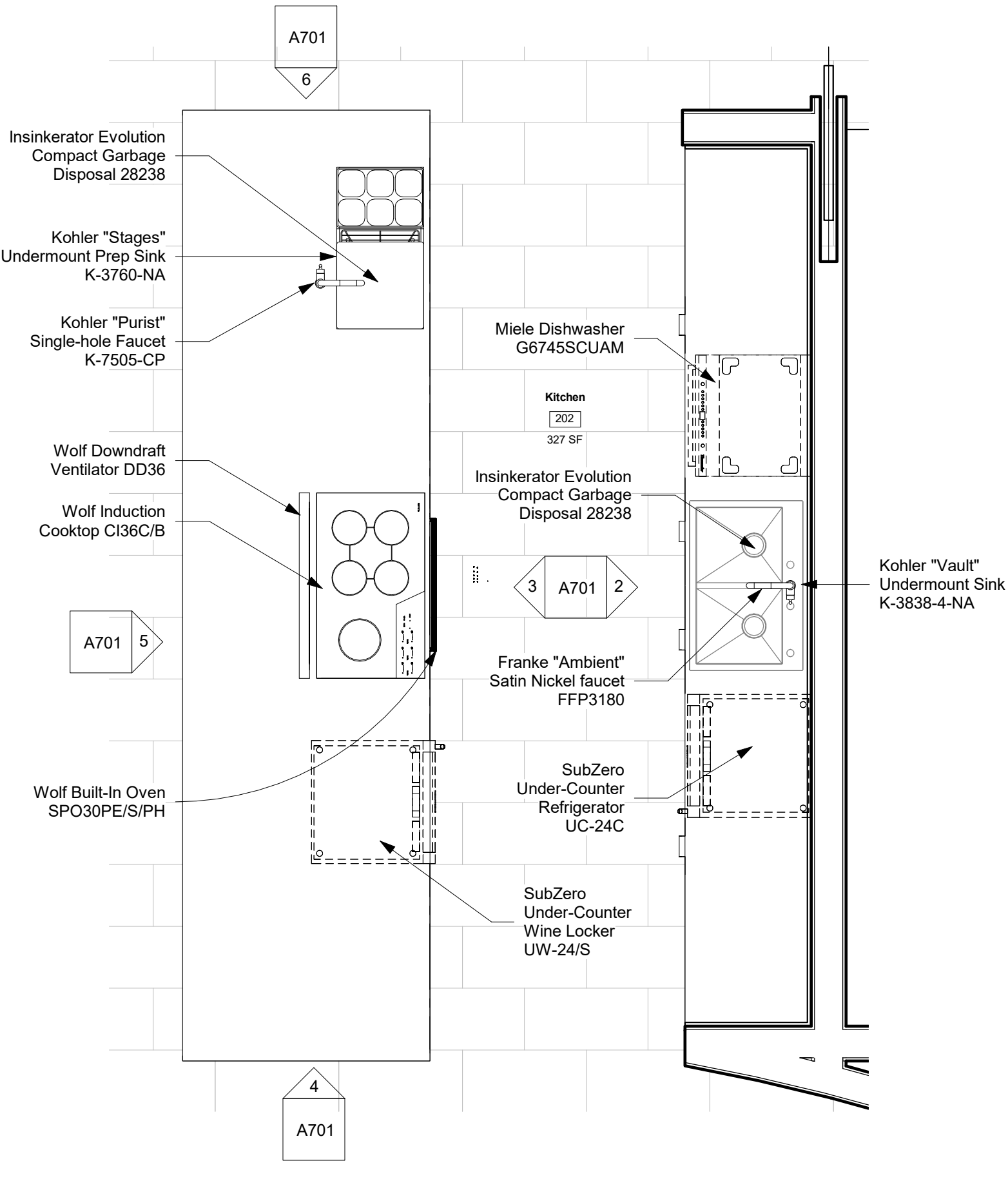
4 Kitchen Island Elev. B
1/2" = 1'-0"



3 Kitchen Island Elev. A
1/2" = 1'-0"



2 Kitchen Elev. A
1/2" = 1'-0"



1 Partial Plan @ Kitchen
1/2" = 1'-0"

Fritz Johnson Architect

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Signature: [Signature]
Expiration Date: 4/30/22

1 Lumahai

TMK:

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

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| Checked by | Checker |

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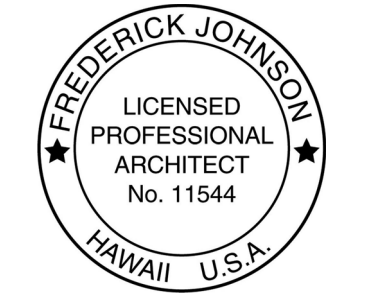
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Interior Elevations

1/2" = 1'-0"

A701

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 Signature: *[Signature]* Date: 4/30/22 Expiration Date:
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 Date:

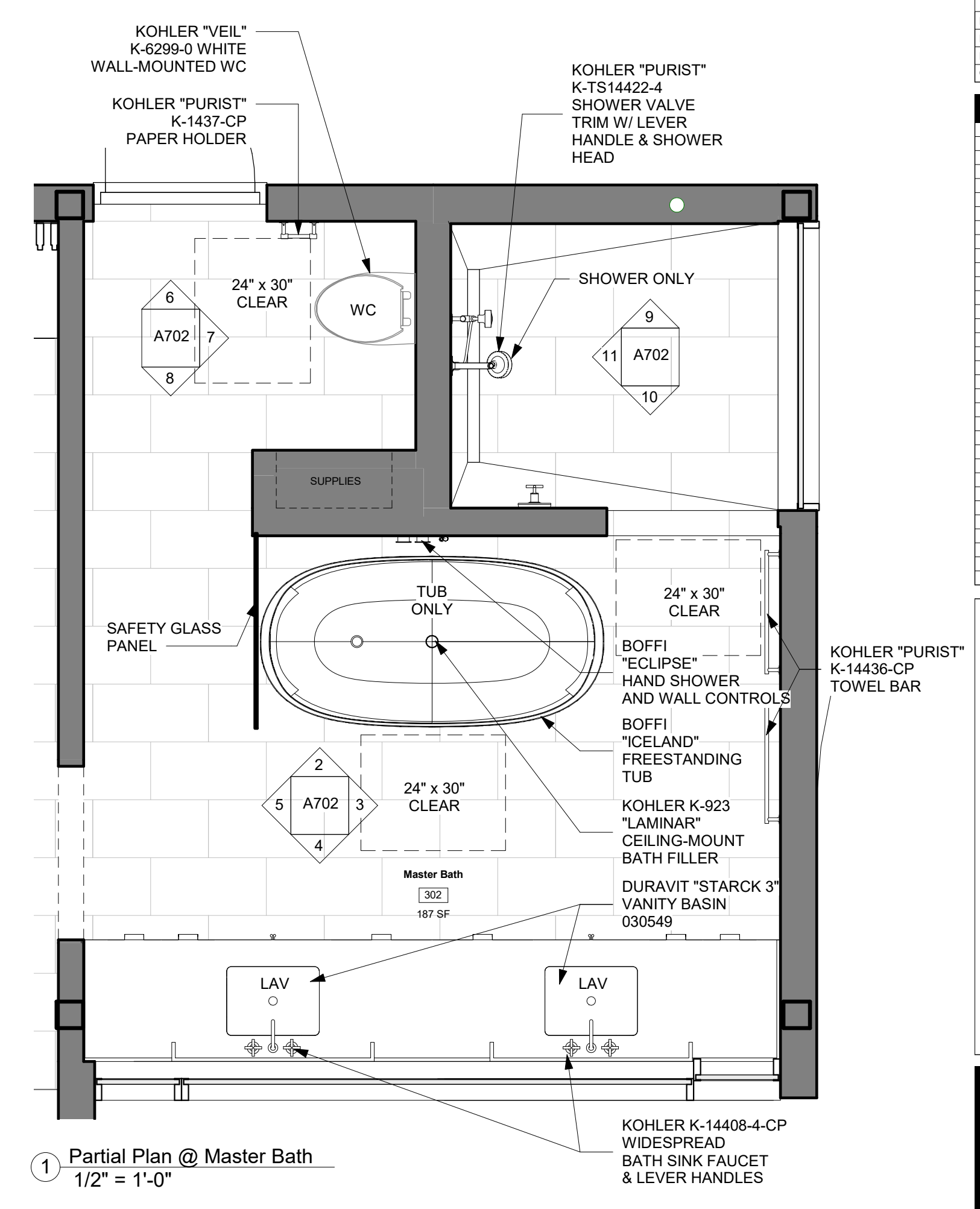
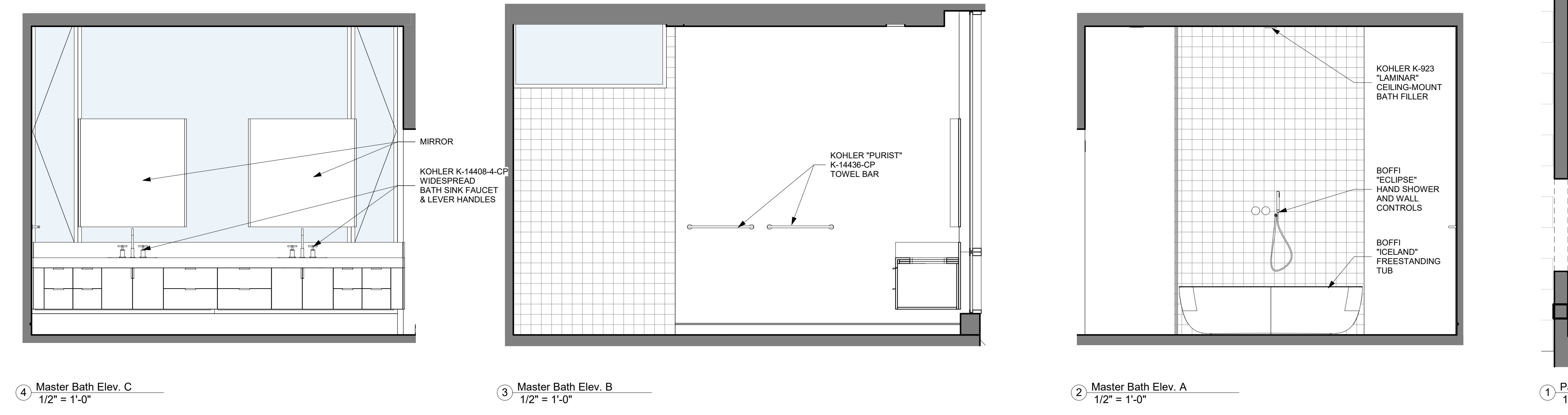
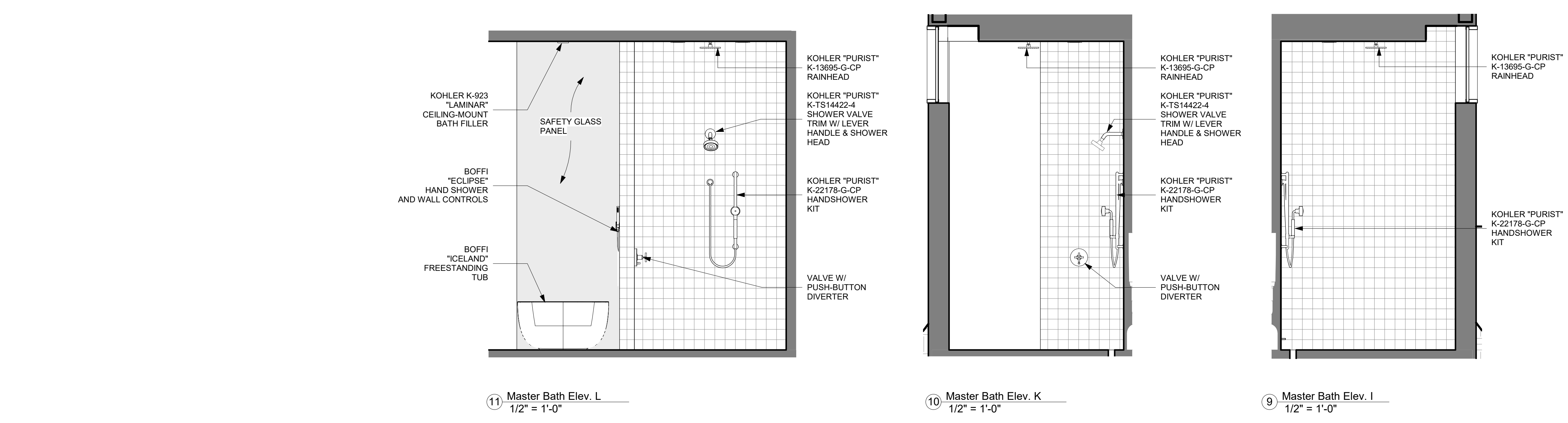
1 Lumahai
 Client:
 Alex Stanyon & Scott Anderson
 1 Lumahai Street
 Honolulu HI 96825

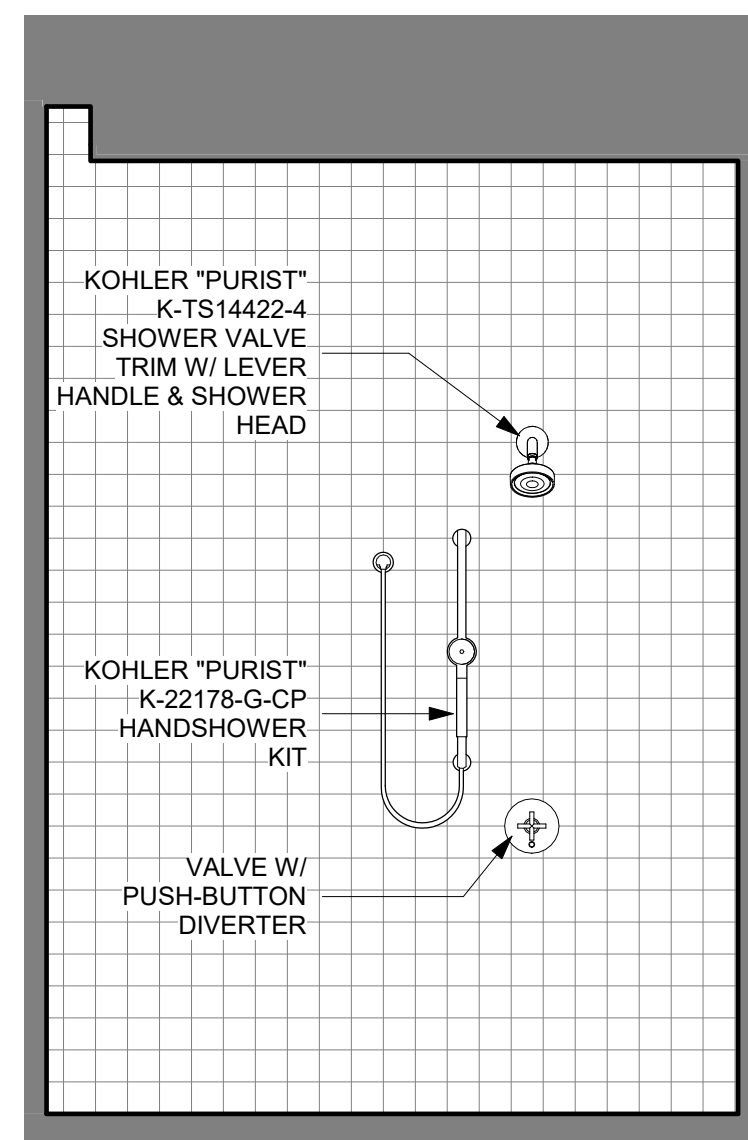
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| Project number | 20.003 |
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| REVISIONS | | |
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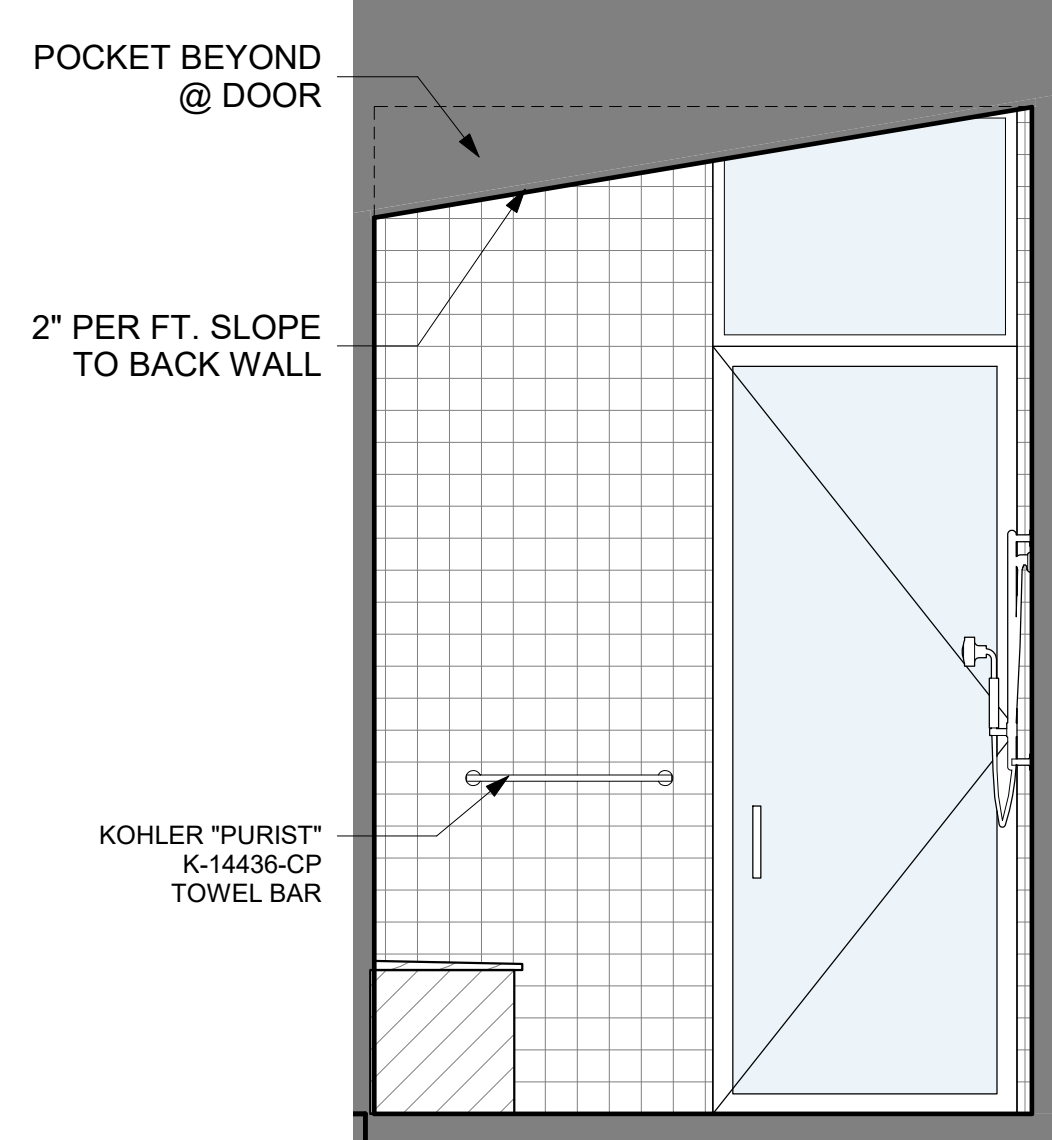
Interior Elevations

1/2" = 1'-0"

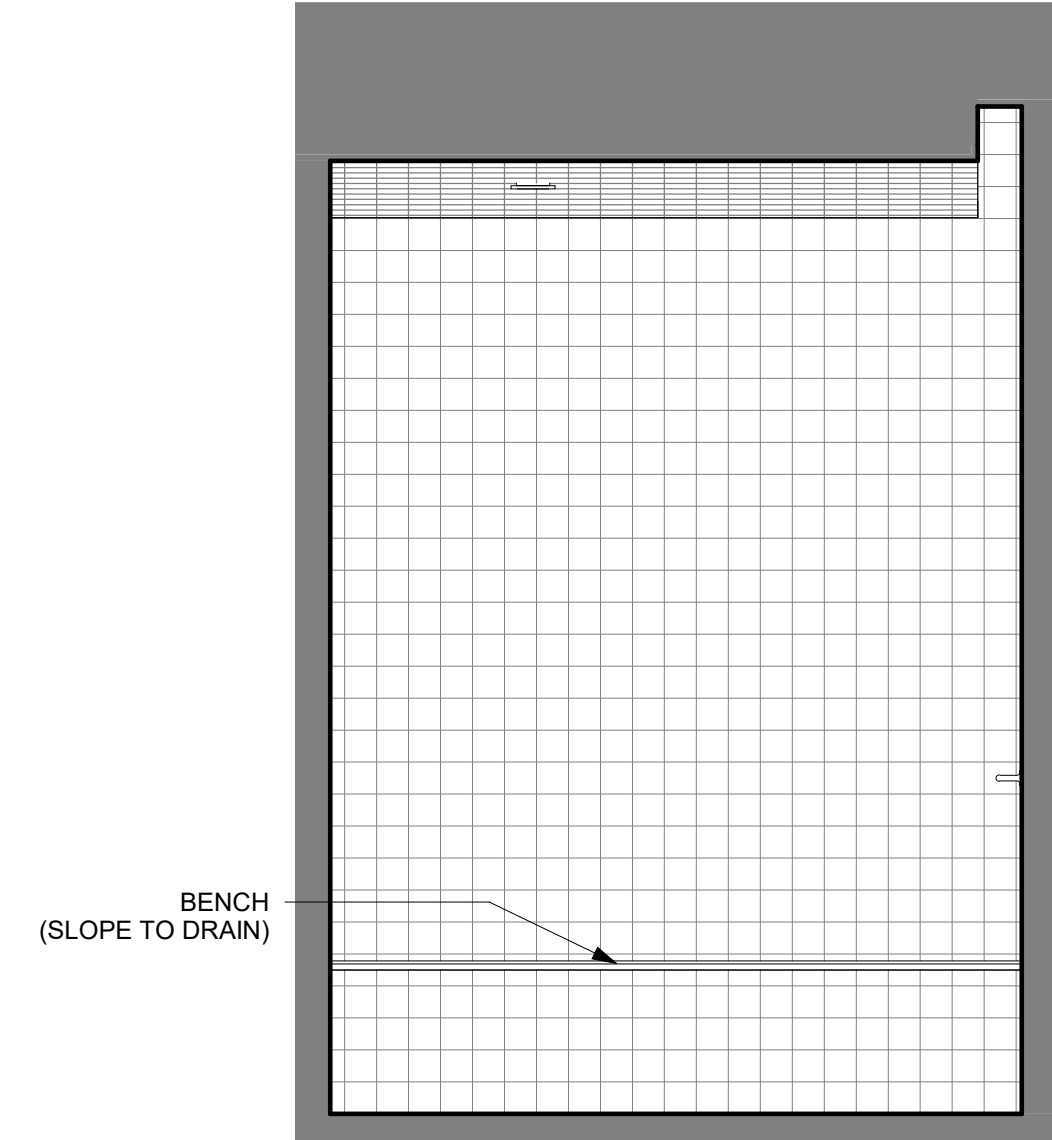




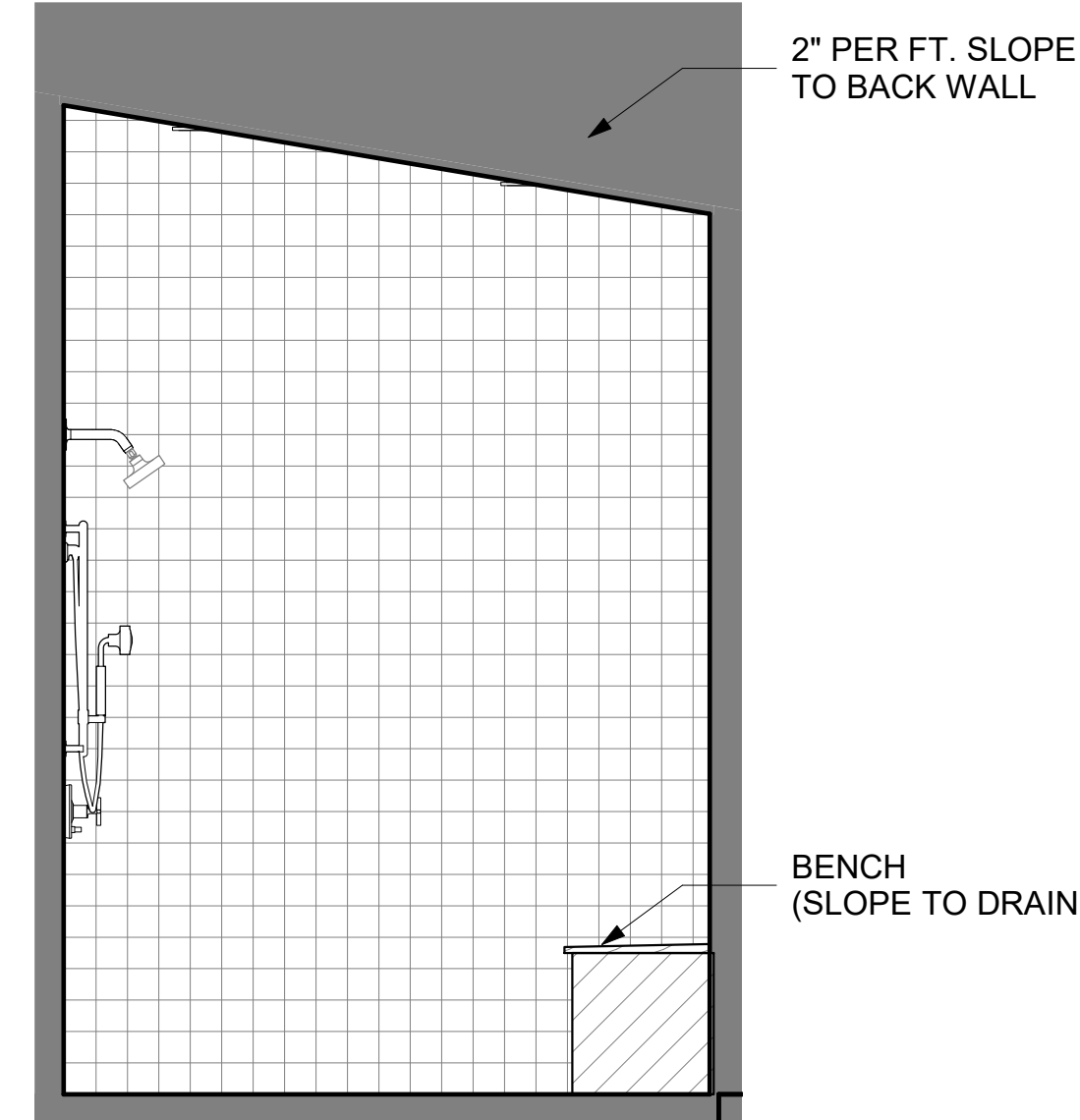
14 Steam Shower Elev. D
1/2" = 1'-0"



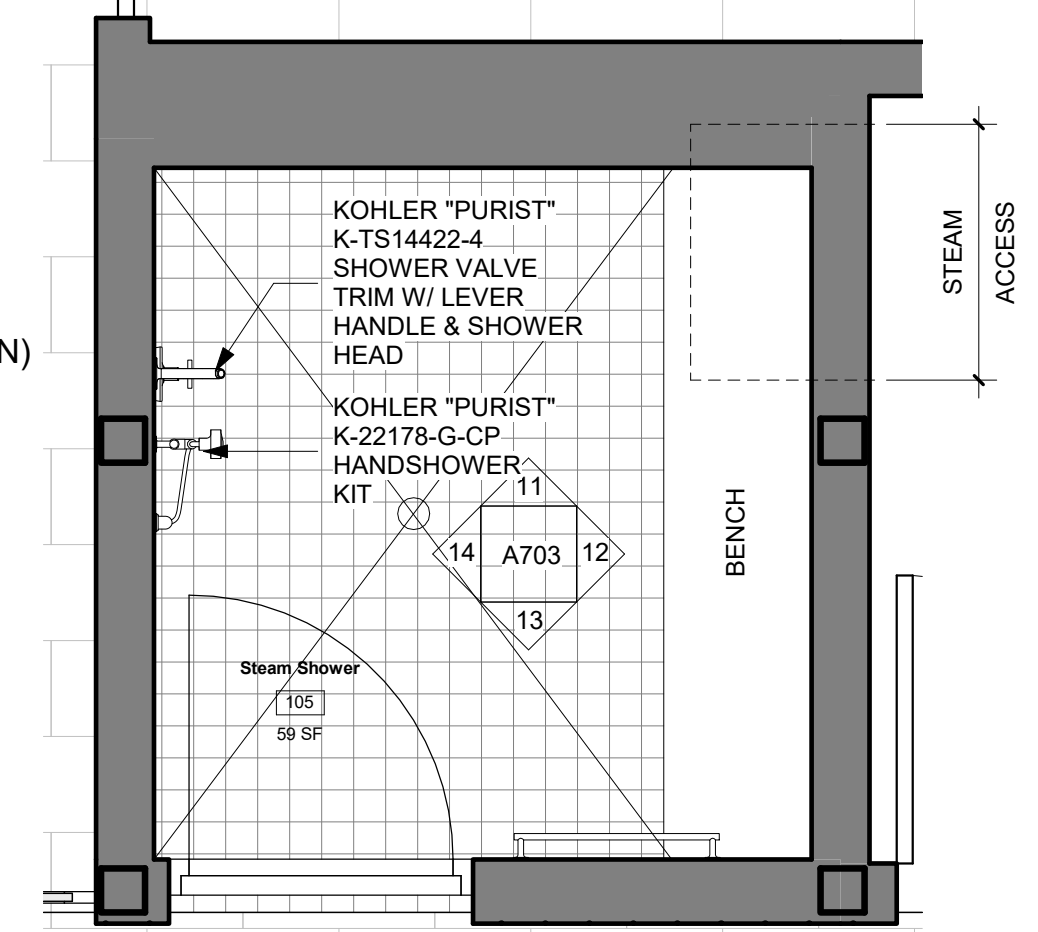
13 Steam Shower Elev. C
1/2" = 1'-0"



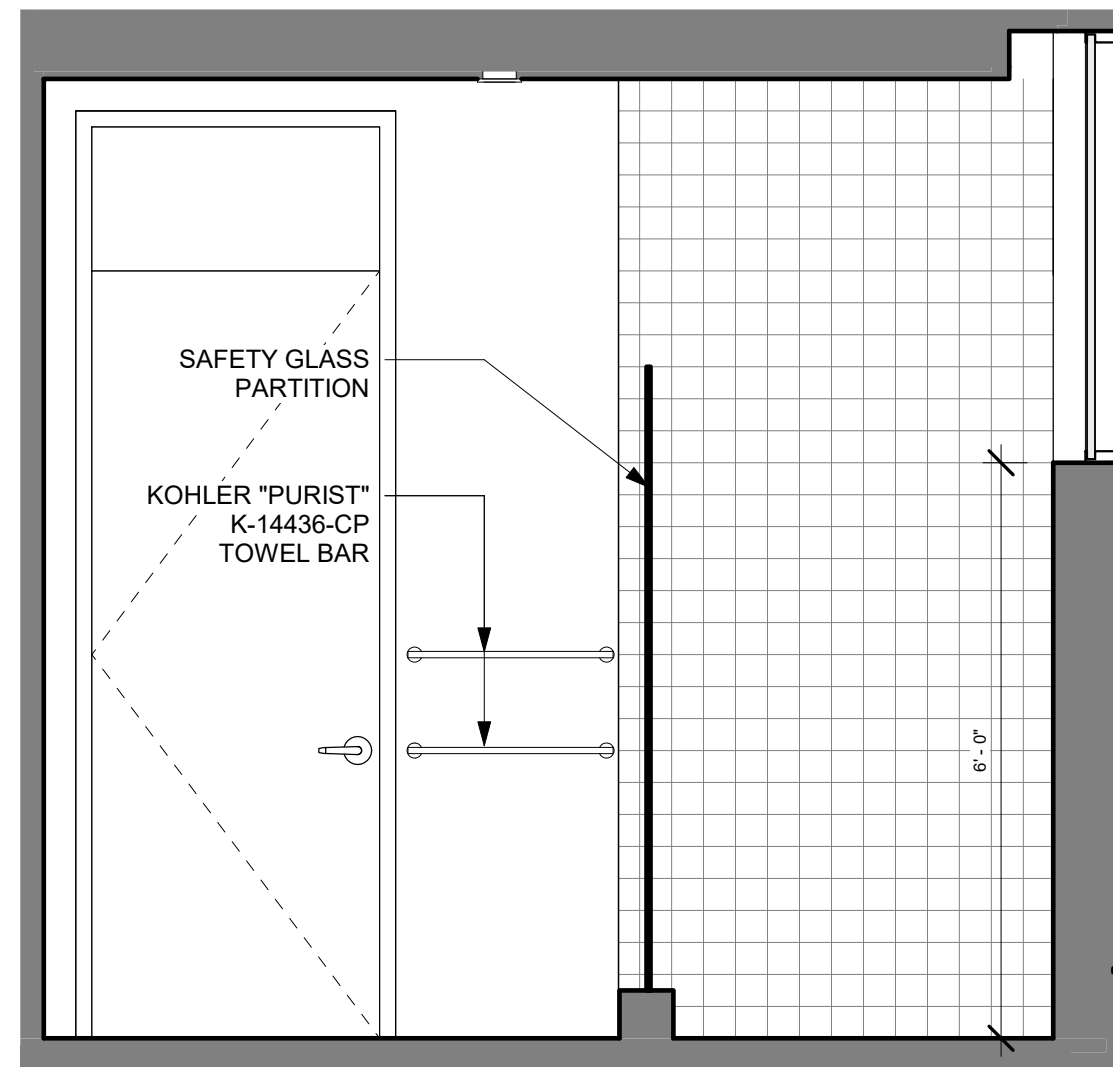
12 Steam Shower Elev. B
1/2" = 1'-0"



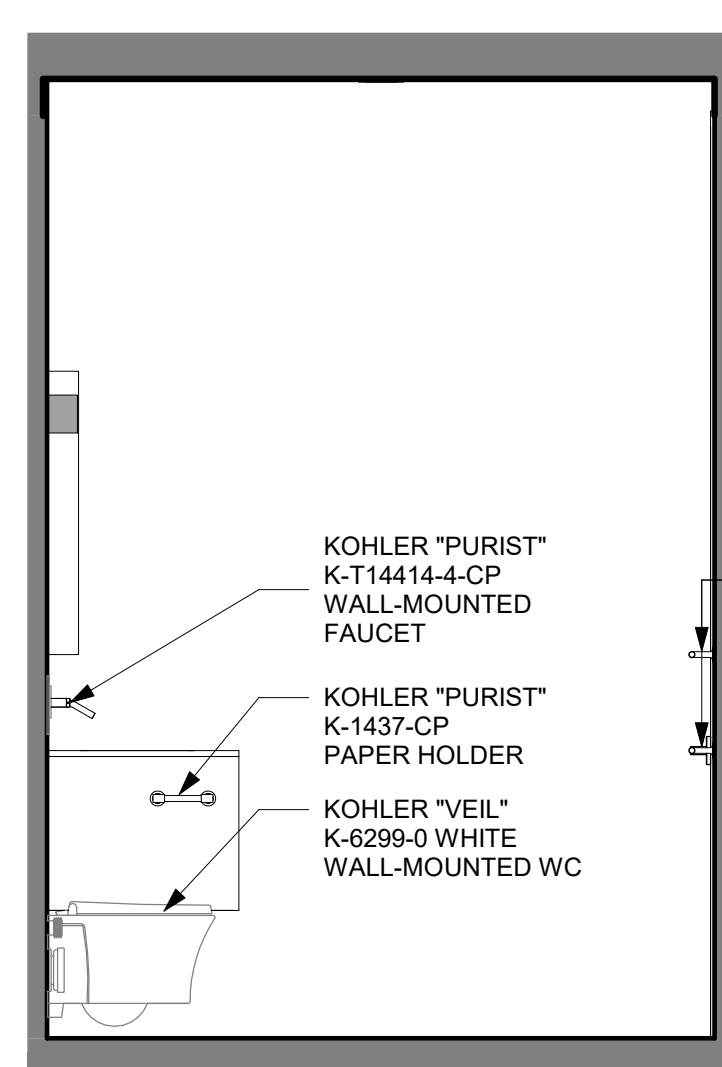
11 Steam Shower Elev. A
1/2" = 1'-0"



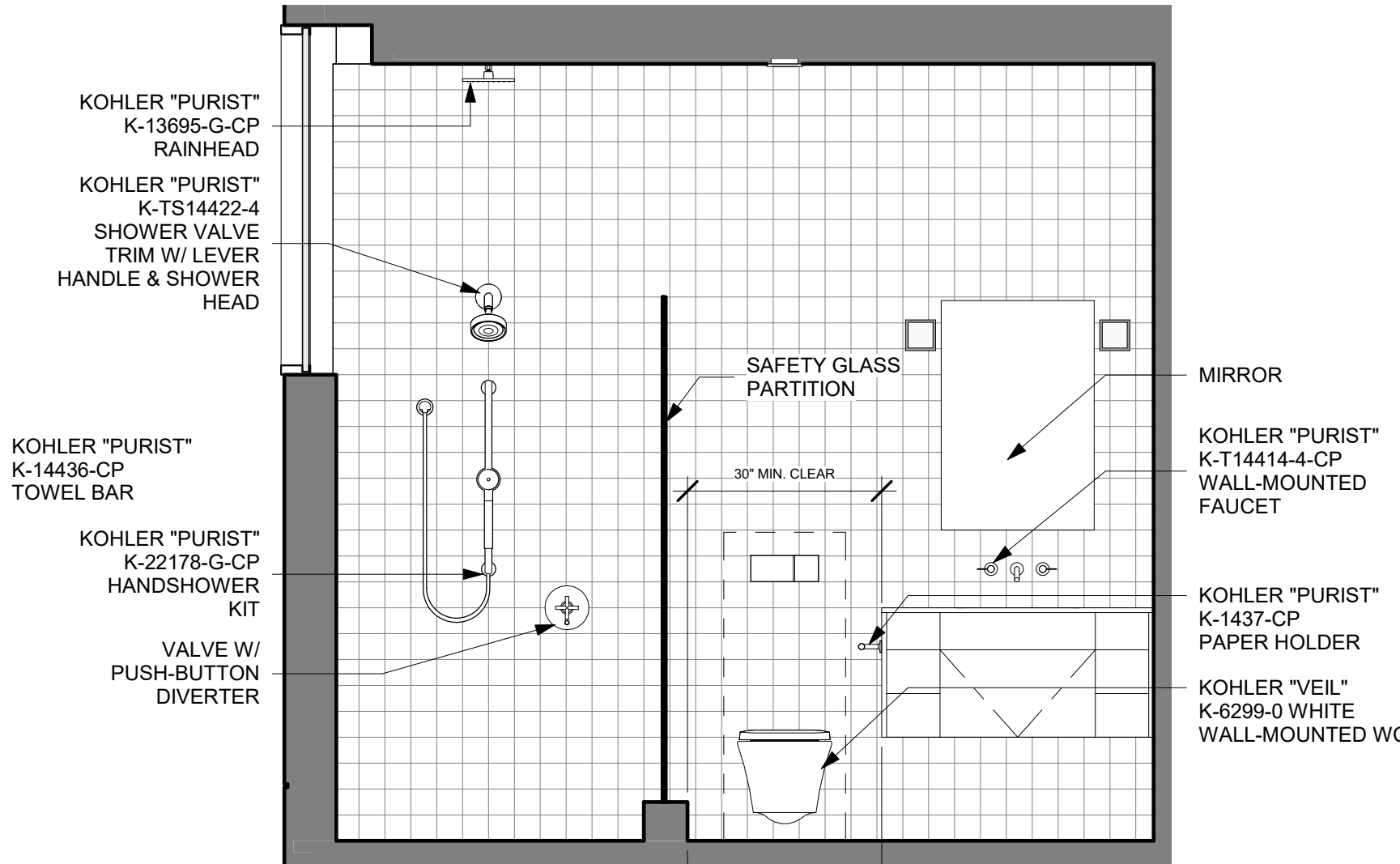
10 Partial Plan @ Steam Shower
1/2" = 1'-0"



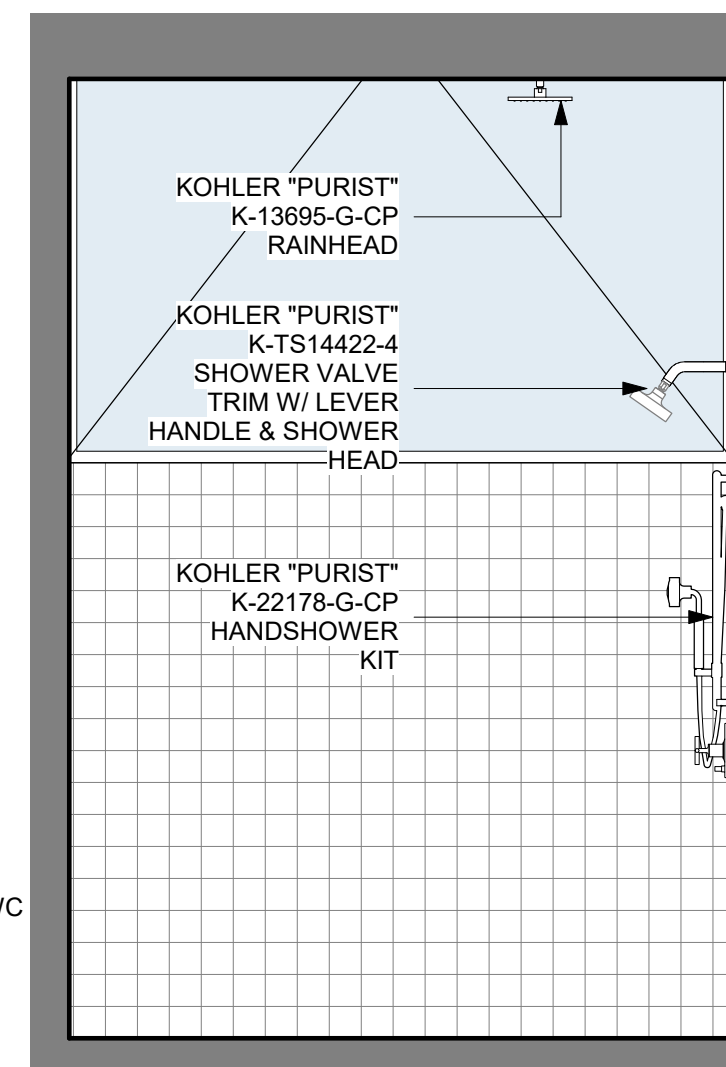
9 Bath 2 Elev. D
1/2" = 1'-0"



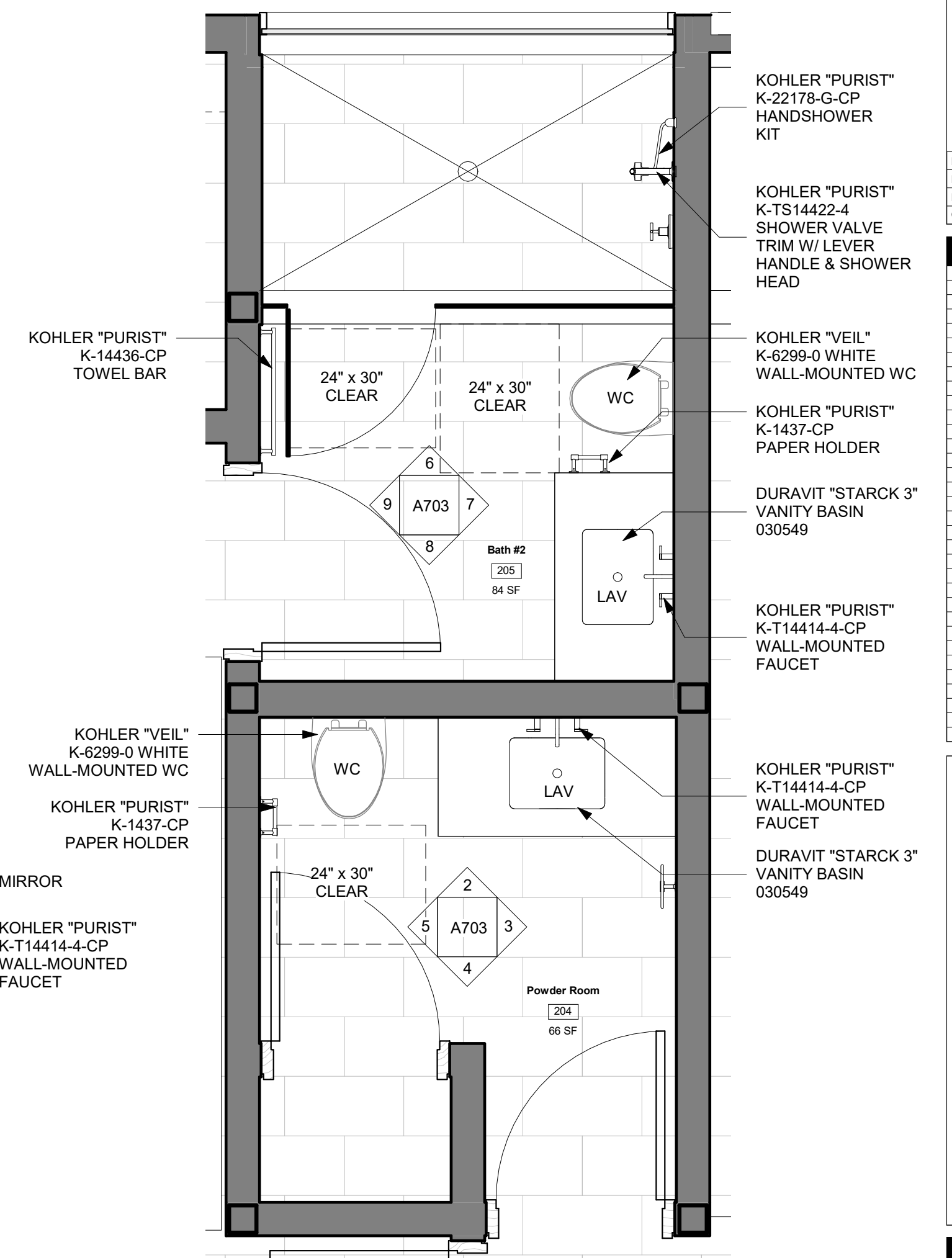
8 Bath 2 Elev. C
1/2" = 1'-0"



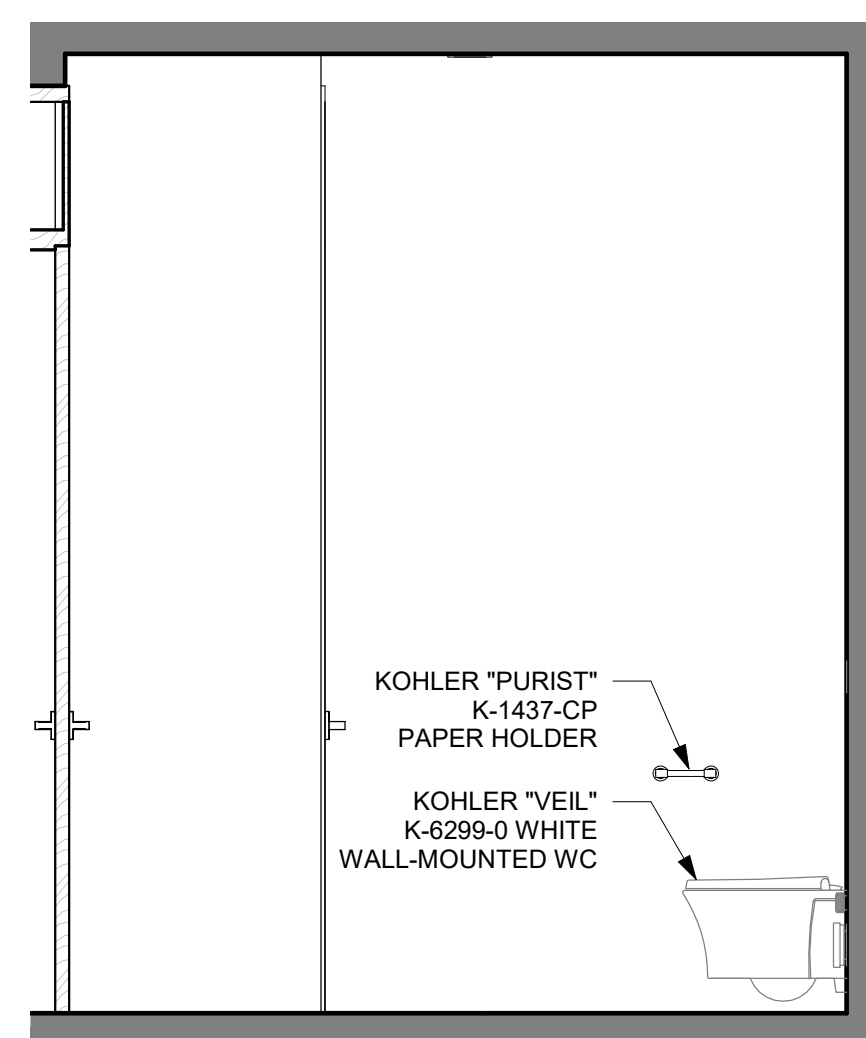
7 Bath 2 Elev. B
1/2" = 1'-0"



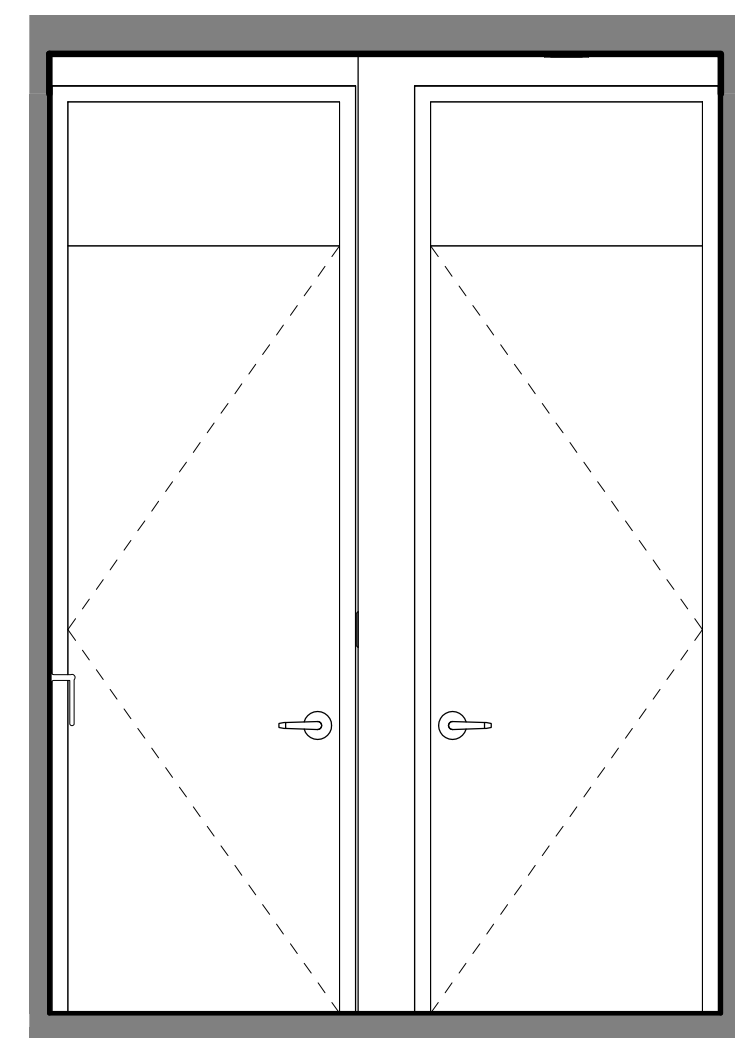
6 Bath 2 Elev. A
1/2" = 1'-0"



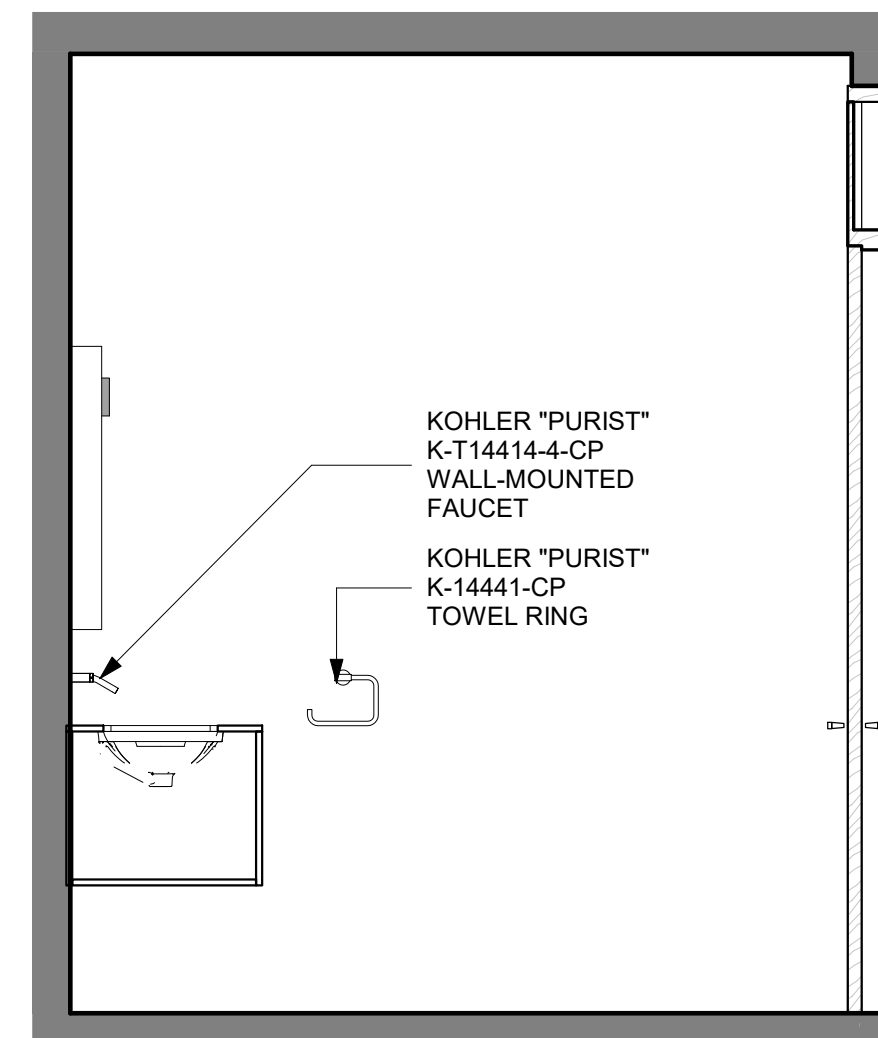
1 Partial Plan @ Bath 2 and Powder Rm.
1/2" = 1'-0"



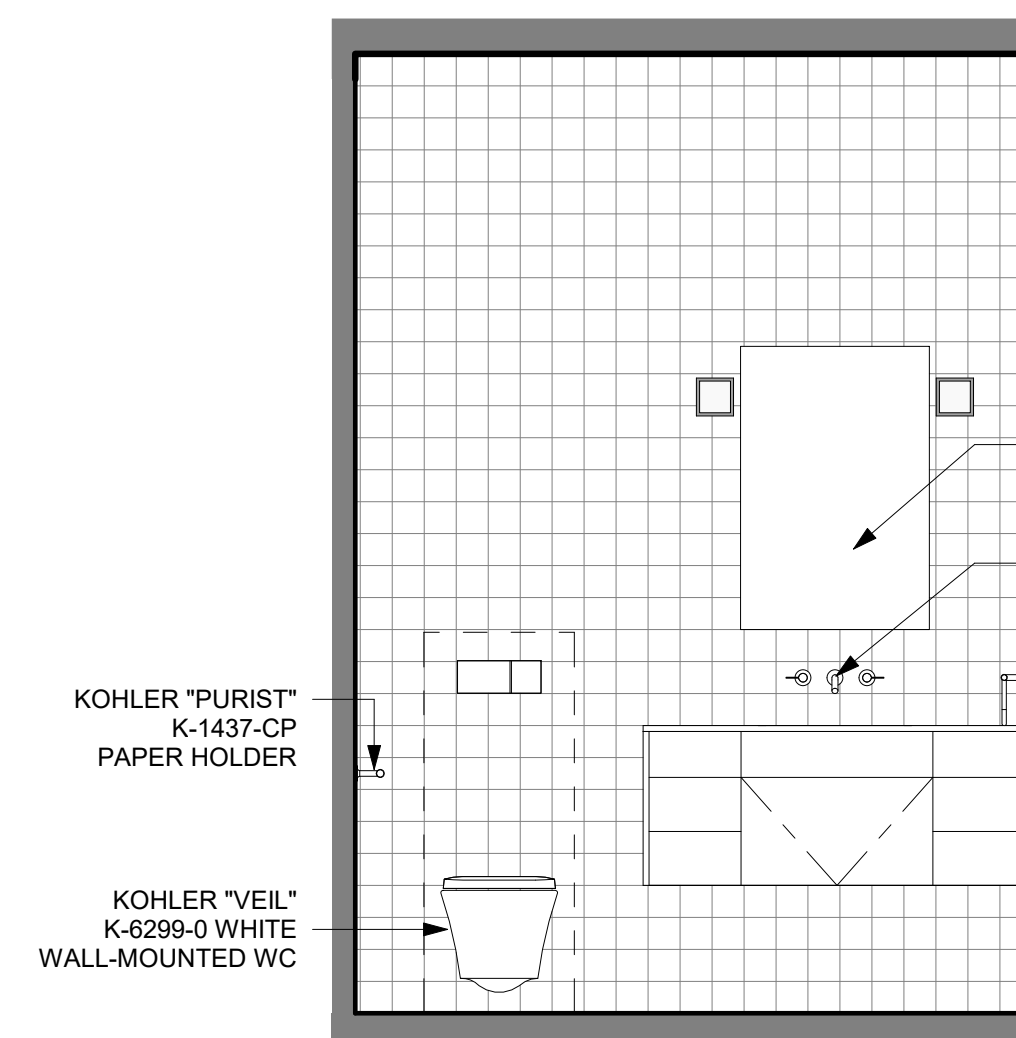
5 Powder Rm. Elev. D
1/2" = 1'-0"



4 Powder Rm. Elev. C
1/2" = 1'-0"



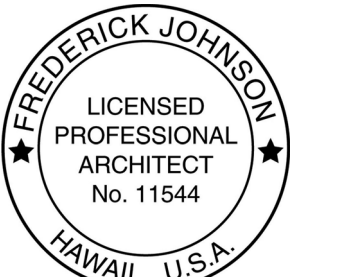
3 Powder Rm. Elev. B
1/2" = 1'-0"



2 Powder Rm. Elev. A
1/2" = 1'-0"

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Signature: [Signature] 4/30/22
Expiration Date:

1 Lumahai

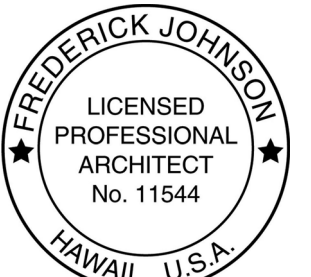
Client: Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

Project number: 20.003
Project Issued: [Date] Issue Date: [Date]
Drawn by: [Name] Author: [Name]
Checked by: [Name] Checker: [Name]

| REVISIONS | | |
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| No. | Description | Date |
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Interior Elevations
1/2" = 1'-0"

A703



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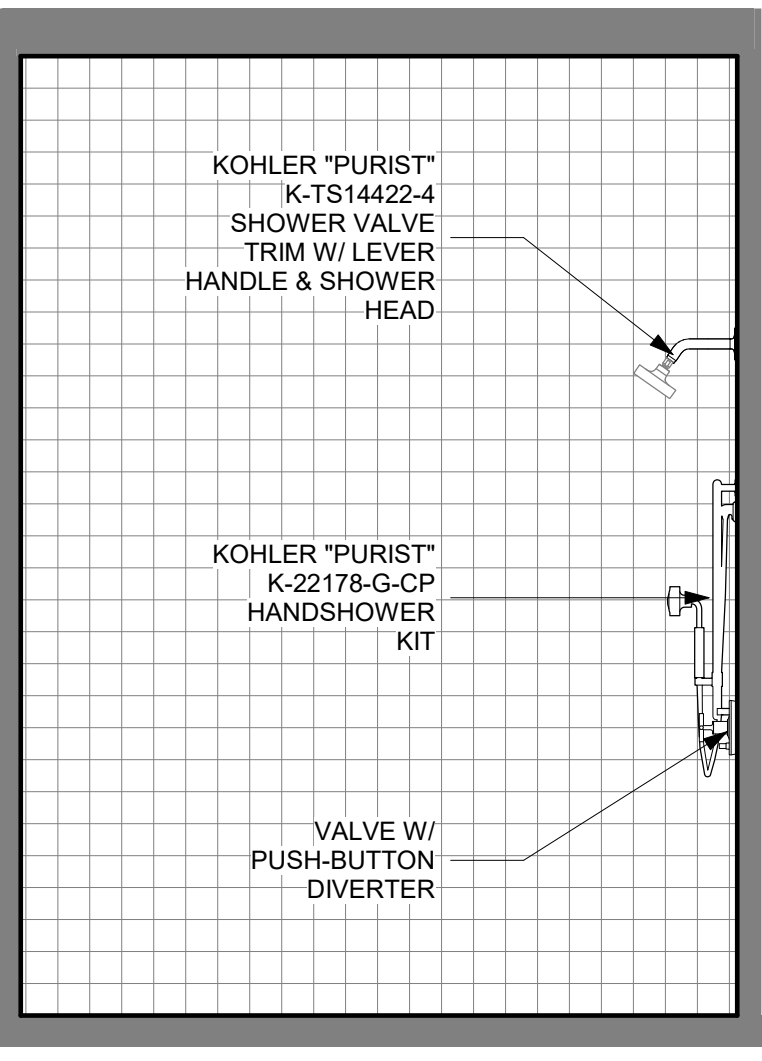
1 Lumahai
 Client: Alex Stanyon & Scott Anderson
 1 Lumahai Street
 Honolulu HI 96825

Project number: 20.003
 Project Issued: Issue Date
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 Checked by: Checker

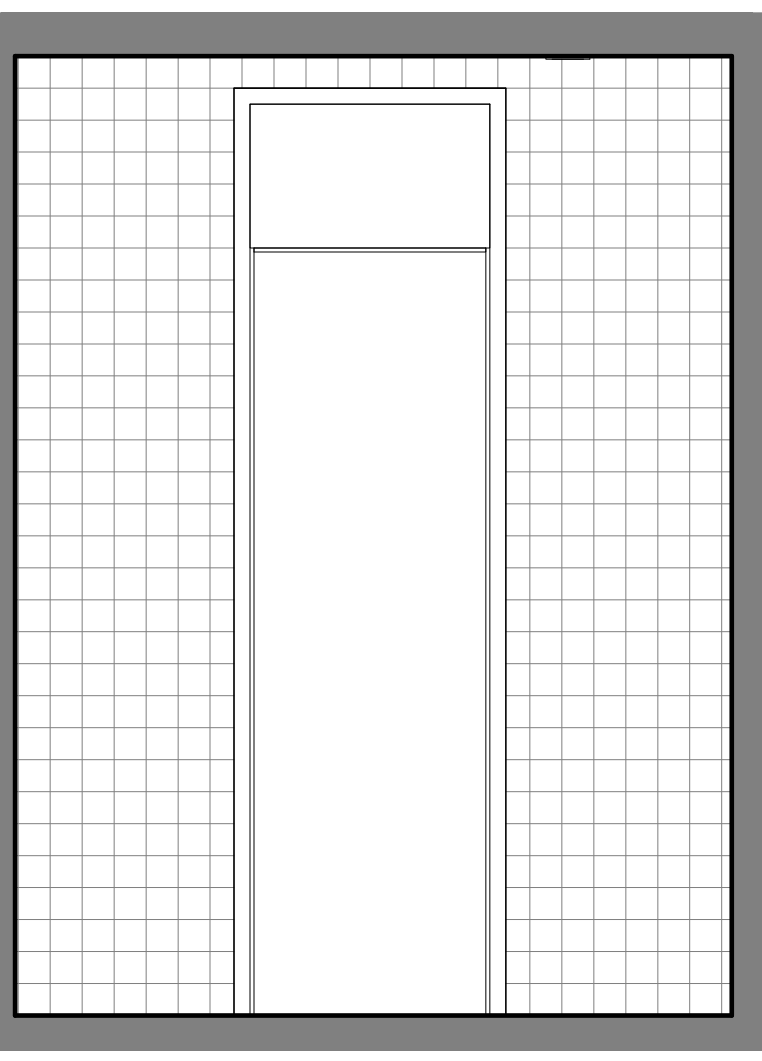
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| No. | Description | Date |
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Interior Elevations

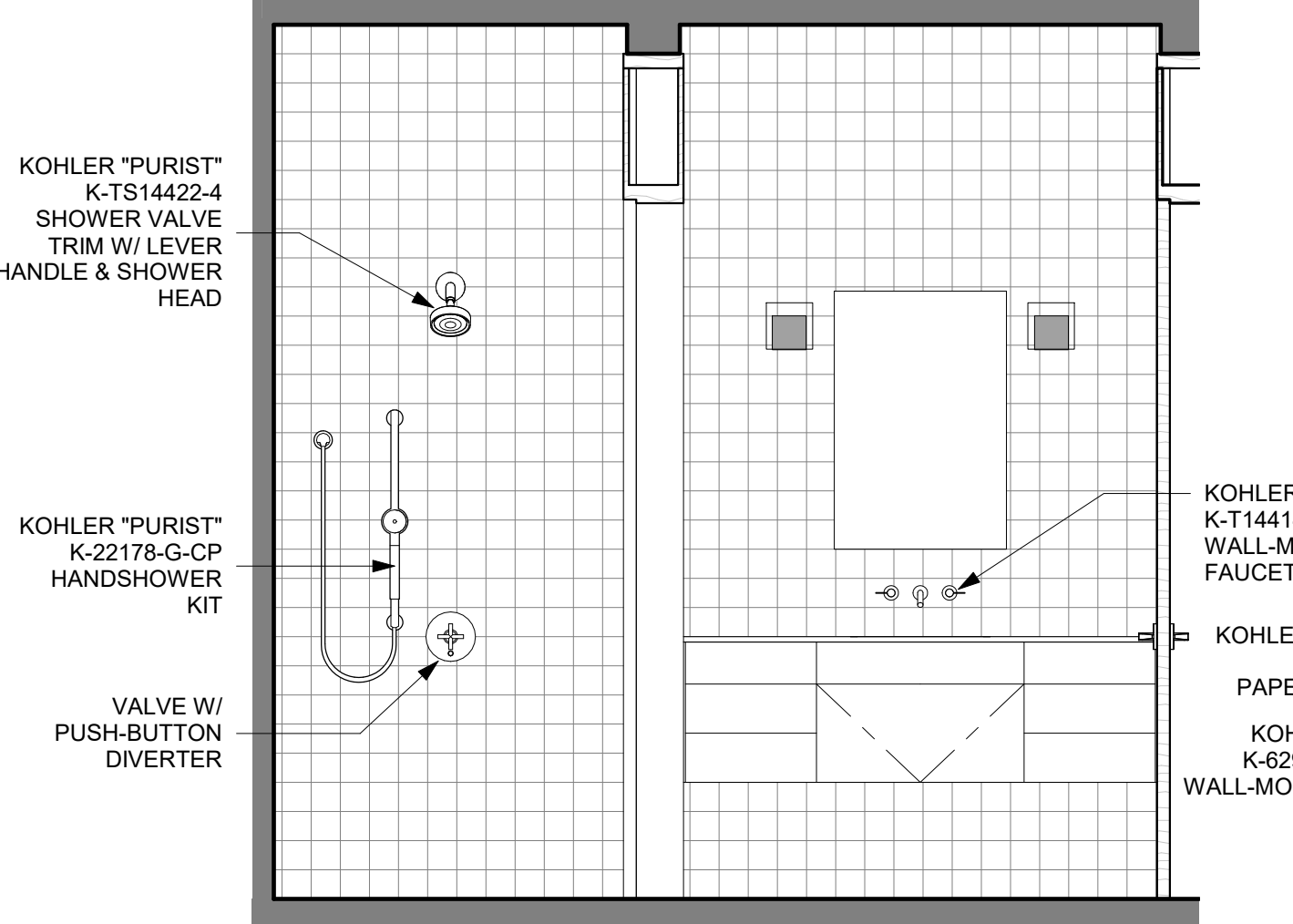
A704



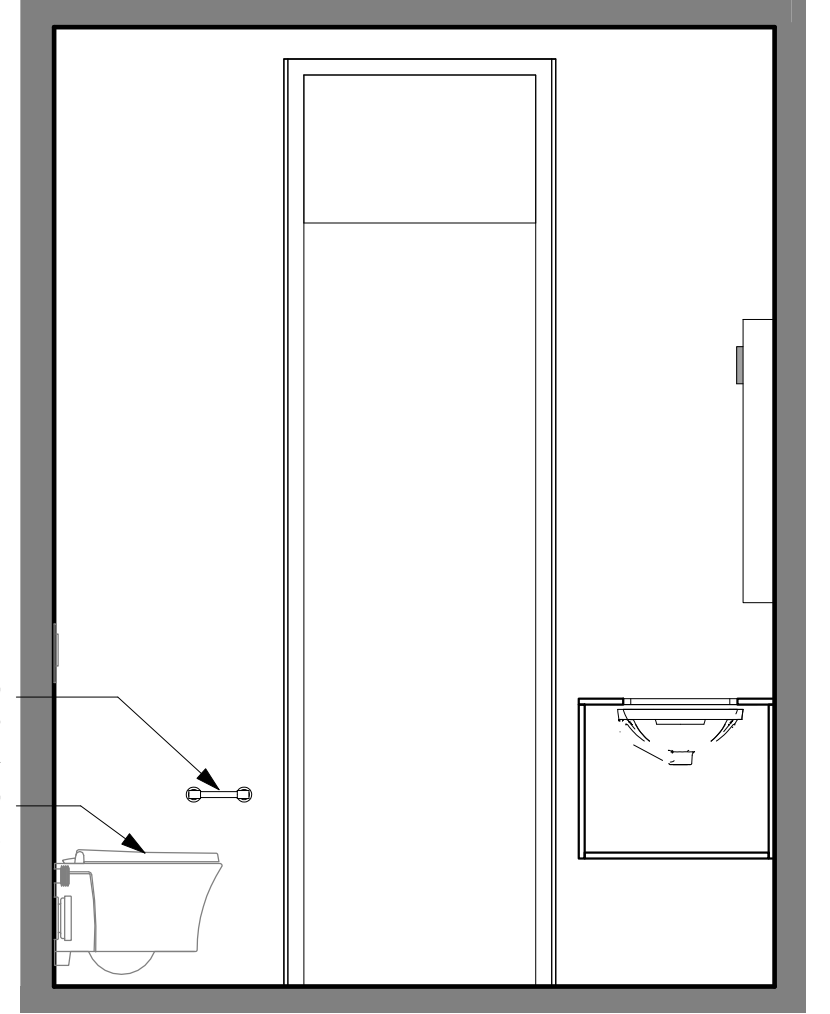
12 Pool Bath Elev. G
 1/2" = 1'-0"



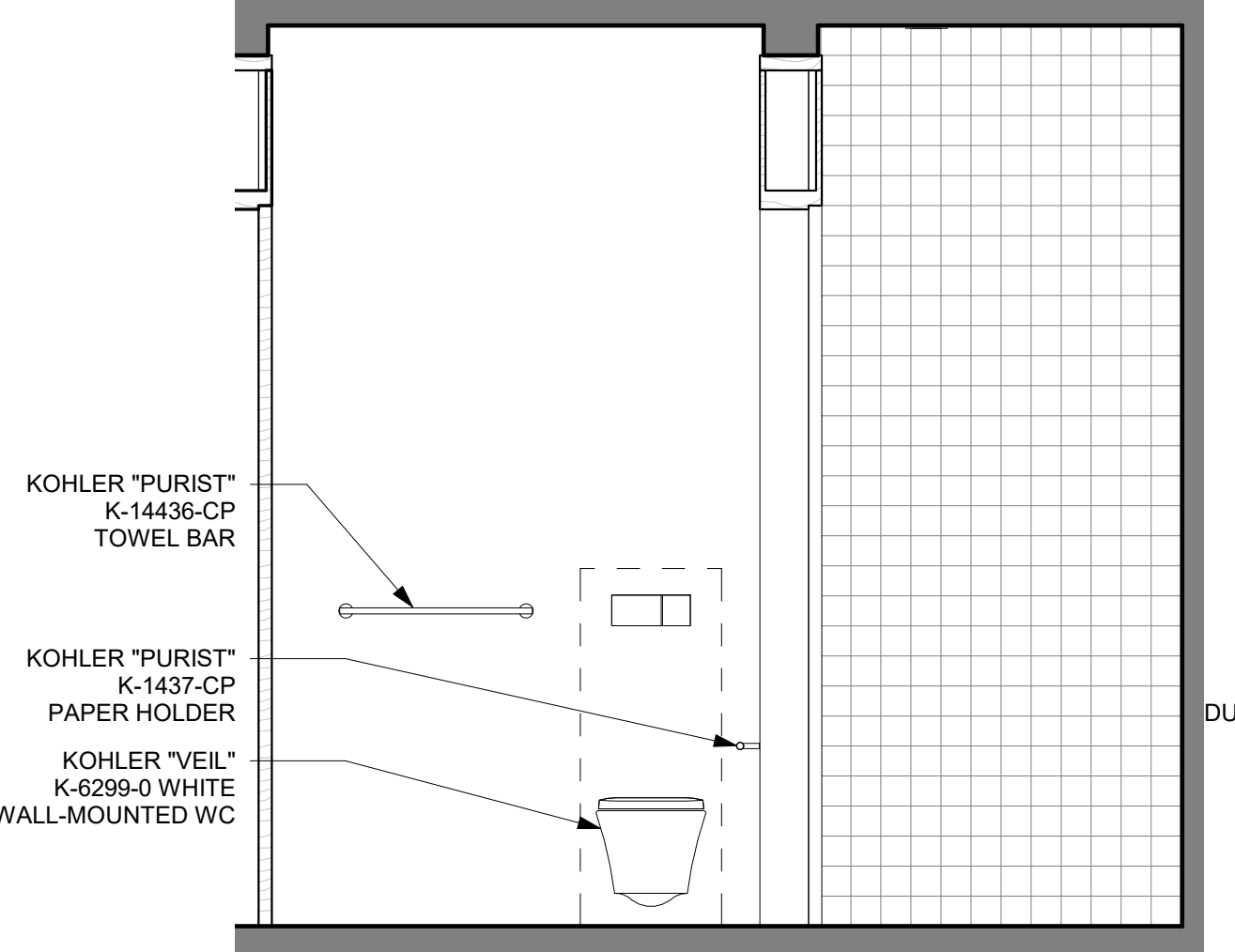
11 Pool Bath Elev. E
 1/2" = 1'-0"



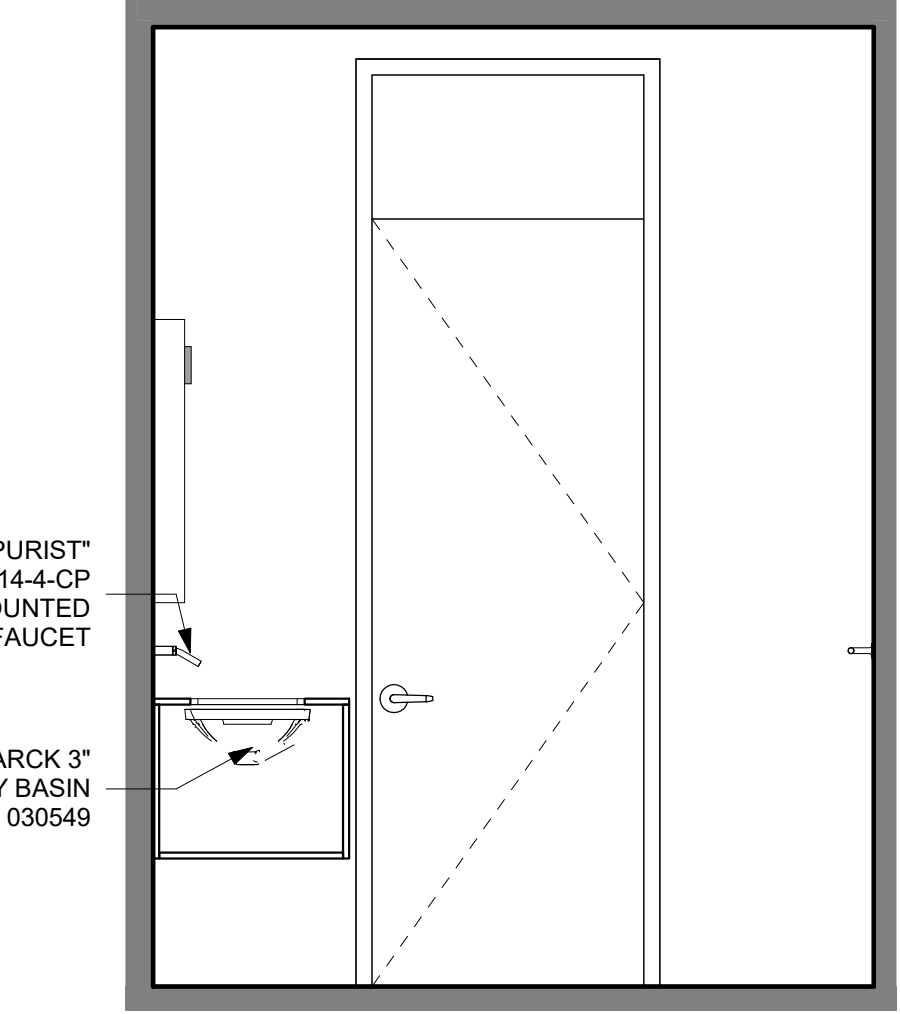
10 Pool Bath Elev. D
 1/2" = 1'-0"



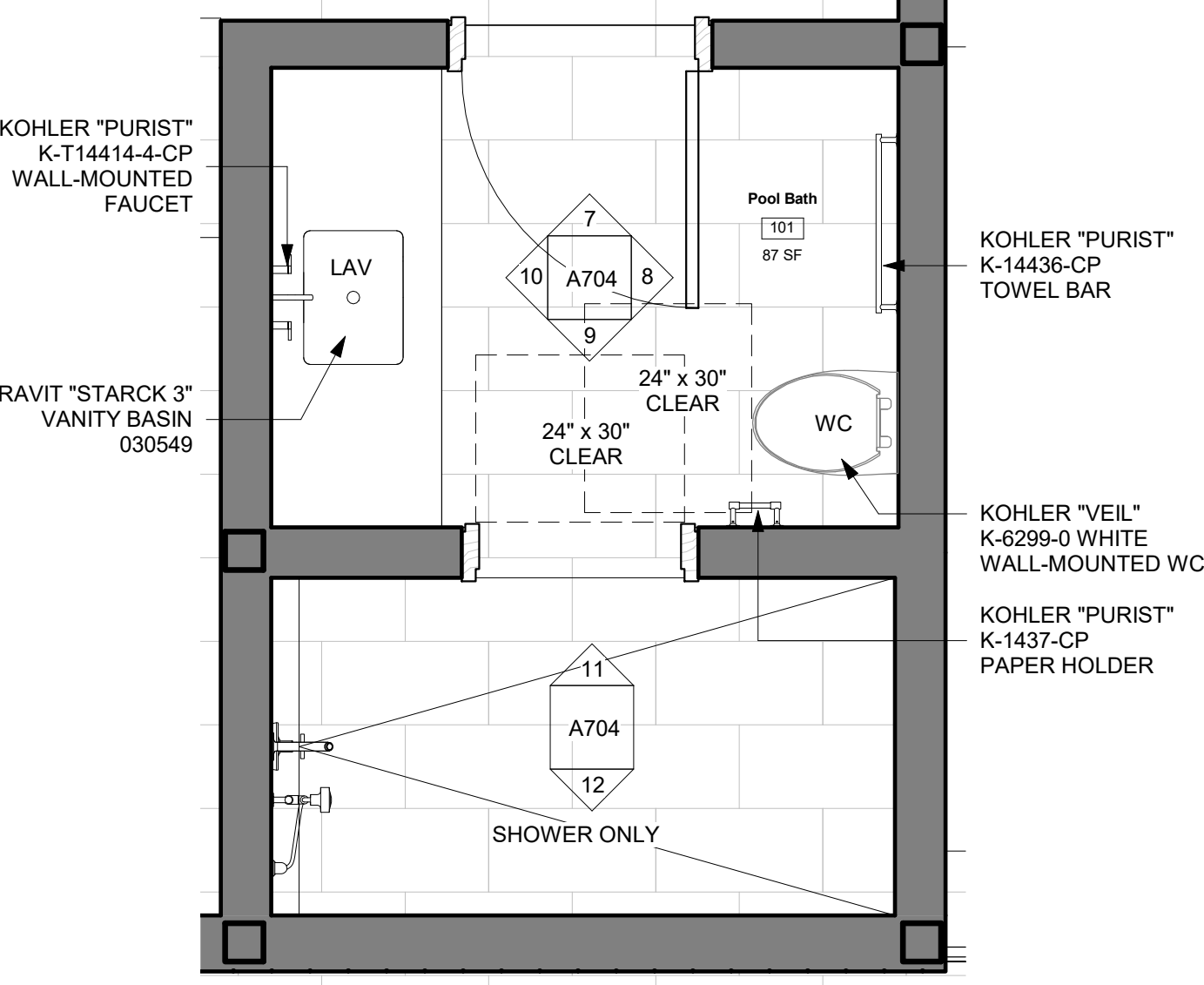
9 Pool Bath Elev. C
 1/2" = 1'-0"



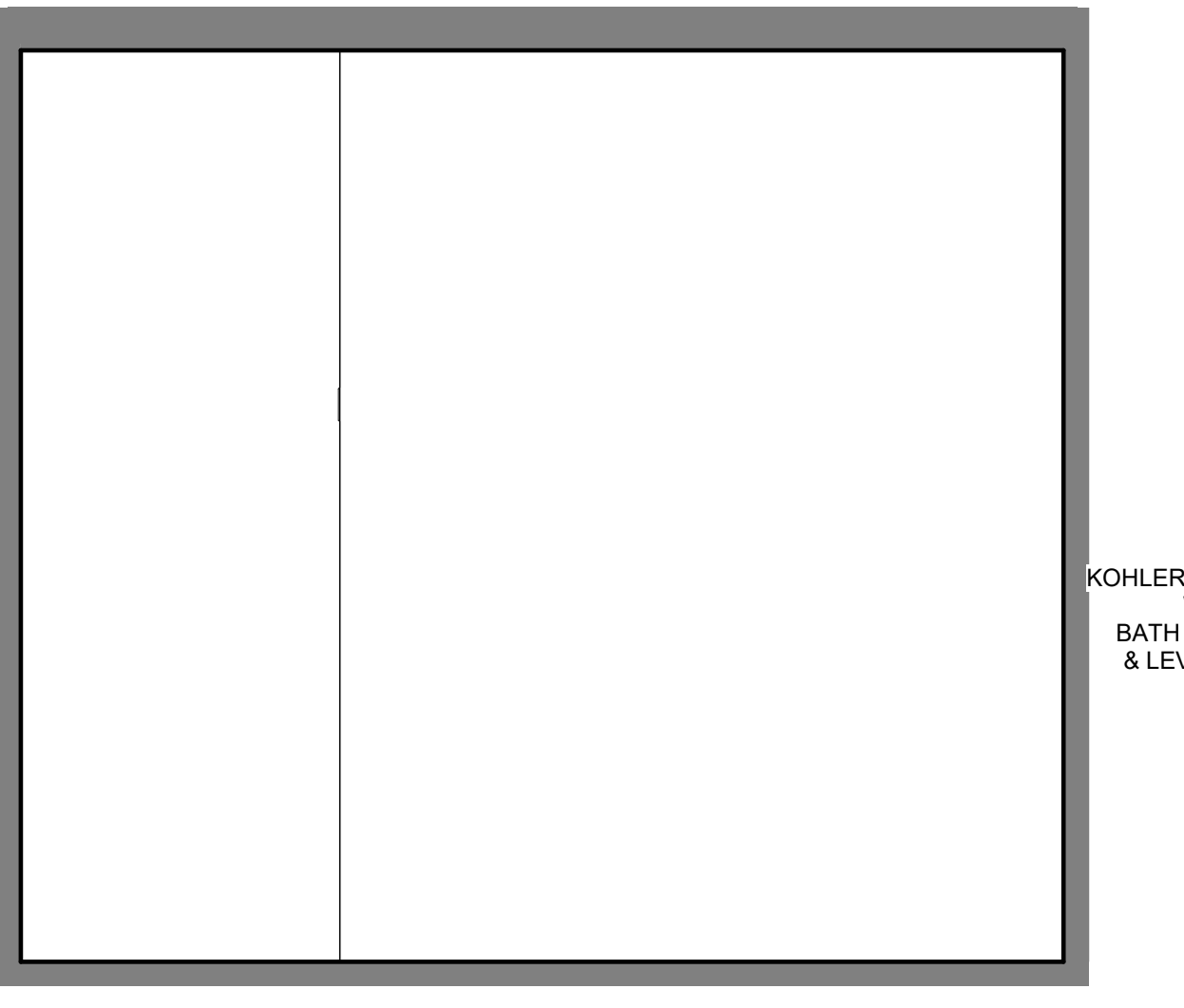
8 Pool Bath Elev. B
 1/2" = 1'-0"



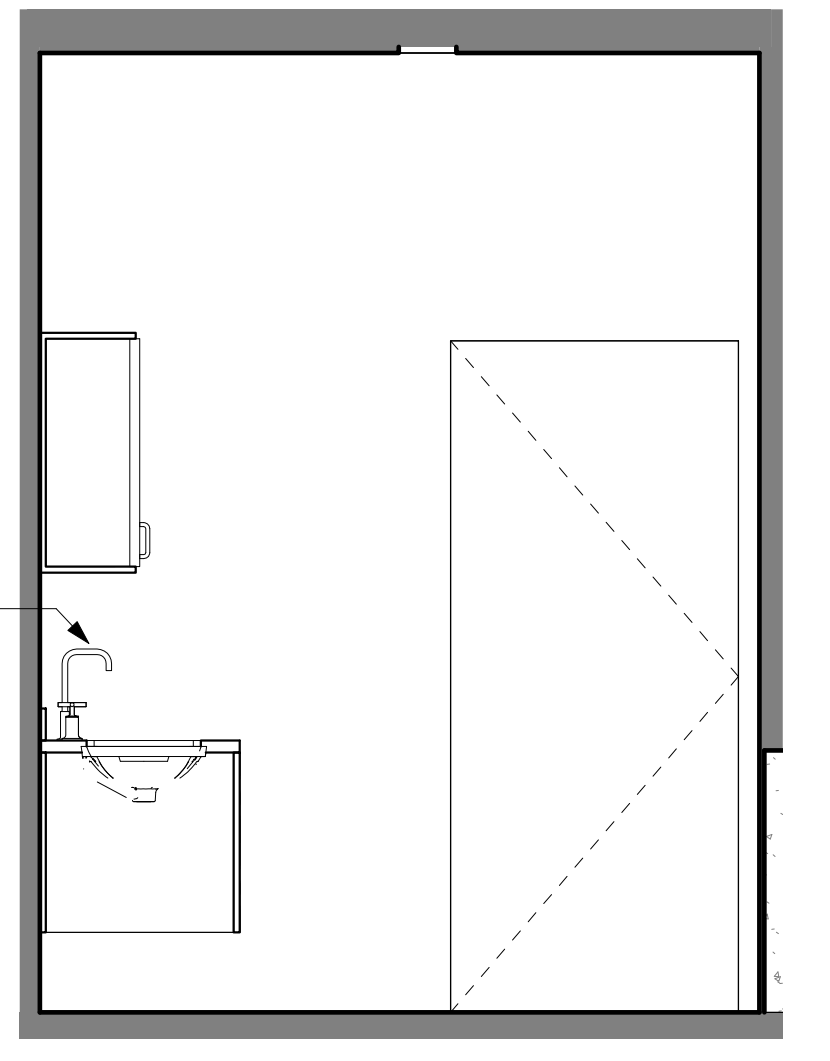
7 Pool Bath Elev. A
 1/2" = 1'-0"



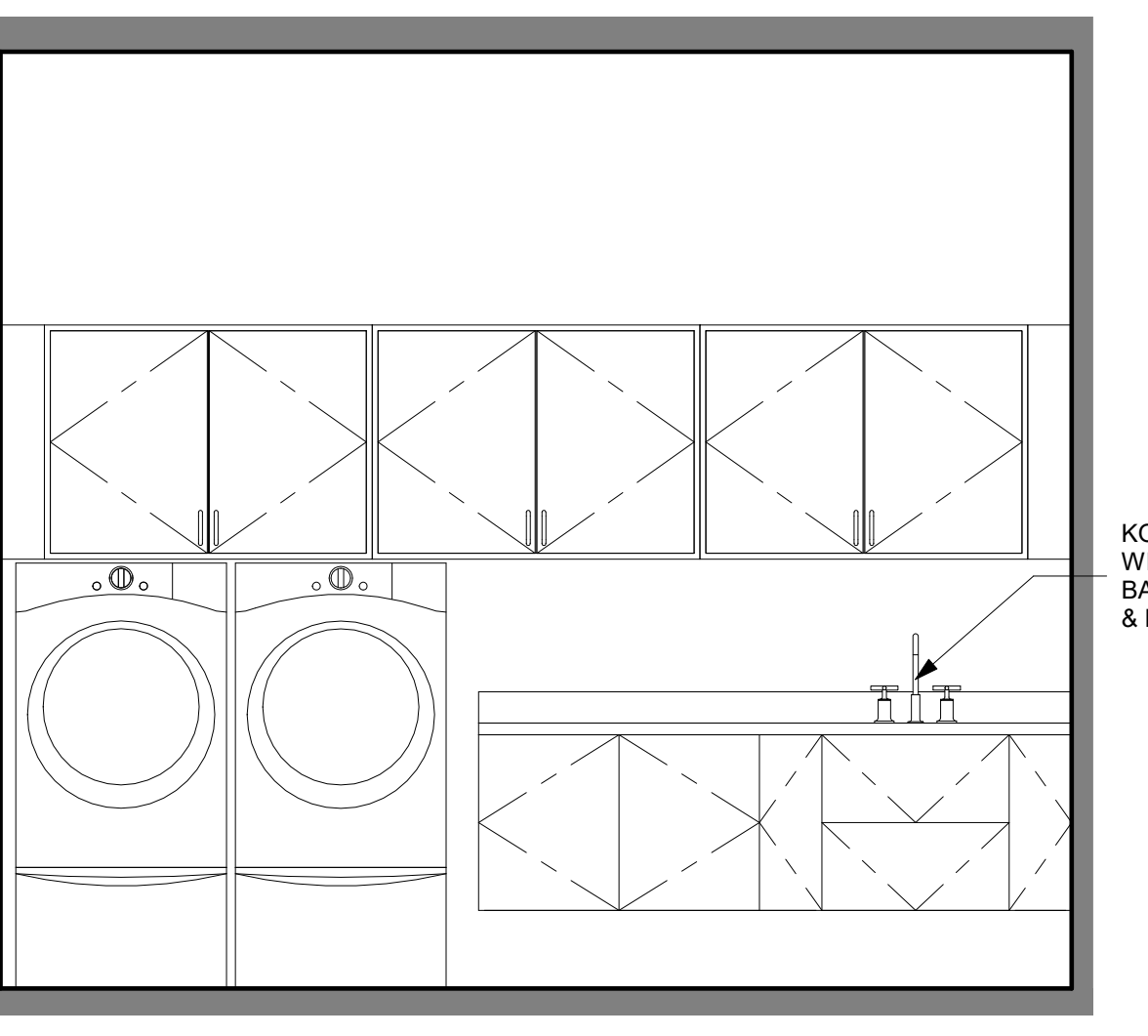
6 Partial Plan @ Pool Bath
 1/2" = 1'-0"



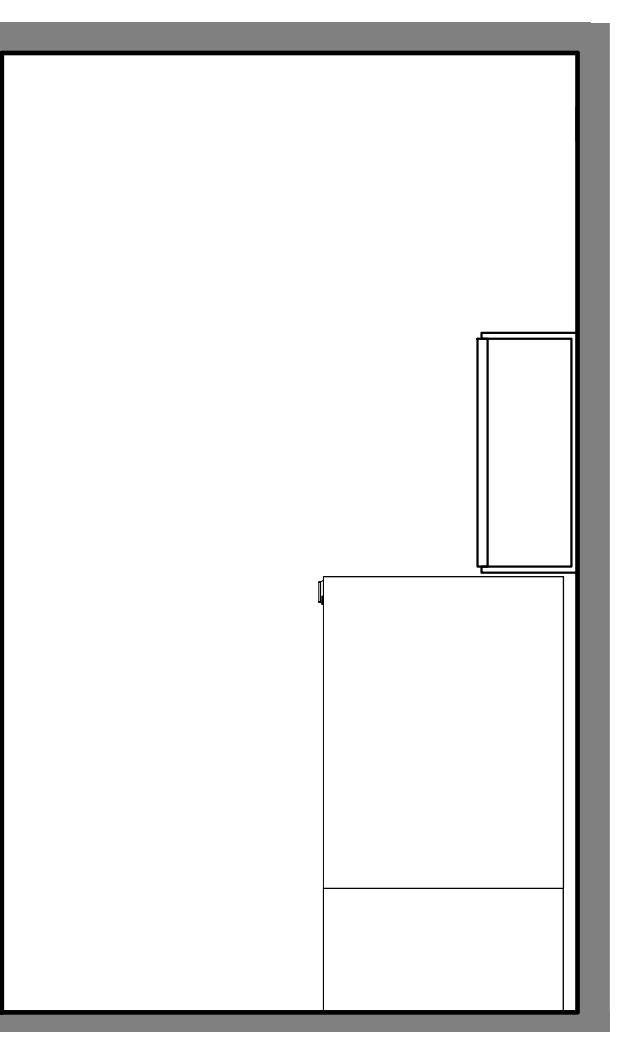
5 Laundry Elev. D
 1/2" = 1'-0"



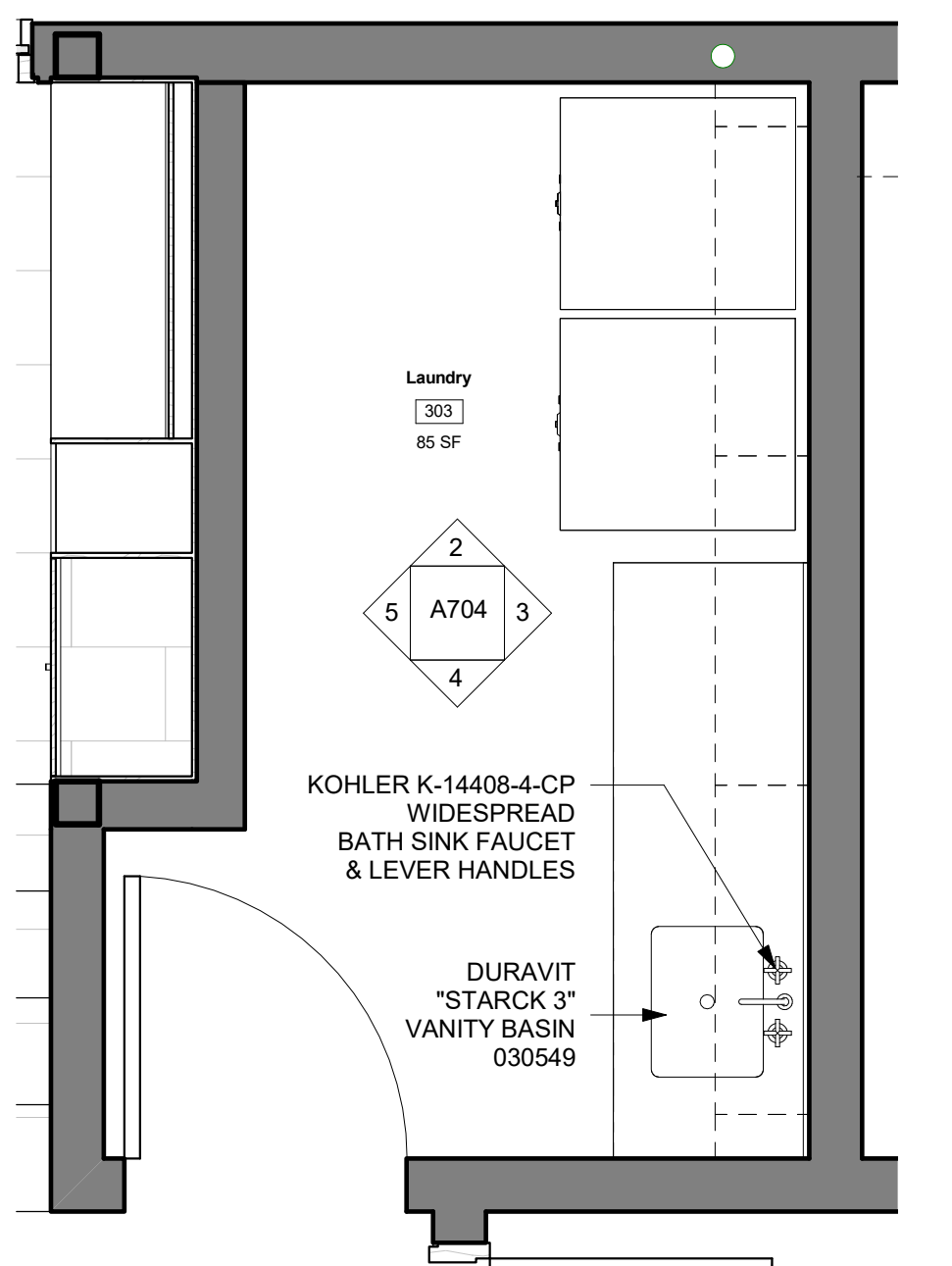
4 Laundry Elev. C
 1/2" = 1'-0"



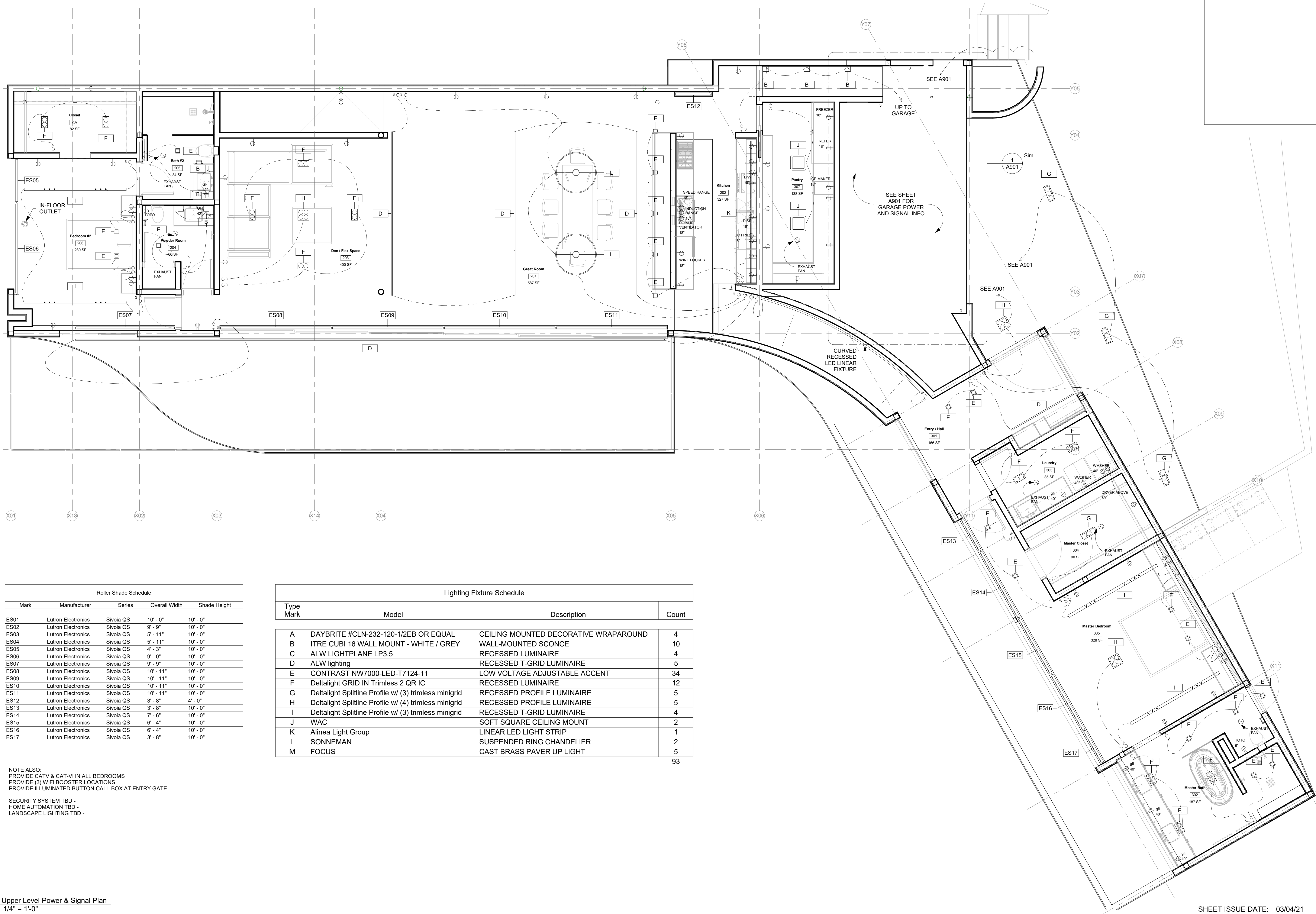
3 Laundry Elev. B
 1/2" = 1'-0"



2 Laundry Elev. A
 1/2" = 1'-0"



1 Partial Plan @ Laundry
 1/2" = 1'-0"



Roller Shade Schedule

| Mark | Manufacturer | Series | Overall Width | Shade Height |
|------|--------------------|-----------|---------------|--------------|
| ES01 | Lutron Electronics | Sivoia QS | 10' - 0" | 10' - 0" |
| ES02 | Lutron Electronics | Sivoia QS | 9' - 9" | 10' - 0" |
| ES03 | Lutron Electronics | Sivoia QS | 5' - 11" | 10' - 0" |
| ES04 | Lutron Electronics | Sivoia QS | 5' - 11" | 10' - 0" |
| ES05 | Lutron Electronics | Sivoia QS | 4' - 3" | 10' - 0" |
| ES06 | Lutron Electronics | Sivoia QS | 9' - 0" | 10' - 0" |
| ES07 | Lutron Electronics | Sivoia QS | 9' - 9" | 10' - 0" |
| ES08 | Lutron Electronics | Sivoia QS | 10' - 11" | 10' - 0" |
| ES09 | Lutron Electronics | Sivoia QS | 10' - 11" | 10' - 0" |
| ES10 | Lutron Electronics | Sivoia QS | 10' - 11" | 10' - 0" |
| ES11 | Lutron Electronics | Sivoia QS | 10' - 11" | 10' - 0" |
| ES12 | Lutron Electronics | Sivoia QS | 3' - 8" | 4' - 0" |
| ES13 | Lutron Electronics | Sivoia QS | 3' - 8" | 10' - 0" |
| ES14 | Lutron Electronics | Sivoia QS | 7' - 6" | 10' - 0" |
| ES15 | Lutron Electronics | Sivoia QS | 6' - 4" | 10' - 0" |
| ES16 | Lutron Electronics | Sivoia QS | 6' - 4" | 10' - 0" |
| ES17 | Lutron Electronics | Sivoia QS | 3' - 8" | 10' - 0" |

Lighting Fixture Schedule

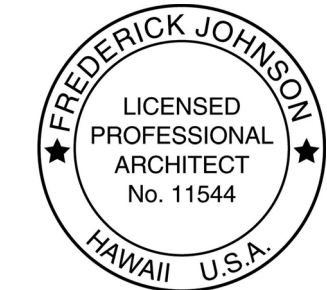
| Type Mark | Model | Description | Count |
|-----------|--|---------------------------------------|-------|
| A | DAYBRITE #CLN-232-120-1/2EB OR EQUAL | CEILING MOUNTED DECORATIVE WRAPAROUND | 4 |
| B | ITRE CUBI 16 WALL MOUNT - WHITE / GREY | WALL-MOUNTED SCONCE | 10 |
| C | ALW LIGHTPLANE LP3.5 | RECESSED LUMINAIRE | 4 |
| D | ALW lighting | RECESSED T-GRID LUMINAIRE | 5 |
| E | CONTRAST NW7000-LED-T7124-11 | LOW VOLTAGE ADJUSTABLE ACCENT | 34 |
| F | Deltalight GRID IN Trimless 2 QR IC | RECESSED LUMINAIRE | 12 |
| G | Deltalight Splitline Profile w/ (3) trimless minigrd | RECESSED PROFILE LUMINAIRE | 5 |
| H | Deltalight Splitline Profile w/ (4) trimless minigrd | RECESSED PROFILE LUMINAIRE | 5 |
| I | Deltalight Splitline Profile w/ (3) trimless minigrd | RECESSED T-GRID LUMINAIRE | 4 |
| J | WAC | SOFT SQUARE CEILING MOUNT | 2 |
| K | Alinea Light Group | LINEAR LED LIGHT STRIP | 1 |
| L | SONNEMAN | SUSPENDED RING CHANDELIER | 2 |
| M | FOCUS | CAST BRASS PAVER UP LIGHT | 5 |
| | | | 93 |

NOTE ALSO:
 PROVIDE CATV & CAT-VI IN ALL BEDROOMS
 PROVIDE (3) WIFI BOOSTER LOCATIONS
 PROVIDE ILLUMINATED BUTTON CALL-BOX AT ENTRY GATE

SECURITY SYSTEM TBD -
 HOME AUTOMATION TBD -
 LANDSCAPE LIGHTING TBD -

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1 Lumahai

TMK: [Blank]

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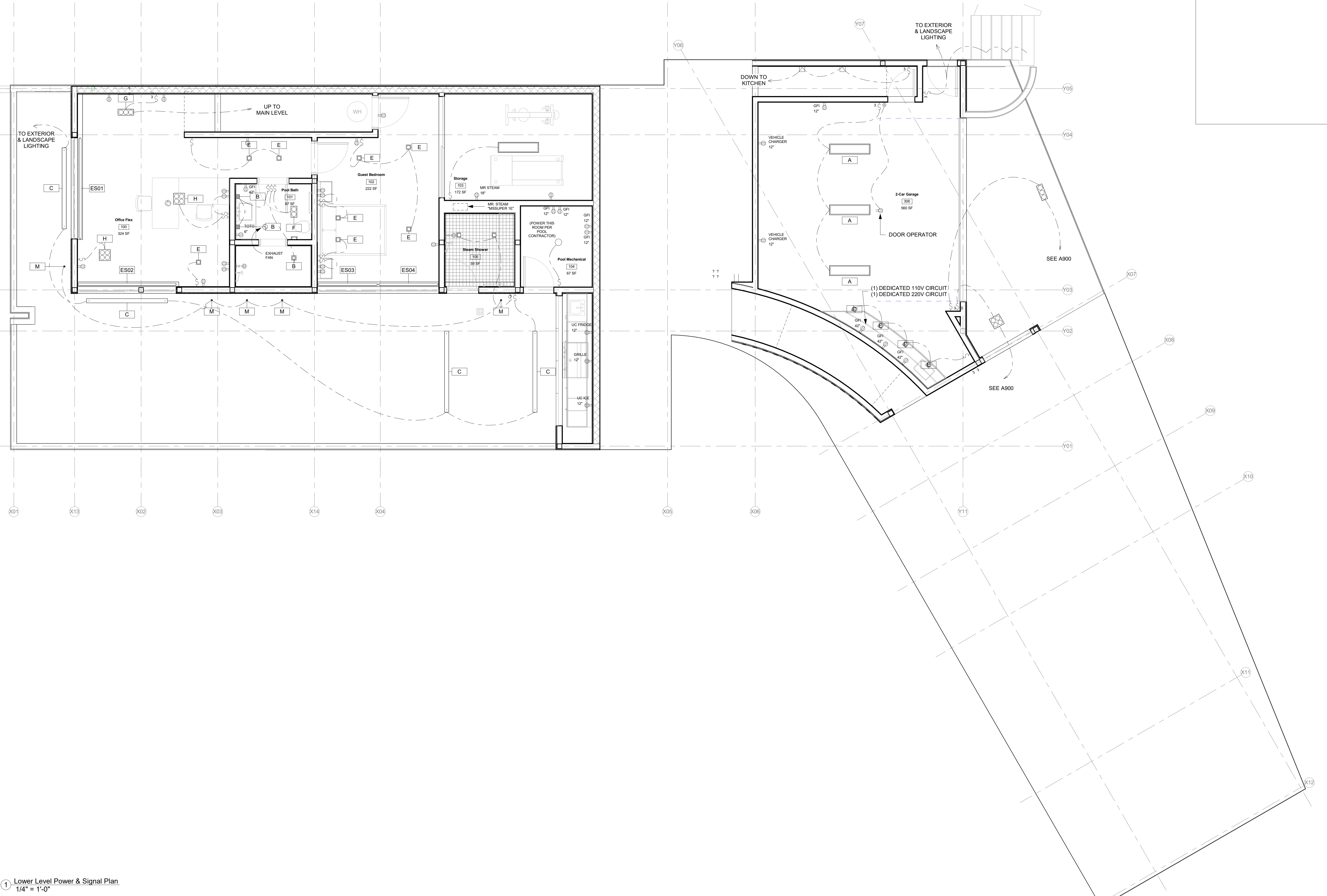
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REVISIONS

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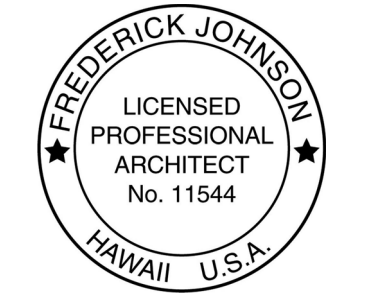
Upper Levels Power and Signal Plan
 1/4" = 1'-0"

A900



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| Checked by: | Checker |

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Lower Level Power and Signal Plan

1/4" = 1'-0"
A901

1 Lower Level Power & Signal Plan
1/4" = 1'-0"

SHEET ISSUE DATE: 03/04/21

| Door Schedule | | | | | | | |
|---------------|-----------|-----------|----------|-------------|---|---------------------------------------|-----|
| Mark | Door Type | Width | Height | Thickness | Door Operation Type | Comments | GRP |
| 100 | A | 2' - 10" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 101 | A | 3' - 0" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 102 | B | 10' - 0" | 7' - 0" | 0' - 1 3/8" | Sliding Closet | Solid Core | 3 |
| 103 | E | 3' - 0" | 10' - 6" | 0' - 1 3/8" | Swing | Exterior Solid Core | 1 |
| 104 | C | 12' - 10" | 9' - 0" | 0' - 2 3/4" | Pocketing / Folding Hafele (or similar) | Custom Exterior Door Set | 5 |
| 105 | A | 3' - 0" | 8' - 0" | | | | |
| 106 | K | 2' - 6" | 8' - 0" | | | | |
| 200 | A | 3' - 0" | 7' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 201 | A | 3' - 0" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 202 | A | 3' - 0" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | |
| 203 | D | 0' - 0" | 0' - 0" | 0' - 0" | Cased Opening | No Panel | 1 |
| 204 | E | 3' - 0" | 8' - 0" | 0' - 1 3/4" | Swing | Exterior Solid Core | 1 |
| 205 | J | 2' - 6" | 7' - 0" | 0' - 1 3/8" | Sliding Pocket | Solid Core | 2 |
| 206 | A | 3' - 0" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 207 | A | 2' - 10" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 208 | A | 2' - 10" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 209 | A | 3' - 0" | 8' - 0" | 0' - 1 3/8" | Swing | Solid Core | 1 |
| 210 | D | 0' - 0" | 0' - 0" | 0' - 0" | Cased Opening | No Panel | |
| 211 | G | 18' - 0" | 7' - 0" | 0' - 2" | Overhead Coiling Multi-Panel | Raynor Styleview W/ Safety Glass | 4 |
| 212 | F | 2' - 8" | 7' - 0" | 0' - 1 3/8" | Swing | Fire Rated Garage Door W/ Self-Closer | 1 |

| Door Hardware Schedule | | | | | | | |
|------------------------|---------------------------------|----------------|-------------------|-------------------------|------------------|--------------|--------------------|
| GRP | Door Type | Door Thickness | Quantity per door | Item | Item MFG | Item Model # | Item Finish |
| 1 | Swing RH or LH thickness varies | 0' - 1 3/8" | 3 | Decorative Barrel Hinge | McKinney | SQ3331 | Satin Nickel |
| | | | 2 | Levers | FSB | 1076 | Aluminum |
| 2 | Sliding Pocket | 0' - 1 3/8" | 1 | Lockset | FSB | E 8801 7139 | Aluminum |
| | | | 1 | Door Stop | FSB | 3381 | Aluminum |
| | | | 1 | Flush Pull | Halliday+Bailie | HB660 | Satin Chrome |
| | | | 1 | Cavity Pull | Halliday+Bailie | HB680 | Satin Chrome |
| | | | 1 | Framing Kit | Hafele | 940.94.004 | Steel, Zinc plated |
| 3 | Sliding Closet | 0' - 1 3/8" | 1 | Upper Track | Hawa | Junior 80/Z | Aluminum |
| | | | 1 | Jamb Bolt | Schlage | IVE-42B15 | Satin Nickel |
| | | | 1 | Flush Pull | Halliday+Bailie | HB660 | Satin Chrome |
| | | | 1 | Hardware Set | Johnson Hardware | 111SD | NA |
| 4 | Overhead Sectional | 0' - 1 1/2" | 1 | Radius Torsion Hardware | Raynor | TBD | TBD |
| | | | 2 | Flush Pull | Halliday+Bailie | HB665 | Satin Chrome |
| 5 | Hardware by Mfg | | | | | | |

Kitchen - 202

Wolf Downdraft Ventilator DD36
Wolf Induction Cooktop C136C/B
Wolf Built-In Oven SPO30PE/S/PH
Miele Dishwasher G6745SCUAM
Kohler "Vault" Undermount Sink K-3838-4-NA
Kohler "Purist" Single-hole Faucet K-7505-CP
(2) Insinkerator Evolution Compact Garbage Disposal 28238
Kohler "Stages" Undermount Prep Sink K-3760-NA
Franke "Ambient" Satin Nickel faucet FFP3180
SubZero Under-Counter Wine Locker UW-24/S
SubZero Under-Counter Refrigerator UC-24C

Pantry - 307

SubZero Built-in Refrigerator BI-36R/S
SubZero Built-in Freezer BI-36F/S
Scottsman Ice Machine SCN60

Laundry - 303

(2) Whirlpool Washer WFV85HEFW
Whirlpool Dryer WED85HEFW
Duravit "Starck 3" Vanity Basin
Kohler faucet K-14408-4-CP Sink Faucet

Powder Room - 204

Kohler "Purist" K-T14414-4-CP wall-mounted faucet
Duravit "Starck 3" vanity basin
Porcelanosa "Tower Mirror"
Toto MW6423056CEFG with Washlet
Kohler "Purist" K-1437-CP paper holder
Kohler "Purist" K-14441-CP towel ring

Pool Bath - 101

Kohler "Purist" K-22178-G-CP Handshower Kit
Kohler "Purist" K-13695-G-CP Rainhead
Kohler "Purist" valve w/ push-button diverter
Kohler "Purist" K-1437-CP Paper Holder
Toto MW6423056CEFG with Washlet
Kohler "Purist" K-T14414-4-CP wall-mounted faucet
Duravit "Starck 3" vanity basin
(2) Kohler "Purist" K-14436-CP towel bar
Porcelanosa "Tower Mirror"

Bath #2 - 205

Kohler "Purist" K-22178-G-CP Handshower Kit
Kohler "Purist" K-13695-G-CP Rainhead
Kohler "Purist" valve w/ push-button diverter
Kohler "Purist" K-1437-CP Paper Holder
Toto MW6423056CEFG with Washlet
Kohler "Purist" K-T14414-4-CP wall-mounted faucet
Duravit "Starck 3" vanity basin
(2) Kohler "Purist" K-14436-CP towel bar
Porcelanosa "Tower Mirror"

Master Bath - 201

Kohler "Purist" K-22178-G-CP handshower kit
Kohler "Purist" K-TS-14422-4 shower valve / shower head kit
Kohler "Purist" K-13695-G-CP rainhead
Kohler "Laminar" K-923 ceiling-mount bath filler
Toto MW6423056CEFG with Washlet
Boffi "Iceland" freestanding tub
Kohler "Purist" valve for tub
(2) Duravit "Starck 3" vanity basin
(2) Kohler "Purist" K-14404-4A-CP Tall Single-Handle Faucet
(2) Kohler "Purist" K-14436-CP towel bar
Kohler "Purist" K-1437-CP Paper Holder

Steam Shower - 105

Mr. Steam "MSSUPER 1E"
Outside:
Kohler "Purist" K-TS-14422-4 shower valve / shower head kit
Kohler "Purist" K-13695-G-CP rainhead

BBQ Area

Wolf Outdoor Grill OG42
Scottsman Ice Machine SCN60
SubZero Under-Counter Refrigerator UC-24C
Franke "Ambient" Satin Nickel faucet FFP3180
Franke "Kubus" KBX110-13 Prep Sink

| Exterior Glazing Schedule | | | | | | |
|---------------------------|----------|----------|---------------------------|--------|------------------------|------------------|
| Mark | Width | Height | Type | Room # | Comments | area |
| 1-1 | 44" | 54" | Fleetwood Series 4800-T | 202 | | 17 SF |
| 2-1 | 63 3/4" | 89 3/4" | Casement Unit | 206 | | 40 SF |
| 2-2 | 89 1/4" | 89 3/4" | Fleetwood Series 4800-T | 206 | | 56 SF |
| 2-3 | 63 3/4" | 28" | Fleetwood Series 450-T | 206 | Awning Unit | 12 SF |
| 2-4 | 89 1/4" | 28" | Fleetwood Series 450-T | 206 | Awning Unit | 17 SF |
| 3-1 | 83 3/4" | 54" | Fleetwood Series 450-T | 205 | Awning Unit | 31 SF |
| 4-1 | 44" | 54" | Fleetwood Series 4800-T 2 | 203 | Awning Unit | 17 SF |
| 4-2 | 87 3/4" | 54" | Fleetwood Series 450-T | 203 | | 33 SF |
| 5-1 | 83" | 93 3/4" | Fleetwood Series 4800-T | 301 | | 54 SF |
| 5-2 | 83" | 24" | Fleetwood Series 450-T | 301 | | 14 SF |
| 6-1 | 44 5/8" | 35 1/4" | Fleetwood Series 4800-T | 305 | | 11 SF |
| 6-2 | 44 5/8" | 58 1/2" | Fleetwood Series 4800-T | 305 | | 18 SF |
| 6-3 | 44 5/8" | 24" | Fleetwood Series 450-T | 305 | Awning Unit | 7 SF |
| 6-4 | 90 1/8" | 93 3/4" | Fleetwood Series 4800-T | 305 | | 59 SF |
| 6-5 | 90 1/8" | 24" | Fleetwood Series 450-T | 305 | Awning Unit | 15 SF |
| 7-1 | 56 3/8" | 93 3/4" | Fleetwood Series 4800-T | 305 | | 37 SF |
| 7-2 | 56 3/8" | 24" | Fleetwood Series 450-T | 305 | | 9 SF |
| 7-3 | 96" | 93 3/4" | Fleetwood Series 4800-T | 305 | | 63 SF |
| 7-4 | 96" | 24" | Fleetwood Series 4800-T | 305 | | 16 SF |
| 7-5 | 44 5/8" | 51 3/4" | Fleetwood Series 4800-T | 305 | | 16 SF |
| 7-6 | 44 5/8" | 66" | Casement Unit | 305 | Awning Unit | 20 SF |
| 8-1 | 18" | 93 3/4" | Casement Unit | 302 | | 12 SF |
| 8-2 | 71 1/8" | 24" | Fleetwood Series 4800-T | 302 | | 12 SF |
| 8-3 | 106 1/4" | 93 3/4" | Fleetwood Series 4800-T | 302 | | 69 SF |
| 8-5 | 71 1/8" | 24" | Fleetwood Series 4800-T | 302 | | 12 SF |
| 8-6 | 18" | 93 3/4" | Casement Unit | | | 12 SF |
| 9-1 | 60" | 30" | Fleetwood Series 4800-T | 302 | | 13 SF |
| F01 | 36" | 96" | Fleetwood Series 3900-T | | Glass Entrance Door | 24 SF |
| F01-1 | 36" | 30" | Fleetwood Series 4800-T 2 | 302 | | 8 SF |
| 11-1 | 193 5/8" | 30" | Fleetwood Series 4800-T | 305 | 2-panel butt-glazed | 40 SF |
| 12-1 | 78 1/4" | 91 3/4" | Fleetwood Series 4800-T | 301 | | 50 SF |
| 12-1 | 83 3/4" | 54" | Fleetwood Series 450-T | 201 | Awning Unit | 31 SF |
| F02 | 144" | 126" | Fleetwood Series 3900-T | 102 | | 126 SF |
| F04 | 38" | 96" | Fleetwood Series 3900-T | 105 | Glass Entrance Door | 25 SF |
| F04-1 | 38" | 30" | Fleetwood Series 4800-T 2 | | | 8 SF |
| F03 | 119 7/8" | 126" | Fleetwood Series 3900-T | 100 | Glass Entrance Door | 105 SF |
| F05 | 65 1/4" | 96" | Fleetwood Series 3900-T | 301 | Glass Entrance Door | 44 SF |
| F06 | 525 3/8" | 126" | Fleetwood Series 4070-T | | Multi-Slide Glass Door | 460 SF |
| F07 | 117" | 126" | Fleetwood Series 3900-T | 100 | | 102 SF |
| F08 | 90 7/8" | 123 3/4" | Fleetwood Series 3900-T | 206 | | 78 SF 1791 SF |

| Mitsubishi AC Schedule | |
|-------------------------------------|----------------|
| Unit Type | capacity (BTU) |
| PUMY SERIES Mitsubishi Outdoor Unit | 36000 |
| PUMY SERIES Mitsubishi Outdoor Unit | 36000 |
| PUMY SERIES Mitsubishi Outdoor Unit | 36000 |
| | 108000 |



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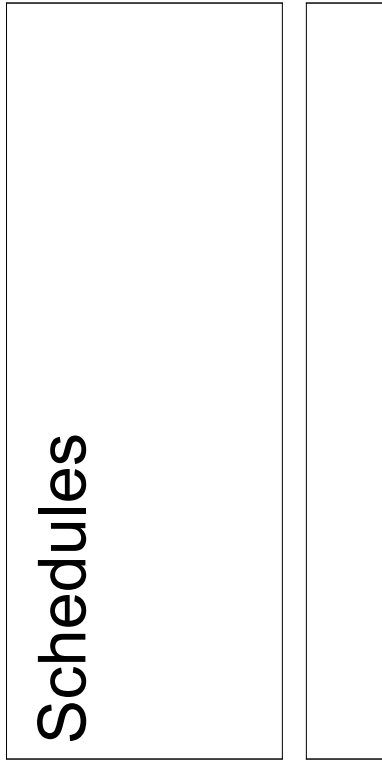
1 Lumahai

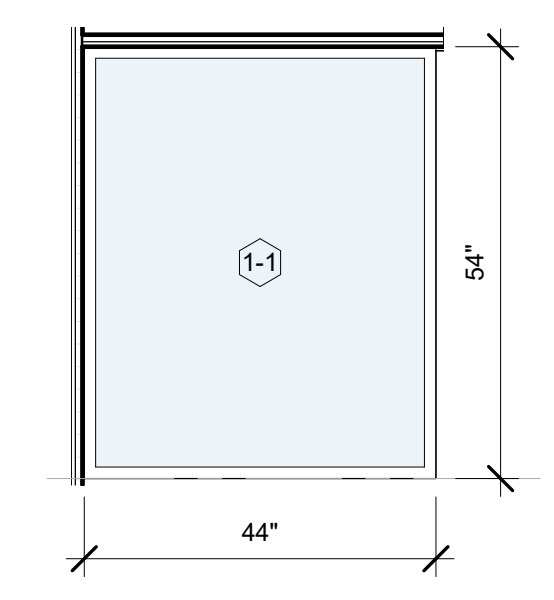
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Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

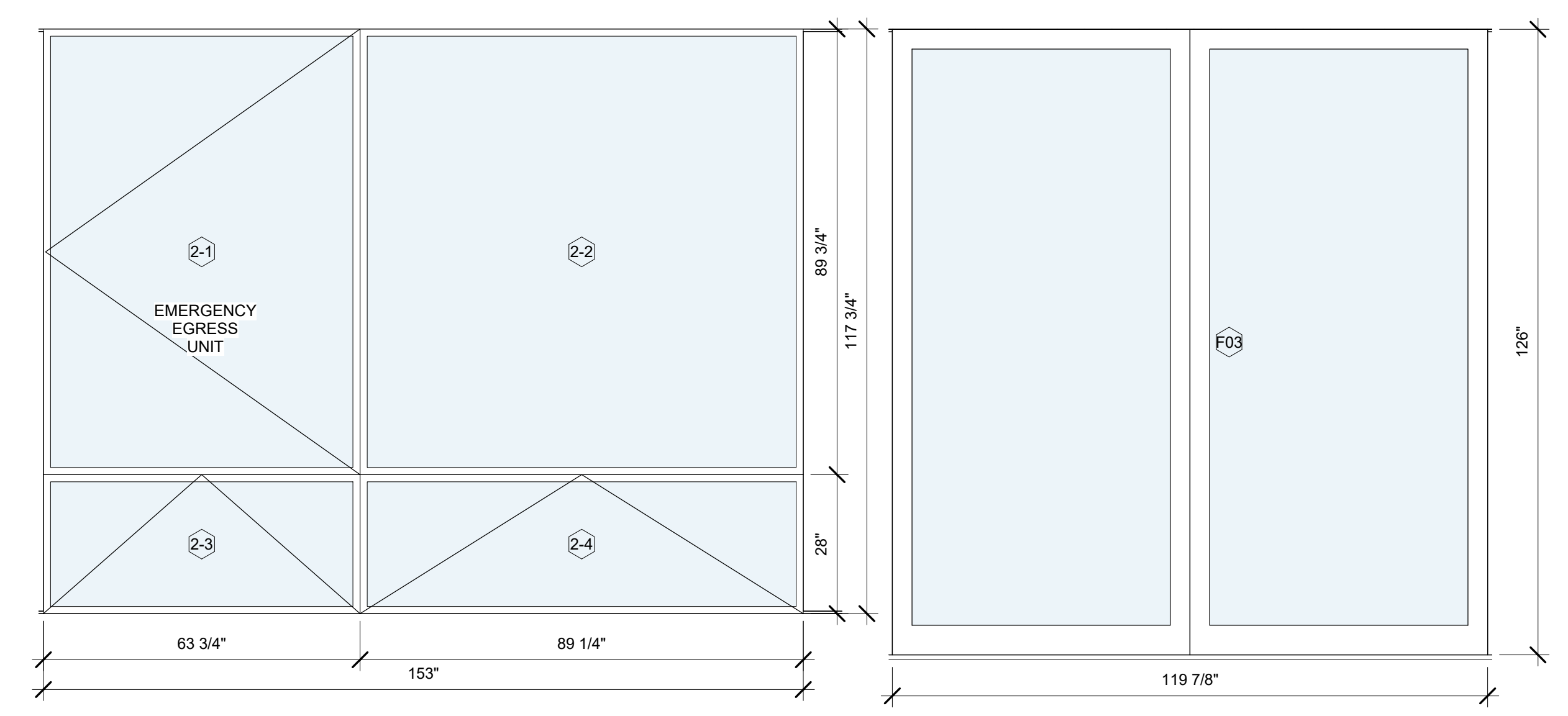
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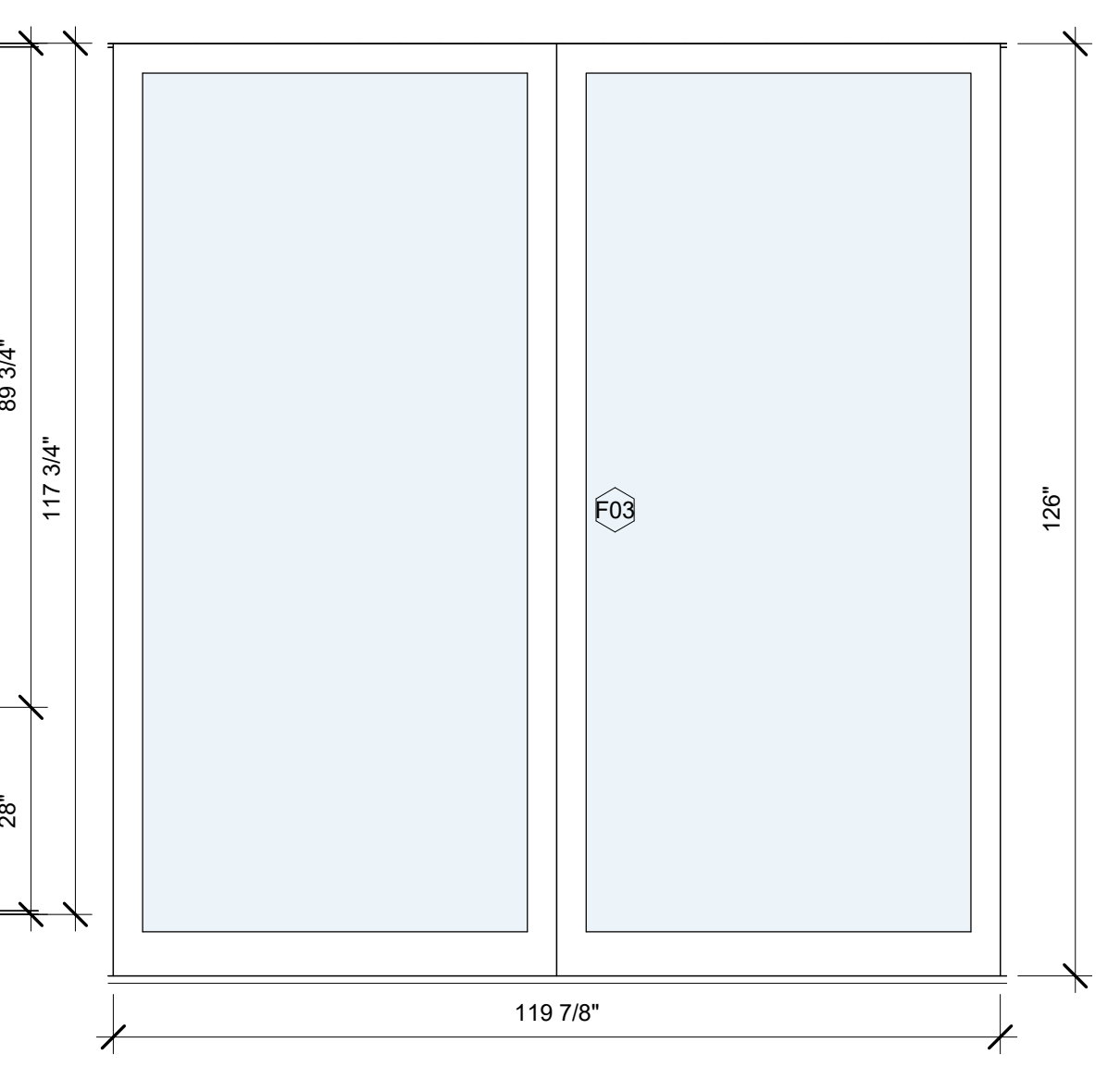




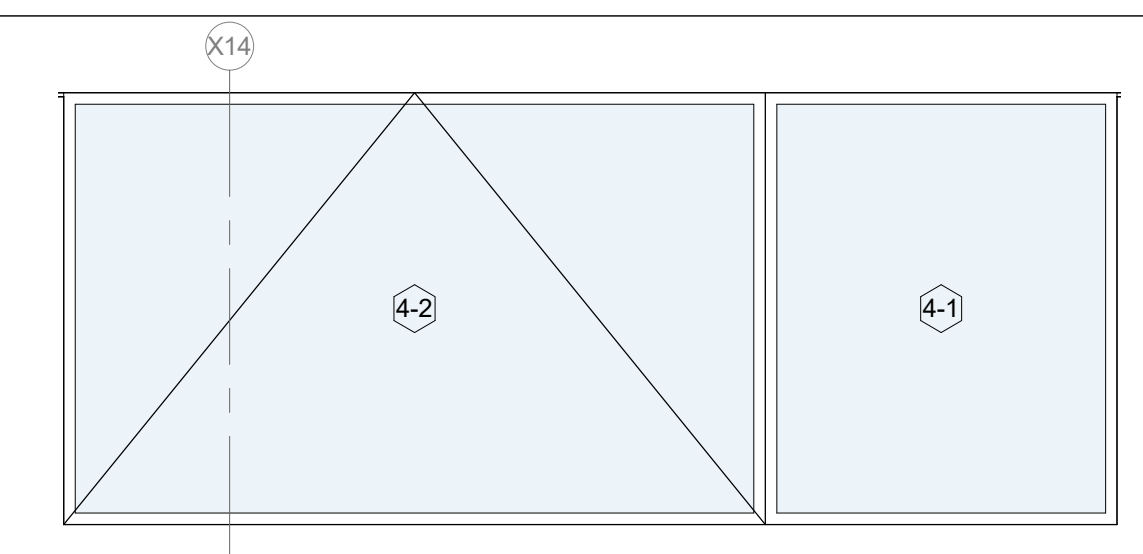
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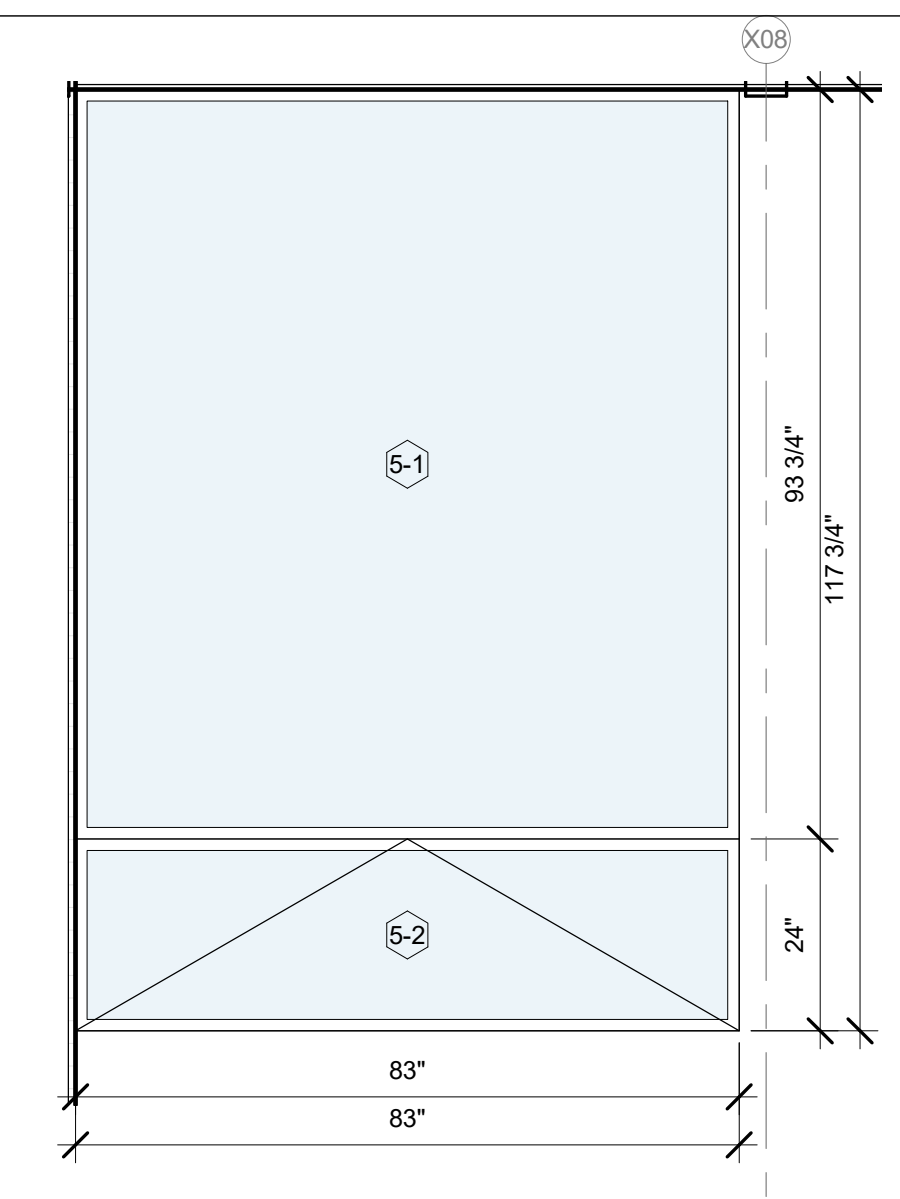
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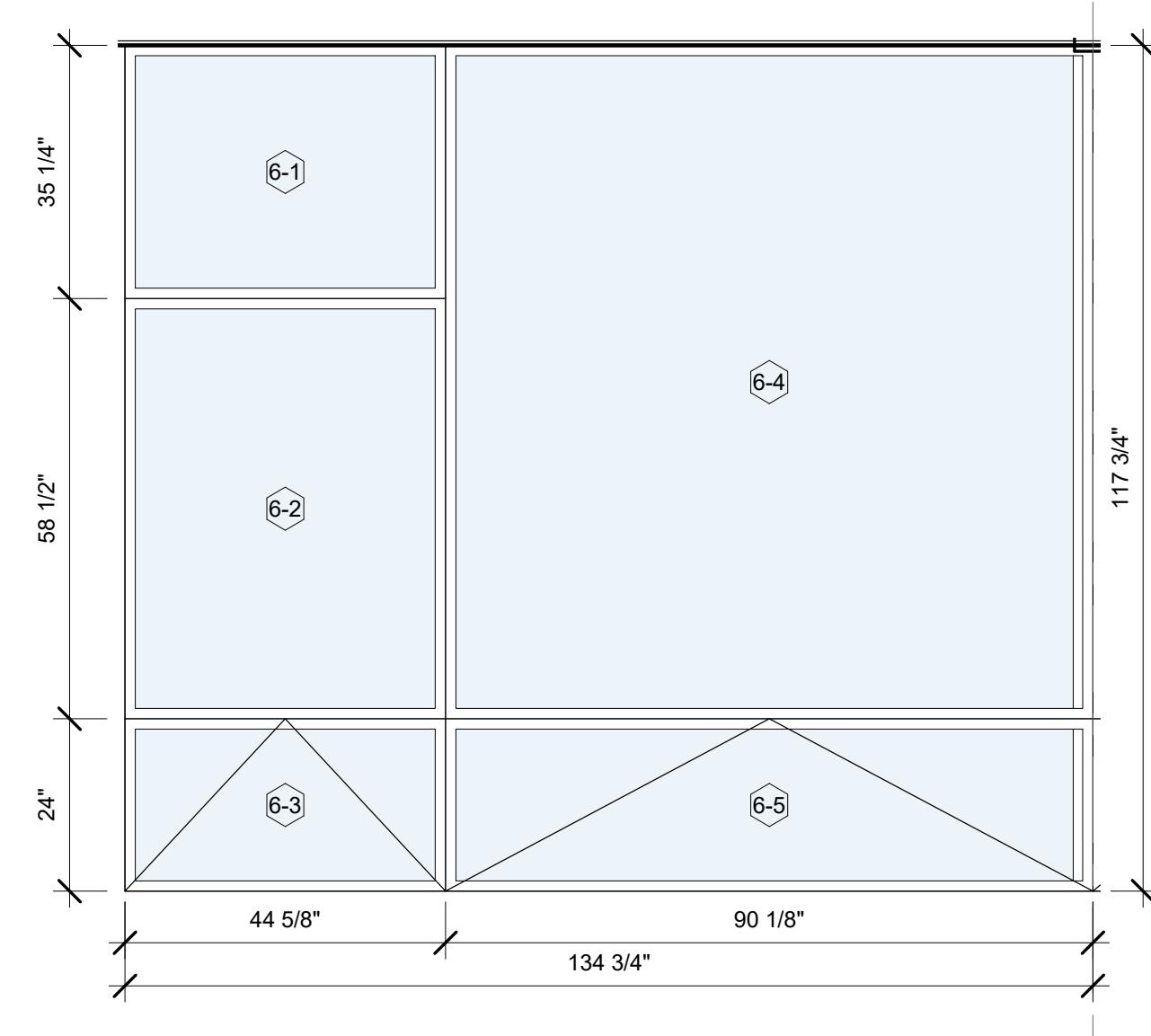
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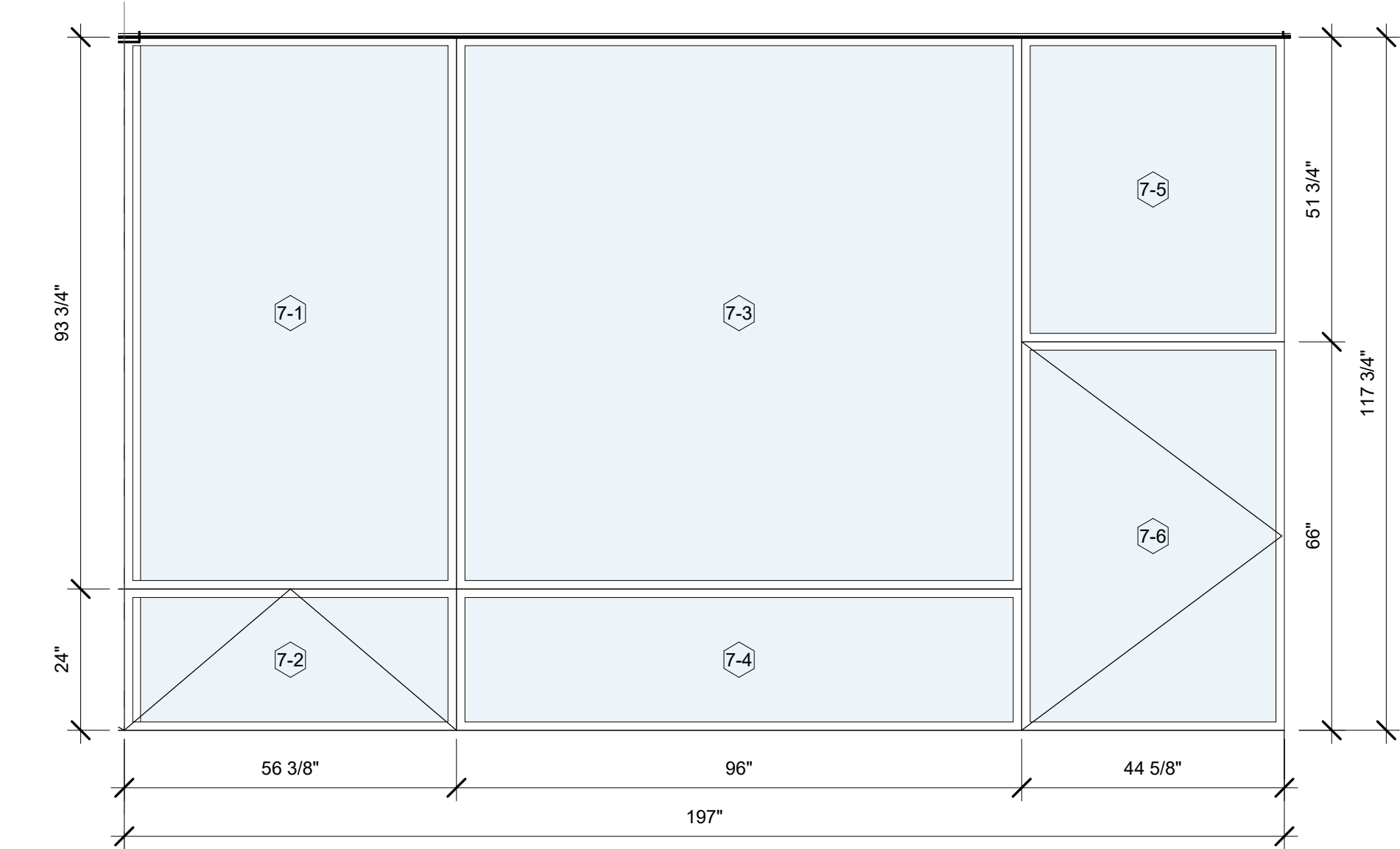
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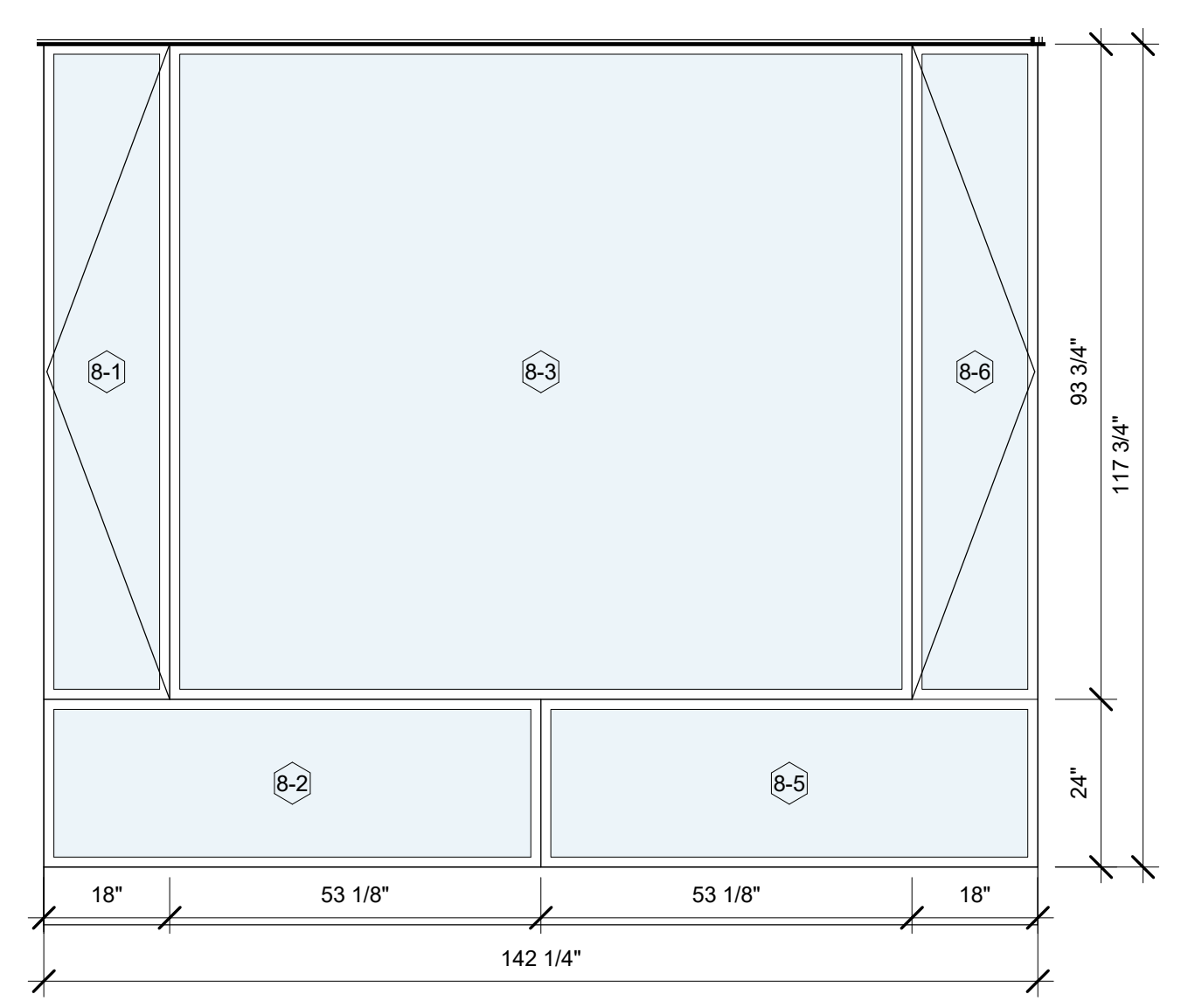
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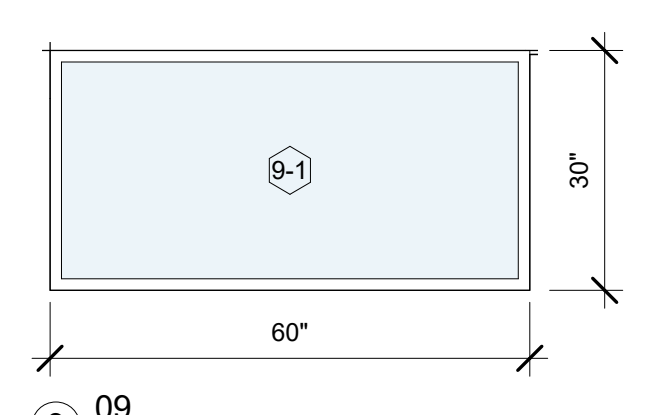
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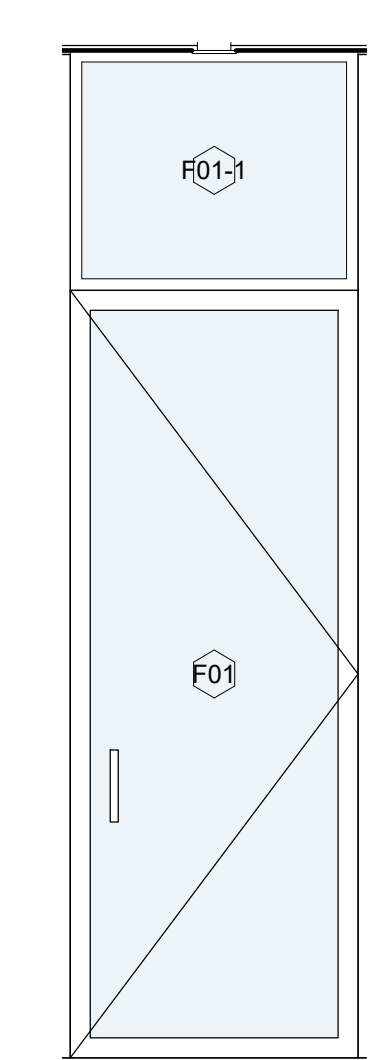
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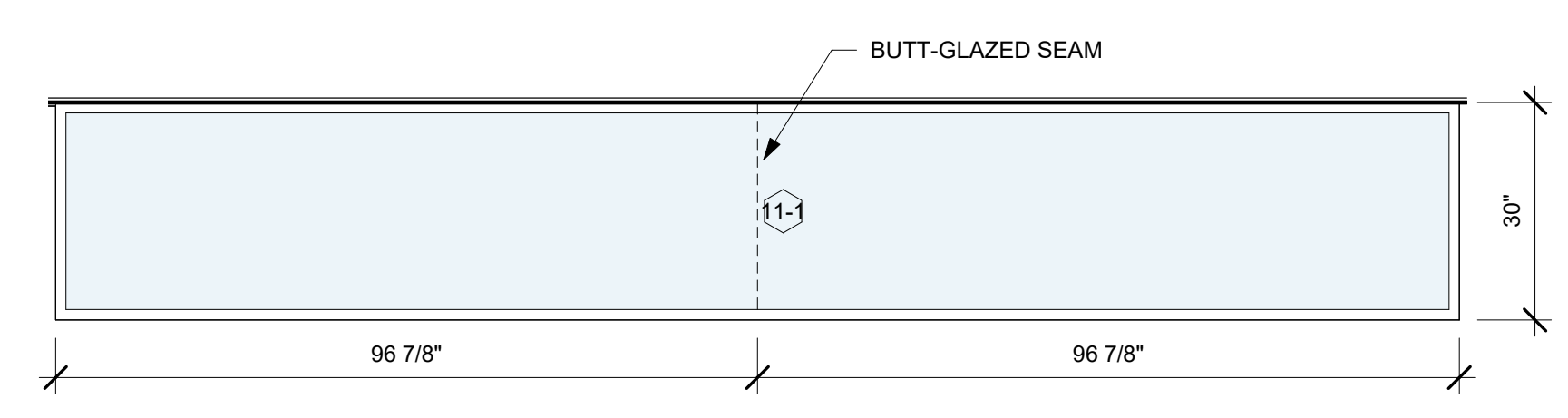
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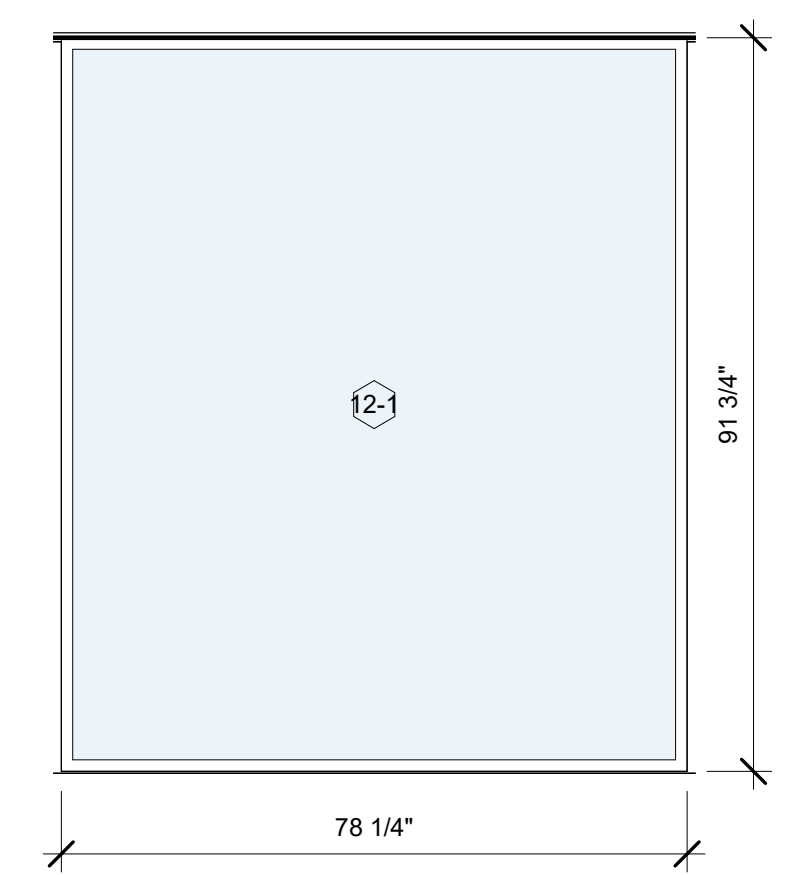
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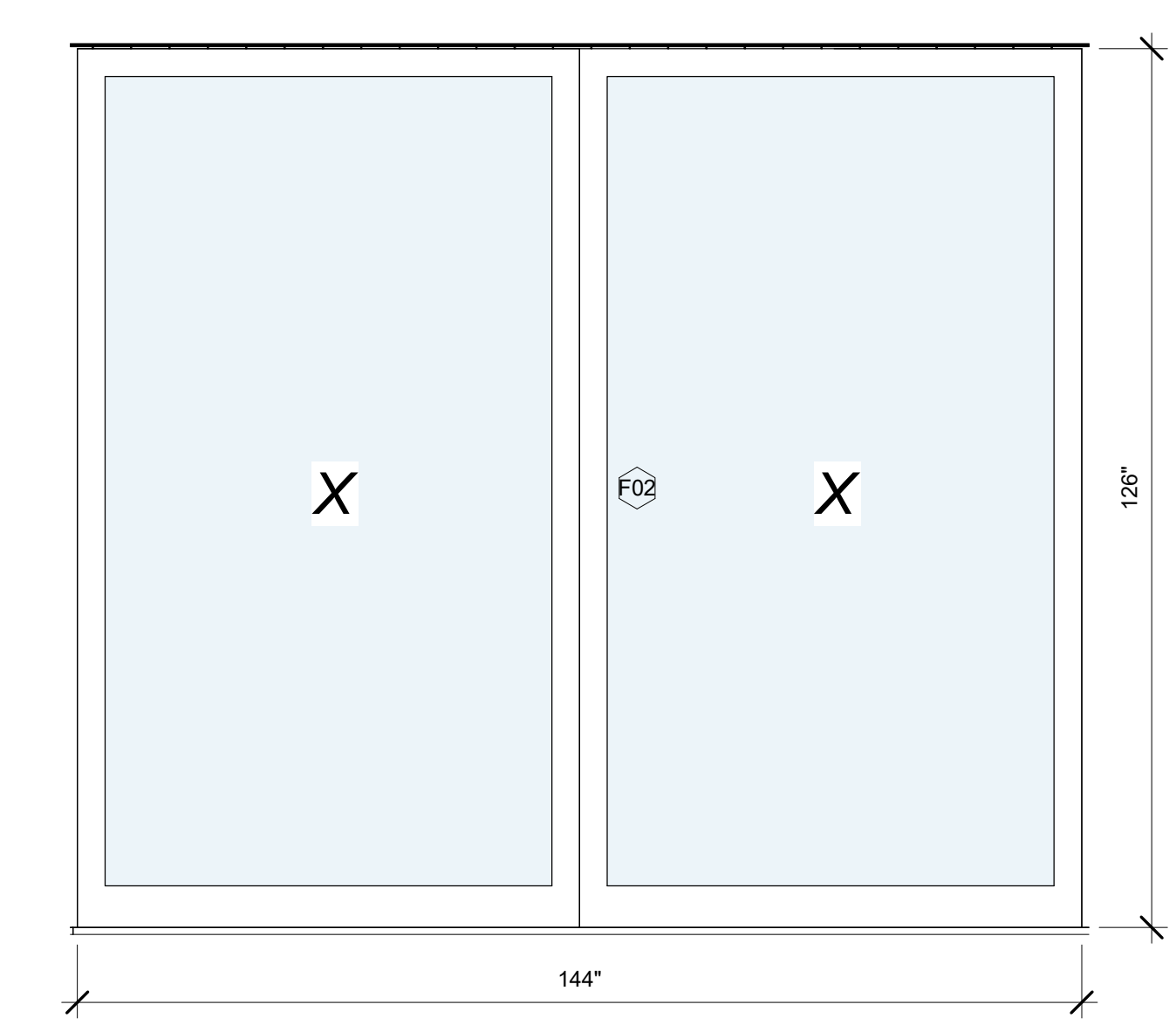
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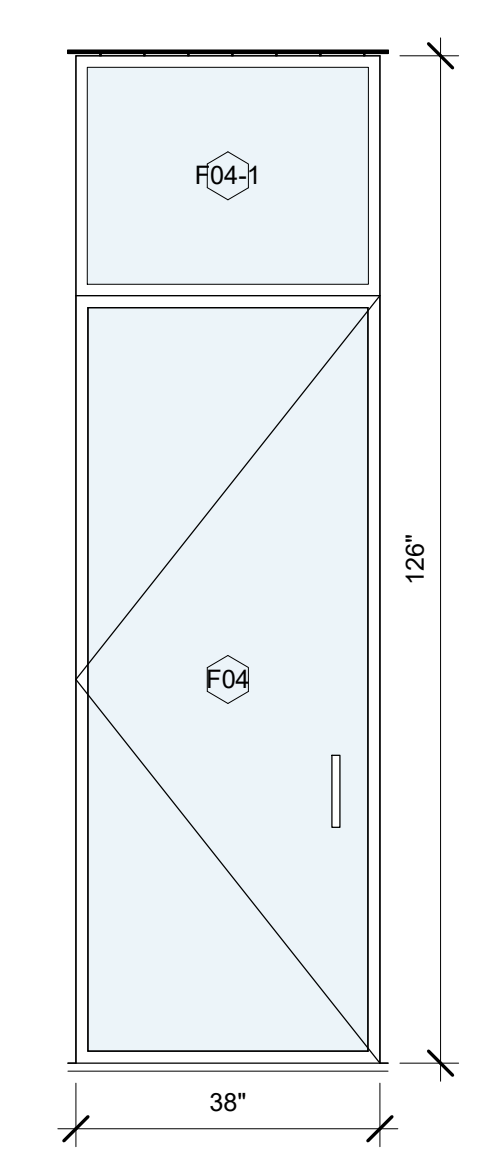
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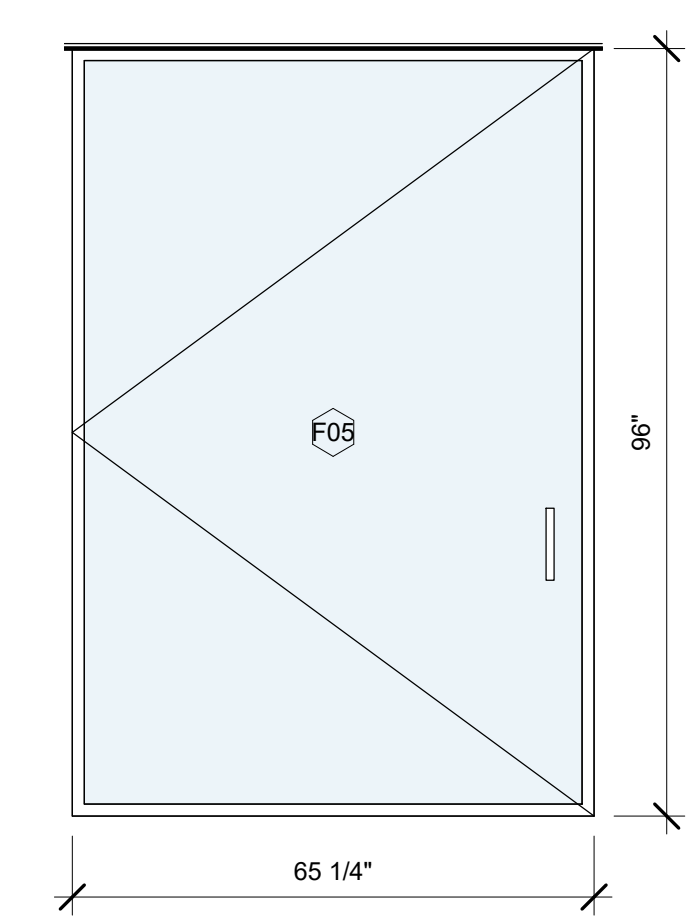
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⑬ F02
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⑭ F04
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⑮ F05
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This work was prepared by me or under my supervision and construction of this project will be under my observation (Supervision of construction as defined in Section 16-85-2 of Title 16, Department of Commerce and Consumer Affairs - Chapter 60, Board of Professional Engineers, Architects and Surveyors of the State of Hawaii).
Signature: _____ Date: 4/30/22
Expiration Date: _____

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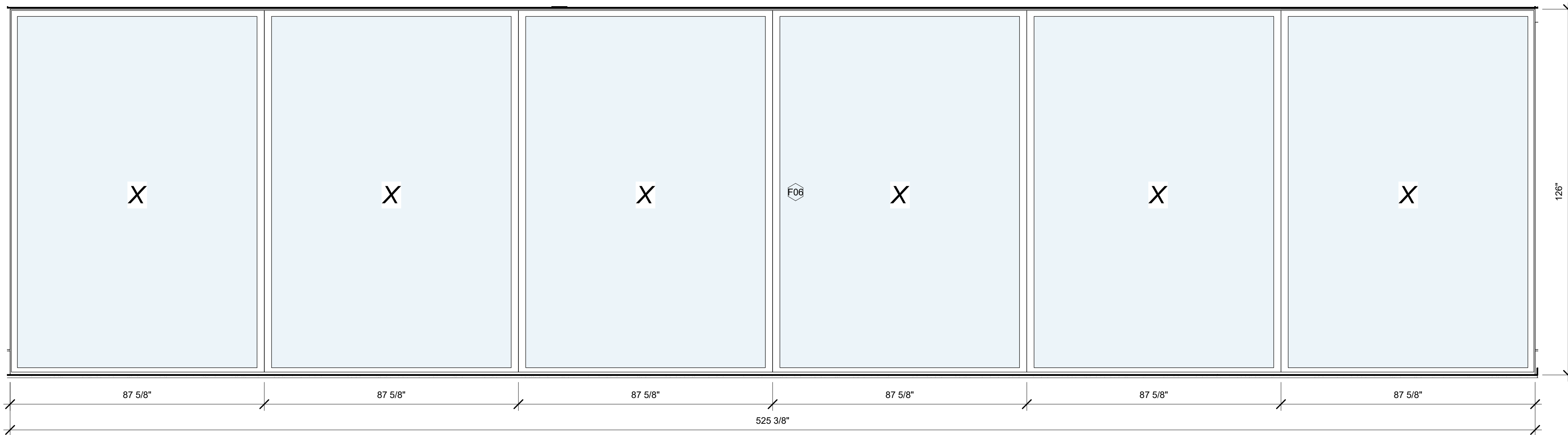
Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

Project number: 20.003
Project issued: _____ Issue Date: _____
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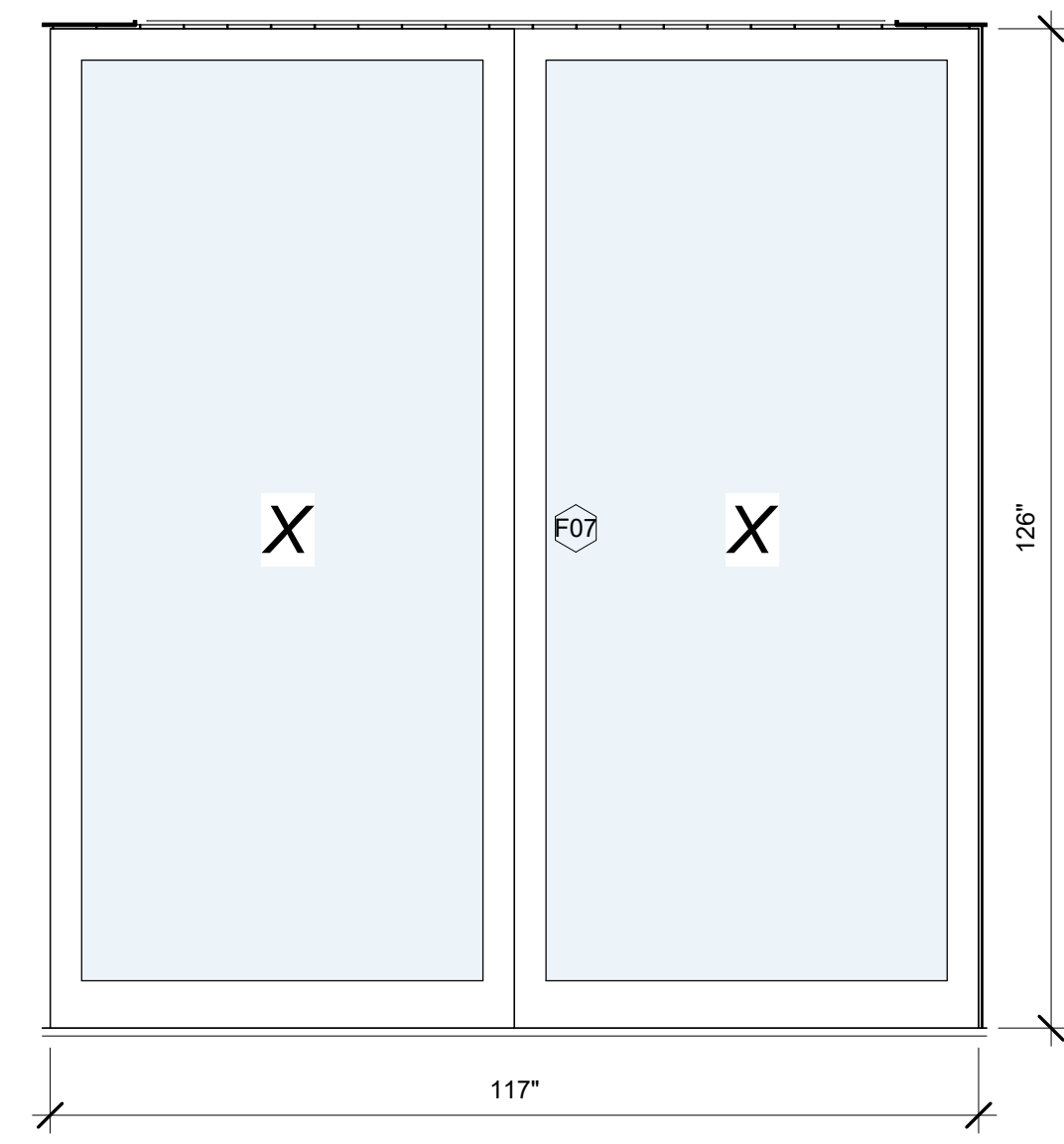
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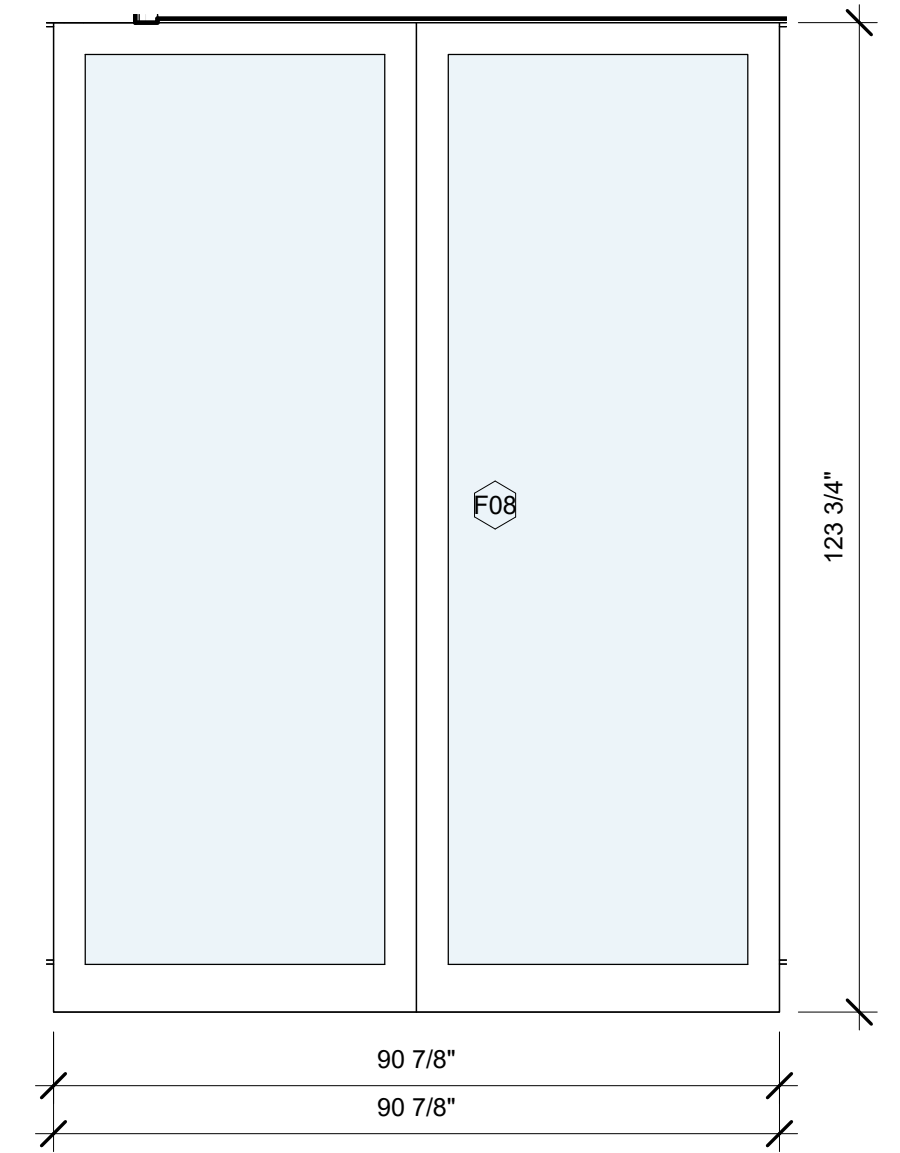
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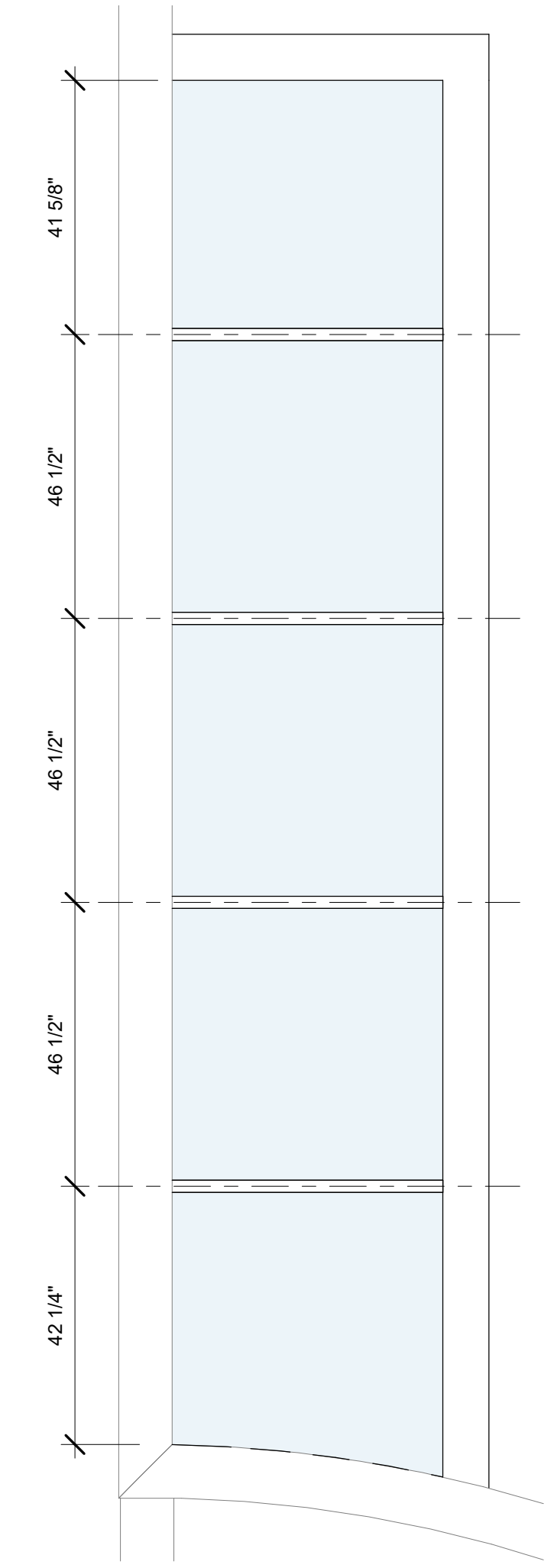
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⑪ F07
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⑫ F08
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⑬ Skylight 02
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Signature: *Fritz Johnson* 4/30/22
Expiration Date

1 Lumahai

TMK:

Client:
Alex Stanyon & Scott Anderson
1 Lumahai Street
Honolulu HI 96825

Project number: 20.003
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Checked by: Checker

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1.3 PROJECT BACKGROUND

The 43,435-square feet subject property was first developed in the late 1970's, with construction of the original 4005-square feet single-family residence completed by September 1, 1979. The property changed ownership and additional improvements were made to the property over the years, including the addition of a swimming pool in 1989 (City and County of Honolulu, Department of Planning and Permitting [DPP], August 2021).

The original residential structure was demolished in 2011. The demolition permit was closed on March 7, 2011 (DPP, August 2021). The subject property has remained vacant since 2011, with only foundation remnants remaining, which include the former pool shell.

The subject property was purchased by Alex Stanyon and Charles Anderson on July 30, 2020. Ms. Stanyon and Mr. Anderson are currently working with Fritz Johnson Architect to design and build a new single-family residential dwelling on the subject property.

1.4 PURPOSE OF THE ENVIRONMENTAL ASSESSMENT

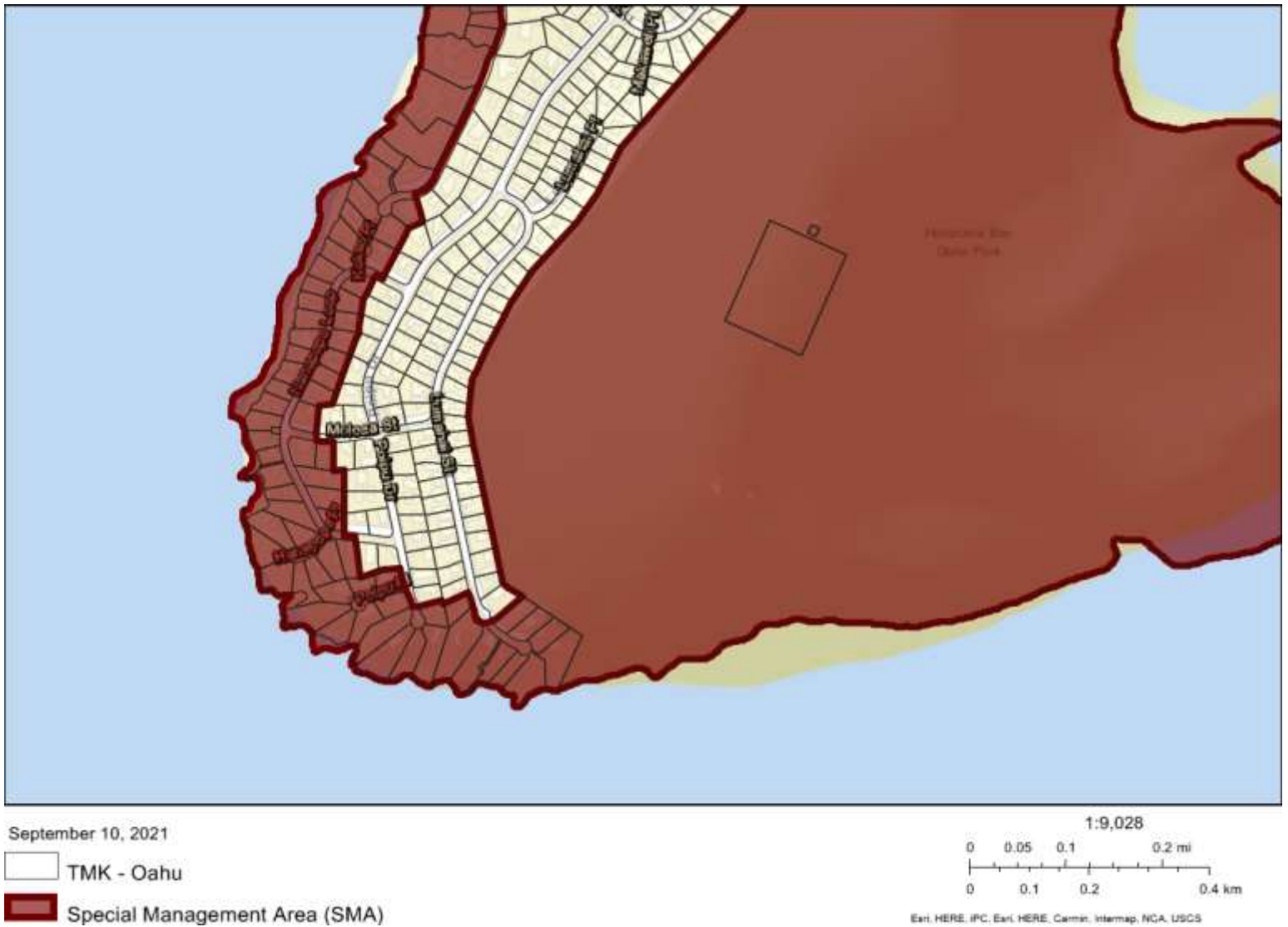
As a result of the 2020 amendment to HRS, Chapter 205A, and in accordance with HRS Chapter 343, and HAR, Title 11 200.1, proposed construction of a new single-family residential dwelling on a shoreline parcel within the SMA is considered development, and is the trigger mechanism for preparation of an EA. The SMA map is shown in Figure 1-3. DPP is the accepting authority for SMA compliance pursuant to Revised Ordinances of Honolulu (ROH), Chapter 25. Processing an SMA application by the DPP is a two (2)-phase process. The first phase involves the acceptance of the HRS, Chapter 343 EA. After the environmental review process, an SMA application will be processed by the DPP, which includes a public hearing. The SMA permit will require approval by the Honolulu City Council. In accordance with Hawaii's Environmental Review process, this Draft EA was prepared to determine the potential environmental impacts of the project and whether any of those impacts are significant according to thirteen (13) specific criteria set forth in HAR Title 11 200.1 to determine whether an Environmental Impact Statement (EIS) shall be required. Pursuant to HAR Title 11-200.1-20, the filing and publication of this Draft EA with the Office of Environmental Quality Control (OEQC) will be followed by a 30-day public comment period. All relevant public comments received during the comment period will be included in the preparation of the Final EA.



This EA has been prepared to comply with the new CCH-DPP regulation requiring an SMA Permit Major for any development, building of a structure, or activity within the SMA, as defined by ROH, Chapter 25, which is in excess of \$500,000, or has substantial adverse environmental or ecological effect. This EA is expected to result in a FONSI.



Figure 1-3. SMA map provided by Hawaii SMA Locator powered by ArcGIS Online.





1.5 REQUIRED PERMITS AND APPROVALS

| Required Permit or Approval | | Approving Authority |
|--|--------------------|---|
| Environmental Assessment / FONSI | | DPP |
| Special Management Area Permit | | DPP |
| Certified Shoreline Survey | | Department of Land and Natural Resources (DLNR) |
| Chapter 6E HRS Compliance Historic Resources | | DLNR, State Historic Preservation Division (SHPD) |
| Construction Permits | Grubbing Permit | DPP |
| | Grading Permit | DPP |
| | Trenching Permit | DPP |
| | Stockpiling Permit | DPP |
| | Demolition Permit | DPP |
| | Building Permit | DPP |
| | Electrical Permit | DPP |
| | Plumbing Permit | DPP |
| Architectural Standards Approval | | Maunalua Triangle Koko Kai Community Association |

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

During the preparation of this EA, Masa Fujioka & Associates (MFA) reached out to various Federal, State, and City agencies, in August and September 2021, to initiate the environmental review process. Fritz Johnson, the project architect, received approval from the local Neighborhood Association, prior to the commencement of this EA. The agencies and organizations contacted are listed below:

- U.S. Fish and Wildlife Service (USFWS), Pacific Islands Office
- State of Hawaii, Department of Business, Economic Development, and Tourism (DBEDT)
- State of Hawaii, Department of Land and Natural Resources (DLNR)
- State of Hawaii, DLNR, State Historic Preservation Division (SHPD)
- State of Hawaii, Office of Planning and Sustainable Development (OPSD)
- City and County of Honolulu, Department of Design and Construction (DDC)



- City and County of Honolulu, Department of Planning and Permitting (DPP)
- City and County of Honolulu, Neighborhood Commission Office, Hawaii Kai Neighborhood Board No. 1
- Maunalua Triangle Koko Kai Community Association

A summary of comments received and list of agencies and other parties that will be provided an opportunity to review the Draft EA is provided in Section 7.0 of this document.



2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The subject property is located at 1 Lumahai Street, in the Portlock community of Hawaii Kai, in the Maunaloa section of the East Honolulu District, on the island of Oahu, in the State of Hawaii. The property is zoned by the City and County of Honolulu (CCH) as R-10 (Residential) (DPP, August 2021) and is listed within a State Urban District, Residential, according to the East Honolulu Sustainable Communities Plan (EHSCP) (City and County of Honolulu, Department of Planning and Permitting [DPP], April 2021). The subject property has a TMK identifier of (1) 3-9-013:030. The subject property is located approximately ¼ mile from Koko Kai Beach Park and ¾ mile from Hanauma Bay. The subject property is bounded by Lumahai Street to the north, the Pacific Ocean to the south, and single-family residences to the east and west.

2.2 SITE CHARACTERISTICS

The subject property is located at the end of a cul-de-sac with residential properties adjacent to the east and west. The subject property consists of a 43,435-square foot parcel consisting of foundation remnants from a previous residential structure, utility infrastructure, and a concrete slab associated with the previously demolished residence on the northern portion of the property. Overgrown, native, and non-native trees, shrubs, and vegetation are present throughout the gently sloping north, east, and west portions of the property. The southern portion of the property is comprised of a rocky, cliff-face overlooking various rock ledges and the Pacific Ocean (see Figures 2-1 and 2-2).

2.2.1 EXISTING USES AND CONDITIONS

The 43,435-square feet subject property is currently vacant, with no structures present on the property. Remnants of the previous residence's foundation are visible on the northern portion of the property. Native, as well as non-native vegetation, including trees, shrubs, and grasses are growing in the cracks of the deteriorating remnants of the foundation and concrete pad areas. The southern portion of the property appears to be comprised of highly weathered volcanic tuff, forming sea cliffs, extending approximately 150 feet (ft) above the Pacific Ocean, and includes a public access easement (see Figures 2-3 through 2-6).



Figure 2-1. Exiting conditions of the southern portion of the subject property.



Figure 2-2. Existing conditions along the southern border of the subject property.





Figure 2-3. Existing conditions along the eastern border of the subject property.



Figure 2-4. Existing conditions along the northern border of the subject property.





Figure 2-5. Existing conditions of the norther border of the subject property.



Figure 2-6. Existing conditions of the subject property the facing south direction.





2.2.2 ADJACENT LAND USES

Land use adjacent to the subject property is comprised of residential development, made up of single-family residences, encompassing the Maunalua Bay View subdivision of the Koko Kai/Portlock community, to the north and west of the property. One (1) two-story single-family residential dwelling is located east of the subject property, followed by undeveloped, open space, associated with the Hanauma Bay Marine Life Conservation District (MLCD) (DPP, April 2021), which includes the ihihilauakea Preserve. The Pacific Ocean is south of the subject property.

2.2.3 SHORELINE CHARACTERISTICS

The coastline of the subject property is characterized as rocky steep cliffside, locally known as Spitting Caves. The shoreline consists of highly weathered, volcanic tuff with little to no vegetation. To the west, the shoreline oversees the connection of the Pacific Ocean and Maunalua Bay with the iconic Diamond Head Crater in the distance. Images of the shoreline and the view from the shoreline are shown in Figures 2-7 and 2-8, respectively. A shoreline affects map of the subject property provided by DLNR is shown in Figure 2-9.



Figure 2-7. Shoreline along the southern portion of the subject property.

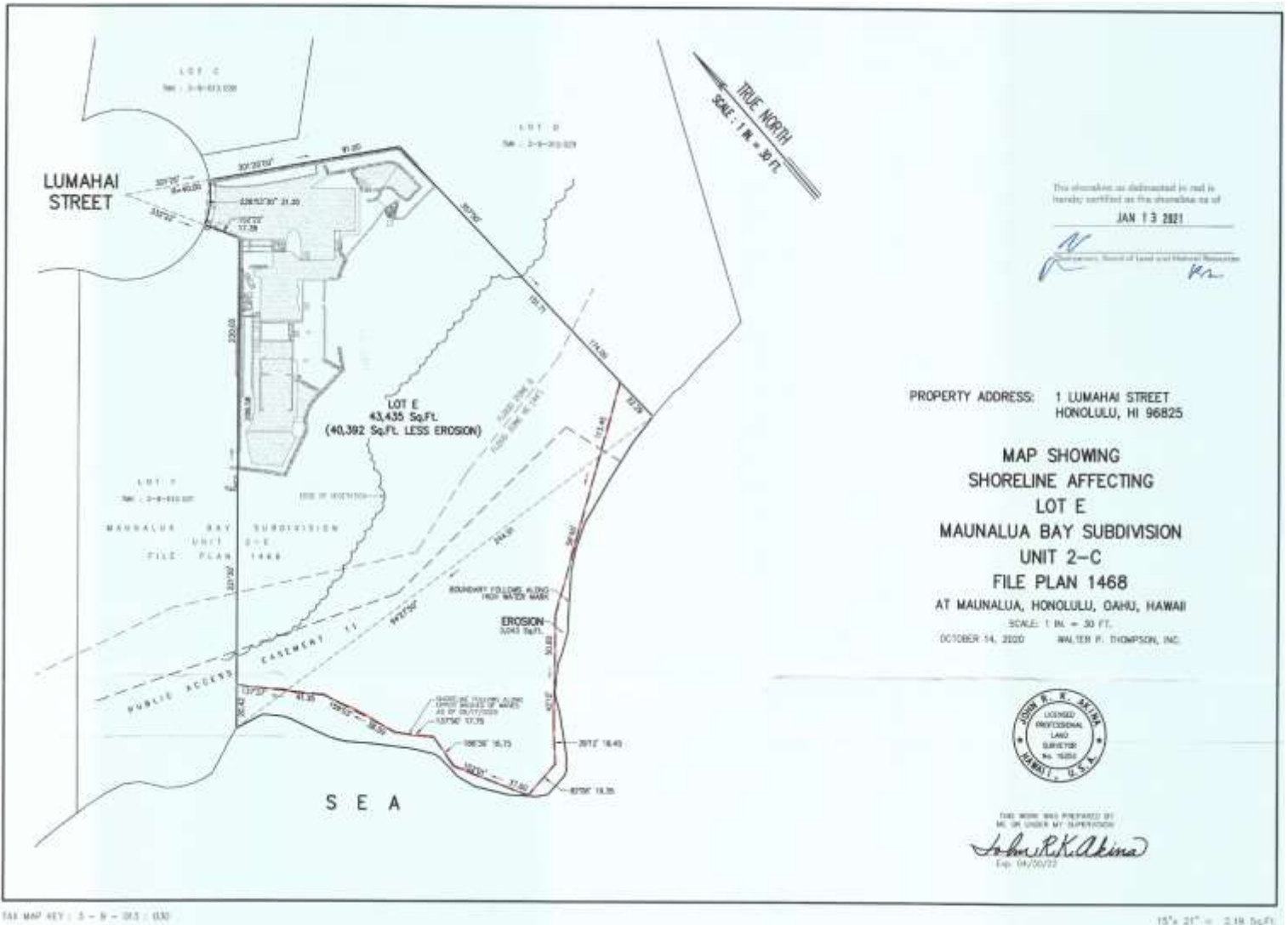


Figure 2-8. Shoreline view from the subject property to the west.





Figure 2-9. Shoreline affects for subject property provided by DLNR.





2.3 PROPOSED ACTION

There are currently no intact structures on the subject property. However, foundation remnants from a previous residential structure still remain in the northern portion of the property. The proposed action consists of the construction of a new two-story, single-family residential dwelling on the 43,435-square foot subject property within the SMA, which is addressed as 1 Lumahai Street in Honolulu, Hawaii.

2.4 BUILDING DESIGN CHARACTERISTICS

The floor plan for the new single-family residential dwelling hugs the contours of the subject property, mimicking the shape of a cupped hand. The living room, dining room, and kitchen extend southward, as do the lanai and swimming pool, focusing views across the Kaiwi Channel to the east. The private wing of the home extends directly east and includes the master retreat living quarters, with the architecture framing views south toward the beaches of Kuliouou. Entry to the home is through the curved webbing linking thumb to palm, uniting the two halves of the design and the different aspects of the landscape to which they are attuned.

The architectural form takes its cues from the freeform, curvilinear nature of the volcanic soils found throughout this flank of the crater. Recognizing that efficient, economical building planning requires a certain adherence to grids and rectangular shapes, the architect has situated those parts of the home uphill and against the hillside and allowed flowing, curving walls and planes to face the coast where they undulate in harmony with the sinuous forms of the natural rock dominating the hillside.

2.5 BUILDING CONSTRUCTION CHARACTERISTICS

Construction of the new single-family residential dwelling will require demolition of existing foundational remnants from the previous residence, followed by construction of the new residence. The new residence will be built using concrete foundations, a steel structure, and wood non-structural infill. Construction will be accomplished with attention given to the protection of existing site topography. Clearing and grubbing is anticipated to be minimal. Construction efforts will conform with Federal, State, County, and City code and design standards. Best-Management-Practices (BMPs) will be implemented to provide protection to sensitive environments from potential short-term impacts related to construction.



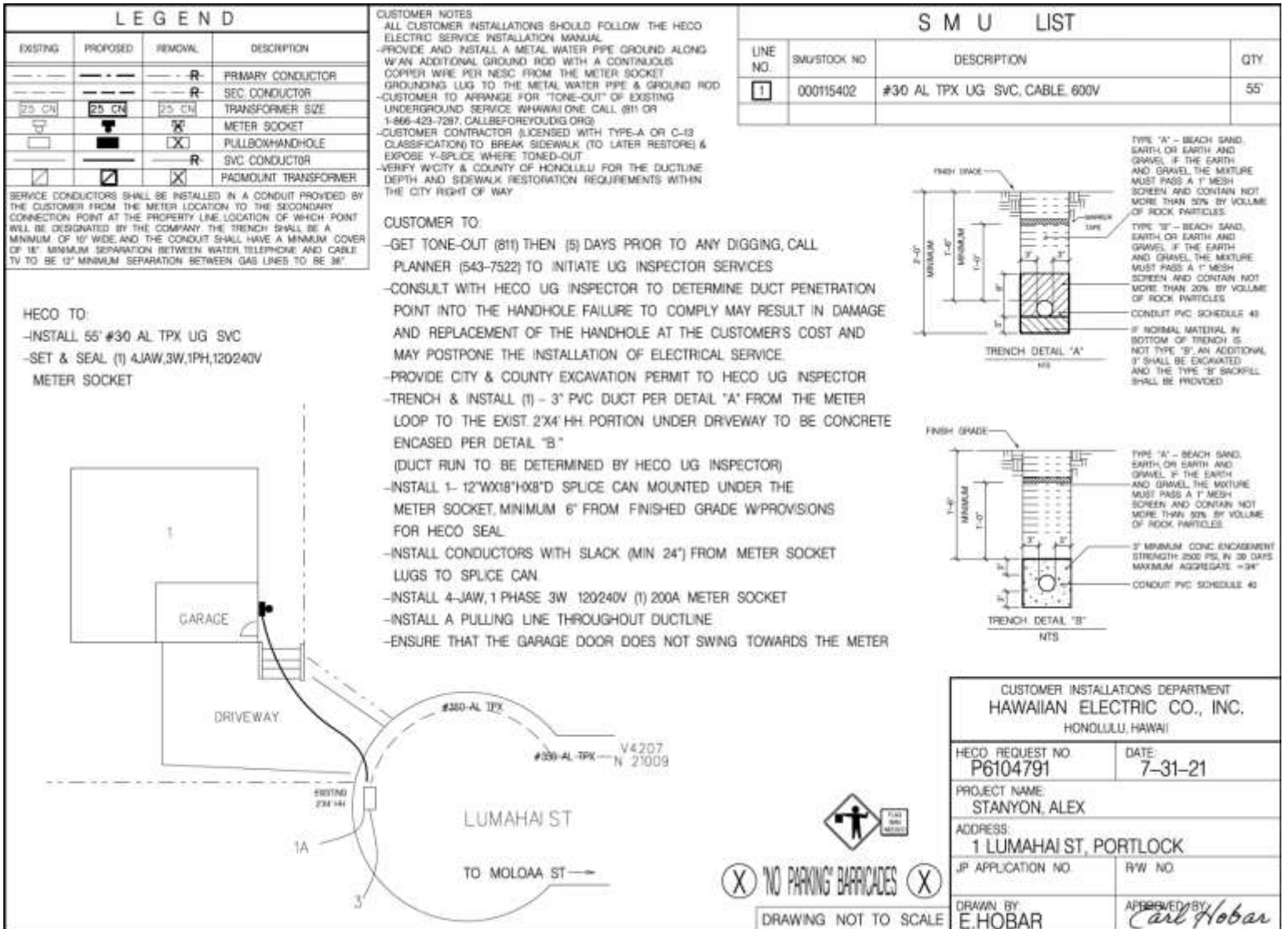
Construction is not anticipated to require a zoning variance, will not significantly increase the final building footprint beyond what is currently present, place any structure within the shoreline setback area, exceed height and setback guidelines, create a visual impact, occupy a significant view plane, or impede any form of lateral shoreline access.

2.6 ACCESS, UTILITIES, AND INFRASTRUCTURE

Access to the subject property is from Lumahai Street. Utility connection points for water service from the Honolulu Board of Water Supply (BWS), wastewater service from Hawaii American Water Company, electric service from Hawaiian Electric Company (HECO), and communication services from Hawaiian Telcom, AT&T, and Spectrum are located on or near the subject property. Municipal solid waste collection services are available for the subject property, following the completion of the construction of the new residence. Installation plans for electric supply lines for the subject property is provided by HECO and shown in Figure 2-10.



Figure 2-10. Installation plans for electric supply lines provided by HECO.





2.7 SUMMARY OF PROJECTED COSTS

The projected cost for the construction of a new single-family residential dwelling on the subject property is anticipated to exceed \$500,000.00.



3.0 ALTERNATIVES TO THE PROPOSED ACTION

The primary objective of the proposed action is to construct a new single-family residential dwelling on the subject property, which is owned by Ms. Stanyon and Mr. Anderson, for the purpose of providing Ms. Stanyon and Mr. Anderson a residence on the island of Oahu.

To meet the objectives of the proposed action, the following alternatives for the subject property were evaluated:

- No Action
- Alternative Property Use
- Alternative Building Location on The Property
- Preferred Alternative/Proposed Action – Construction of a new single-family residential dwelling on the northwest corner of the subject property.

Each alternative was evaluated to determine if it could attain the objective of the proposed action, regardless of cost, while avoiding adverse environmental effects, costs, and risks. The following sections summarize each alternative.

3.1 ALTERNATIVE A - NO ACTION

The No Action alternative is the benchmark by which to compare the environmental effects of all other project alternatives. Under the No Action alternative, the new single-family residential dwelling would not be built. The subject property would remain vacant and unused, except for perhaps exploring and picnicking by the property owners and their guests.

While the No Action alternative has no associated costs, it is not considered to be the best use of the subject property, which is zoned R-10 (Residential), and does not attain the objective of the proposed action.



3.2 ALTERNATIVE B - ALTERNATIVE PROPERTY USE

Alternative property uses were explored for the subject property, based on allowable uses for R-zoned parcels as specified in ROH, Chapter 21, Table 21-3, which is summarized in Table 3-1 below.

| Table 3-1. Permitted Uses for R-10 (Residential) Zoned Parcels | |
|--|---|
| Uses | R-10 (Residential) Zoning Permitted Use Requirements |
| Home Occupations | Special Accessory Use, Subject to Standards in Article 5 |
| Neighborhood Grocery Stores | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Accessory Dwelling Units | Special Accessory Use, Subject to Standards in Article 5 |
| Bed And Breakfast Homes | Permitted, Subject to Standards in Article 5 |
| Consulates | Permitted Use, Subject to Standards in Article 5 |
| Duplex Units | Permitted Use |
| Single-Family Dwellings | Permitted Use |
| Two-Family Dwellings | Permitted Use |
| Group Living Facilities | Conditional Use Permit-Major Required, Subject to Standards in Article 5, Public Hearing Required |
| Roomers/Rooming | Special Accessory Use, Subject to Standards in Article 5 |
| Day-Care Facilities | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Hospitals | Plan Review Use |
| Meeting Facilities | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Prisons | Plan Review Use |
| Public Uses and Structures | Permitted Use |
| Schools | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Schools, Language | Permitted Use, Subject to Standards in Article 5 |
| Universities, Colleges | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Joint Use Parking Facilities | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Off-Site Parking Facilities | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Antennas, Receive Only | Special Accessory Use, Subject to Standards in Article 5 |
| Utility Installations – Type A | Permitted Use |
| Utility Installations – Type B | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |
| Wind Machines < 100kW | Conditional Use Permit-Minor Required, Subject to Standards in Article 5 |

The following allowable uses for R-10 (Residential) zoned parcels were compared to local neighborhood association rules to determine fully approved property uses for the subject property.



Home Occupations – Considered Special Accessory Use and subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel.

Neighborhood Grocery Stores – Require a Conditional Use Permit-minor and are subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel. The location and topographic composition of the subject property are not conducive to a neighborhood grocery store.

Accessory Dwelling Units – Considered Special Accessory Use and subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel.

Bed and Breakfast Homes – Permitted, subject to standards in ROH, Chapter 21, Article 5, but are prohibited and may not operate without a valid nonconforming use certificate in areas where the applicable development plan or sustainable communities plan prohibits or does not permit new bed and breakfast homes and require a dwelling to be present on the parcel.

Consulates – Permitted, subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel.

Single-Family Dwellings – Permitted.

Two-Family Dwellings – Permitted but are prohibited under Koko Kai Neighborhood Association rules.

Group Living Facilities – Conditional Use Permit-major required, subject to standards in ROH, Chapter 21, Article 5, and require a public hearing, as well as a dwelling to be present on the parcel.

Roomers/Rooming – Considered Special Accessory Use and subject to standards in ROH, Chapter 21, Article 5 and require a dwelling to be present on the parcel.

Day-Care Facilities – Require a Conditional Use Permit-minor and are subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel.

Hospitals – Require a plan review of the intended use but are prohibited under Koko Kai Neighborhood Association rules.



Meeting Facilities – Require a Conditional Use Permit-minor and are subject to standards in ROH, Chapter 21, Article 5, and require a dwelling to be present on the parcel.

Prisons – Require a plan review of the intended use but are prohibited under Koko Kai Neighborhood Association rules.

Public Uses and Structures – Permitted.

Schools and Universities/Colleges – Require a Conditional Use Permit-minor and are subject to standards in ROH, Chapter 21, Article 5, but are prohibited under Koko Kai Neighborhood Association rules.

Parking Facilities – Require a Conditional Use Permit-minor and are subject to standards in ROH, Chapter 21, Article 5, but are prohibited under Koko Kai Neighborhood Association rules.

Antennas – Considered Special Accessory Use and subject to standards in ROH, Chapter 21, Article 5, but are prohibited under Koko Kai Neighborhood Association rules.

Utility Installations and Wind Machines – Permitted but are prohibited under Koko Kai Neighborhood Association rules.

Given the overlapping regulatory restrictions pertaining to the subject property, the only allowable use for the subject property is the one being proposed.

3.3 ALTERNATIVE C - ALTERNATIVE BUILDING LOCATION ON THE PROPERTY

The designed shape and orientation of the proposed new single-family residential dwelling quite literally follow the only available buildable area on the subject property. Based on the geotechnical investigation, the surveyor's report, and the architect's review, it has been determined that it is virtually impossible to design and build in any other location on the subject property.

3.4 PREFERRED ALTERNATIVE/PROPOSED ACTION

The proposed project information is summarized in Section 1.1 above and illustrated in Figure 1-2. The location of the proposed home site, in the northwest portion of the subject property,



was chosen as it was the only technically feasible building location on the property. There are no known environmental or construction related reasons for serious consideration of other building sites on the subject property.



4.0 ENVIRONMENTAL SETTING, PROTELENTIAL IMPACTS, AND MITIGATION MEASURES

This section describes the existing environmental setting of the subject property and identifies possible impacts of the proposed action to construct a new single-family residential dwelling on the subject property. Strategies to mitigate potential impacts are also identified.

4.1 TOPOGRAPHY

The subject property is located the Portlock community of Hawaii Kai, in the Maunaloa section of the East Honolulu District of Honolulu, at the southern end of Lumahai Street. The lot is bordered by residential lots to the east and west, by Lumahai Street to the north, and by the southern coastline of Portlock. The ground surface slopes slightly to moderately downward to the south, toward the rear of the property. A cliff wall runs along the south boundary and the ground slopes near vertically downwards, to the shoreline in that area.

Potential Impacts and Proposed Mitigation

Construction of the proposed new single-family residential dwelling is not anticipated to adversely impact the topographic nature of the subject property. Design of the new residence is based on blending the new residence with the existing topography to maintain the natural beauty of the topography and prevent visual impacts. Mitigation measures, including BMPs, will be put in place during construction to minimize short-term impacts related to soil erosion and sedimentation.

4.2 SOILS AND EROSION CONDITIONS

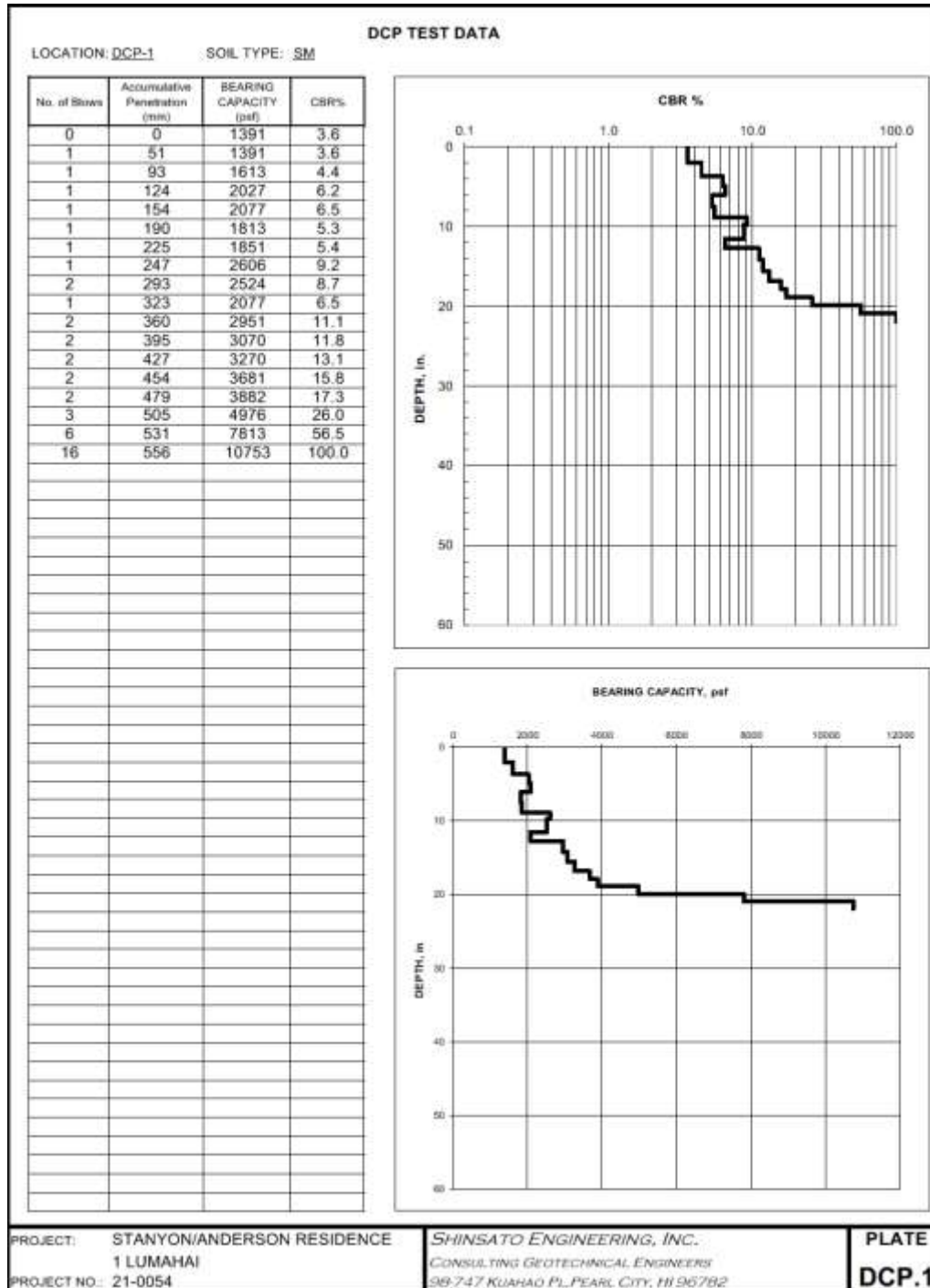
The subject property is located along the southwestern flank of the Koko Head crater. The crater is part of the late-stage volcanic eruptions that occurred on the southeasterly end of the Koolau mountains. These late-stage eruptions, known as the Honolulu Volcanic Series, form familiar landmarks on Oahu such as Diamond Head, Punchbowl, Tantalus, Round Top and Koko craters (Stearns and Vaksvik, 1935). Tuff cones are made up of beds of volcanic ash deposits that harden by consolidation and cementation into a brown, waxy- or earthy-appearing substance called palagonite. From the U.S. Department of Agriculture (USDA) Soil Conservation Service "Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai and



Lanai, State of Hawaii," the site is located in an area designated as Koko silt loam, 6 to 12 % slopes (KsC). This series consists of well-drained soils on fans and volcanic spurs on the island of Oahu. These soils developed in alluvium washed from deposits of volcanic ash, cinders, and tuff. On this soil, permeability is moderate. Runoff is slow to medium, and the erosion hazard is slight (USDA, 1972, pg. 72, Plate 68). In general, "the site to be overlain by stiff, brown elastic silt followed by volcanic tuff. The thickness of the upper silt layer varies across the property. The volcanic tuff is exposed on the ground surface along the southern edge of the property and also along the southern coastline. The tuff is generally highly weathered (dense) in the upper layer then grades very dense with depth below grade "(Shinsato Engineering, Inc. July 15, 2021).



Figure 4-1. Dynamic Cone Penetration Test Log #1 Provided by Shinsato Engineering, Inc.





Potential Impacts and Proposed Mitigation

Construction of the proposed new single-family residential dwelling may temporarily impact the soils at the subject property. Potential impacts include possible minor soil erosion, fugitive dust generation, and stormwater runoff during demolition, grading, and construction. Temporary disturbance to soils will be mitigated using BMPs. Construction activities will comply with all applicable Federal, State, and CCH regulations and rules for erosion control, including CCH-DPP Administrative Rule, 15 regarding Storm Drainage Standards and Rule 16, Relating to Water Quality. Additionally, all construction activities will comply with the relevant requirements regulating Fugitive Dust specified in HAR, Title 11-60.1-33. Upon completion of the proposed construction, including landscaping and drainage improvements, the potential for soil erosion will greatly be minimized. No long-term impacts on soils are anticipated.

Hazardous waste is not expected to be generated during construction. If hazardous waste is generated, it will be handled in accordance with HAR, Titles 11-260.1 to 11-279.1. No temporary or long-term impacts related to hazardous waste are anticipated from the construction of the proposed single-family residential dwelling.

4.3 CLIMATE

The subject property is located on the tropical island of Oahu, Hawaii, where the length of day and temperature are relatively uniform throughout the year. Since Oahu is more than 2,000 miles from the nearest continental land mass, the air that encounters Oahu spends more time over open ocean, which moderates the air's intensity and temperature. Oahu's mountains greatly influence the island's weather and climate. The mountains obstruct, deflect, and accelerate air flow. Warm, moist air must rise over windward mountain slopes, triggering rainfall. As the air descends the leeward slopes, it becomes warmer and drier, causing the leeward areas to be sunnier and drier.

The average annual rainfall on Oahu is from 15 inches to 60 inches, and the average air temperature is 73°F to 75°F. Oahu has two (2) seasons: summer and winter. Summer lasts from May through October with higher temperatures and reliable trade winds. Winter is the rainy season and lasts from November to April, with cooler temperatures and frequent rainstorms.



According to the University of Hawaii (UH) Geography Department, Climate of Hawaii interactive mapping tool, the windward and northern regions of the island are typically wetter than the western and southern regions (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).

Portlock typically receives approximately 32.9 inches of rainfall annually. The wettest month of the year is March with an average of 3.6 inches of rainfall. The annual average air temperature in Portlock is 74°F. The average monthly low temperature is approximately 66°F in January and the average monthly high temperature is approximately 86°F in August (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).

Potential Impacts and Proposed Mitigation

The project is not anticipated to have temporary or long-term impact on rainfall or the climate of the subject property, the Portlock community, or the island of Oahu. Therefore, no mitigation measures are anticipated.

4.4 CLIMATE CHANGE AND SEA LEVEL RISE

According to the National Oceanic and Atmospheric Administration (NOAA), global mean sea level has risen approximately 8 inches to 9 inches since 1880. NOAA also indicates that nearly one third of that rise has occurred in the last two and a half decades. The rising water level is attributed to a combination of meltwater from glaciers and ice sheets and thermal expansion of seawater, as it warms. In 2019, the average global mean sea level was 3.4 inches higher than the 1993 average (National Oceanic and Atmospheric Administration [NOAA], August 2021a).

Researchers predict that global mean sea level could rise 32 centimeters (cm) or 1 ft in the next 40 years (Rignot, E., Velicogna, I., van den Broeke, M.R., Monaghan, A., and Lenaerts, J., 2011) and reach 75 cm to 190 cm (2.5 ft to 6.2 ft) over the next century (Vermeer, M. and Rahmstorf, S., 2009).

The NOAA Tides and Currents website (National Oceanic and Atmospheric Administration [NOAA], August 2021b), reports the relative sea level rise for Honolulu is 1.55 millimeter per year, based on monthly mean sea level data from 1905 to 2020, which is equivalent to an



increase of 0.51 ft in 100 years (NOAA, August 2021b). This may not seem like a substantial rate, however, sea level rise over 100 years can intensify hazards such as impacts from coastal erosion, coastal inundation, and seasonal high waves. Additionally, this long-term trend has increased the impact of short-term fluctuations in coastal sea level, leading to more frequent and increasingly severe episodic flooding and erosion along the coast due to extreme tides (Firing, Y., Merrifield, M.A., 2004).

The Hawaii Climate Change Mitigation and Adaptation Initiative (Act 32) in 2017 expanded on the 2014 Hawaii Climate Change Adaptation Initiative (Act 83) and mandated the development of the Sea Level Rise Vulnerability and Adaptation Report (SLRVAR). The SLRVAR provides a state-wide assessment of Hawaii's vulnerability to sea level rise and provides recommendations to reduce exposure and sensitivity to sea level rise, in an effort to increase the capacity to adapt. The SLRVAR is intended to serve as a framework for identifying and managing climate change threats facing Hawaii.

According to the SLRVAR, the sea level is rising at increasing rates due to global warming of the atmosphere and oceans along with melting of the glaciers and ice sheets. Rising sea level and projections of stronger and more frequent El Niño events and tropical cyclones in waters surrounding Hawaii all indicate a growing vulnerability to coastal flooding and erosion. While the Intergovernmental Panel on Climate Change's (IPCC's) "business as usual" scenario, where Greenhouse Gas (GHG) emissions continue at the current rate of increase, predicts up to 3.2 ft of global sea level rise by year 2100 (IPCC 2014), recent observations and projections suggest that this magnitude of sea level rise could occur as early as year 2060 under more recently published highest-end scenarios (Sweet et al. 2017). As such, questions remain around the exact timing of that rise due largely to uncertainties around future behavior of Earth's cryosphere and global GHG emission trajectories. For this reason, it is vital that the magnitude and rate of sea level rise is tracked as new projections emerge, plan for 3.2 ft of sea level rise now, and be ready to adjust that projection upward (Hawaii Climate Change Mitigation and Adaptation Commission, 2017).

The UH Pacific Islands Ocean Observation System (PacIOOS) is one (1) of eleven (11) regional associations within the U.S. Integrated Ocean Observing System (IOOS®). PacIOOS was certified as a Regional Information Coordination Entity in 2015. PacIOOS collects real-time data on ocean conditions, using it to forecast future events in an effort to help save lives and resources. UH PacIOOS developed the PacIOOS Voyager interactive



online mapping tool for visualizing and downloading oceanographic observations, forecasts, and other geospatial data related the ocean. The PacIOOS Voyager models the potential impacts that a 3.2-ft rise in sea level would have on coastal hazards including passive flooding, annual high wave flooding, and coastal erosion. The footprint of these three (3) hazards were combined to define the project extent of chronic flooding due to sea level rise, referred to as the Sea Level Rise Exposure Area (SLRXA) (Pacific Islands Ocean Observing System [PACIOOS], 2017). Figure 4-2 identifies the 3.2-ft sea level rise exposure area, which may occur in the mid to latter half of the 21st century in the vicinity of the subject property. Figure 4-3 shows the footprint of the 3.2-ft scenario predicted annual high wave flooding and coastal erosion in the vicinity of the subject property. Figure 4-4 shows the predicted extent of passive flooding, using the 3.2-ft scenario.



Figure 4-2. Sea level rise with 3.2 ft impact provided by PaclOOS and powered by Google.

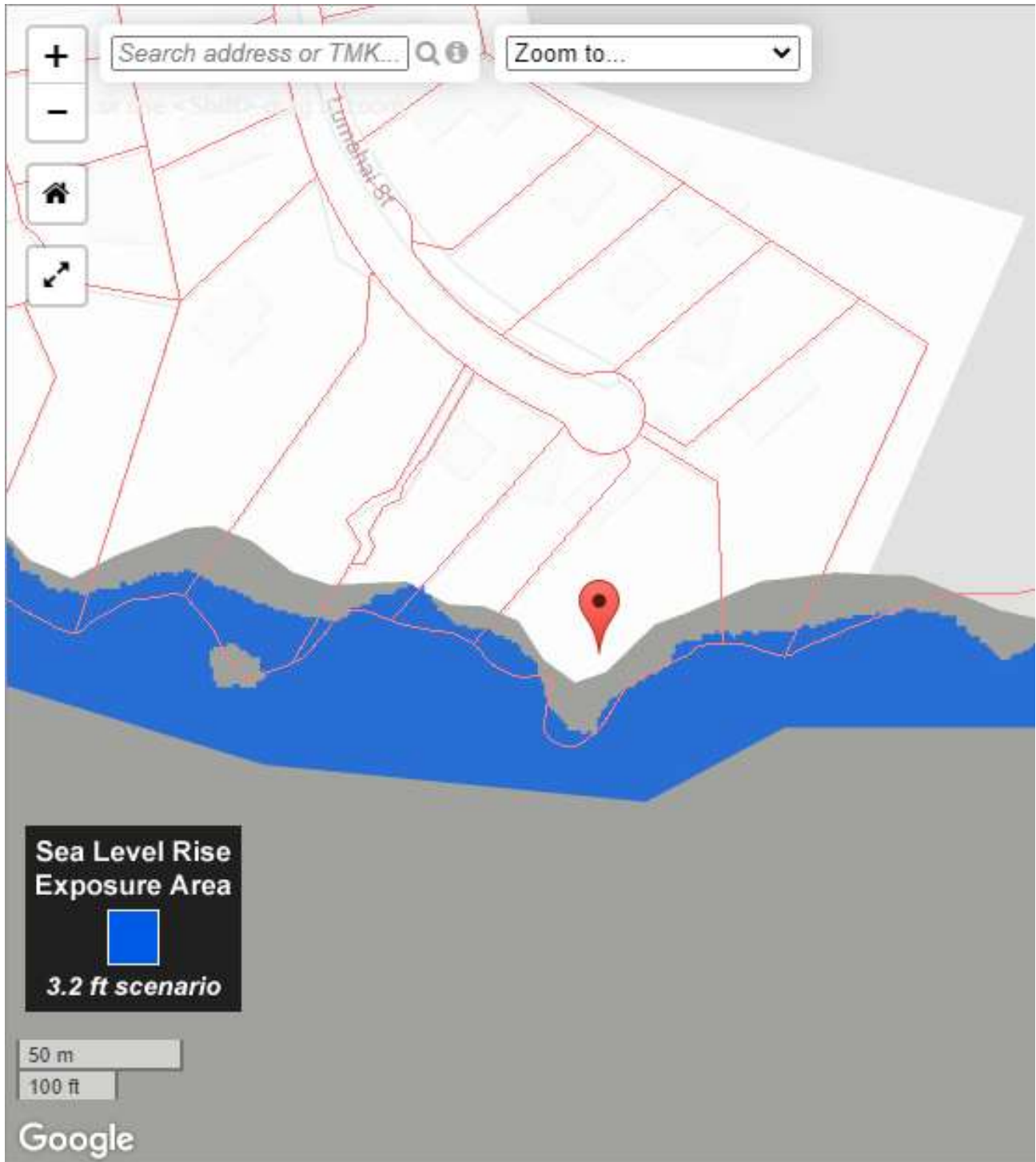




Figure 4-3. Annual high wave flooding and coastal erosion map provided by PacIOOS and powered by Google.

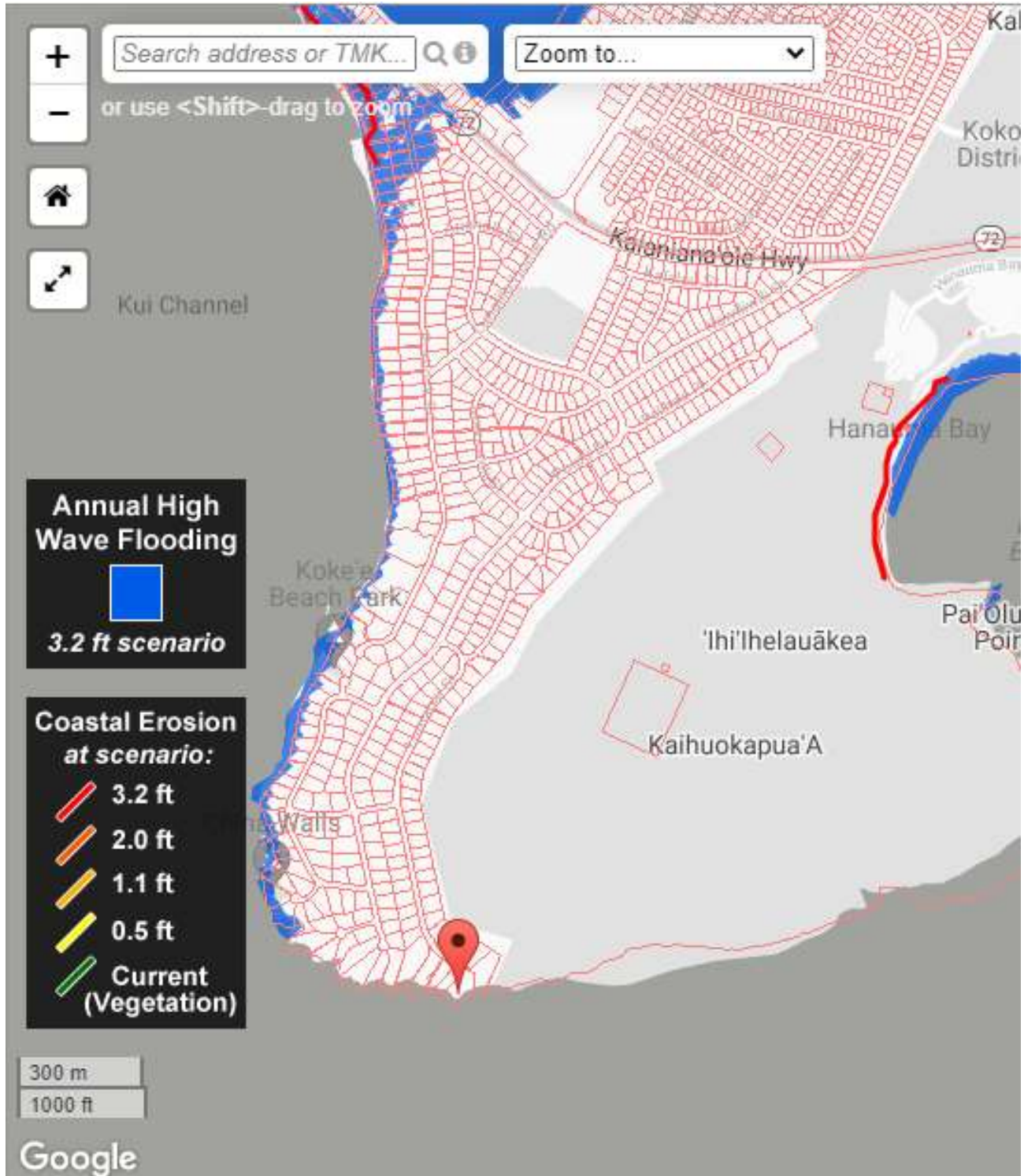
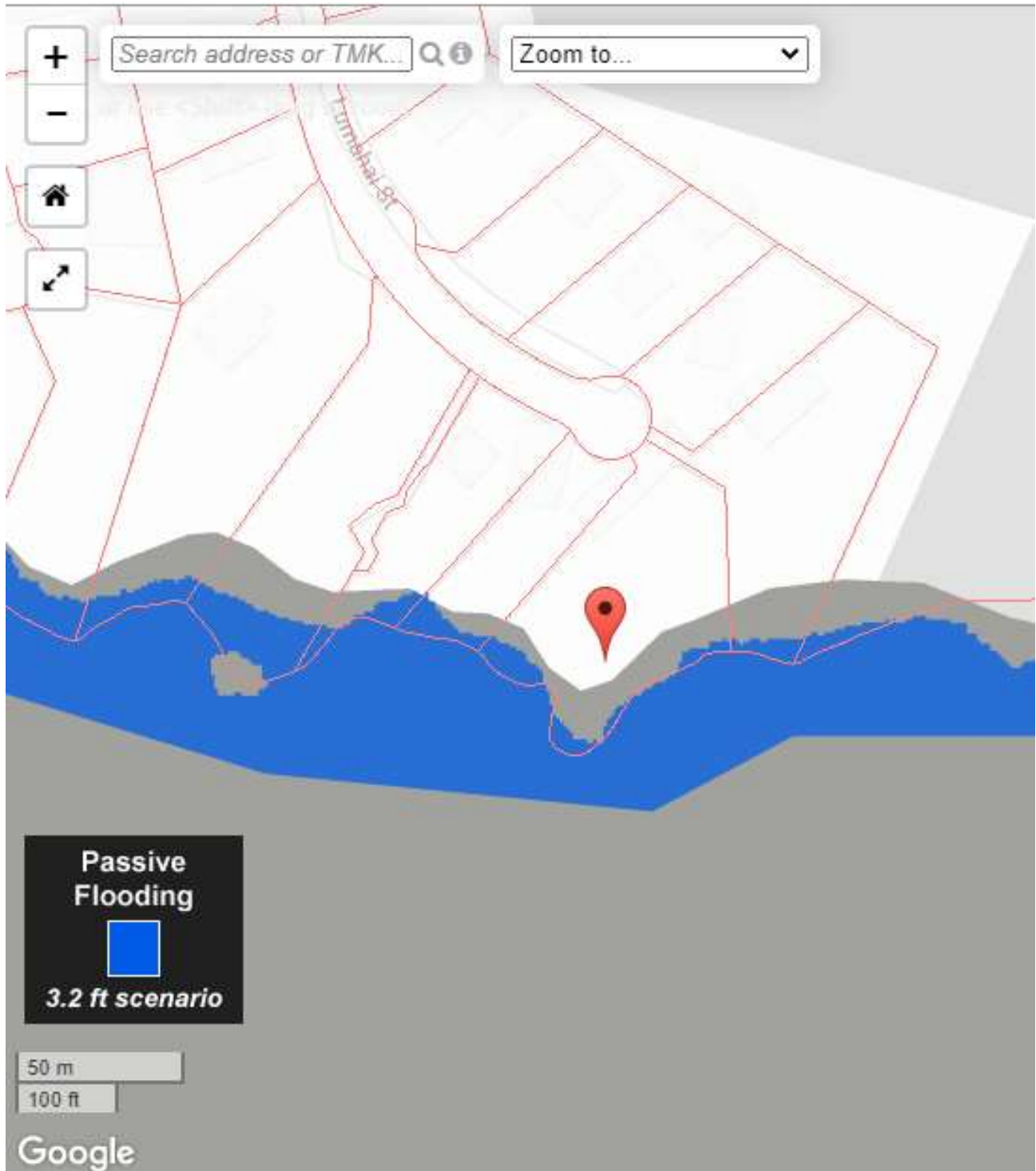




Figure 4-4. Passive flooding map provided by PacIOOS and powered by Google.





Potential Impacts and Proposed Mitigation

Climate change and sea level rise is not expected to produce any short-term impacts on the subject property. Short term emissions of greenhouse gases resulting from construction activities will comply with HDOH Air Quality Standards to minimize impacts. PacIOOS Voyager predictive modeling of the SLRXA, based on a 3.2-ft sea level rise, indicates that the subject property will not be impacted by annual high wave flooding or coastal erosion, and only a small area along the southern edge of the property, within the public access easement and shoreline setback area, may experience minor impacts. Based on the predictive modeling, no long-term impact to the subject property due to climate change and sea level rise is anticipated. Additionally, the proposed construction of the new single-family residential dwelling on the subject property is not anticipated to have a long-term impact on the climate change or sea level rise, and therefore no mitigation measures are anticipated.

4.5 NATURAL HAZARDS

The State of Hawaii, including the island of Oahu, is vulnerable to potential natural hazards, such as hurricanes, tropical storms and winds, tsunami inundation, flooding, earthquakes, and wildfires. These natural hazards have the ability to impact Oahu's residents and infrastructure. The following sections summarize these potential natural hazards and describe potential impacts resulting from the natural hazards as well as the mitigation measures that will be implemented to minimize the impact of the natural hazards.

4.5.1 HURRICANES

Hurricanes form in areas of enhanced thunderstorms over warm, tropical oceans. A Pacific hurricane is a mature tropical cyclone that develops within the northeastern and central Pacific Ocean. As the weather system moves westward, across the tropics, warm ocean air rises into the storm, forming an area of low-pressure underneath. This causes more air to rush in. The air then rises and cools, forming clouds and thunderstorms. Up in the clouds, water condenses and forms droplets, releasing even more heat to power the storm. Once sustained wind speeds reach 74 miles per hour (mph), the storm becomes a hurricane. Hurricanes are categorized according to their wind-speed.

- Category 1 hurricanes have wind speeds between 74 and 95 mph.



- Category 2 hurricanes have winds between 96 and 110 mph.
- Category 3 hurricanes have wind speeds of 111 to 129 mph.
- Category 4 hurricanes have wind speeds between 130 and 156 mph.
- Category 5 hurricanes have wind speeds of 157 mph or greater.

Hurricane season officially starts June 1st and lasts through November 30th, though this form of tropical cyclone can occur any time of year (Hawaii Department of Health (DOH), August 2021). Generally, hurricanes form off the west coast of Mexico and move west across the Central Pacific, typically passing south of Hawaii. Late season hurricanes tend to follow a different track, forming south of Hawaii and moving north toward the islands. In the past 25 years four (4) hurricanes have passed over or near to the Hawaiian Islands.

- Hurricane Iwa in 1982 - devastated Hawaii with wind gusts exceeding 100 mph and rough seas exceeding 30 ft in height. Iwa was the first significant hurricane to impact Hawaii since it received statehood in 1959. Iwa severely damaged or destroyed property, and left 500 people homeless (Wikipedia, August 2021a).
- Hurricane Iniki in 1992 - was the most powerful hurricane to strike Hawaii in recorded history, with recorded wind gusts of 225 mph. Iniki was responsible for 6 deaths and approximately 3.1 billion dollars in damage (Wikipedia, August 2021b).
- Hurricane Iselle in 2014 - was a category four hurricane in the East Pacific before it weakened to a tropical storm, hitting the Big Island of Hawaii (Nasa, August 2021).
- Hurricane Douglas in 2020 - grew to a strong category four hurricane in the Eastern Pacific before weakening to a category one hurricane as it passed north of the main islands. Douglas caused minimal damage and resulted in no reported injuries or fatalities (Wikipedia, August 2021).

It is difficult to predict when hurricanes may occur, but it is reasonable to expect future events will take place. As such, hurricanes will be considered in the project design.



4.5.2 KONA WINDS AND STORMS

Kona Winds is the local Hawaiian term for the stormy, rain-bearing winds that blow over the Hawaiian Islands in the opposite direction of the trade winds, forming Kona Storms. Kona storms form during the winter months, from October to April, and are cold core cyclones. Even though they are not considered tropical or subtropical, Kona Storms tend to be similar to subtropical cyclones in the way they lose their associated weather fronts over time (AllWeather Stats, August 2021). Kona Storms can produce heavy rain, thunderstorms, and hailstorms, which can result in flash flooding and landslides. The high winds associated with the Kona Storms can cause large surfs, swells, and waterspouts. Kona Storms have been responsible for widespread damage to the south and west-facing shorelines of Oahu.

4.5.3 TSUNAMI INUNDATION

Tsunamis are caused by violent seafloor movement associated with earthquakes, landslides, lava entering the sea, seamount collapse, or meteorite impact. The most common cause is earthquakes. Most tsunamis affecting Hawaii originate from the tectonically active areas located around the Pacific Rim, such as Alaska, Japan, and Chile, known as the Ring of Fire (Pacific Tsunami Museum, August 2021).

Waves created by earthquakes in the Ring of Fire can take hours to reach Hawaii, depending on the speed of the wave, which can be as much as 475 mph. The National Weather Service (NWS) operates two (2) Tsunami Warning Centers 24 hours a day, seven (7) days a week. The Tsunami Warning Centers rely on an observation system that includes seismic and water level networks from around the world to help determine when a tsunami forms and where it will impact a land mass (National Oceanic Atmospheric Administration/National Weather Service, August 2021). The Pacific Tsunami Warning System can provide Hawaii with several hours advance warning, prior to the arrival of tsunami waves. Although less common, tsunamis can also originate from seismic activity in the Hawaiian Islands, resulting in less warning for potentially impacted areas.

CCH has created tsunami evacuation zones. In the event of a tsunami warning the public will be advised which evacuation zone to leave. CCH classifies tsunami evacuation zones into three (3) categories.



- **Tsunami Evacuation Zone (TEZ)** – areas where evacuation is required for any tsunami warning.
- **Extreme Tsunami Evacuation Zone (XTEZ)** - additional areas that must be evacuated only during an extreme tsunami event generated from earthquakes of Magnitude 9 or higher on the Richter scale.
- **Green Zone** - safe areas that are anticipated to be outside of the XTEZ inundated areas.

The project site lies primarily within an area designated as a TEZ (Figure 4-5).



Figure 4-5. Tsunami Evacuation Zone map provided by the CCH DPP.





4.5.4 COASTAL FLOODING

The ground surface of the subject property slopes slightly to moderately downward toward the south. A cliff face runs along the south boundary of the property and the ground slopes near vertically downward, to the shoreline. The ground elevation of the residence footprint is approximately 150 ft above the shoreline.

The southern edge of the subject property is categorized as Zone VE by the Federal Emergency Management Association (FEMA) (Figure 4-6). Areas categorized as Zone VE are subject to inundation by the 1% annual-chance flood event with additional hazards due to storm-induced velocity wave action (FEMA, August 2021). According to FEMA, mandatory flood insurance purchase applies to Zone VE. The vast majority of the subject property is categorized by FEMA as Zone D (Figure 4-7). Areas with a Zone D designation are subject to possible, but undetermined flood hazards. No flood hazard analysis has been conducted in Zone D areas (FEMA, August 2021). The proposed new single-family residential dwelling will be constructed on the northern portion of the subject property, which is classified as Zone D. According to DLNR, Engineering Division, flood insurance for the subject property may be required, based on a portion of the property being in Zone VE (State of Hawaii, Department of Land and Natural Resources [DLNR], September 22, 2021).



Figure 4-6. FEMA Flood Zone VE Map provided by Google and FEMA.

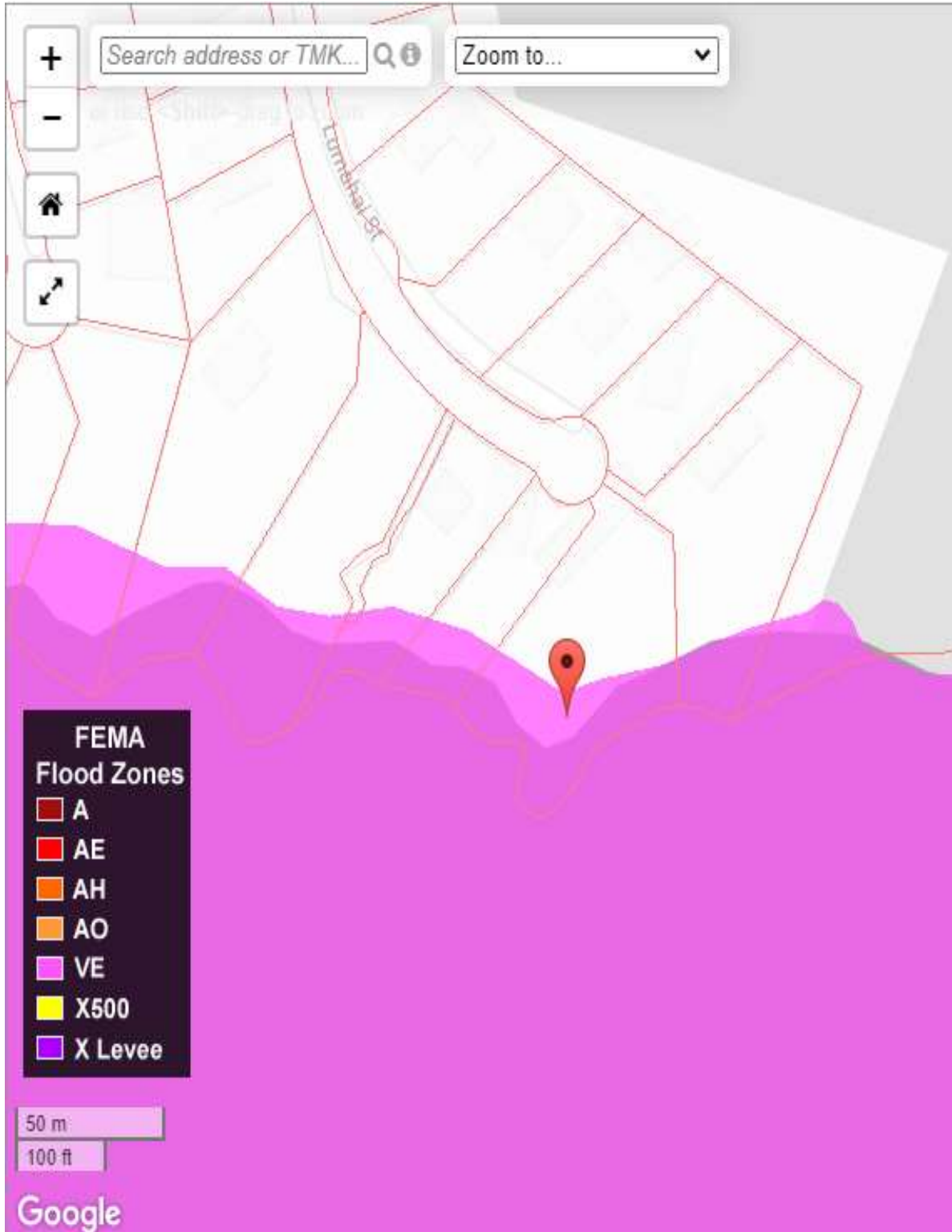
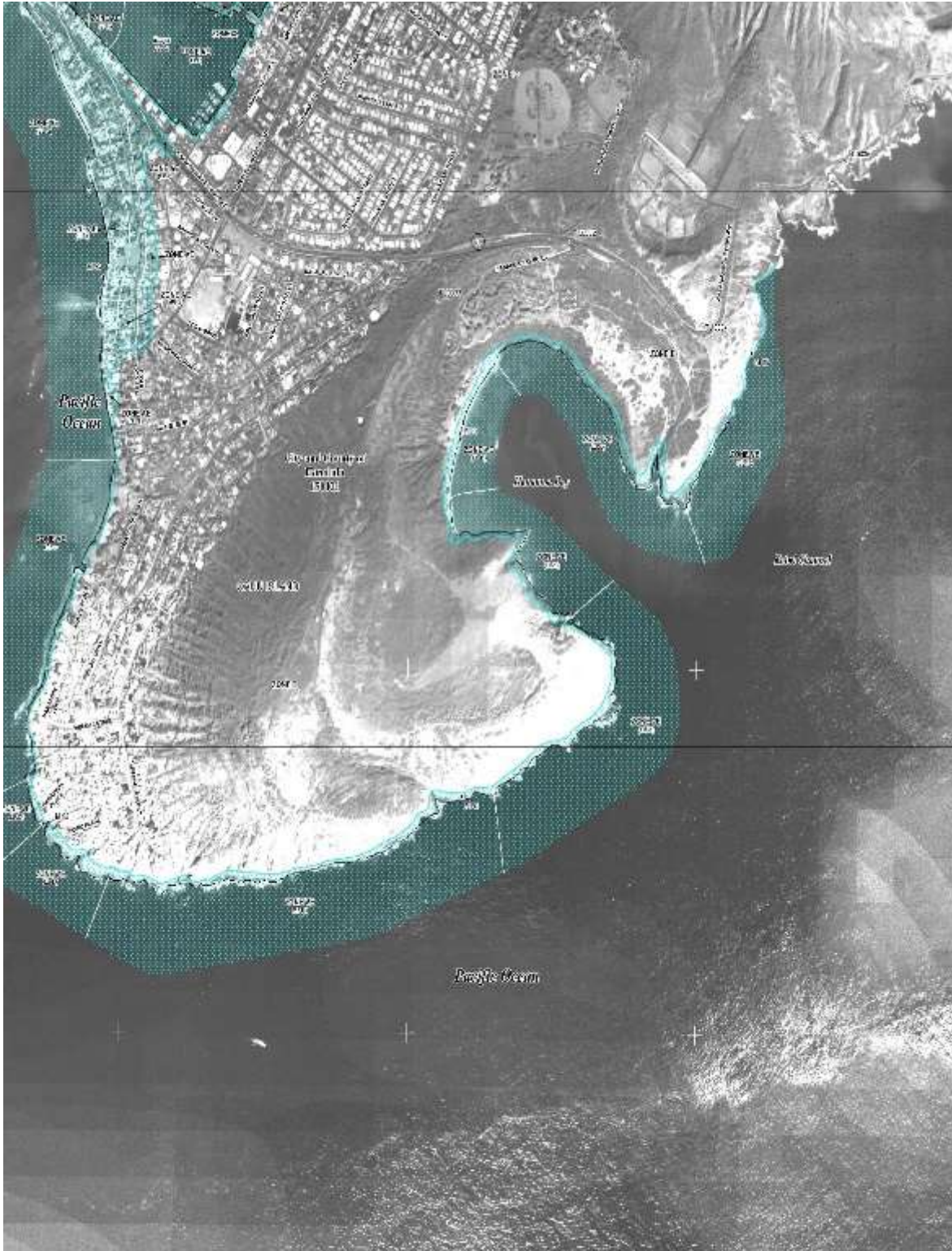




Figure 4-7. FEMA Flood Zone VE and D Map provided by Flood Insurance Rate Map.





4.5.5 SEISMIC ACTIVITY

The Hawaiian Islands are prone to three (3) types of earthquakes, tectonic, mantle, and volcanic. The majority of earthquakes occur on, or in close proximity, to the Island of Hawaii, and are related to volcanic activity in the region. The most recent earthquake to cause damage on Oahu was the April 26, 1973, Honomu Earthquake, with the epicenter beneath the Hamakua Coast of the Island of Hawaii. The deep earthquake, which was felt as far away as Kauai, caused cosmetic damage and two (2) broken windows on Oahu. The most recent earthquake originating in close proximity to Oahu was the Oahu Earthquake of June 28, 1948. The earthquake magnitude was approximately 5.0, but the shaking in Honolulu was surprisingly severe for so small an event (Fryer, Gerard, Dr. Hawaii Institute of Geophysics and Planetology. 2009).

The July 15, 2021, Geotechnical Investigation Report for the subject property indicates that the site class and soil profile name may be assumed as C: very dense soil and soft rock profile (Shinsato Engineering, Inc. July 15, 2021).

4.5.6 WILDFIRES

A recent study found that a greater percentage of Hawaii's land area burns annually than the U.S. national average, and some years exceeds the 12 most fire-prone western states. From 2000 through 2012, an average of more than 1,000 wildfires burned more than 17,000 acres annually in Hawaii (Trauernicht, 2014). Wildfires are a threat to Hawaii in several ways. In addition to being a direct threat to human safety, wildfires pose a threat to Hawaii's native ecosystems through the loss of vegetation, increased rates of soil erosion, landslide danger, and sediment deposited in streams and shallow coral reefs.

According to Division of Forestry and Wildlife (DOFAW), approximately 90% of wildfires in Hawaii are caused by humans (State of Hawaii, Department of Land and Natural Resources, Division of Forestry and Wildlife [DOFAW], August 2021). Ironically, the most effective fire prevention tool is also humans. Although wildfires in Hawaii cannot be eradicated, their frequency and impact can be reduced through prevention, preparedness, and pre-fire management (Trauernicht, 2014).



Potential Impacts and Proposed Mitigation

Impacts to the subject property from natural hazards are possible. Short term impacts could result in construction delays and additional construction costs. Short term mitigation measures, including halting construction activities, securing partially constructed unsecured construction materials and equipment, relocating larger construction equipment to higher ground or safe zones, and evacuating construction personnel to designated safe zones, such as in the event of a tsunami, will be put in place to help minimize impacts.

Building design and construction will adhere to Uniform and International Building Codes as well as all relevant Federal, State, and County regulations and construction standards to mitigate long-term impacts from natural hazards. Wildfire mitigation will include reducing fuels and constructing natural firebreaks on the subject property.

4.6 TERRESTRIAL FLORA AND FAUNA

The terrestrial flora and fauna are considered within the EA to protect any group of vegetal or animal species in a determined territory so that biological diversity and ecological integrity are maintained. The subject property is situated on a cliff face approximately 150 ft above the Pacific Ocean to the south. Portions of the subject property that are not comprised of rock or covered with concrete remnants from the previous residential dwelling that was demolished, have been overgrown with native and non-native vegetation as discussed in Section 2.2. A list of terrestrial flora and fauna with a federal status of threatened, endangered, and migratory bird treaty act were provided by the USFWS, Pacific Islands Fish and Wildlife Office.

4.6.1 TERRESTRIAL FLORA

The overgrown vegetation on the subject property may conceal the potential presence of plant species. The USFWS, Pacific Islands Fish and Wildlife Office was contacted to provide technical assistance on species biology, habitat, or life requisite requirements for threatened or endangered plants with the potential to be most likely to be encountered within the vicinity of the subject property. USFWS provided a list of protected species most likely to occur within the vicinity of the subject property. Table 4-1 lists the protected plant species most likely to be encountered in the vicinity of the subject property.



| Table 4-1. Federal Status of Plant Species | | |
|--|---------------|----------------|
| Scientific Name | Hawaiian Name | Federal Status |
| Marsilea villosa | ihiihi | Endangered |

ihiihi

The ihiihi is an endemic fern to the Hawaiian Islands, naturally grown in vernal pools and other water features as these plants can thrive without going through the wet/dry seasonal cycle. The seeding requires wet/dry seasonal cycle in its natural habitat where seeding may occur under very wet conditions. With good moisture, the ihiihi can grow easily and spread rapidly. The ihiihi mature size is less than 1 ft tall and can span 10 ft wide. The ihiihi is a long-lived fern, which is considered greater than 5 yrs. The leaves of the ihiihi are shaped like a four-leaved clover or shamrock, both unrelated. The ihiihi is considered endangered (Native Plants Hawaii, September 2021).

Potential Impacts and Proposed Mitigation

As the subject property has been developed previously, it is likely that potential landscape growing sites on the property have been greatly diminished. No ihiihi were observed on the subject property or in the general vicinity of the subject property, during the August 26, 2021, site reconnaissance.

As a precaution to avoid potential impacts during construction, the following measures are recommended:

- A pre-construction visual survey should be conducted to locate and record landscape growing sites, as well as any threatened, endangered, or protected species observed at the subject property.
- Site Clearing and Grubbing – should be timed to avoid potential impacts to seeding (November through April). If this cannot be avoided, contact the State of Hawaii DLNR, DOFAW.
- If any protected species are present during construction, then all activities within 100 ft of the species should cease until the species has left the area.



4.6.2 TERRESTRIAL FAUNA

The trees, bushes, shrubs, and grasses on the subject property present a potential habitat for birds and mammals. The USFWS, Pacific Islands Fish and Wildlife Office was contacted to provide technical assistance on species biology, habitat, or life requisite requirements for threatened or endangered birds and mammals with the potential to be most likely to be encountered within the vicinity of the subject property. USFWS provided a list of protected species most likely to occur within the vicinity of the subject property. Table 4-2 lists the protected bird, insect, mammal, and reptile species most likely to be encountered in the vicinity of the subject property.

| Table 4-2. Federal Status of Animal Species | | | |
|---|-------------------------|---------------|---------------------------|
| Scientific Name | Common Name | Hawaiian Name | Federal Status |
| Mammals | | | |
| Lasiurus cinereus semotus | Hawaiian Hoary bat | opeapea | Endangered |
| Birds | | | |
| Pterodroma sandwichensis | Hawaiian Petrel | uau | Endangered |
| Puffinus auricularis newelli | Newell's Shearwater | ao | Threatened |
| Ardenna pacificus | Wedge-tailed Shearwater | uau kani | Migratory Bird Treaty Act |
| Gygis alba | White Tern | manu-o-ku | Migratory Bird Treaty Act |
| Insects | | | |
| None Listed | None Listed | None Listed | None Listed |
| Reptiles | | | |
| None Listed | None Listed | None Listed | None Listed |

Hawaiian Hoary Bat

The Hawaiian Hoary Bat is a nocturnal mammal that feeds on a variety of native and non-native night-flying insects. The bat has a heavy gray or brown fur coat with white tinged ears. Hawaiian Hoary Bats generally weigh less than 1-pound and have a wingspan of approximately 10.5 to 13.5 inches, with the female of the species being larger than the male. Bats are primarily found from sea level to approximately 7,500 ft and are thought to roost among trees in areas near forests. The Hawaiian Hoary Bat is listed as endangered (U.S. Fish and Wildlife Service [USWFS], September 2021a).



Hawaiian Petrel

The endangered Hawaiian Petrel is the native Hawaiian seabird. Adults measure approximately 16 inches from head to tail and have a 3-ft wingspan and have dark gray coloring on their outermost feathers with white below and covering their chest and underside of their wings. Hawaiian Petrels nest in underground burrows, entering and leaving the burrow after dark. The female lays a single egg in May and both the male and female take turns incubating it for 60 days. When hatched, the chick is fed by both parents until it is mature enough to fledge in November or early December (National Park Service [NPS], September 2021).

Newell's Shearwater

The Newell's Shearwater is endemic to the Hawaiian Islands, spending the vast majority of the year on the open sea, feeding mainly on fish and squid. The adults have a dark bill with hooked tip, are dark, sooty brown on the tops of their heads, across their backs, and the backs of their wings, and have whit throats and underparts. Newell's Shearwater are colonial and nest on steep mountain slopes, where, in June, the females lay a single egg in cavities and burrows, often located at the base of a tree. Both the males and females incubate the eggs and participate in feeding the chicks, until they are ready to fledge in November. The Newell's Shearwater is considered threatened (Hawaii Department of Land and Natural Resources [DLNR], 2015).

Wedge-tailed Shearwater

Wedge-tails are widely found in tropical and sub-tropical waters of the Indian and Pacific Oceans. They are named for their wedge-shaped tail. Wedge-tailed Shearwater markings are dark brown to brownish gray with white underparts, except for dark wing margins and undertail coverts, with slate-gray hooked bills. Wedge-tails will return to the same nesting site each year, nesting in shallow burrows. Females lay a single egg in June and both the male and female wedge-tail will incubate the egg in shifts. After hatching, chicks are fed by the parents for approximately four (4) months, at which time they are deserted, shortly before fledging. The Wedge-tailed Shearwater is not on the Threatened or Endangered lists but are protected under the 1918 Migratory Bird Treaty Act (MBTA) (U.S. Fish and Wildlife Service [USWFS], September 2021b).



White Tern

The White Tern ranges widely across the Pacific Ocean from the coasts of Central America to New Zealand, the islands of the Indian Ocean, and on some islands in the Atlantic Ocean. It is a small bird, sometimes called the Fairy Tern. The Tern's entire body is white with a black eye-ring. Breeding occurs in the late spring and early summer. Females lay a single egg in a small depression on a branch, roof, or other surface. Both the male and female take turns incubating the egg until it hatches in approximately 36 days. The chick is fed whole fish or squid for approximately four (4) months, during which time, the chick will fledge and move further from the nest site, only returning to be fed. The White Tern is protected under the MBTA.

Potential Impacts and Proposed Mitigation

As the subject property has been developed previously, it is likely that potential nesting sites on the property have been greatly diminished. No threatened or endangered mammals or birds were observed on the subject property or in the general vicinity of the subject property, during the August 26, 2021, site reconnaissance. Additionally, no evidence of nesting or burrowing was observed during the site reconnaissance.

As a precaution to avoid potential impacts during construction, the following measures are recommended:

- A pre-construction visual survey should be conducted to locate and record nesting and burrowing sites, as well as any threatened, endangered, or protected species observed at the subject property.
- Site Clearing and Grubbing – should be timed to avoid potential impacts to nests and burrows (May through November). If this cannot be avoided, contact DLNR, DOFAW prior to disturbing, trimming, or removing woody plants greater than 15 ft tall.
- If any protected species are present during construction, then all activities within 100 ft of the species should cease until the species has left the area.
- If Possible, avoid construction after dark between mid-September and mid-December, which is the peak of seabird fallout to minimize potential impacts to threatened,



endangered, and protected seabird species. Any construction activities after sunset should be carried out using well-shielded lights, mounted at a sufficient height, to be pointed directly downward to the greatest extent possible.

4.7 TRAFFIC AND ROADWAYS

The subject property is located at the east end of Lumahai Street, with a private driveway accessing the property from a cul-de-sac. Lumahai Street provides the only private vehicular access to the subject property. Lumahai Street is not a through street and does not experience traffic congestion. A public pedestrian walkway access, north of the subject property, provides access to the cliff side, locally known as Spitting Caves, which extends from the southwest to the southeast of the subject property. Due to public pedestrian access, vehicular parking along Lumahai Street may occur.

Potential Impacts and Proposed Mitigation

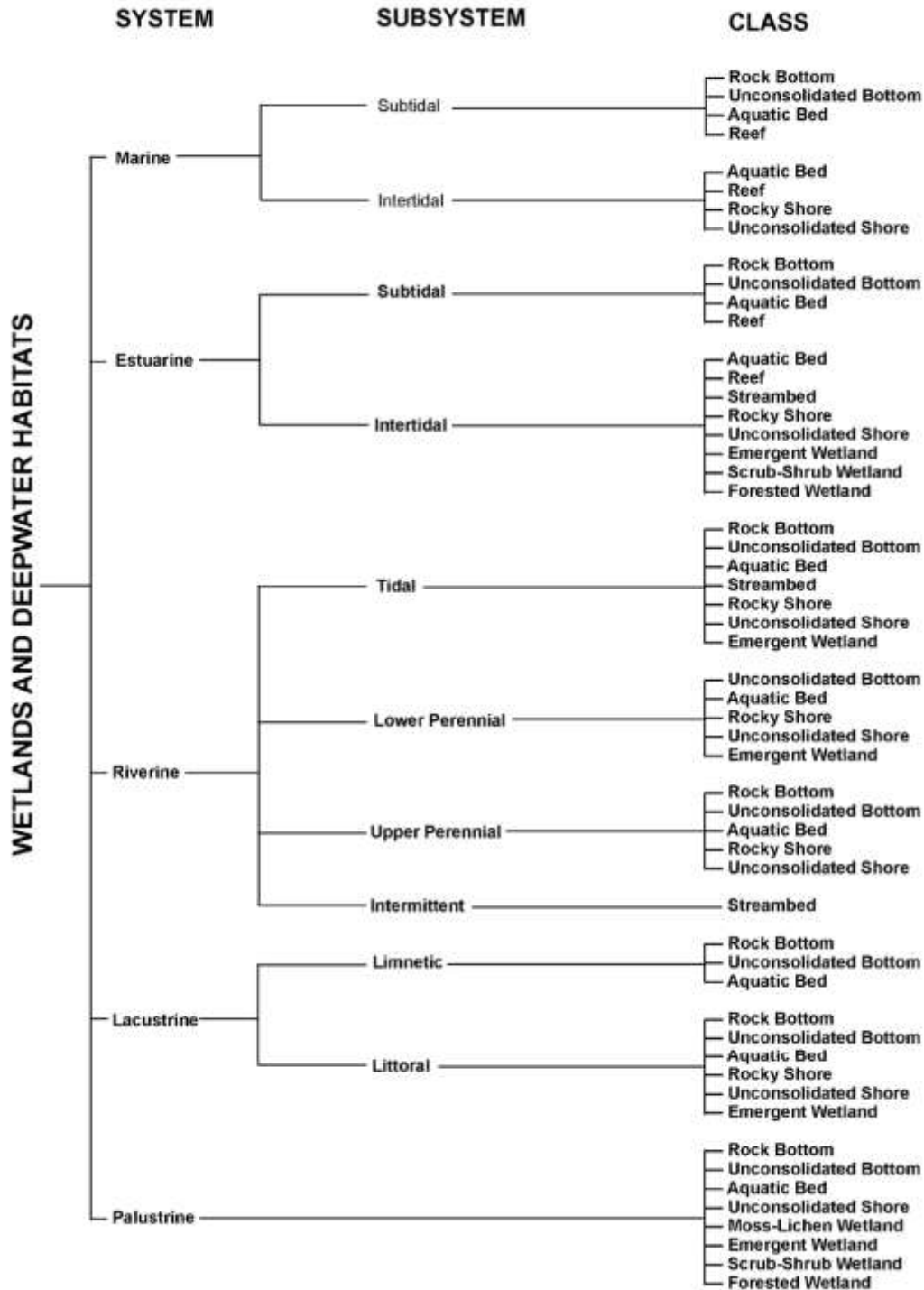
The proposed construction of the new two-story single-family residential dwelling on the subject property is not anticipated to adversely affect traffic in the Koko Kai Community of Portlock.

4.8 WATER QUALITY

The PacIOOS Voyager mapping program displays the NOAA benthic habitat in the vicinity of the subject property. The geomorphology and biology of benthic habitat for the area offshore of the subject property is characterized by rock/boulders, sand, live coral, and mud. The USFWS classifies the nearshore water habitat as marine, intertidal, rocky shore, that is regularly flooded (see Figure 4-8). (Federal Geographic Data Committee, 2013).



Figure 4-8. Classification of wetlands and deepwater habitats provided by the Federal Geographic Data Committee.

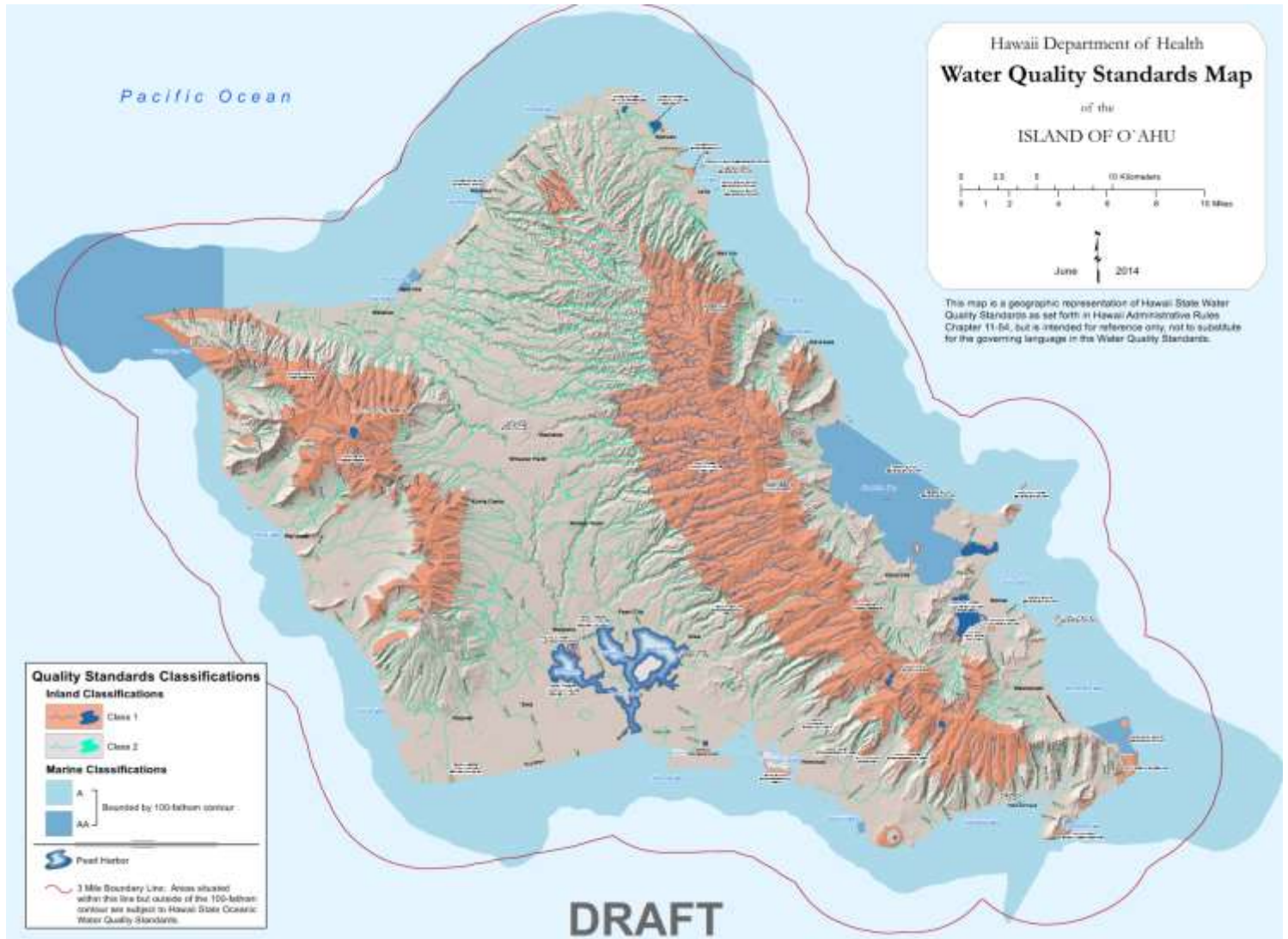




HDOH, Clean Water Branch (CWB) has classified the Pacific Ocean in the vicinity of the subject property as "Open Coastal Marine waters," having a "Class A" water use, which is to be protected for recreational purposes and aesthetic enjoyment, based on guidelines in HAR Title 11-54 (see Figure 4-9 Water quality standards map). It is also stipulated that "*These waters shall not act as receiving waters for any discharge which has not received the best degree of treatment or control compatible with the criteria established for this class*" (Hawaii Administrative Rules [HAR] Title 11 Chapter 54 [11-54], 2014).



Figure 4-9. Water quality standards map provided by HDOH.





Potential Impacts and Proposed Mitigation

During the short-term construction period, runoff and erosion will be minimized through compliance with the CCH's grading ordinance, as well as the applicable provisions of the HDOH's Water Quality Standards (Hawaii Administrative Rules [HAR], Title 11, Chapter 54 [11-54], 2014) and Water Pollution Control requirements (Hawaii Administrative Rules [HAR] Title 11 Chapter 55 [11-55], 2018). Standard construction BMPs will be employed to minimize impacts, as detailed in subsequent construction plans. No significant storm drainage runoff to coastal waters is anticipated. Construction BMPs to protect nearshore waters may include silt fencing around the perimeter of construction area to prevent sediment from entering coastal waters and storm water diversion devices to direct storm water runoff and reduce runoff velocity to prevent significant soil erosion.

4.9 AIR QUALITY

HDOH, Clean Air Branch (CAB) established, monitors, and enforces the State Ambient Air Quality Standards (SAAQS), which were established in 1957 and are based on the United States (US) Environmental Protection Agency (EPA) National Ambient Air Quality Standards (NAAQS). The HDOH-CAB monitors ambient air quality, near real-time at monitoring stations across Hawaii. The primary purpose of the statewide monitoring network is to measure ambient air concentrations for six (6) pollutants and ensure that the air quality standards are met. The stations are maintained, and the data are collected by the Air Quality Monitoring Section of the State Laboratories Division (State of Hawaii, Department of Health, Clean Air Branch [CAB], September 2021).

There are six (6) monitoring stations on the island of Oahu. The Honolulu Station is closest to the subject property and is located at the HDOH office on Punchbowl Street. The monitoring station continuously measures carbon monoxide (CO), nitrogen dioxide (NO²), Ozone (O³), sulfur dioxide (SO²), particulate matter (PM), PM_{2.5}, and PM₁₀, as well as wind direction and speed (CAB, September 2021). According to the State of Hawaii Annual Summary 2019 Air Quality Data, which is presented in Appendix A, in 2019, the State of Hawaii was in attainment for all NAAQS (State of Hawaii, Department of Health [DOH]. July 2021).



Hawaii has an air quality index of 21.2, which is the cleanest average air quality in the United States. Honolulu is one (1) of six (6) cities in the United States that are ranked on all three (3) of the American Lung Association's cleanest cities lists for ozone, year-round particle pollution, and short-term particle pollution (American Lung Association, September 2021). Hawaii's consistent good air quality can be attributed in part to the prevailing northeasterly trade winds, with the lack of heavy industry stationary pollutant sources also contributing.

Potential Impacts and Proposed Mitigation

The potential pollutant source in the vicinity of the subject property is CO from motor vehicles. However, since the subject property is located at the end of a cul-de-sac in a low-density single family residential area, with almost constant northeasterly trade winds, the likelihood of CO concentrations high enough to affect air quality standards is very low.

Construction activity to build the new two-story single-family residential dwelling will be consistent with typical residential construction. Soil excavation and vehicular movement on unpaved surfaces may cause short-term, low impact dust emissions. The State of Hawaii Air Pollution Control regulations prohibit visible emissions of fugitive dust from construction activities at the property line. To control dust emissions during construction, a dust control program will be implemented, and dust emissions will be controlled through construction mitigation measures such as limiting active land disturbance areas, wetting active work areas, maintaining "good housekeeping" practices to keep dust and soil on-site, and covering any imported and/or exported material during transport. Construction of the proposed new single-family residential dwelling will not adversely affect long-term air quality. No mitigation is proposed.

4.10 NOISE

Based on the subject property's location, as well as the land use in the surrounding area, current ambient background noise can be characterized as natural (due to birds, wind, and ocean waves) and manmade (due to occasional vehicular traffic, occasional overhead airplane, and typical low density residential noise). These types of noises are consistent with typical low density residential areas.



Potential Impacts and Proposed Mitigation

There will be short-term noise generated during construction activities. However, the noise levels associated with typical residential construction are not expected to adversely affect neighbors and the surrounding community.

Construction activities will comply with the HDOH Community Noise Rule expressed in HAR Title 11-46, which specifies that construction activities will comply with all community noise controls. HAR Title 11-46-3 describes the State zoning districts, which are based on land use. The subject property falls under the Class A zoning districts category, which includes all areas equivalent to lands zoned residential, conservation, preservation, public space, open space, or similar type.

The HDOH Community Noise Rule also specifies that Class A zoning district areas may not exceed the “maximum permissible” noise level of 55 decibels (dBA) from 7 a.m. to 10 p.m. and 45 dBA between the hours of 10 p.m. and 7 a.m. (Hawaii Administrative Rules [HAR], Title 11, Chapter 46, 1969). If construction sound levels are anticipated to exceed the HDOH’s “maximum permissible” noise levels at the property line, the contractor will obtain a noise permit from HDOH to operate vehicles, construction equipment, and power tools that produce noise levels above “maximum permissible” levels. While construction activities may affect ambient noise levels temporarily, over the long-term, the proposed construction of the new single-family residential dwelling will not affect ambient noise levels.

4.11 UTILITIES

Utilities, including electricity, water, wastewater, and communications were previously provided to the subject property, but were taken out of service when the former residence was demolished. Remaining remnants of previous utility infrastructure will be removed and disposed of during demolition of the remaining foundation walls and concrete pad. Existing utilities are located in easements in the vicinity of the subject property.

The proposed construction of a new single-family residential dwelling will require the installation of new infrastructure to provide utility services to the residence. The following sections discuss the anticipated utilities to be installed, anticipated impacts resulting from installation of the utilities, and proposed mitigation measures to minimize the impacts.



4.11.1 ELECTRICAL SUPPLY

Electricity will be provided to the subject property by HECO via a pre-existing subsurface electrical transmission line located in an easement near the subject property. During construction, an electrical meter and other electrical appurtenances will be installed, and the new single-family residential dwelling will be connected to the HECO power grid.

Potential Impacts and Proposed Mitigation

The proposed action will not adversely affect electrical supply to the public area. The construction will not affect existing electrical service supply lines. No mitigation is proposed.

4.11.2 WATER SUPPLY

Water will be provided to the subject property by the BWS via a pre-existing subsurface water supply line located in an easement near the subject property. During construction a water meter, pressure regulator, shut-off valve, and other water appurtenances will be installed, and the new single-family residential dwelling will be connected to the BWS water distribution system.

Potential Impacts and Proposed Mitigation

The proposed action will not adversely affect water supply to the public area. The construction will not affect existing underground water supply lines. No mitigation is proposed.

4.11.3 WASTEWATER SUPPLY

Wastewater services will be provided to the subject property by Hawaii American Water via a pre-existing subsurface sewer line located in an easement near the subject property. During construction a sewer service line will be installed, and the new single-family residential dwelling will be connected to the Hawaii American Water wastewater collection system.



Potential Impacts and Proposed Mitigation

The proposed action will not adversely affect wastewater supply to the public area. The construction will not affect existing underground wastewater supply lines. No mitigation is proposed.

4.11.4 COMMUNICATIONS FACILITIES

Several telecommunications options are available for the subject property. Hawaiian Telcom, AT&T, and Spectrum have facilities in the vicinity of the subject property. Plans and drawings have not yet indicated if there will be communication connection to the new residential dwelling.

Potential Impacts and Proposed Mitigation

The proposed action will not adversely affect communication supply to the public area. The construction will not affect existing overhead and underground communication supply lines. No mitigation is proposed.

4.12 SOCIO-ECONOMIC CHARACTERISTICS

The subject property, which is located in the Portlock community, in southeast portion of the City and County of Honolulu is currently vacant and unoccupied. Honolulu County, which comprises the entire island of Oahu, has the highest population of all the Hawaiian counties. The reported population in the Honolulu for 2019 was 974,563. The average population density for the state for that same period was 220 persons per square mile (State of Hawaii, Department of Business, Economic Development and Tourism [DBEDT], January 2021).

The average value of residential building permits in Honolulu for 2019 was \$593,090 compared to \$342,649 in 1990 (State of Hawaii, Department of Business, Economic Development and Tourism [DBEDT], September 2021).

In the first quarter of 2021, private building authorizations in Honolulu increased \$52.3 million or 11.9%, compared with the first quarter of 2020. In 2020, private building authorizations in Honolulu decreased \$246.6 million or 12.0%, compared with the previous year (DBEDT, September 2021). According to the U.S. Bureau of Labor Statistics, the average weekly



wages for all industries in the CCH during the fourth quarter of 2020 was \$1,282 (U.S. Bureau of Labor Statistics, September 2021).

Potential Impacts and Proposed Mitigation

The construction of the proposed new single-family residential dwelling will have no adverse socioeconomic impacts. The project will have a small but positive economic impact for the CCH. The residence and associated improvements will not adversely affect population or demand for services. Short-term construction-related activity will generate economic benefits through the local civilian construction sector and the purchase of construction materials will support locally owned businesses. Additionally, upon completion, the proposed new single-family residential dwelling will also increase revenue for the state through property taxes.

4.13 PUBLIC FACILITIES AND SERVICES

This section discusses the potential for impacts to public facilities and services resulting from construction of the proposed new single-family residential dwelling.

4.13.1 EDUCATIONAL FACILITIES

The subject property is located within the State of Hawaii, Department of Education (DOE), Hawaii Public Schools, Honolulu District. There are currently 36 elementary schools, nine (9) intermediate/middle schools, six (6) high schools, one (1) combined K-12th grade school and one (1) special purpose school in the Honolulu District. The subject property is within the boundaries serviced by the following schools.

- Koko Head Elementary School located 1.2 miles from the subject property at 189 Lunalilo Home Road.
- Niu Valley Middle School located 4.2 miles from the subject property at 310 Halemaumau Street.
- Kaiser High School located 2.4 miles from the subject property at 511 Lunalilo Home Road.



The nearest public library to the subject property is the Hawaii Kai Public Library at 249 Lunalilo Home Road approximately 1.6 miles from the subject property.

Potential Impacts and Proposed Mitigation

No long-term adverse impacts to Honolulu District school or library facilities are anticipated as a result of construction of the proposed new single-family residential dwelling. No significant increase in local traffic, which could potentially impede access to nearby educational facilities, is anticipated. The proposed construction is not anticipated to affect educational services to the community. No mitigation is proposed.

4.13.2 RECREATIONAL FACILITIES

There are numerous public access and commercial recreational facilities within the vicinity of the subject property (see Figure 4-10 Map of parks near subject property). The following recreational facilities are within 4 miles of the subject property.

- Spitting Caves Trail – is located approximately 200 ft west of the subject property. The trail is a short, moderately trafficked loop trail. The Spitting Cave is located just below a high cliff where waves crash underneath and shoot into the cave, ejecting the water like a reverse blowhole (AllTrails, August 2021).
- Koko Kai Beach Park and China Walls – are located approximately 0.5 miles northwest of the subject property. Koko Kai Beach Park is a small grassy area with no amenities. China walls is a rugged stretch of rocky coastline along the southeastern tip of Oahu. It is very popular with tourists and locals alike. It is reported to be a great whale watching spot and is very popular with surfers and cliff-jumpers. Often times, spectators will gather on the stepped cliffs to watch cliff divers and surfers below (Outdoor Project, August 2021).
- Kokee Beach Park – is located approximately 0.6 miles northwest of the subject property. Kokee Beach Park has no amenities and is most often used for access to nearby surfing spots.
- Hawaii Water Sports Center – is located approximately 1.6 miles north of the subject property at 7192 Kalaniana'ole Highway. The Hawaii Sports Center is a commercial



establishment that provides rental equipment for Parasailing, jet-skiing, wakeboarding, and water skiing as well as tube, wakeboard, and water-skiing rides.

- Koko Head District/Regional Park – is located approximately 2.3 miles north-northeast of the subject property. The Park offers outdoor recreation and provides public open space to the general public. Hiking and biking are popular at Koko Head District Park along with birdwatching and other outdoor activities. Several beaches can be accessed via the park, and Hanauma Bay Nature Preserve is located at the southwest end of the park, approximately 2 miles northeast of the subject property (City and County of Honolulu, Department of Parks and Recreation, August 2021).
- Koko Head Crater – is located in Koko Head District/Regional Park, approximately 2.3 miles from the subject property. Koko Head Crater is also known as “Koko Head Stairs” due to the over 1000 stair-like steps that lead to the summit of the crater (Best of Oahu August 2021).
- The Oahu Club – is located approximately 3.6 miles north of the subject property at 6800 Hawaii Kai Drive. The Oahu Club is a private tennis and fitness facility with saunas, Jacuzzis, and swimming pools.



Figure 4-10. Map of parks near subject property provided by Google maps.





Potential Impacts and Proposed Mitigation

During construction, the project may result in short-term disruption of vehicle traffic along Lumahai Street in the vicinity of the subject property and Spitting Cave. However, the proposed construction is not anticipated to obstruct or hinder access to nearby recreational facilities and no impact to public beach access will occur. The planned project will not dramatically increase the population in the vicinity and will not create dramatic, additional long-term use of recreational facilities. The proposed construction of a new single-family residential dwelling will not adversely affect existing recreational facilities and no mitigation is recommended.

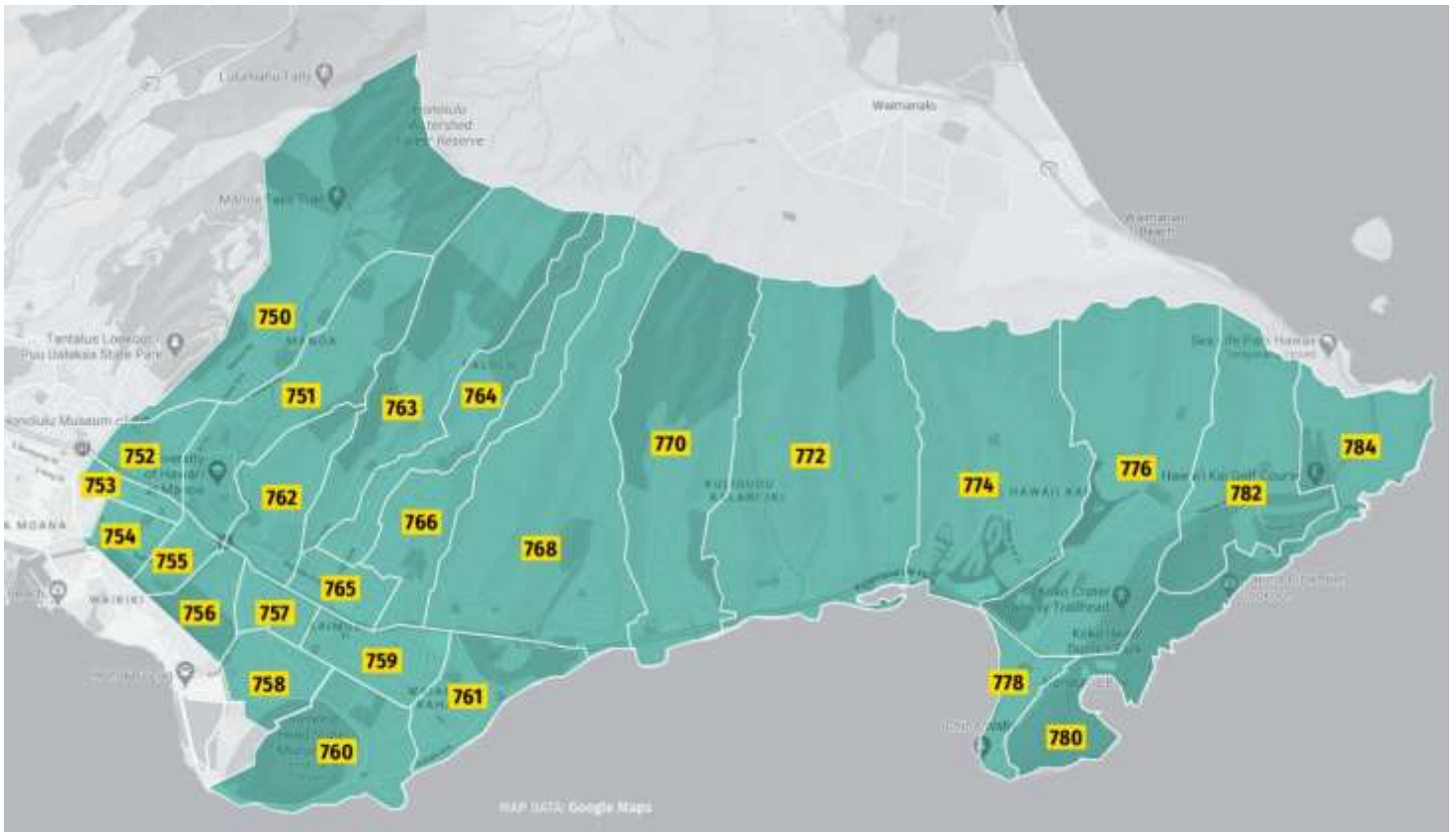
4.13.3 POLICE

The Portlock community is served by the Honolulu Police Department (HPD) District 7, which covers East Honolulu, from Punahou Street to Makapuu Point, encompassing approximately 40 square miles. The subject property lies in HPD District 7 Patrol Zone 778 (See Figure 4-11) HPD District 7 Administrative Headquarters is located at 801 South Beretania Street, approximately 12 miles from the subject property, and the HPD District 7 Criminal Investigations office is located at 4087 Diamond Head Road, approximately 9 miles from the subject property (Honolulu Police Department, August 2021).

The Portlock neighborhood, in which the subject property resides, is considered a relatively low crime area. During the six (6) month period from February 2, 2021, to August 9, 2021, 19 crimes were reported within a one-mile radius of the subject property (Honolulu Police Department, August 2021). A list of the reported crimes and the location of their occurrence are presented in Appendix B.



Figure 4-11. HPD District 7 Patrol Zone map provided by Google maps.





Potential Impacts and Proposed Mitigation

The construction of the proposed new single-family residential dwelling will not impact HPD's operations or ability to provide adequate services to the surrounding community. No direct, secondary, or cumulative impacts to police protection are anticipated or expected as a result of the proposed project. Equipment mobilization and materials deliveries related to construction of the home will follow state and local laws. No mitigation measures are proposed.

4.13.4 FIRE AND EMERGENCY MEDICAL SERVICES

The Honolulu Fire Department (HFD) manages 45 operating fire stations in Honolulu County, with one (1) fire department per 13 square miles, covering 601 total square miles. There are four (4) HFD stations within approximately 10 miles of the subject property. The nearest HFD station that serves the subject property is HFD Station 34, the Hawaii Kai Fire Station, located at 515 Lunalilo Home Road, approximately 2.3 miles away.

During the six (6) month period from February 10, 2021, to August 10, 2021, 35 emergency responses were reported within the vicinity of the subject property (Honolulu Fire Department, August 2021). The following is a summary of the reported emergency response calls within that 6-month period:

- 18 water related responses
- 11 medical related responses
- 3 false alarms
- 2 high angle rescues
- 1 building fire

Potential Impacts and Proposed Mitigation

Construction of the proposed new single-family residential dwelling will not impact HFD's ability to provide emergency services and fire protection to subject property and the surrounding residential community. No mitigation measures are proposed.



4.13.5 SOLID WASTE MANAGEMENT

It is estimated that Oahu generates more than 2.2 million tons of waste annually from residential, commercial, and industrial sources. Most residential and general commercial trash is disposed of at CCH's H-POWER (Honolulu Program of Waste Energy Recovery) Plant, located in the Campbell Industrial Park. The H-POWER facility processes over 700,000 tons of waste annually. Noncombustible construction and demolition (C&D) debris and industrial wastes are disposed of at one (1) of two (2) landfills on Oahu, the Waimanalo Gulch Sanitary Landfill and the Nanakuli landfill, which is permitted for construction and demolition waste only (City and County of Honolulu, Department of Environmental Services, Refuse Division, August 2021).

Solid waste management services for the subject property are provided by CCH. Weekly trash collection services are provided on Wednesdays. Recycling services for mixed recyclables and green waste are provided on alternating Saturdays City and County of Honolulu, Department of Environmental Services, Refuse Division, August 2021).

Potential Impacts and Proposed Mitigation

Short-term impacts resulting from construction of the proposed new single-family residential dwelling will be limited. The construction contractor will be responsible for disposing all construction related debris at a CCH approved disposal facility in accordance with HRS, Chapters 342H and 342I, and HAR, Title 11- 58.1, Solid Waste Management Control. Upon completion, the new home will not have a long-term effect on solid waste management. No mitigation is proposed.

4.14 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

An Archaeological Inventory Survey (AIS) of the subject property was conducted by Keala Pono Archaeological Consulting (September 2021). The survey was designed to identify historic properties within the subject property and surrounding area. There were no archaeological resources identified in the survey of the subject property and surrounding area. The AIS results are presented as an Archaeological Assessment in Appendix C.



4.14.1 HISTORIC AND ARCHAEOLOGICAL RESOURCES

The subject property is located in the southeast portion of the area formally known as Maunalua, along the cliffside known as Kawaihoa Point, which is also known as Portlock Point. Historically, Maunalua was home to the large Kuapa ponds containing akule and mullet, as well as numerous fishing shrines. Additionally, sweet potato farming occurred in regions of rich red soil found in the area. In 1900, the land near the subject property was commercialized for livestock farming and commercial mullet farming began in Maunalua Bay. A tsunami event in 1961 occurred and devastated many coastal sites in the ahupuaa. In 1961, Maunalua became recognized as Hawaii Kai. Residential and commercial development began in 1970s and has continued to grow in lieu of the current increase of population and tourism (Keala Pono Archaeological Consulting, LLC, September 2021). Figure 4-12 indicates the locations of previous archaeological investigations in Maunalua.

Accounts as early as 1921 of historic properties in the Maunalua Bay area have been reported. Archaeological accounts of three (3) ko'a (fishing shrines), Koko Head petroglyphs, a platform on Koko Crater, Kuapa Fishpond, pre-contact temporary shelter, military bunkers at Koko Head, remnants of a radar station at Koko Crater, and human remains were identified or recovered in the Hawaii Kai area, within the general vicinity of the subject property. The archaeological findings were documented by McAllister (1933), Emory and Sinoto (1961), Borthwick et al. (1998), and Magnuson (2003) (Keala Pono Archaeological Consulting, LLC, September 2021).

Potential Impact and Proposed Mitigation

The construction of the new two-story single-family residential dwelling is not expected to result in significant adverse impacts to historic properties of the site. No adverse effect to historical or archaeological resources is anticipated as a result of the proposed action. No further archaeological work or mitigation is proposed.



Figure 4-12. Previous Archaeological Investigations in Maunaloa (Keala Pono, 2021)





4.14.2 CULTURAL RESOURCES

Maunalua is connected to Hawaiian cultural stories of gods, goddesses, and menehune. Koko Crater was originally referred to as Kohelepelepe but was changed due to outside influences. The name Kohelepelepe comes from a Hawaiian story involving the volcano goddess, Pele, the pig god, Kamapuaa, and the sorcery goddess, Kapo. As Kamapuaa was bothering Pele, Kapo, Pele's sister, lured Kamapuaa away from Hawaii to Oahu using the formation of Kohelepelepe modernly known as Koko crater to entice him (Keala Pono Archaeological Consulting, LLC, September 2021).

Koko head was previously known as Kaneapua's Hill, the name stemming from a Hawaiian story of three (3) Hawaiian god-brothers, Kane, Kanaloa, and Kaneapua. The youngest brother, Kaneapua, was ordered to collect water from the Waiakaaiea spring without relieving himself. Due to the ignorance of Kaneapua, the older brothers turned their backs and left him. Kaneapua transformed into the Tuff cone known as Koko head, where it is dry and bare (Keala Pono Archaeological Consulting, LLC, September 2021).

Another Hawaiian story links the disappearance of mullet in the Kuapa Pond and their reappearance in the Kaelepulu Fishpond in Kailua to involvement of menehune (mythical dwarf people). It is said that the menehune helped a woman named Mahoe build Kuapa Pond in one (1) night. As the mullet would disappear from the Kuapa Pond, Mahoe would carry a newborn pig around the pond on the night of Kane and place limu and 'ilima on the shrine on the following night of Lono. The fish would return to Kuapa Pond after the night of Lono (Keala Pono Archaeological Consulting, LLC, September 2021).

Potential Impacts and Proposed Mitigation

There are no indications of known cultural resources within the subject property. Minimal to no impacts to Hawaiian cultural practices or resources are anticipated. Existing cultural practices, such as fishing, that occur in the greater surrounding area will not be impacted. With potential for inadvertent cultural finds, should cultural materials be discovered during construction activities, all work shall cease immediately and an archaeologist from SHPD shall be notified. Construction-related activities will be suspended until further archaeological/cultural recommendations are made for the appropriate treatment of archaeological and/or cultural materials.



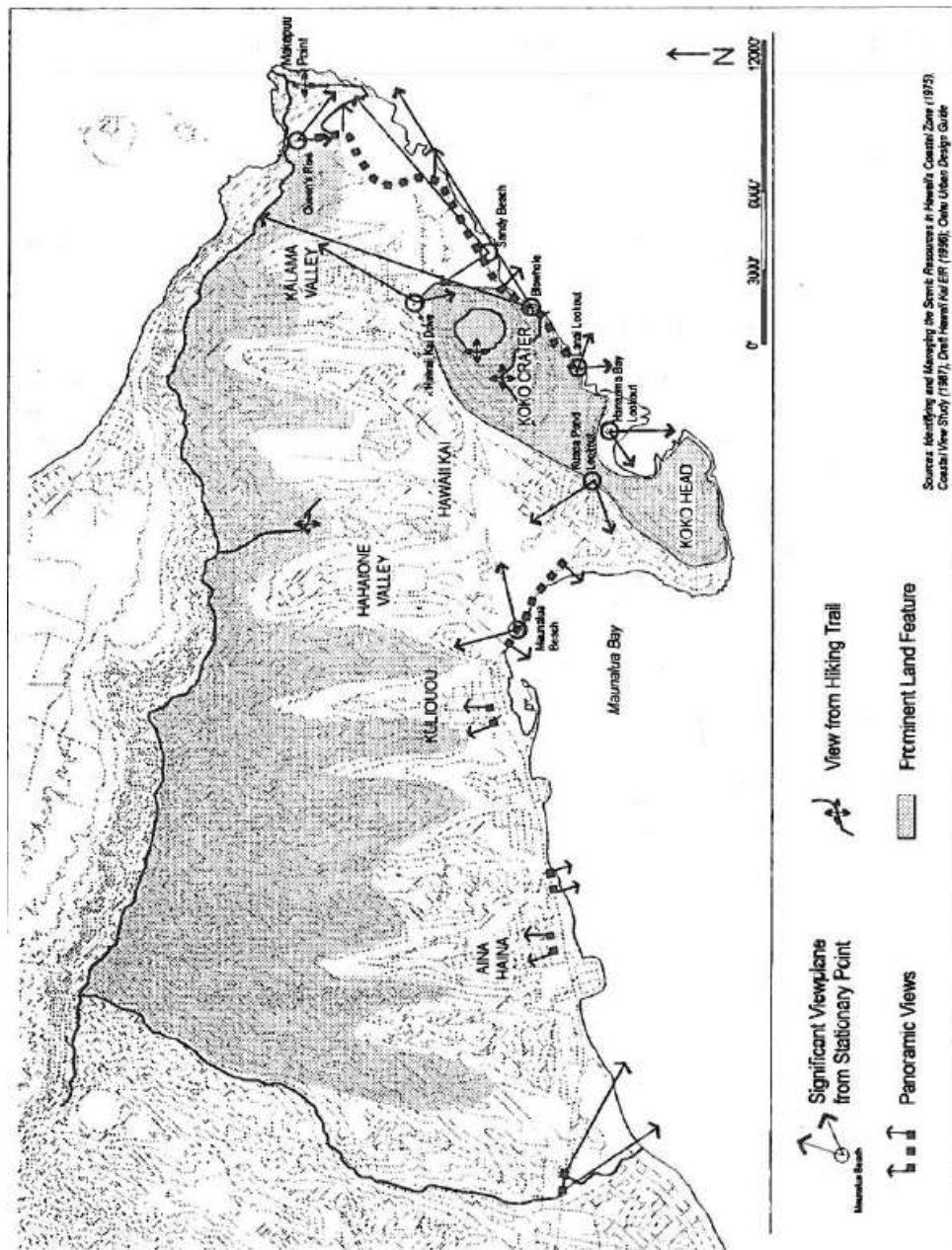
4.15 VISUAL RESOURCES

The project site is located on the coast in Portlock neighborhood of Maunaloa, in the Kona District on the island of Oahu. The private residential property is developed with the remains of a concrete slab. The project site is bounded by the Pacific Ocean to the south, private residential properties to the east and west, and Lumahai Street to the north.

The rugged coastal lands between Koko Head and Makapuu Point are among Oahu's most unique and spectacular scenic resources and are identified in the East Honolulu Sustainable Communities Plan as a scenic viewshed (Figure 4-13). The East Honolulu Sustainable Communities Plan stresses the importance of protecting the scenic value of this viewshed, which is critical to the island's economy, due to its island-wide attraction to both residents and visitors (DPP, April 2021).



Figure 4-13. Koko head and Makapuu Viewshed map provided by East Honolulu Sustainable Communities Pan.





Potential Impacts and Proposed Mitigation

Construction of the proposed new single-family residential dwelling will not adversely affect coastal view or pose any potential impact to the visual resources of the community. The subject property is west of the Koko Head Makapuu Point scenic viewshed and the property's topography slopes in such a way as not to interfere with coastal views from surrounding properties. No mitigation measures are proposed.

4.16 POTENTIAL CUMULATIVE AND SECONDARY IMPACTS

Cumulative impacts are changes to environmental, social, and economic values caused by the combined incremental effects of past, present, and reasonably foreseeable, future human activities and natural processes, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (Hawaii Administrative Rules [HAR], Title 11, Chapter 200-2, April 2008).

Secondary impacts are effects, which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (HAR 11-200-2, April 2008).

Potential Impacts and Proposed Mitigation

Negative cumulative impacts are not anticipated as a result of the proposed action involving the construction of a new single-family residential dwelling on the subject property. Positive long-term cumulative impacts resulting from the proposed action, however small, include land use utilization for its designated purpose, increased local and state revenue, and added consumer spending.

Adverse secondary impacts are not anticipated as a result of the proposed action. Federal, State, and County environmental regulations should be met throughout the construction and operation of the project. Construction activity during the proposed project will generate direct employment as well indirect employment in construction-related industries. Vehicular traffic, air quality, noise, and visual quality may be temporarily disturbed during the



construction phase of the proposed project. A small access point to spitting caves north of the subject project is not anticipated to be affected during the construction phase of the proposed action or as a result of the completed proposed action.



5.0 CONFORMANCE WITH PLANS, REQUIRED PERMITS, AND APPROVALS

This section discusses the proposed action's consistency with applicable land use objectives, policies, and guidelines in the Hawaii State Plan, Hawaii State Land Use Law, Hawaii Coastal Zone Management Program, Hawaii Water Quality Standards, City County of Honolulu General Plan, City and County of Honolulu East Honolulu Sustainable Communities Plan, City and County of Honolulu Land Use Ordinances, Shore Line Setbacks, and Special Management Areas.

5.1 HAWAII STATE PLAN

The Hawaii State Plan, adopted in 1978, and promulgated in HRS, Chapter 226, consists of three (3) sections:

- **Part I, Overall Theme, Goals, Objectives, and Policies.** In this section, the plan describes the overall theme and goals of the plan. The objectives and policies focus on general topic areas, including population, economy, physical environment, facility systems, and socio-cultural advancement.
- **Part II, Planning Coordination, and Implementation.** This section of the plan establishes a statewide planning system via Functional Plans, County General Plans, and State Programs to coordinate and guide all major state and county activities and to implement the overall theme, goals, objectives, policies, and priority guidelines.
- **Part III, Priority Guidelines.** This section establishes overall priority guidelines, setting the course for the state by addressing major areas of statewide concern, including economic, population growth, crime and criminal justice, affordable housing, education, sustainability, and climate change adaption.

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the objectives and policies of the Hawaii State Plan. The directly relevant State Plan goals, objectives, policies, and priority guidelines, along with a discussion of how the proposed construction conforms to them are provided in Table 5-1 and are discussed below.



| Table 5-1. Hawaii State Plan Objectives, Policies, and Priority Guidelines (HRS 226 – Hawaii State Planning Act) | | |
|---|---|--|
| Section | Objectives – Policies - Guidelines | Applicability to Proposed Construction |
| Objectives and Policies | | |
| § 226-5 | Objectives and policies for population | Applicable |
| § 226-6 | Objectives and policies for the economy – in general | Applicable |
| § 226-7 | Objectives and policies for the economy – agriculture | Not Applicable |
| § 226-8 | Objectives and policies for the economy – visitor industry | Not Applicable |
| § 226-9 | Objectives and policies for the economy – federal expenditures | Not Applicable |
| § 226-10 | Objectives and policies for the economy – potential growth and innovative activities | Not Applicable |
| § 226-10.5 | Objectives and policies for the economy – information industry | Not Applicable |
| § 226-11 | Objectives and policies for the physical environment – land-based, shoreline, and marine resources | Not Applicable |
| § 226-12 | Objectives and policies for the physical environment – scenic, natural beauty, and historic resources | Not Applicable |
| § 226-13 | Objectives and policies for the physical environment – land, air, and water quality | Applicable |
| § 226-14 | Objectives and policies for facility systems – in general | Not Applicable |
| § 226-15 | Objectives and policies for facility systems – solid and liquid waste | Not Applicable |
| § 226-16 | Objectives and policies for facility systems – water | Not Applicable |
| § 226-17 | Objectives and policies for facility systems – transportation | Not Applicable |
| § 226-18 | Objectives and policies for facility systems – energy | Not Applicable |
| § 226-18.5 | Objectives and policies for facility systems – telecommunications | Not Applicable |
| § 226-19 | Objectives and policies for socio-cultural advancement – housing | Applicable |
| § 226-20 | Objectives and policies for socio-cultural advancement – health | Not Applicable |
| § 226-21 | Objectives and policies for socio-cultural advancement – education | Not Applicable |
| § 226-22 | Objectives and policies for socio-cultural advancement – social services | Not Applicable |
| § 226-23 | Objectives and policies for socio-cultural advancement – leisure | Applicable |
| § 226-24 | Objectives and policies for socio-cultural advancement – individual rights and personal well-being | Not Applicable |
| § 226-25 | Objectives and policies for socio-cultural advancement – culture | Not Applicable |
| § 226-26 | Objectives and policies for socio-cultural advancement – public safety | Not Applicable |
| § 226-27 | Objectives and policies for socio-cultural advancement – government | Not Applicable |
| Priority Guidelines | | |
| § 226-102 | Priority Guidelines – overall direction | Not Applicable |
| § 226103- | Economic priority guidelines | Not Applicable |
| § 226-104 | Population growth and land resources priority guidelines | Applicable |



**Table 5-1. Hawaii State Plan Objectives, Policies, and Priority Guidelines
(HRS 226 – Hawaii State Planning Act)**

| Section | Objectives – Policies - Guidelines | Applicability to Proposed Construction |
|----------------|---|---|
| § 226-105 | Crime and criminal justice | Not Applicable |
| § 226-106 | Affordable housing | Not Applicable |
| § 226-107 | Quality education | Not Applicable |
| § 226-108 | Sustainability | Applicable |
| § 226-109 | Climate change adaptation priority guidelines | Applicable |

Objectives and Policies

HRS, Chapter 226-5 - Objective and policies for population

Objective:

It shall be the objective in planning for the State's population to guide population growth to be consistent with the achievement of physical, economic, and social objectives contained in this chapter.

Policies:

- 1. Manage population growth statewide in a manner that provides increased opportunities for Hawaii's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.*
- 2. Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.*
- 3. Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the islands.*
- 4. Encourage research activities and public awareness programs to foster an understanding of Hawaii's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawaii's population.*



5. *Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.*
6. *Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.*
7. *Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not negatively impact statewide population growth as it relates to physical, social, and economic aspirations. Construction of the new single-family residential dwelling will provide short-term employment opportunities for local construction related businesses promoting increased opportunities for Hawaii's people to pursue their socio-economic aspirations.

HRS, Chapter 226-6 - Objectives and policies for the economy--in general

Objectives:

Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited. And a steadily growing and diversified economic base that is not overly dependent on a few industries and includes the development and expansion of industries on the neighbor islands.

Policies:

1. *Promote and encourage entrepreneurship within Hawaii by residents and nonresidents of the State.*



2. *Expand Hawaii's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.*
3. *Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.*
4. *Transform and maintain Hawaii as a place that welcomes and facilitates innovative activity that may lead to commercial opportunities.*
5. *Promote innovative activity that may pose initial risks, but ultimately contribute to the economy of Hawaii.*
6. *Seek broader outlets for new or expanded Hawaii business investments.*
7. *Expand existing markets and penetrate new markets for Hawaii's products and services.*
8. *Assure that the basic economic needs of Hawaii's people are maintained in the event of disruptions in overseas transportation.*
9. *Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.*
10. *Encourage the formation of cooperatives and other favorable marketing arrangements at the local or regional level to assist Hawaii's small-scale producers, manufacturers, and distributors.*
11. *Encourage labor-intensive activities that are economically satisfying, and which offer opportunities for upward mobility.*
12. *Encourage innovative activities that may not be labor-intensive but may otherwise contribute to the economy of Hawaii.*
13. *Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.*



14. *Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.*
15. *Maintain acceptable working conditions and standards for Hawaii's workers.*
16. *Provide equal employment opportunities for all segments of Hawaii's population through affirmative action and nondiscrimination measures.*
17. *Stimulate the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.*
18. *Encourage businesses that have favorable financial multiplier effects within Hawaii's economy, particularly with respect to emerging industries in science and technology.*
19. *Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.*
20. *Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new or innovative potential growth industries in particular.*
21. *Foster a business climate in Hawaii--including attitudes, tax and regulatory policies, and financial and technical assistance programs--that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will help foster a level of construction activity responsive to, and consistent with, state growth objectives. Construction activity also encourages increased consumer behavior, bettering Hawaii's economy.



HRS, Chapter 226-13 - Objectives and policies for the physical environment - land, air, and water quality

Objective:

Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of maintenance and pursuit of improved quality in Hawaii's land, air, and water resources and greater public awareness and appreciation of Hawaii's environmental resources.

Policies:

- 1. Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.*
- 2. Promote the proper management of Hawaii's land and water resources.*
- 3. Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.*
- 4. Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaii's people.*
- 5. Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.*
- 6. Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.*
- 7. Encourage urban developments in close proximity to existing services and facilities.*
- 8. Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures, and visitors.*



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is not anticipated to impact Hawaii's coastal resources. Protective measures during construction will be implemented to mitigate potential impacts to land, air, and water quality. The new single-family residential dwelling will also enhance the physical qualities of Hawaii's Koko Kai neighborhood and the Portlock community, which is within close proximity to existing services and facilities. The new home will be appropriately scaled and will maintain Hawaii's scenic and natural resources, replacing existing foundation remnants from a previously demolished home, which have affected the aesthetics of the subject property. Construction of the new single-family residential dwelling will complement the aesthetics of the surrounding neighborhood.

HRS, Chapter 226-19 - Objectives and policies for socio-cultural advancement - housing

Objective:

Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of Greater opportunities for Hawaii's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and above moderate-income segments of Hawaii's population, the orderly development of residential areas sensitive to community needs and other land uses, and the development and provision of affordable rental housing by the State to meet the housing needs of Hawaii's people.

Policies:

- 1. Effectively accommodate the housing needs of Hawaii's people.*
- 2. Stimulate and promote feasible approaches that increase affordable rental and for sale housing choices for extremely low-, very low-, lower-, moderate-, and above moderate-income households.*



3. *Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.*
4. *Promote appropriate improvement, rehabilitation, and maintenance of existing rental and for sale housing units and residential areas.*
5. *Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and other concerns of existing communities and surrounding areas.*
6. *Facilitate the use of available vacant, developable, and underutilized urban lands for housing.*
7. *Foster a variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods that reflect the culture and values of the community.*
8. *Promote research and development of methods to reduce the cost of housing construction in Hawaii.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will provide homeownership opportunity for the subject property owners, will promote appropriate improvement and rehabilitation of the existing subject property, and will facilitate the use of available vacant and developable lands (subject property) on the island of Oahu. The proposed construction will not require a variance or zoning change, will not significantly increase the footprint of previous historical development on the subject property, or alter the historical land use of the subject property. The design of the proposed home will not create a significant visual impact from the accessible portions of the adjacent Public Access Easement or occupy a significant view plane (See Figure 1-2).



HRS, Chapter 226-23 - Objectives and policies for socio-cultural advancement - leisure

Objective:

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

Policies:

- 1. Foster and preserve Hawaii's multi-cultural heritage through supportive cultural, artistic, recreational, and humanities-oriented programs and activities.*
- 2. Provide a wide range of activities and facilities to fulfill the cultural, artistic, and recreational needs of all diverse and special groups effectively and efficiently.*
- 3. Enhance the enjoyment of recreational experiences through safety and security measures, educational opportunities, and improved facility design and maintenance.*
- 4. Promote the recreational and educational potential of natural resources having scenic, open space, cultural, historical, geological, or biological values while ensuring that their inherent values are preserved.*
- 5. Ensure opportunities for everyone to use and enjoy Hawaii's recreational resources.*
- 6. Assure the availability of sufficient resources to provide for future cultural, artistic, and recreational needs.*
- 7. Provide adequate and accessible physical fitness programs to promote the physical and mental well-being of Hawaii's people.*
- 8. Increase opportunities for appreciation and participation in the creative arts, including the literary, theatrical, visual, musical, folk, and traditional art forms.*
- 9. Encourage the development of creative expression in the artistic disciplines to enable all segments of Hawaii's population to participate in the creative arts.*



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

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not impede access to nearby significant natural resources, thus assuring adequate access to significant natural and cultural resources in public ownership.

Priority Guidelines

HRS, Chapter 226-104 – Population growth and land resources

Priority Guidelines:

Priority guidelines to effect desired statewide growth and distribution:

1. *Encourage planning and resource management to ensure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawaii's people.*
2. *Manage a growth rate for Hawaii's economy that will parallel future employment needs for Hawaii's people.*
3. *Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.*
4. *Encourage major state and federal investments and services to promote economic development and private investment to the neighbor islands, as appropriate.*
5. *Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.*
6. *Seek federal funds and other funding sources outside the State for research, program development, and training to provide future employment opportunities on the neighbor islands.*



7. *Support the development of high technology parks on the neighbor islands.*

Discussion:

The proposed construction of a new single-family residential dwelling is in an appropriately designated State Land Use District (SLUD), meets the appropriate local zoning requirements (CCH: R-10 residential), and community plan criteria (East Honolulu Sustainable Communities Plan: State Urban District Residential)

HRS, Chapter 226-108 - Sustainability

Priority Guidelines:

Priority guidelines and principles to promote sustainability shall include:

1. *Encouraging balanced economic, social, community, and environmental priorities.*
2. *Encouraging planning that respects and promotes living within the natural resources and limits of the State.*
3. *Promoting a diversified and dynamic economy.*
4. *Encouraging respect for the host culture.*
5. ***Promoting decisions based on meeting the needs of the present without compromising the needs of future generations.***
6. *Considering the principles of the ahupuaa system; and*
7. *Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawaii.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property promotes decisions based on meeting the needs of the present and projected future growth, without compromising the generations to come and is consistent with HRS 226-108, Sustainability Priority Guideline 5.



HRS, Chapter 226-109 – Climate change adaptation

Priority Guidelines:

Priority guidelines to prepare the State to address the impacts of climate change, including impacts to the areas of agriculture; conservation lands; coastal and nearshore marine areas; natural and cultural resources; education; energy; higher education; health; historic preservation; water resources; the built environment, such as housing, recreation, transportation; and the economy shall:

- 1. Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities;*
- 2. Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies;*
- 3. Invest in continued monitoring and research of Hawaii's climate and the impacts of climate change on the State;*
- 4. Consider native Hawaiian traditional knowledge and practices in planning for the impacts of climate change;*
- 5. Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;*
- 6. Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments;*
- 7. Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options;*



8. *Foster cross-jurisdictional collaboration between county, state, and federal agencies and partnerships between government and private entities and other nongovernmental entities, including nonprofit entities;*
9. *Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans; and*
10. *Encourage planning and management of the natural and built environments that effectively integrate climate change policy.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property supports the priority guidelines for climate change. The home's architectural design as well as construction practices utilized during the building process will not contribute to existing climate change and sea level rise impacts. Potential sea level rise is not anticipated to affect the proposed new single-family residential dwelling.

5.2 HAWAII STATE LAND USE DISTRICT

HRS, Chapter 205-2 stipulates that there shall be four (4) major land use districts in which all lands in the State of Hawaii shall be placed. Boundary determinations for each district are made by the State Land Use Commission (SLUC), an agency within the DBEDT (Hawaii Revised Statutes [HRS], Chapter 205-2 [205-2], 2007). The following four (4) land use districts are:

- Urban Districts – include lands characterized by “city-like” concentrations of people, structures, and services, including vacant areas slated for future development.
- Rural Districts – include areas composed primarily of small farms mixed with low-density residential lots with a minimum size of one-half acre.
- Agricultural Districts – include lands for the cultivation of crops, aquaculture, raising livestock, wind energy facilities, timber cultivation, agriculture support activities, and land with significant potential for agriculture uses.



- Conservation Districts – include lands in existing forest and water reserve zones and include areas necessary for protecting watersheds and water sources, scenic and historic areas, parks, wilderness, open space, recreation areas habitats of endemic plants, fish, and wildlife, and all submerged lands seaward of the shoreline. Lands that are subject to flooding and soil erosion are also included in Conservation Districts.

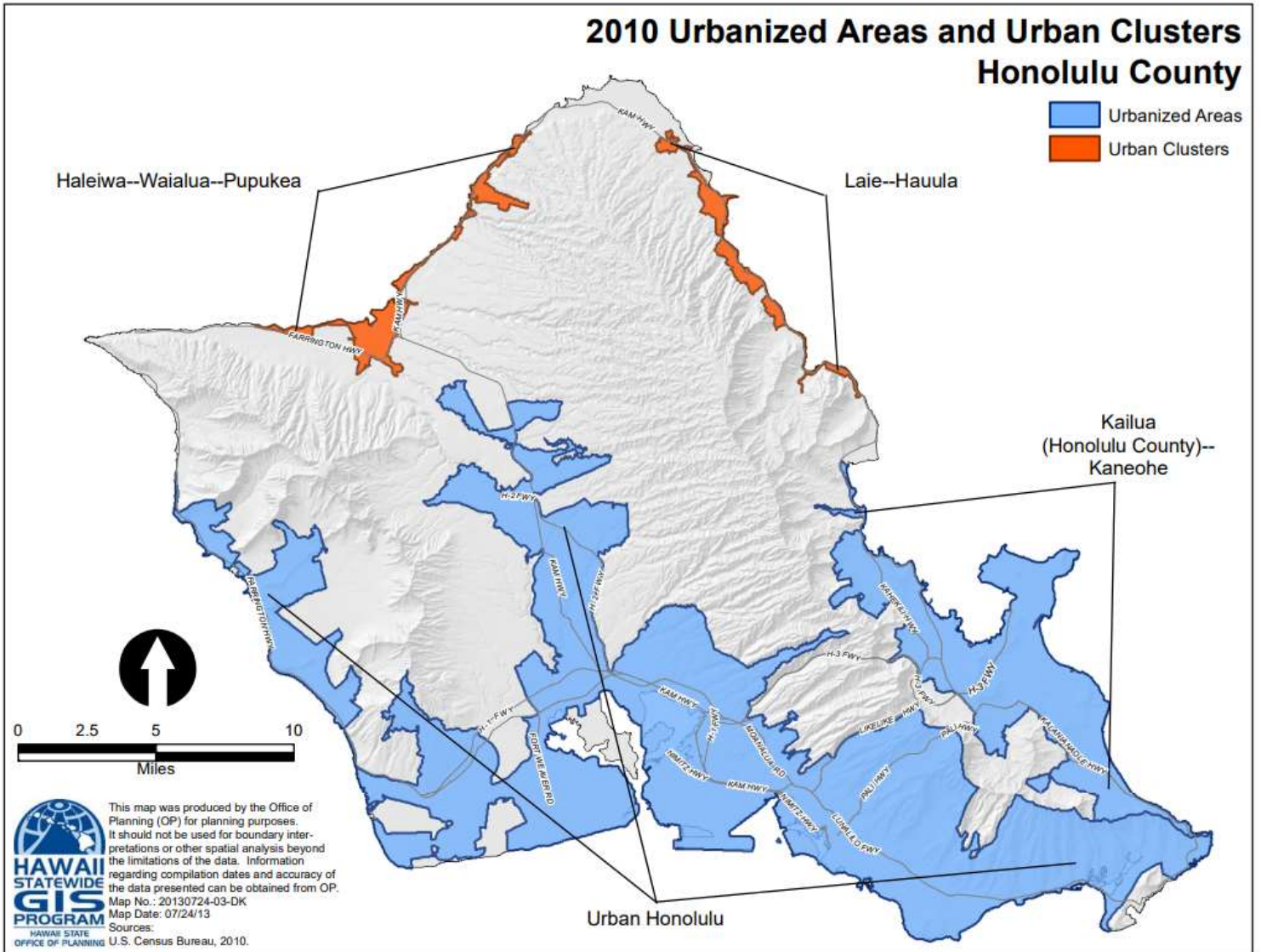
Primary jurisdiction of Urban Districts lies with the respective county governments. The SLUC and county governments share jurisdiction over Rural Districts. Agricultural Districts are administrated by the respective county governments, ensuring compliance with SLUC determined compatible uses. Conservation Districts are administrated by the DLNR.

Discussion:

The subject property is located within the State Urban District (Figure 5-1 Urban areas in Honolulu County), as classified by HRS, Chapter 205-2. The proposed new single-family residential dwelling complies with stipulated uses for the Urban District and will not require district reclassification. Proposed building locations are consistent with Shoreline Setback Requirements. It is anticipated that the proposed construction will not require a zoning change or variance.



Figure 5-1. Urban areas in Honolulu County map provided by Hawaii State OP.





5.3 HAWAII COSTAL ZONE MANAGEMENT

The Federal Coastal Zone Management (CZM) Program was created through passage of the CZM Act of 1972. Hawaii implemented the Hawaii CZM Program in 1977 through promulgation of HRS, Chapter 205A. The purpose of Hawaii's Coastal Zone Management (CZM) Program is "to provide for the effective management, beneficial use, protection, and development of the coastal zone." L. 1977, c188 §1. Hawaii's CZM plan is administrated by the State of Hawaii, Office of Planning and Sustainable Development (OPSD). (State of Hawaii, Department of Planning and Sustainable Development [OPSD], September 2021a).

The premise of the CZM concept is to look at the whole, interrelated ecosystem of a coastal zone area rather than at each individual species, resource, or use within the system, individually. Hawaii employed this concept when designating the entire state as a CZM area. Lawmakers realized that because there is no point of land in Hawaii greater than 30 miles from the ocean, inland occurrences can, and will, influence coastal and marine resources. Hawaii also uses CZM as a tool to balance the needs of economic development with the conservation of coastal zone resources in a sustainable manner.

5.3.1 COSTAL ZONE MANAGEMENT

The following are the Objectives and Policies found in HRS, Chapter 205A-2, Coastal Zone Management Program.

HRS, Chapter 205A-2 – Coastal zone management program

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 restoration of coastal resources that have significant recreational and ecosystem value, including but not limited to coral reefs, surfing sites, fishponds, sand beaches, and coastal dunes, when these resources will be unavoidably damaged by development; or requiring monetary compensation to the State for recreation when restoration is not feasible or desirable;*
 - 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 that dedication against the requirements of section 46-6;*



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will have no impact on coordination and funding of coastal recreational planning and management. Additionally, the proposed construction will not impact public access to coastal recreational resources. The nearest public access point is approximately 200 ft north of the subject property. Existing coastal resources will not be impacted by construction of the new single-family residential dwelling. The proposed construction will adhere to all CCH, state, and federal water quality regulations, and does not include any planned shoreline improvements.

Historic resources;

Objective:

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

Policies:

- a. Identify and analyze significant archaeological resources;*
- b. Maximize information retention through preservation of remains and artifacts or salvage operations; and*
- c. Support state goals for protection, restoration, interpretation, and display of historic resources;*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not negatively impact the protection or preservation of natural and manmade historic and prehistoric resources that are significant in Hawaiian and American history and culture. An AIS of the subject property was conducted by Keala Pono Archaeological Consulting (Keala Pono Archaeological Consulting, LLC, September 2021). The survey was designed to identify historic properties within the



subject property and surrounding area. There were no archaeological resources identified in the survey of the subject property and surrounding area.

2. Scenic and open space resources;

Objective:

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

Policies:

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

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not impact the quality of coastal scenic and open space resources. The subject property is not within a designated viewshed, and the property's topography slopes in such a way as not to interfere with coastal views from surrounding properties. Construction of the new home will be designed to be compatible with the surrounding visual environment and will not impact the protection and preservation of coastal scenic and open space resources.



3. Coastal ecosystems;

Objective:

Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, 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 of significant biological or economic importance, including reefs, beaches, and dunes;*
- d. Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*
- e. Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures;*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not have long term impact on coastal ecosystems, including reefs, beaches, and coastal dunes. Potential short-term impacts will be mitigated through the use of BMPs, which are discussed throughout this EA, to prevent construction-related sediment and debris from leaving the subject property and entering coastal waters.



4. 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 and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area; and*
- c. Direct the location and expansion of coastal development to areas designated and used for that development and permit reasonable long-term growth at those areas, and permit coastal development outside of designated areas when:
 - i. Use of designated locations is not feasible;*
 - ii. Adverse environmental effects and risks from coastal hazards are minimized; and*
 - iii. The development is important to the State's economy;**

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with State and County regulations, land use ordinances, and plans. The design for the proposed home was specifically developed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts, and when completed, the project is not anticipated to result in adverse social, visual, and environmental impacts in the coastal zone management area.



5. Coastal hazards;

Objective:

Reduce hazard to life and property from coastal hazards.

Policies:

- a. Develop and communicate adequate information about the risks of coastal hazards;*
- b. Control development, including planning and zoning control, in areas subject to coastal hazards;*
- c. Ensure that developments comply with requirements of the National Flood Insurance Program; and*
- d. Prevent coastal flooding from inland projects;*

Discussion:

The subject property is located in Flood Zones D and VE. Flood Zone D is defined as areas in which flood hazards are undetermined, but possible, and Flood Zone VE is defined as a coastal flood zone with velocity hazard (wave action), with Base Flood Elevations determined. The southern edge of the subject property comprised mainly of vertical rock cliffs that rise approximately 150 ft above the ocean (see Figure 2-7), falls within Flood Zone VE. The remainder of the subject property is in Flood Zone D, along with the vast majority of the Portlock community and the Hanauma Bay open space.

The subject property is in the TEZ, near the transition to both the XTEZ (50 ft to the north) and the Green Zone (50 ft to the northwest) (See Figure 4-5 Tsunami Evacuation Zones).

The subject property is not directly adjacent to any stream courses.

The subject property lies in the Portlock community of Honolulu, which is a participating community in the FEMA, National Flood Insurance Program (NFIP)



(State of Hawaii, Department of Land and Natural Resources [DLNR], Engineering Division, National Flood Insurance Program, September 2021).

The proposed construction of a new single-family residential dwelling on the subject property is consistent with State and County regulations related to coastal hazards and supports the objective and policies related to coastal hazards.

6. Managing development;

Objective:

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

Policies:

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

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the objective and policies regarding managing development in coastal areas. This EA is prepared in accordance with HRS, Chapter 343, and evaluates the potential short-term and long-term impacts of the proposed new single-family residential dwelling on environmental, social, and cultural resources.



7. Public participation;

Objective:

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

Policies:

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

Discussion:

HRS, Chapter 343 requires public participation in the environmental review process. HDOH, OEQC facilitates Hawaii's environmental review process, which is also known as the Hawaii Environmental Policy Act (HEPA). The OEQC governs EA publications and is the repository for EA publications in Hawaii. The OEQC makes all EAs available to the public for review and comment, with a 30-day public comment period.

This EA provides public information regarding coastal issues and concerns related to the proposed construction of the new single-family residential dwelling on the subject property, along with proposed mitigation measures for the expressed coastal issues and concerns. Other public involvement will include pre-assessment consultation with State, County and Community agencies, organizations, and individuals, all of whom, are encouraged to provide input during the pre-assessment period and during preparation of the Draft EA.



8. Beach and coastal dune protection;

Objectives:

Protect beaches and coastal dunes for public use and recreation, the benefit of coastal ecosystems, and for use and natural buffers against coastal hazards.

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; and*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the objectives and policies for the protection of beaches and coastal dunes. The proposed construction is consistent with shoreline setback



requirements. No shoreline hardening structures are anticipated as part of the proposed construction. No grading of coastal dunes is anticipated as part of the proposed construction. The subject property is not adjacent to a beach transit corridor or any public coastal access point. BMPs will be utilized during construction to mitigate any short-term impacts to beaches and coastal dunes.

9. 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 and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources; and*
- e. Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the objective and policies for the protection, use, and development of marine and coastal resources to assure their sustainability. BMPs, discussed throughout this EA, will be utilized during construction to mitigate the potential for introduction of pollutants to marine and coastal resources.

5.3.2 SPECIAL MANAGEMENT AREAS

HRS, Chapter 205A – Part II, *Special Management Areas*, sets forth special controls on development within an area along the shoreline to avoid permanent losses of valuable resources and management options, and to ensure that adequate access to public-owned or used beaches, recreation areas, and natural reserves is provided, based on the State's policy to preserve, protect, and where possible, to restore the natural resources of the coastal zone of Hawaii. Each county is responsible for designating an SMA that extends inland from the shoreline (Hawaii Revised Statutes [HRS], Chapter 205A-22 [205A-22], 2012) and has jurisdiction over development within the SMA. *“Development”*, as defined in HRS, Chapter 205A-22, means any of the uses, activities, or operations on land or in or under water within a special management area that included below.

1. *Placement or erection of any solid material or any gaseous, liquid, solid, or thermal waste;*
2. *Grading, removing, dredging, mining, or extraction of any materials;*
3. *Change in the density or intensity of use of land, including but not limited to the division or subdivision of land;*
4. *Change in the intensity of use of water, ecology related thereto, or of access thereto; and*
5. *Construction, reconstruction, [demolition,] or alteration of the size of any structure.*

SMA guidelines from HRS, Chapter 205A-26 have been adopted by the Counties to evaluate projects located in the SMA to ensure they are consistent with the objectives and policies of



the Hawaii CZM Program (Hawaii Revised Statutes [HRS], Chapter 205A-26 [205A-26], 2012).

HRS, Chapter 205A-26 *Special management area guidelines.*

- A. *All development in the special management area shall be subject to reasonable terms and conditions set by the authority in order to ensure:*
- a. *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;*
 - b. *Adequate and properly located public recreation areas and wildlife preserves are reserved;*
 - c. *Provisions are made for solid and liquid waste treatment, disposition, and management which will minimize adverse effects upon special management area resources; and*
 - d. *Alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not impact adequate access to publicly owned or used beaches, recreation areas, and natural reserves. The nearest publicly owned or used beach access is approximately 0.5 miles northwest of the subject property and the nearest access point to a recreation area is approximately 200 ft north of the subject property. The proposed construction will not diminish public recreation areas and wildlife preserves. Solid and liquid waste treatment, disposition, and management will not have adverse impacts on SMA resources. Solid waste is discussed in Section 3.15.5. The new residential dwelling will be connected to the neighborhood sewer system for disposition of sanitary waste. The proposed construction will cause minimal to no alterations to existing landforms and



vegetation, and the new single-family residential dwelling will cause no adverse effect to water resources and scenic and recreational amenities. Construction will adhere to all building codes to minimize danger from floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of an earthquake.

B. No development shall be approved unless the authority has first found:

- a. That the development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interests. Such adverse effects shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and the elimination of planning options;*
- b. That the development is consistent with the objectives, policies, and special management area guidelines of this chapter and any guidelines enacted by the legislature; and*
- c. That the development is consistent with the county general plan and zoning. Such a finding of consistency does not preclude concurrent processing where a general plan or zoning amendment may also be required.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property will not have any adverse environmental or ecological effect. Neither cumulative impacts nor secondary impacts are anticipated as a result of the proposed action. The proposed construction of a new single-family residential dwelling on the subject property is consistent with the objectives, policies, and SMA guidelines and is consistent with the County plan and zoning. Re-zoning or a zoning variance related to the proposed construction are not anticipated.



C. *The authority shall seek to minimize, where reasonable:*

- a. *Dredging, filling, or otherwise altering any bay, estuary, salt marsh, river mouth, slough, or lagoon;*
- b. *Any development which would reduce the size of any beach or other area usable for public recreation;*
- c. *Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management areas and the mean high tide line where there is no beach;*
- d. *Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and*
- e. *Any development which 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.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property does not involve dredging, filling, or alterations to surface waters. Additionally, construction will not result in the reduction, in size, of any beach or area usable for public recreation. The design of the new single-family residential dwelling is driven by the belief the existing geology and geography of the area should be maintained. The floor plan hugs the contours of the site, to maintain the line of sight from community streets.

5.3.3 SHORELINE SETBACKS

Shoreline setbacks were established by the state of Hawaii, as part of the CZM to protect the natural shoreline and reduce hazards to property from coastal floods. Shoreline setbacks limit construction within the shoreline area, which is defined in HRS, Chapter 205A-41 as *all of the land area between the shoreline and the shoreline setback line and may include the area between mean sea level and the shoreline; provided that if the highest annual wash of the waves is fixed or significantly affected by a structure that has not received all permits and approvals required by law or if any part of any structure in violation of this part extends*



seaward of the shoreline, then the term "shoreline area" shall include the entire structure (Hawaii Revised Statutes [HRS], Chapter 205A-41, [205A-41], 2012).

A shoreline setback line means that line established in this part or by the county running inland from the shoreline at a horizontal plane. "Structure" includes, but is not limited to, any portion of any building, pavement, road, pipe, flume, utility line, fence, groin, wall, or revetment (HRS 205A-41, 2012).

Discussion:

The subject property's shoreline was certified by the State of Hawaii on January 13, 2021. A copy of the shoreline certification and approval letter are presented in Appendix D. The proposed construction of a new single-family residential dwelling on the subject property does not involve construction of any structures within the shoreline area, beyond the shoreline setback line, in proximity to existing shorelines.

5.4 HAWAII WATER QUALITY STANDARDS

The State of Hawaii's Water Quality Standards are found in HAR, Title 11-54. The HDOH-CWB is responsible for administering and enforcing the standards, which were most recently revised in 2014 (HAR 11-54, 2014). The objectives of the state water quality standards are presented below.

HAR, Title 11-54 General policy of water quality antidegradation.

- a. Existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.*
- b. Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the director finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the state's continuing planning process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the director shall assure water quality adequate to protect existing uses fully. Further, the director shall assure that there shall be achieved the highest statutory and*



- regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.*
- c. Where existing high-quality waters constitute an outstanding resource, such as waters of national and state parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.*
 - d. In those areas where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Clean Water Act.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the applicable objectives and policies for state water quality standards. Construction and stormwater BMPs will be utilized to project water quality during construction to prevent short-term impacts to water quality. Building design and landscaping will prevent long-term impacts to water quality.

5.5 CITY AND COUNTY OF HONOLULU GENERAL PLAN

CCH adopted the General Plan for the City and County of Honolulu in 1977. The plan was revised in 1992 and amended in 2002. The General Plan is a comprehensive statement of objectives and policies, which sets forth the long-range aspirations of Oahu's residents and the strategies of actions to achieve them (City and County of Honolulu, Department of General Planning, 1992 and 2002). The directly relevant CCH Revised General Plan, Areas of Concern objectives and policies, along with a discussion of how the proposed construction conforms to them are provided in Table 5-2 and are discussed below.

| Table 5-2. City and County of Honolulu Revised General Plan (Amended October 3, 2002) | |
|--|--|
| Areas of Concern | Applicability to Proposed Construction |
| Population | Not Applicable |
| Economic Activity | Not Applicable |
| The Natural Environment | Applicable |
| Housing | Not Applicable |
| Transportation and Utilities | Not Applicable |



| Table 5-2. City and County of Honolulu Revised General Plan (Amended October 3, 2002) | |
|--|--|
| Areas of Concern | Applicability to Proposed Construction |
| Energy | Not Applicable |
| Physical Development and Urban Design | Not Applicable |
| Public Safety | Not Applicable |
| Health and Education | Not Applicable |
| Culture and Recreation | Applicable |
| Government Operations and Fiscal Management | Not Applicable |

Objectives and Policies

The Natural Environment

Objective

A. To protect and preserve the natural environment.

Policies

- 1. Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*
- 2. Seek the restoration of environmentally damaged areas and natural resources.*
- 3. Retain the Island's streams as scenic, aquatic, and recreation resources.*
- 4. Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water- recharge areas, distinctive landforms, and existing vegetation.*
- 5. Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.*
- 6. Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.*
- 7. Protect the natural environment from damaging levels of air, water, and noise pollution.*



8. *Protect plants, birds, and other animals that are unique to the State of Hawaii and the Island of Oahu.*
9. *Protect mature trees on public and private lands and encourage their integration into new developments.*
10. *Increase public awareness and appreciation of Oahu's land, air, and water resources.*
11. *Encourage the State and Federal governments to protect the unique environmental, marine, and wildlife assets of the Northwestern Hawaiian Islands.*

Objective

- B. *To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.*

Policies

1. *Protect the Island's well-known resources: its mountains and craters; forests and watershed areas; marshes, rivers, and streams; shoreline, fishponds, and bays; and reefs and offshore islands.*
2. *Protect Oahu's scenic views, especially those seen from highly developed and heavily traveled areas.*
3. *Locate roads, highways, and other public facilities and utilities in areas where they will least obstruct important views of the mountains and the sea.*
4. *Provide opportunities for recreational and educational use and physical contact with Oahu's natural environment.*

Culture and Recreation

Objective

- A. *To Foster the multiethnic Culture of Hawaii*

Policies

1. *Encourage the preservation and enhancement of Hawaii's diverse cultures.*



2. *Encourage greater public awareness, understanding, and appreciation of cultural heritage and contributions to Hawaii made by the City's various ethnic groups.*
3. *Encourage opportunities for better interaction among people with different ethnic, social, and cultural backgrounds.*
4. *Encourage the protection of the ethnic identities of the older communities of Oahu.*

Objective

- B. To protect Oahu's cultural, historic, architectural, and archaeological resources.*

Policies

1. *Encourage the restoration and preservation of early Hawaiian structures, artifacts, and landmarks.*
2. *Identify, and to the extent possible, pre-serve and restore buildings, sites, and areas of social, cultural, historic, architectural, and archaeological significance.*
3. *Cooperate with the State and Federal governments in developing and implementing a comprehensive preservation program for social, cultural, historic, architectural, and archaeological resources.*
4. *Promote the interpretive and educational use of cultural, historic, architectural, and archaeological sites, buildings, and artifacts.*
5. *Seek public and private funds, and public participation and support, to protect social, cultural, historic, architectural, and archaeological resources.*
6. *Provide incentives for the restoration, preservation, and maintenance of social, cultural, historic, architectural, and archaeological resources.*

Objective

- C. To foster the visual and performing arts.*

Policies

1. *Encourage and support programs and activities for the visual and performing arts.*



2. *Encourage creative expression and access to the arts by all segments of the population.*
3. *Provide permanent art in appropriate City public buildings and places.*

Objective

- D. *To provide a wide range of recreational facilities and services that are readily available to all residents of Oahu.*

Policies

1. *Develop and maintain community-based parks to meet the needs of the different communities on Oahu.*
2. *Develop and maintain a system of regional parks and specialized recreation facilities.*
3. *Develop and maintain urban parks, squares, and beautification areas in high density urban places.*
4. *Encourage public and private botanic and zoological parks on Oahu to foster an awareness and appreciation of the natural environment.*
5. *Encourage the State to develop and maintain a system of natural resource-based parks, such as beach, shoreline, and mountain parks.*
6. *Provide convenient access to all beaches and inland recreation areas.*
7. *Provide for recreation programs which serve a broad spectrum of the population.*
8. *Encourage ocean and water-oriented recreation activities that do not adversely impact on the natural environment.*
9. *Require all new developments to provide their residents with adequate recreation space.*
10. *Encourage the private provision of recreation and leisure-time facilities and services.*
11. *Encourage the after-hours, weekend, and summertime use of public schools' facilities for recreation.*



12. *Provide for safe and secure use of public parks, beaches, and recreation facilities.*
13. *Encourage the safe use of Oahu's ocean environments.*
14. *Encourage the State and Federal governments to transfer excess and underutilized land to the City and County for public recreation use.*

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the applicable objectives and policies of the CCH Revised General Plan. The proposed construction will not adversely impact the natural environment at the subject property or in the greater Oahu area. The proposed construction poses no risk of cultural or historical impact. The project will not affect public recreational resources, nor will it affect access to those public recreational resources.

5.6 CITY AND COUNTY OF HONOLULU EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN

East Honolulu is one (1) of eight (8), CCH designated, geographic planning regions on Oahu. Each region has developed a community-oriented plan to help guide public policy, investment, and decision-making, based on the specific conditions and community values of that region. The eight (8) regional sustainable communities plans complement the General Plan, working together with RPH, Chapter 21, the Land Use Ordinance (LUO), the Subdivision Rules and Regulations, and the CCH Capital Improvement Program, to form a three (3)-tier system to direct land use and growth on Oahu.

The East Honolulu Sustainable Communities Plan, which was then known as the East Honolulu Development Plan, was first adopted in 1983. The name was later changed to the East Honolulu Sustainable Communities Plan in response to a 1992 City Charter amendment, which changed the nature of the Development Plans from relatively detailed, parcel-specific plans, to conceptual, visionary plans. The plan was most recently revised in 2020, and the revised plan adopted in early 2021 as Ordinance 21-11. The plan, which is presented in Appendix E, is organized in five (5) chapters and an appendix, as follows (DPP, April 2021):



Chapter 1: East Honolulu's Role in Oahu's Development Pattern

This chapter defines the region's role and identity within the overall framework of island-wide planning and land use management.

Chapter 2: The Vision for East Honolulu's Future

Chapter 2 summarizes the community-based vision for the future of the region, discusses key elements of that vision, and presents illustrative maps and tables.

Chapter 3: Land Use Policies and Guidelines

Chapter 3 provides the land use policies needed to implement the vision for East Honolulu described in Chapter 2.

Chapter 4: Public Facilities and Infrastructure Policies and Guidelines

This chapter provides the infrastructure policies needed to implement the vision for East Honolulu described in Chapter 2 and Chapter 3.

Chapter 5: Implementation

Chapter 5 identifies the means through which the policies will be applied, including zone changes, and infrastructure budgeting and development outlined by the Plan.

Appendix A

- Three (3) conceptual maps.
 - Open Space.
 - Urban Land Use.
 - Public Facilities.
- A glossary of terms used in the Plan and on the maps.



The vision of the East Honolulu Sustainable Communities Plan is to sustain East Honolulu's character, lifestyle, and economic opportunities, while stabilizing East Honolulu's share of Oahu's population at approximately 5%. The Plan incorporates the following principles of sustainability to foster the community's long-term health and resources (DPP, April 2021):

- Adopt the concept of ahupuaa in land use and natural resource management.
- Protect lands designated for recreation, agriculture, physical and environmental resources, and where appropriate, open spaces and view planes.
- Use resources so they are not depleted, permanently damaged, or destroyed; Plan, develop, and utilize construction technologies that minimize negative environmental impacts and promote restoration of natural processes.
- Adapt infrastructure and programs to be more accessible and age-friendly based on the recommendations in the Honolulu Age-Friendly City Action Plan.
- Respect the cultural, social, and physical resources that shape and reinforce residents' sense of community and quality of life.
- Guide the process of change. Strive to make decisions based on an understanding of the cumulative effects such decisions will have on the land and community resources.
- Improve community resilience to natural and man-made hazards, including climate change and sea level rise, in accordance with the Oahu Resilience Strategy.
- Balance economic prosperity, social and community well-being, and environmental stewardship.
- Encourage greater collaboration across agencies and with the community to manage and protect resources.

The directly relevant East Honolulu Sustainable Communities Plan, Land Use Policies and Guidelines, along with a discussion of how the proposed construction conforms to them are provided in Table 5-3 and are discussed below.



| Table 5-3. East Honolulu Sustainable Communities Plan | |
|---|--|
| Land Use Policies and Guidelines | Applicability to Proposed Construction |
| Open Space Preservation and Development | Not Applicable |
| Island-Based Parks and Recreational Areas | Not Applicable |
| Community-Based Parks | Not Applicable |
| Historic and Cultural Resources | Applicable |
| Residential Use | Applicable |
| Non-Residential Development | Not Applicable |

Historic and Cultural Resources

General Policies

- Emphasize physical references to East Honolulu's history and cultural roots.
- Protect existing visual landmarks and support the creation of new culturally appropriate landmarks.
- Preserve and actively maintain significant historic features from earlier periods.
- Retain, whenever possible, significant vistas associated with archaeological features.

Planning Guidelines

- **Preservation and Protection** – Determine the appropriate preservation methods on a site-by-site basis in consultation with the State Historic Preservation Officer and cultural practitioners of the area.
 - Require preservation in-situ only for those features for which the State Historic Preservation Officer has recommended such treatment.
 - Recommend in-situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.
- **Compatible Setting** - Determine the appropriate treatment for a historic site by the particular qualities of the site and its relationship to its physical surroundings in consultation with the State Historic Preservation Officer. The context of a historic site is usually a significant part of its value and care should be taken in the planning and design



of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. Include sight lines that are significant to the original purpose and value of the site in criteria for adjacent use restrictions.

- **Accessibility** - Determine the degree of access that would best promote the preservation of the historic, cultural, and educational value of the site in consultation with the State Historic Preservation Officer, Hawaiian cultural organizations, and the landowner, recognizing that economic use is sometimes the only feasible way to preserve a site. Public access to a historic site can take many forms, from direct physical contact and use to limited visual contact. In some cases, however, it may be highly advisable to restrict access to sites to protect their physical integrity or sacred value.

Historic and Cultural Resources

General Policies

- Accommodate a slight increase of housing capacity in East Honolulu by:
 - Development of new homes on the few remaining vacant lots designated for low-density residential use.
 - Expansion of existing homes (especially ohana units on eligible parcels) in built-up residential neighborhoods.
- Respond to the special needs of an aging population by providing future housing opportunities for a variety of living accommodations which are affordable to low- and moderate-income, gap group, and other elderly households. These accommodations could include several forms, such as houses that can accommodate multi-generation households, ohana units, home expansions, group living facilities, adult residential care homes, assisted living units, and continuing care retirement communities such as the Kāhala Nui assisted living units and the Hawaii Kai retirement community.
 - Encourage the development of medical care facilities, including, but not limited to, facilities that provide palliative and hospice care.



- Modify residential neighborhood street design to provide greater emphasis on safe, accessible, convenient, and comfortable pedestrian routes, bus stops, bike routes, and landscaping with shade trees. Methods include, but are not limited to slowing travel speeds, less direct routes, adding and improving crosswalks, and converting on-street automobile parking spaces into seating areas and shaded landscaping. Revision of City Street standards, subdivision regulations, and use of traffic calming measures may be required in order to support these policies and the policies identified in the Complete Streets Design Manual (2016). Policies that emphasize Complete Streets adhere to the following key principles:
 - Safety;
 - Consistency of design;
 - Context sensitive solutions;
 - Energy efficiency;
 - Accessibility and mobility for all;
 - Health;
 - Use and comfort of all users;
 - Green infrastructure.
- Create an inclusive and accessible urban or suburban environment that encourages active and healthy aging, specifically age-in-place principles and the Universal Design Standards that address or include the following:
 - Equitable, flexibility, simple and intuitive, perception information, tolerance for error, low physical effort, and size and space.
- Suggest the formation of a community-based redevelopment district that would protect, adapt, and relocate residential and commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion.



- Adopt maps and regulations to incorporate the guidance from the City Climate Commission and the Hawaii Sea Level Rise Vulnerability and Adaptation Report on vulnerability to coastal erosion and flooding and other science-based projections of climate change impacts into land use regulations and permit processes.
- Encourage new structures to be designed to withstand the anticipated impacts of sea level rise over the building's lifespan.
- Enforce regulations relating to the operation of transient vacation units in residential neighborhoods.

Planning Guidelines

- **Physical Character and Definition of Neighborhoods** - Establish design guidelines to minimize long-term adverse impacts of new infill development on surrounding neighborhoods. Encourage use of sloped roof forms with wide overhangs. Enhance the boundaries of existing neighborhoods through the use of landscaping, natural features, and building form and siting. Focus neighborhood activity on the local street, common pedestrian rights-of-way, or recreation areas.
- **Transit, Bicycle, and Pedestrian-Oriented Residential Streets** - Encourage bus, pedestrian, and bicycle travel, particularly to reach neighborhood destinations such as schools, parks, and convenience stores, by seeking to reduce the number of vehicle miles traveled per person and recognizing the need for accessible design and safe travel conditions for elderly and disabled people. Implement passive and active automobile traffic calming measures on residential neighborhood streets and add street trees to provide shading for sidewalks and bus stops. Implement the policies and guidelines in the Oahu Bike Plan, Bike Plan Hawaii, the Statewide Pedestrian Master Plan, and, when completed, the Oahu Pedestrian Plan.
- **Environmental Compatibility** - Encourage energy-efficient features, such as the use of solar panels for generating electricity and heating water, and passive solar design, such as the use of window recesses and overhangs and orientation of openings to allow natural cross-ventilation.



- **Low-Impact Development and Stormwater Retention** – Follow low-impact development standards as properties are redeveloped to encourage the capture of stormwater, sediment, and toxic pollutant runoff on-site and reduce pollutant loads into downstream water bodies. Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.

Residential Development

The East Honolulu Sustainable Communities Plan separates residential development into three (3) categories, each of which is found only within the Community Growth Boundary.

- **Residential** – Dwellings in this category consist of single-family detached and attached homes or townhouses with individual entries. Density of development may range from five (5) through twelve (12) dwelling units per acre. Building heights generally do not exceed two (2) stories.
- **Low-Density Apartment** – This category consists of predominantly two (2) and three (3)-story townhouse complexes, stacked flats, or low-rise apartment buildings; parking provision may comprise a separate story. Overall building height should not exceed 40 ft. Buildings may have elevators and common entries for multiple dwellings. Density of development may range from 10-30 dwelling units per acre. The Low-Density Apartment designation will be applied only to sites that have already been developed in a manner that is consistent with the density and building height guidelines for this category, and to undeveloped areas zoned for the Apartment District as of the effective date of this Plan.
- **Medium-Density Apartment** – This category of residential development takes the form of multi-story apartment buildings with densities in the range of 25-90 dwelling units per acre. Medium-Density Apartment designation is applied only to sites that have already been developed in a manner that is generally consistent with the density and building height guidelines for Medium-Density Apartment use or are collocated on a site designated for commercial use and proposed mixed-use development.



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the applicable land use policies and guidelines of the East Honolulu Sustainable Communities Plan. The proposed construction poses no risk of cultural or historical impact. The subject property is not located on Preservation Lands and will not modify or alter the historic use of the subject property. The subject property is in a designated Urban Area, within the Community Growth Boundary for East Honolulu, and the proposed construction is consistent with the general policy of developing new homes on the few remaining vacant lots that are designated for low density residential use. The home's design and property landscaping accentuate the subject property's natural features and topography. Design will also incorporate energy efficient features and low impact development.

5.7 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE

The laws that govern the City and County of Honolulu are officially named the Revised Ordinances of Honolulu (ROH). The ROH includes all ordinances of a general and permanent nature for the City and County and incorporates applicable State, national, and international codes, as well. ROH, Chapter 21 is the Land Use Ordinance (LUO). The purpose of the LUO is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the CCH General Plan, the Sustainable Communities Plans to promote and protect the public health, safety, and welfare. The LUO is intended to minimize the adverse effects resulting from the inappropriate location, use, or design of sites and structures. It promotes conservation of natural, historic, and scenic resources and encourages design that enhances the physical form of Honolulu. The LUO is also a tool to assist the public in identifying and understanding regulations affecting the development and use of land. The LUO is intended to provide reasonable development and design standards, for the location, height, bulk and size of structures, yard areas, off-street parking facilities, and open spaces, and the use of structures and land for agriculture, industry, business, residences, or other purposes (Revised Ordinances of Honolulu [ROH] Chapter 21, September 2021).



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is consistent with the ROH LUO. The subject property is designated as R-10 (Residential), allowing for the construction of a single-family residential dwelling that does not depart from the existing density or scale of the residential zoning. The building design will not exceed neighborhood guidelines or LUO or requirements for building height and setback. The proposed construction will result in a built area of approximately 10% of the lot area, well within the 40% allowed by the LUO.

5.8 SHORELINE SETBACK

When the state of Hawaii established shoreline setbacks as part of the CZM, authorization was given to individual counties to administrate development within the shoreline setback area, which is the land between the certified shoreline and the setback line. The shoreline setback line is generally established 40 ft. inland from the certified shoreline. CCH established shoreline setback rules in ROH, Chapter 23, pursuant to HRS, Chapter 205A, for the administration of the shoreline setback area and tasked CCH-DPP with regulation of the policy. The purpose of the Shoreline Setbacks policy is to:

- Protect and preserve the natural shoreline, especially sandy beaches.
- Protect and preserve public pedestrian access laterally along the shoreline and to the sea.
- Protect and preserve open space along the shoreline.
- Reduce hazards to property from floods.

The standards established in ROH, Chapter 23 generally prohibit construction and other activities that may adversely affect the natural shoreline, sandy beaches, public access along the shoreline, or increase the potential risk of property damage from floods, with a few exceptions, which are considered on a case-by-case basis through a variance request process (Revised Ordinances of Honolulu [ROH] Chapter 23, September 2021).



Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is compliant with the Shoreline Setback rules established in ROH, Chapter 23. The proposed construction does not place a structure within 40 ft proximity to the established, certified shoreline or increase the risk of property damage due to flooding. Nor does the proposed construction pose a risk of adversely impacting the natural shoreline or impeding any form of lateral shoreline access. Additionally, a zoning change or variance are not anticipated to be required to construct the proposed new single-family residential dwelling.

5.9 SPECIAL MANAGEMENT AREA

The State of Hawaii established a policy to avoid permanent losses of valuable resources and management options, and to ensure that adequate access to public-owned or used beaches, recreation areas, and natural reserves are provided along the coastal zone of Hawaii for the purpose of preserving, protecting, and where possible, restoring the natural resources of the coastal zone. This coastal zone area was deemed the SMA.

The SMA permit was established in 1975 to regulate permissible land uses that are already allowed by land use policies including zoning designations, county general plans, and community development plans, and is a management tool to assure that uses, activities, or operations on land or in or under water within an SMA are designed and carried out in compliance with the CZM objectives and policies, and SMA guidelines (State of Hawaii, Department of Planning and Sustainable Development [OPSD], September 2021b).

Responsibility for determining the SMA boundary has been given to the individual counties, along with the administration of the SMA. Management of land within the SMA in the City and County of Honolulu is regulated through ROH, Chapter 25, which was derived from HRS, Chapter 205-26. SMA administration in the City and County of Honolulu is provided by CCH-DPP.

Discussion:

The proposed construction of a new single-family residential dwelling on the subject property is located entirely within the SMA. As discussed in Section 5.3.2, the proposed construction is compliant with SMA guidelines for the provision of public shoreline access,



preservation of important archaeological sites, building height restrictions, boundary setback requirements to preserve coastal views from public areas, and drainage requirements to mitigate potential flooding and prevent sediment from impacting coastal waters.



6.0 ASSESSMENT OF THE SIGNIFICANCE CRITERIA AND ANTICIPATED DETERMINATION

When considering the significance of potential environmental effects, the sum of the effects of the proposed action on the quality of the environment must be evaluated. In determining whether the proposed action may have a significant effect on the environment, every phase of the proposed action, the expected impacts resulting from the proposed action, and the proposed mitigation measures to minimize the expected impacts need to be considered. To accomplish this, the proposed action is evaluated, based on the thirteen (13) criteria discussed in Section 6.1, below. In most instances, an action is determined to have a significant effect on the environment if it meets one (1) or more of the criteria.

6.1 ASSESSMENT OF THE SIGNIFICANCE CRITERIA

The potential impacts of the proposed construction of a new single-family residential dwelling on the subject property have been fully examined and discussed in this EA. Assessments of the significance criteria outlined in HAR, Title 11, 200.12 is presented below.

(1) Irrevocably commit to loss or destruction of any natural or cultural resource.

Archaeological and cultural studies have been conducted for the subject property. As detailed in Section 4.14 of this report, the proposed construction of a new single-family residential dwelling does not involve any known loss or destruction of existing natural or cultural resources. No archaeological materials or features were identified in the immediate vicinity of the subject property. Additionally, as the subject property lies on a cliff line with little to no soil development, and previous construction, dating to 1979, disturbed much of the ground surface, it is very unlikely that anything of natural or cultural importance remains today. If any cultural or archaeological resources are discovered during construction, the DLNR-SHPD, and the Oahu Island Burial Council representative will be notified.

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

The proposed construction of a new single-family residential dwelling on the subject property will not curtail the range of beneficial uses of the environment. The subject property is within the designated Urban Area within the Community Growth Boundary for East Honolulu and is zoned as R-10 (Residential), allowing for the construction of a single-family



residential dwelling that does not depart from the existing density or scale of the residential zoning. Given the overlapping guidelines and restrictions pertaining to the subject property, the only allowable, and beneficial, use is the one proposed.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law.

The proposed project is consistent with the environmental policies, goals, and guidelines as delineated in HRS, Chapter 344, and as documented in this EA.

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

No adverse impact to economic, social welfare, or cultural practices are anticipated. Short-term labor costs will provide a positive, however, limited economic impact on the construction industry.

(5) Have a substantial adverse effect on public health.

The proposed construction of a new single-family residential dwelling on the subject property is consistent with existing land uses and will be completed in accordance with Federal, State, and County of Honolulu, rules and regulations governing public safety and health. BMPs will be utilized to mitigate temporary impacts. There may be temporary construction-related impacts to air quality from possible dust emissions and temporary degradation of the acoustic environment in the immediate vicinity resulting from construction equipment operations. No substantial adverse impacts to public health are anticipated.

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

Secondary impacts such as population changes or effects on public facilities are not anticipated.



(7) Involve a substantial degradation of environmental quality.

The proposed construction of a new single-family residential dwelling on the subject property will be completed in accordance with the environmental policies of HRS, Chapter 343. The analysis provided in this EA indicates that no substantial environmental degradation is anticipated. Standard construction and erosion control BMPs will be utilized to minimize the anticipated construction-related short-term impacts.

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

The proposed construction of a new single-family residential dwelling on the subject property will not have a considerable effect on the environment and will not cause a commitment to larger actions. The subject property was previously developed and after demolition, the foundation walls remain. The proposed construction will not significantly increase the built footprint beyond the existing, partially demolished foundation walls.

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

The proposed construction of a new single-family residential dwelling on the subject property will not have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat. The USFWS provided a list of protected flora and fauna species most likely to occur within the vicinity of the subject property. No threatened or endangered terrestrial plants, mammals, or birds were observed on the subject property or in the general vicinity of the subject property, during the August 26, 2021, site reconnaissance. Additionally, no evidence of seeding, nesting, or burrowing was observed during the site reconnaissance. The subject property does not contain a habitat for the ihihi, Hawaiian Hoary Bat, Hawaiian Petrel, or Newell's Shearwater, and as the subject property has been developed previously, it is likely that potential nesting sites on the property have been greatly diminished.

Due to the vacant state of the subject property, precautionary actions are recommended to avoid potential impacts during the construction of the single-family residential dwelling. The recommended precautionary actions are listed in Section 4.6.



(10) Have a substantial adverse effect on air or water quality or ambient noise levels.

Potential temporary, short-term impacts to air and water quality or ambient noise levels associated with construction are identified in Sections 4.8, 4.9, and 4.10 of this EA. Mitigation measures, as described in this EA, will be utilized throughout the construction process in compliance with State, County, and City regulations. No detrimental long-term impacts to air, water, or acoustic quality are anticipated.

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

The southern edge of the subject property is categorized as Zone VE and is subject to inundation by the 1% annual-chance flood event with additional hazards due to storm-induced velocity wave action. The southern edge of the subject property is comprised of a cliff faces and ledges dropping over 150 ft to the shoreline. No development will occur in this area, which also partially lies within the shoreline setback area. The vast majority of the subject property is categorized as Zone D, which is subject to possible, but undetermined flood hazards. The subject property lies on the border of the TEZ and the green zone. Due to the subject property's location and topography, on an elevated cliff line 150 ft above the shoreline, substantial adverse effects, or potential damage due to its location, on the border of a TEZ, are not anticipated.

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

The topography of the subject property, which lies topographically lower than the surrounding parcels, and consists of gently sloping land across the north, east, and west portions of the property, and a cliff-face on the south edge of the property, dropping approximately 150 ft to the Pacific Ocean, will shield construction activities, as well as the new single-family residential dwelling when built. No adverse impacts to scenic vistas and view planes are anticipated.



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

The proposed construction of a new single-family residential dwelling on the subject property will not require substantial energy consumption when compared to other similar-sized projects. No substantial long-term energy consumption or increase in GHG emissions are anticipated.

6.2 ANTICIPATED DETERMINATION

Based on a review of the provisions set forth in HRS, Chapter 343 and HAR, Title 11, 200.1-13, including the significance criteria outlined in HAR, Title 11 200.12, this Draft EA has determined that the proposed construction of a new single-family residential dwelling on the subject property will not have a significant adverse impact to climate, air and water quality, utilities and infrastructure, noise, visual resources, archaeological and cultural resources, or wildlife habitat. A FONSI is anticipated.

6.3 SUMMARY

Based on the above findings, further evaluation of the proposed construction of a new single-family residential dwelling on the subject property impacts through the preparation of an Environmental Impact Statement is not warranted. The EA recommends mitigation measures to prevent or lessen impacts when such impacts are identified. A FONSI is anticipated.



7.0 AGENCIES, ORGANIZATIONS, AND INDIVIDUALS RECEIVING COPIES OF THE EA

Early consultation on the project was carried out on in August and September 2021 with ten (10) total agencies and stakeholder groups as part of the scoping process for this project. Parties contacted during the early consultation process, comments received, and those that will be provided an opportunity to review the EA are identified in Table 7-1 below. Written comments received during the early consultation comment period are presented in Appendix F.

| Table 7-1. Agencies, Organizations, and Individuals Receiving Copies of the EA | | | | | |
|--|--------------------|--------------------------------------|--------------------|-------------------|--------------------------|
| Respondents and Distribution | Early Consultation | Received Early Consultation Comments | Receiving Draft EA | Comments Received | Receiving Final EA/FONSI |
| U.S. Fish and Wildlife Service, Pacific Islands Office | X | X | X | | |
| Hawaii Department of Business, Economic Development, and Tourism | X | | X | | |
| Hawaii Department of Health, Clean Water Branch | X | X | | | |
| Hawaii Department of Land and Natural Resources | X | X | X | | |
| Hawaii Department of Land and Natural Resources, State Historic Preservation Division | X | | X | | |
| Hawaii Office of Planning and Sustainable Development | X | X | X | | |
| City and County of Honolulu, Department of Design and Construction | X | X | X | | |
| City and County of Honolulu Department of Planning and Permitting | X | X | X | | |
| City and County of Honolulu, Neighborhood Commission Office, Hawaii Kai Neighborhood Board No. 1 | X | | X | | |
| Maunalua Triangle Koko Kai Community Association | X | | X | | |



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APPENDIX A
State of Hawaii Annual Summary 2019 Air Quality
Data

State of Hawaii Annual Summary 2019 Air Quality Data



Kaneohe Bay, Hawaii

ELIZABETH A. CHAR, M.D.
Director of Health



State of Hawaii
Department of Health
July 2021

DAVID Y. IGE
Governor of Hawaii

2019 Hawaii Air Quality Data

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Section 1

INTRODUCTION

The Department of Health, Clean Air Branch, monitors the ambient air in the State of Hawaii for various gaseous and particulate air pollutants. The U. S. Environmental Protection Agency (EPA) has set national ambient air quality standards (NAAQS) for six criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone, and particulate matter (PM₁₀ and PM_{2.5}). Hawaii has also established a state ambient air standard for hydrogen sulfide. The primary purpose of the statewide monitoring network is to measure ambient air concentrations of these pollutants and ensure that these air quality standards are met. The stations are maintained and the data are collected by the Air Quality Monitoring Section of the State Laboratories Division.

In addition to monitoring the ambient air for criteria pollutants, the State of Hawaii also participates in the NCore multi pollutant monitoring network; the NCore station in Hawaii is located at the Kapolei monitoring station. The NCore network addresses the following objectives:

- Timely reporting of data to public by supporting AIRNow, air quality forecasting, and other public reporting mechanisms;
- Support for development of emission strategies through air quality model evaluation and other observational methods;
- Accountability of emission strategy progress through tracking long-term trends of criteria and non-criteria pollutants and their precursors;
- Support for long-term health assessments that contribute to ongoing reviews of the NAAQS;
- Compliance through establishing nonattainment/attainment areas through comparison with the NAAQS;
- Support to scientific studies ranging across technological, health, and atmospheric process disciplines;
- Support to ecosystem assessments recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses; and
- PM_{2.5} speciation monitoring that EPA determined to be essential for establishing a relationship between particle concentrations and adverse health effects and would provide valuable information in characterizing aerosols, determining the effectiveness of control strategies, and understanding the effects of particle pollution on atmospheric and regional haze.

Air pollution is caused by many different man-made and natural sources. There are industrial sources of pollution, such as power plants and refineries; mobile sources, such as cars, trucks, and buses; agricultural sources, such as agricultural burning; and natural sources, such as windblown dust and volcanic activity. In 2019, for the most part, the state maintained 20 air monitoring stations on 4 islands. Most commercial, industrial, and transportation activities and their associated air quality effects occur on Oahu, where 6 of

the stations are located. The monitoring stations on Maui measure the air quality impacts from commercial, industrial, transportation and agricultural activities. The majority of stations are located on the island of Hawaii to measure air quality impacts from the volcano and geothermal energy production. The monitoring station on Kauai is mainly to measure the air quality impacts from cruise ships. The state's ambient air monitoring network is reviewed annually and relocations, additions and/or discontinuations can occur in the future as the need arises.

This report summarizes the validated air pollutant data collected at the 20 monitoring stations during calendar year 2019. Tabular summaries are provided which compare the measured concentrations of criteria pollutants with federal ambient air quality standards and of hydrogen sulfide with the state standard. The 2019 speciation data is also included in this report. Trend summaries of criteria pollutants parameters are shown graphically.

The Department of Health has a web site that displays near real-time air quality data updated throughout the day from the air monitoring stations. The data has not been reviewed for quality assurance and is subject to change but provides the public with viewing access to current air pollutant and meteorological information. To view this data online, go to <http://health.hawaii.gov/cab> and link to "Hawaii Ambient Air Quality Data."

Additionally, because emissions from the Kilauea volcano may affect communities on the island of Hawaii on a daily basis, the Department of Health has a website dedicated to displaying short term SO₂ data from stations located on the island. It provides near real-time 15-minute SO₂ averages and advisory level guidance to help individuals protect themselves against possible health effects. To view this data online, go to www.hiso2index.info

To view this entire book as well as books from 2017 and 2018 online, go to: <http://health.hawaii.gov/cab> and link to "Hawaii Air Quality Data Book."

Questions or comments regarding data in this report and other air quality information should be addressed to:

| | |
|-----------------------------|----------------------|
| Clean Air Branch | Phone: (808)586-4200 |
| Department of Health | Fax: (808)586-4359 |
| 2827 Waimano Home Road #130 | |
| Pearl City, HI, 96782 | |

The Department of Health provides access to its programs and activities without regard to race, color, national origin (including language), age, sex, religion, or disability. Write our Affirmative Action Officer at P.O. Box 3378, Honolulu, Hawaii 96801-3378, or call (808)586-4616 (voice) within 180 days of a problem.

Section 2

DEFINITIONS

| | |
|---|---|
| <i>98th Percentile Value</i> | The PM _{2.5} 24-hour average or the maximum daily 1-hour NO ₂ average in the year below which 98% of all values fall. |
| <i>99th Percentile Value</i> | The maximum daily 1-hour SO ₂ value in the year below which 99% of all values fall. |
| <i>Ambient Air</i> | The general outdoor atmosphere, external to buildings, to which the general public has access. |
| <i>Ambient Air Quality Standard</i> | A limit in the quantity and exposure to pollutants dispersed or suspended in the ambient air. Primary standards are set to protect public health, including sensitive populations such as asthmatics, children, and the elderly. Secondary standards are set to protect public welfare including protection against visibility degradation, and damage to animals, crops, vegetation and buildings. |
| <i>Carbon Monoxide</i> | Carbon monoxide (CO) is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels with the majority of emissions coming from transportation sources. |
| <i>CFR</i> | Code of Federal Regulations is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal government. Title 40 is the Protection of the Environment. |
| <i>Collocated</i> | This is a procedure required for a certain percentage of PM ₁₀ and PM _{2.5} samplers in the monitoring network. Collocated samplers determine precision or variation in the PM ₁₀ or PM _{2.5} concentration measurements of identical samplers run in the same location under the same sampling conditions. |
| <i>Criteria Pollutants</i> | These are the six pollutants for which the EPA has established national air quality standards. The pollutants are ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead and particulate matter (PM ₁₀ and PM _{2.5}). |
| <i>DRR</i> | Data Requirements Rule for 1-hour SO ₂ NAAQS. |

| | |
|-------------------------|---|
| <i>EPA</i> | The U. S. Environmental Protection Agency; established to protect human health and the natural environment. |
| <i>Hydrogen Sulfide</i> | Hydrogen sulfide (H ₂ S) is a toxic, colorless gas with a characteristic “rotten egg” odor detectable at very low levels. It occurs naturally during the decomposition of organic matter, near geothermal sources and is also produced during certain industrial processes, including wastewater treatment facilities. |
| <i>Micron</i> | One micron is one millionth of a meter or approximately 1/25,000 of an inch. |
| <i>µg/m³</i> | Micrograms per cubic meter. This is the measurement of air quality expressed as mass per unit volume. |
| <i>NAAQS</i> | National Ambient Air Quality Standards. These are pollutant standards that the EPA has established to protect public health and welfare. NAAQS have been set for carbon monoxide, nitrogen dioxide, PM ₁₀ , PM _{2.5} , ozone, sulfur dioxide, and lead. These are commonly referred to as criteria pollutants. |
| <i>NCore</i> | A multi-pollutant network that integrates several advanced measurement systems for particles, pollutant gases and meteorology. Most NCore stations have been operating since the formal start of the network on January 1, 2011, including Hawaii’s. |
| <i>Nitrogen Dioxide</i> | Nitrogen dioxide (NO ₂) is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NO _x). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicle exhaust and combustion of fossil fuels. NO ₂ is also a component in the atmospheric reaction that produces ground-level ozone. |
| <i>Ozone</i> | Ozone (O ₃) is the main constituent in photochemical air pollution. It is formed in the atmosphere by a chemical reaction of nitrogen oxides (NO _x) and volatile organic compounds (VOCs) in the presence of sunlight. In the upper atmosphere, O ₃ shields the earth from harmful ultraviolet radiation; however, at ground level, it can cause harmful effects in humans and plants. |

| | |
|---------------------------|---|
| <i>Particulate Matter</i> | This refers to any solid or liquid matter dispersed in the air. Particulate matter (PM) includes dust, soot, smoke, and liquid droplets from sources such as factories, power plants, motor vehicles, construction, agricultural activities, and fires. |
| <i>PM₁₀</i> | Particulate matter that is 10 microns or less in aerodynamic diameter. These are considered “coarse” particles, generally from sources such as road and windblown dust, and crushing and grinding operations. |
| <i>PM_{2.5}</i> | Particulate matter that is 2.5 microns or less in aerodynamic diameter. Considered “fine” particles, these are generally a result of fuel combustion such as from motor vehicles, utility generation and industrial facilities. Fine particles can also be formed when gases, such as sulfur dioxide and nitrogen dioxide, are chemically transformed into particles. |
| <i>ppm</i> | Parts per million is one particle in 1,000,000 other particles. It is approximately one drop in 13 gallons. |
| <i>SLAMS</i> | State and Local Air Monitoring Stations. The Clean Air Act requires that every state establish a network of air monitoring stations for criteria pollutants. |
| <i>SPM</i> | Special Purpose Monitoring stations. These are stations established to provide data for special studies in support of air program interests and activities. SPM stations supplement the SLAMS network as special circumstances require and adequate resources permit. |
| <i>Sulfur Dioxide</i> | Sulfur dioxide (SO ₂) is a colorless gas that easily combines with water vapor forming sulfuric acid. Emissions of sulfur dioxide are largely from sources that burn fossil fuels such as coal and oil. In Hawaii, another possible major source of sulfur dioxide emissions is from any active eruption of Kilauea Volcano on the Big Island. |
| <i>Vog</i> | Vog is a local term used to express volcanic smog. Vog occurs when volcanic gas and particles combine with air and sunlight to produce atmospheric haze. |

Table 2-1 State and Federal Ambient Air Quality Standards

Sources: State standards HAR §11-59; Federal standards 40 CFR Part 50

| Air Pollutant | Averaging Time | Standards | | |
|-------------------------------------|---------------------|------------------------------------|---------------------------------------|---|
| | | Hawaii State Standard | Federal Primary Standard ^a | Federal Secondary Standard ^b |
| Carbon Monoxide (CO) | 1-hour | 9 ppm | 35 ppm | None |
| | 8-hour | 4.4 ppm | 9 ppm | |
| Nitrogen Dioxide (NO ₂) | 1-hour | --- | 0.100 ppm | --- |
| | Annual | 0.04 ppm | 0.053 ppm | 0.053 ppm |
| PM ₁₀ | 24-hour | 150 µg/m ³ | 150 µg/m ³ | --- |
| | Annual ^c | 50 µg/m ³ | --- | --- |
| PM _{2.5} | 24-hour | --- | 35 µg/m ³ | 35 µg/m ³ |
| | Annual | --- | 12 µg/m ³ | 15 µg/m ³ |
| Ozone (O ₃) | 8-hour | 0.08 ppm | 0.070 ppm | 0.070 ppm |
| Sulfur Dioxide (SO ₂) | 1-hour | --- | 0.075 ppm | --- |
| | 3-hour | 0.5 ppm | --- | 0.5 ppm |
| | 24-hour | 0.14 ppm | --- | --- |
| | Annual | 0.03 ppm | --- | --- |
| Lead (Pb) | Rolling 3-month | 1.5 µg/m ³ ^d | 0.15 µg/m ³ | 0.15 µg/m ³ |
| Hydrogen Sulfide | 1-hour | 0.025 ppm | None | None |

^a **Primary Standards** set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children and the elderly.

^b **Secondary Standards** set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

^c Due to a lack of evidence linking health problems to long-term exposure to coarse particle pollution, EPA revoked the annual PM₁₀ standard effective December 17, 2006. However, the state still has an annual standard.

^d The state standard is based on calendar quarter.

Compliance with the National Ambient Air Quality Standards

CO 1-hour: May not be exceeded more than once per year.

CO 8-hour: May not be exceeded more than once per year.

NO₂ 1-hour: The 3-year average of the 98th percentile daily maximum 1-hour averages must not exceed the standard.

NO₂ Annual: Average of all 1-hour values in the year may not exceed the level of the standard.

PM₁₀ 24-hour: Must not be exceeded more than one day per year, after compensating for days when monitoring did not occur (estimated number of exceedances).

PM_{2.5} 24-hour: The 3-year average of the 98th percentile 24-hour concentrations must not exceed the level of the standard.

PM_{2.5} Annual: The 3-year average of 24-hour values must not exceed the level of the standard.

Ozone 8-hour: The 3-year average of the fourth highest daily maximum value must not exceed the level of the standard.

SO₂ 1-hour: The 3-year average of the 99th percentile daily maximum 1-hour averages must not exceed the standard.

SO₂ 3-hour: Not be exceeded more than once per year.

SO₂ Annual: Average of all 1-hour values in the year may not exceed the level of the standard.

Lead: Average of all 24-hour values in any rolling 3-month period may not exceed the level of the standard.

Section 3


SITE LOCATIONS AND DESCRIPTIONS


Figure 3-1: Island of Oahu – Air Monitoring Stations





| Station | Name | Location | Pollutants/Parameters Monitored |
|---------|-----------------|------------------------|--|
| 1 | Honolulu | 1250 Punchbowl St. | CO, SO ₂ , PM _{2.5} , PM ₁₀ |
| 2 | Sand Island | 1039 Sand Island Pkwy. | O ₃ , PM _{2.5} |
| 3 | Pearl City | 860 4th St. | PM _{2.5} , PM ₁₀ |
| 4 | Kapolei / NCore | 2052 Lauwiliwili St. | CO, SO ₂ , NO ₂ / CO trace, SO ₂ trace, NO/NO _y , O ₃ , PM _{2.5} , PM _{2.5} speciation, PM ₁₀ , PM _{10-2.5} , WS/WD |
| 5 | Kahe | Palehua Road | SO ₂ |
| 6 | Waiau | 689 Kamehameha Hwy. | SO ₂ |


The following station descriptions include latitude and longitude in decimal degrees and altitude in meters above mean sea level.

| Honolulu (DH) | | |
|---|---------------------------|--|
|  | Location: | 1250 Punchbowl St., Honolulu |
| | Latitude: | 21.30758 |
| | Longitude: | -157.85542 |
| | Altitude: | 20 m |
| | Parameters: | SO ₂ , CO, PM ₁₀ , PM _{2.5} |
| | Established: | February 1971 |
| | Brief Description: | Located in downtown Honolulu on the roof of the Department of Health building, across from the Queen's Medical Center, in a busy commercial, business and government district. |

| Kapolei (KA) | | |
|--|--|--|
|  | Location: | 2052 Lauwiliwili St., Kapolei |
| | Latitude: | 21.32374 |
| | Longitude: | -158.08861 |
| | Altitude: | 17.9 m |
| | Parameters: | SO ₂ , CO, NO ₂ , PM ₁₀ , PM _{2.5} , PM _{2.5} speciation, NCore |
| | Established: | July 2002 |
| Brief Description: | Located in Kapolei Business Park, southeast of Kapolei Fire Station, next to a drainage canal that separates the park from Barber's Point. Approximately 1.5 miles from Malakole Street in Campbell Industrial Park. | |

| Pearl City (PC) | | |
|---|--|--------------------------------------|
|  | Location: | 860 4 th St., Pearl City |
| | Latitude: | 21.39283 |
| | Longitude: | -157.96913 |
| | Altitude: | 23.1 m |
| | Parameters: | PM ₁₀ , PM _{2.5} |
| | Established: | May 1979 |
| Brief Description: | Located on the roof of the Leeward Health Center in a commercial, residential and light industrial area approximately 1.5 miles northwest of the Waiiau power plant and near the Pearl Harbor Naval Complex. | |

| Sand Island (SI) | | |
|---|---------------------------|---|
|  | Location: | 1039 Sand Island Pkwy., Honolulu |
| | Latitude: | 21.30384 |
| | Longitude: | -157.87117 |
| | Altitude: | 5.3 m |
| | Parameters: | O ₃ , PM _{2.5} |
| | Established: | February 1981 |
| | Brief Description: | Located in a light industrial, commercial and recreational area approximately two miles downwind of downtown Honolulu near the entrance to the Sand Island State Recreation Area. |

| Kahe (KE) (Data Requirements Rule) | | |
|--|---------------------------|--|
|  | Location: | Palehua Road, Makakilo |
| | Latitude: | 21.3678 |
| | Longitude: | -158.103 |
| | Altitude: | 388 m |
| | Parameters: | SO ₂ |
| | Established: | January 2017 |
| | Brief Description: | Located on the hillside south of Palehua Road, approximately 2.7 kilometers northeast of the Kahe Generating Station. The area around the station is undeveloped and is currently used for cattle grazing. The city of Makakilo is located to the east and southeast. The areas immediately to the west through north are undeveloped. |



| Waiau (WI) (Data Requirements Rule) | | |
|---|---------------------------|--|
|  | Location: | 689 Kamehameha Hwy., Pearl City |
| | Latitude: | 21.3909 |
| | Longitude: | -157.9653 |
| | Altitude: | 7 m |
| | Parameters: | SO ₂ |
| | Established: | January 2017 |
| | Brief Description: | Located in an urban area approximately 400 meters northwest of the Waiau Power Generating Station in Pearl City, Oahu. The station is surrounded by a residential area to the north, the H-1 Freeway from the east to southwest and the business district to the west. |

Figure 3-2: Island of Maui – Air Monitoring Stations



| Station | Name | Location | Pollutants Monitored |
|---------|---------|---------------------|----------------------|
| 1 | Kihei | Hale Piilani Park | PM _{2.5} |
| 2 | Kahului | TMK (2)-3-8-007-153 | PM _{2.5} |

| Kihei (KH) | | |
|--|---------------------------|--------------------------|
|  | Location: | Hale Piilani Park, Kihei |
| | Latitude: | 20.780997 |
| | Longitude: | -156.44637 |
| | Altitude: | 46.5 m |
| | Parameters: | PM _{2.5} |
| | Established: | February 1999 |
| | Brief Description: | |
| <p>Located in a residential community park, next to a recent residential development on what was once agricultural land.</p> | | |


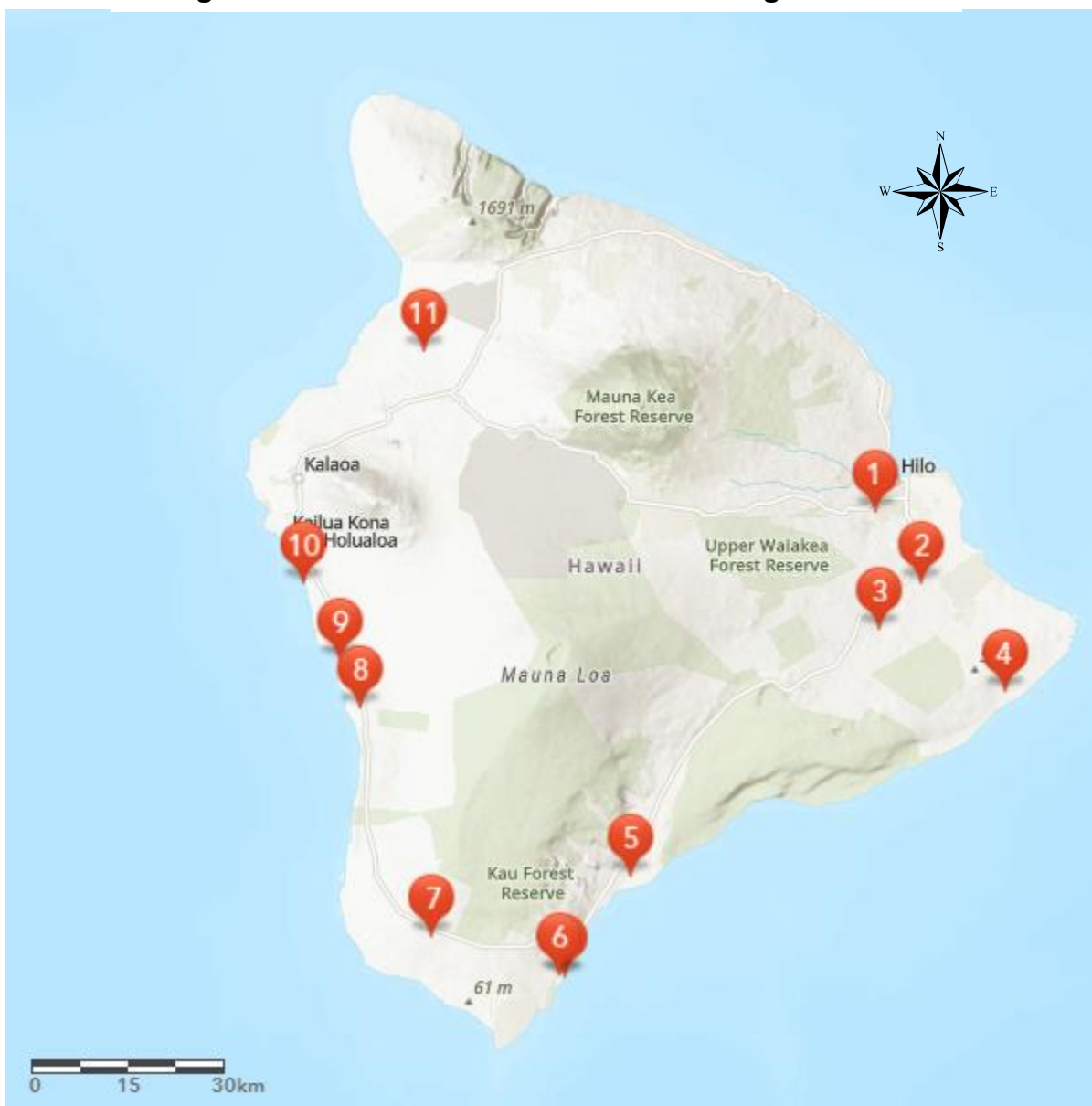


| Kahului (KL) | | |
|--|---------------------|------------------------------|
|  | Location: | TMK (2)-3—8-007-153, Kahului |
| | Latitude: | 20.869444 |
| | Longitude: | -156.492417 |
| | Altitude: | 55.5 m |
| | Parameters: | PM _{2.5} |
| | Established: | January 2016 |
| Brief Description: | | |
| <p>Located within a fenced area off of Maulani Parkway, TMK 2-3-8-007-153. The area is surrounded primarily by residential land.</p> | | |


Figure 3-3: Island of Hawaii – Air Monitoring Stations





| Station | Name | Location | Pollutants Monitored |
|---------|--------------------------|-------------------------------------|-------------------------------------|
| 1 | Hilo | 1099 Waianuenue Ave. | SO ₂ , PM _{2.5} |
| 2 | Keeau (temporary) | 16-714 Volcano Rd. | SO ₂ , PM _{2.5} |
| 3 | Mountain View | 18-1235 Volcano Rd. | SO ₂ , PM _{2.5} |
| 4 | Leilani | 13-3441 Moku St. | H ₂ S, SO ₂ |
| 5 | Pahala | 96-3150 Pikake St. | SO ₂ , PM _{2.5} |
| 6 | Naalehu-TP/S (temporary) | Naalehu Fire Station/Elem. School | SO ₂ , PM _{2.5} |
| 7 | Ocean View | 92-6091 Orchid Mauka Circ. | SO ₂ , PM _{2.5} |
| 8 | Honaunau (temporary) | DWS Keel Well C, Painted Church Rd. | PM _{2.5} |
| 9 | Kona | 81-1043 Konawaena School Rd. | SO ₂ , PM _{2.5} |
| 10 | Kailua-Kona (temporary) | DWS Puapua'a Reservoir | PM _{2.5} |
| 11 | Waikoloa (temporary) | 68-1730 Hooke Street | PM _{2.5} |


| Hilo (HL) | | |
|---|---------------------------|---|
|  | Location: | 1099 Waiuanuenue Ave., Hilo |
| | Latitude: | 19.71756 |
| | Longitude: | -155.11053 |
| | Altitude: | 136.8 m |
| | Parameters: | SO ₂ , PM _{2.5} |
| | Established: | January 1997 |
| | Brief Description: | Located near the Hilo Medical Center, this station was established to monitor vog during "Kona" or southerly wind conditions. |


| Kona (KN) | | |
|---|---------------------------|---|
|  | Location: | 81-1043 Konawaena School Rd., Kona |
| | Latitude: | 19.50978 |
| | Longitude: | -155.91342 |
| | Altitude: | 517.2 m |
| | Parameters: | SO ₂ , PM _{2.5} |
| | Established: | September 2005 |
| | Brief Description: | Located on the upper campus of Konawaena High School, this station monitors for vog on the west side of the island of Hawaii. |


| Mt. View (MV) | | |
|---|---------------------------|---|
|  | Location: | 18-1235 Volcano Rd., Mt. View |
| | Latitude: | 19.57002 |
| | Longitude: | -155.08046 |
| | Altitude: | 436.5 m |
| | Parameters: | SO ₂ , PM _{2.5} |
| | Established: | December 2010 |
| | Brief Description: | Located on the grounds of the Mt. View Elementary School, this station was established to monitor vog during southerly wind conditions. |


| Ocean View (OV) | | |
|---|---------------------------|--|
|  | Location: | 92-6091 Orchid Mauka Circle, Ocean View |
| | Latitude: | 19.11756 |
| | Longitude: | -155.77814 |
| | Altitude: | 862.6 m |
| | Parameters: | SO ₂ , PM _{2.5} |
| | Established: | April 2010 |
| | Brief Description: | This station is located in Hawaii Ocean View Estates at the Ocean View Fire Station and monitors for volcanic emissions. |


| Pahala (PA) | | |
|---|---------------------------|--|
|  | Location: | 96-3150 Pikake St., Pahala |
| | Latitude: | 19.2039 |
| | Longitude: | -155.48018 |
| | Altitude: | 320 m |
| | Parameters: | SO ₂ , PM _{2.5} |
| | Established: | August 2007 |
| | Brief Description: | The station is on the grounds of the Kau High and Pahala Elementary School, monitoring for volcanic emissions. |


| Honaunau – Temporary (HN) | | |
|---|---------------------------|--|
|  | Location: | DWS Kei Well C, Painted Church Rd., Honaunau |
| | Latitude: | 19.44276389 |
| | Longitude: | -155.88583333 |
| | Altitude: | 274 m |
| | Parameters: | PM _{2.5} |
| | Established: | August 2018 |
| | Brief Description: | This temporary station is located in a residential subdivision within a fenced area that contains a Hawaii County Department of Water Supply water tank and pump house, monitoring for volcanic emissions. |

| KAILUA-KONA (KK) | | |
|---|---------------------------|---|
|  | Location: | DWS Puapua'a Reservoir, Kailua-Kona |
| | Latitude: | 19.61815833 |
| | Longitude: | -155.9711111 |
| | Altitude: | 92.4 m |
| | Parameters: | PM _{2.5} |
| | Established: | November 2018 |
| | Brief Description: | This station is located in the middle Kailua-Kona town within a fenced area that contains a County of Hawaii water reservoir and pump house, monitoring for volcanic emissions. |

| KEEAU - Temporary(KS-T) | | |
|---|---------------------------|---|
|  | Location: | Kamehameha Schools, 16-714 Volcano Road, Keaau, HI 96749 |
| | Latitude: | 19.60533889 |
| | Longitude: | -155.05138889 |
| | Altitude: | 179.8 m |
| | Parameters: | PM _{2.5} , SO ₂ |
| | Established: | June 2018 |
| | Brief Description: | This temporary station is located in the town of Keaau on the Kamehameha Schools Hawaii campus, monitoring for volcanic emissions during southerly wind conditions. |

| Leilani (LE) | | |
|---|---------------------------|--|
|  | Location: | 13-3441 Moku St., Pahoa |
| | Latitude: | 19.46555556 |
| | Longitude: | -154.91583333 |
| | Altitude: | 229 m |
| | Parameters: | H ₂ S, SO ₂ |
| | Established: | September 2019 |
| | Brief Description: | This station is located in a residential subdivision within a fenced area that contains the Leilani Community Association Center, monitoring emissions from the nearby geothermal energy facility. |

| Naalehu – Temporary PM_{2.5} (NA-TP) | | |
|---|---------------------------|--|
|  | Location: | Naalehu Volunteer Fire Station, Kaalaiki Road., Naalehu |
| | Latitude: | 19.061379 |
| | Longitude: | -155.586748 |
| | Altitude: | 207.9 m |
| | Parameters: | PM _{2.5} |
| | Established: | June 2018 |
| | Brief Description: | This temporary station is located at the Naalehu Volunteer Fire Station monitoring for volcanic emissions. |

| Naalehu – SO₂ (NA-S) | | |
|---|---------------------------|---|
|  | Location: | Naalehu Elementary School, 95-5547 Mamalahoa Hwy., Naalehu |
| | Latitude: | 19.060656 |
| | Longitude: | -155.579167 |
| | Altitude: | 196.3 m |
| | Parameters: | SO ₂ |
| | Established: | August 2018 |
| | Brief Description: | This station is located inside the USGS Seismograph building on the campus of Naalehu Elementary School, monitoring for volcanic emissions. |


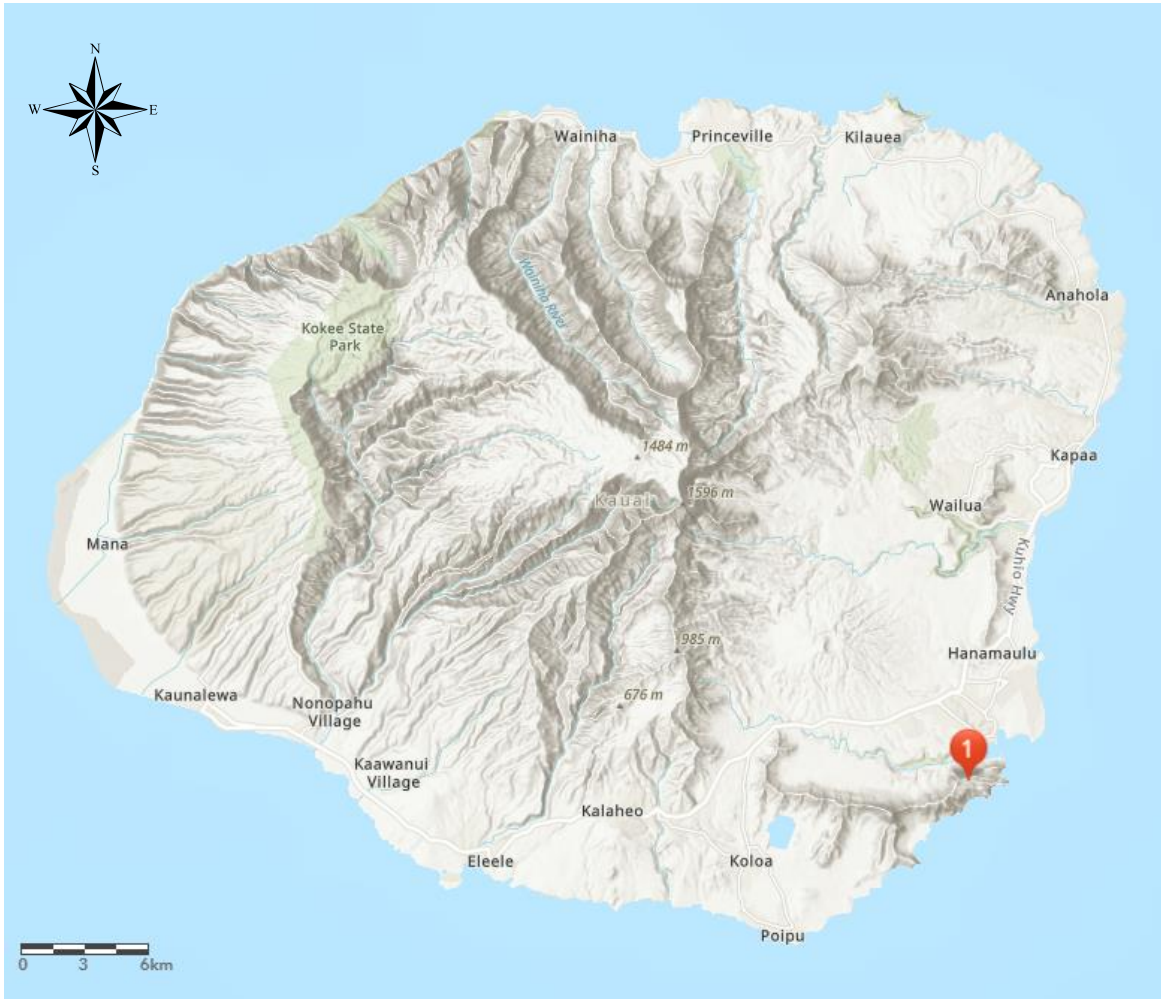
| Waikoloa (WL-T) | | |
|---|---------------------------|---|
|  | Location: | 68-1730 Hooke Street, Waikoloa |
| | Latitude: | 19.945325 |
| | Longitude: | -155.79138889 |
| | Altitude: | 259.1 m |
| | Parameters: | PM _{2.5} |
| | Established: | June 2018 |
| | Brief Description: | This temporary station is located at the Waikoloa Elementary School, monitoring for volcanic emissions. |

Figure 3-4: Island of Kauai – Air Monitoring Station



| Station | Name | Location | Pollutants Monitored |
|---------|---------|--------------------|---|
| 1 | Niumalu | 2342 Hulemalu Road | SO ₂ , NO ₂ , PM _{2.5} |


| Niumalu (NI) | | |
|---|---------------------|---|
|  | Location: | 2342 Hulemalu Road, Lihue |
| | Latitude: | 21.9495 |
| | Longitude: | -159.365 |
| | Altitude: | 11 m |
| | Parameters: | SO ₂ , NO ₂ , PM _{2.5} |
| | Established: | April 2011 |
| Brief Description: | | |
| Located in the Niumalu residential subdivision, this station monitors for emissions from the cruise ships in Nawiliwili Harbor approximately 1.0 mile upwind. | | |

Table 3-1 State of Hawaii Ambient Air Monitoring Network

| SITE | Pollutants Monitored and Station Type | | | | | | | MONITORING OBJECTIVE | LOCATION SETTING |
|--------------------------|---------------------------------------|-------------------|----|----------------|-----------------|-----------------|------------------|---|-----------------------|
| | PM ₁₀ | PM _{2.5} | CO | O ₃ | SO ₂ | NO ₂ | H ₂ S | | |
| OAHU | | | | | | | | | |
| Honolulu | S | S | S | - | S | - | - | Population Exposure | Urban and Center City |
| Kapolei ¹ | S | S,C | S | S | S | S | - | Population Exposure | Suburban |
| Pearl City | S | S | - | - | - | - | - | Population Exposure | Urban and Center City |
| Sand Island | - | S | - | S | - | - | - | Maximum Concentration (O ₃)/ Transport (PM _{2.5}) | Urban and Center City |
| Kahe ² | - | - | - | - | S | - | - | Source Impact (DRR) | Neighborhood |
| Waiau ² | - | - | - | - | S | - | - | Source Impact (DRR) | Suburban |
| MAUI | | | | | | | | | |
| Kihei | - | S | - | - | - | - | - | Population Exposure | Suburban |
| Kahului | - | SPM | - | - | - | - | - | Population Exposure | Neighborhood |
| HAWAII | | | | | | | | | |
| Hilo | - | SPM | - | - | S | - | - | Population Exposure | Suburban |
| Kona | - | SPM | - | - | S | - | - | Population Exposure (SO ₂)/ Maximum concentration (PM _{2.5}) | Suburban |
| Mountain View | - | SPM | - | - | SPM | - | - | Source Impact | Suburban |
| Ocean View | - | SPM | - | - | SPM | - | - | Welfare Impact (SO ₂)/ Source Impact (PM _{2.5}) | Rural |
| Pahala | - | SPM | - | - | SPM | - | - | Maximum concentration (SO ₂)/ Source Impact (PM _{2.5}) | Rural |
| Honaunau ³ | - | SPM | - | - | - | - | - | Source Impact | Rural |
| Kailua-Kona ³ | - | SPM | - | - | - | - | - | Source Impact | Suburban |
| Keeau ³ | - | SPM | - | - | SPM | - | - | Source Impact | Suburban |
| Leilani ³ | - | - | - | - | SPM | - | SPM | Source Impact (geothermal) | Rural |
| Naalehu ^{3,4} | - | SPM | - | - | SPM | - | - | Source Impact | Rural |
| Waikoloa ³ | - | SPM | - | - | - | - | - | Source Impact | Rural |
| KAUAI | | | | | | | | | |
| Niimalu | - | SPM | - | - | SPM | SPM | - | Source Impact (cruise ships) | Suburban |

C = Collocated Site S = (SLAMS) State and Local Air Monitoring Station

SPM = Special Purpose Monitoring Station (for monitoring vog, geothermal energy production and cruise ships)

¹ Includes NCore station; ² As required by the Data Requirements Rule;

³ These temporary stations were in operation for all or part of 2019;

⁴ Two closely located temporary stations, one PM_{2.5} and one SO₂.

Table 3-2 Sampling Equipment at Each Monitoring Station

| Monitoring Station | PM ₁₀ Continuous Ambient Particulate Monitor | PM _{2.5} Manual Particulate Monitor | PM _{2.5} Continuous Monitor | CO Continuous Gas Filter Correlation Analyzer | SO ₂ Continuous Pulsed Fluorescence Ambient Air Analyzer | O ₃ Continuous UV Photometric Analyzer | NO ₂ Continuous Chemiluminescence Analyzer | H ₂ S Continuous Pulsed Fluorescence Ambient Air Analyzer |
|--------------------|---|--|--------------------------------------|---|---|---|---|--|
| OAHU | | | | | | | | |
| Honolulu | ■ | | ■ | ■ | ■ | | | |
| Kapolei | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Pearl City | ■ | | ■ | | | | | |
| Sand Island | | | ■ | | | ■ | | |
| MAUI | | | | | | | | |
| Kihei | | | ■ | | | | | |
| Kahului | | | ■ | | | | | |
| HAWAII | | | | | | | | |
| Hilo | | | ■ | | ■ | | | |
| Kona | | | ■ | | ■ | | | |
| Mt. View | | | ■ | | ■ | | | |
| Ocean View | | | ■ | | ■ | | | |
| Pahala | | | ■ | | ■ | | | |
| Honaunau | | | ■ | | | | | |
| Kailua-Kona | | | ■ | | | | | |
| Keeau | | | ■ | | ■ | | | |
| Leilani | | | | | ■ | | | ■ |
| Naalehu-P | | | ■ | | | | | |
| Naalaehu-S | | | | | ■ | | | |
| Waikoloa ES | | | ■ | | | | | |
| KAUAI | | | | | | | | |
| Niumalu | | | ■ | | ■ | | ■ | |

Section 4

2019 AIR QUALITY DATA

To protect the state's air quality from degradation, the Department of Health's Clean Air Branch is responsible for regulating and monitoring pollution sources to ensure that the levels of criteria pollutants remain well below the state and federal ambient air quality standards. Data collected from the ambient air network is validated by the Air Quality Monitoring Section to ensure that the reported data is of good quality and meets all quality control and assurance requirements.

In 2019 the State of Hawaii was in attainment of all NAAQS.

Explanation of Summary Tables 4-1 through 4-17:

- Summaries are by pollutant and averaging period, with the number of occurrences exceeding the NAAQS or, in Table 4-17, the number of exceedances of the state H₂S standard (there is no federal H₂S standard);
- The "Maximum" is the highest and second highest valid values recorded in the year for the averaging period. For PM_{2.5}, the maximum and 98th percentile concentrations are provided and for O₃, the 4th highest daily maximum value is also displayed;
- The "Annual Mean" is the arithmetic mean of all valid values recorded in the year;
- "Possible Periods" is the total number of possible sampling periods in the year for the averaging period;
- "Valid Periods" is the total number of acceptable sampling periods after data validation;
- "Percent Recovery" represents the amount of quality data reported;
- Attainment with the NAAQS is determined according to 40 CFR 50.

Explanation of Tables 4-18 through 4-25:

- For each pollutant and averaging period, the highest concentration for each month is presented;
- The month with the highest value recorded in the year for each site is highlighted.

Table 4-1. 2019 Summary of the 24-Hour PM₁₀ Averages

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 150 µg/m ³ | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|-------------|----------------------|----------------------|-------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 2 nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | | |
| OAHU | | | | | | | | | | | | | | | | | | | |
| Honolulu | 35 | 27 | 10.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 355 | 97.3% |
| Kapolei | 42 | 32 | 11.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 352 | 96.4% |
| Pearl City | 15 | 10 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 359 | 98.4% |

Table 4-2. Attainment Determination of the 24-Hour PM₁₀ NAAQS

| Station | Exceedances in 2017 | Exceedances in 2018 | Exceedances in 2019 | Sites in violation of the NAAQS |
|------------|---------------------|---------------------|---------------------|---------------------------------|
| Honolulu | 0 | 0 | 0 | 0 |
| Kapolei | 0 | 0 | 0 | 0 |
| Pearl City | 0 | 0 | 0 | 0 |

Attainment: The standard not to be exceeded more than once per year on average over 3 years.
In 2019, Hawaii was in attainment with the 24-hour PM₁₀ NAAQS.

Table 4-3. 2019 Summary of the 24-Hour PM_{2.5} Averages: SLAMS Stations

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 35 µg/m ³ | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|-------------|----------------------|--------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 98 th % | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | | |
| OAHU | | | | | | | | | | | | | | | | | | | |
| Honolulu | 15.1 | 6.7 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 348 | 95.3% |
| Kapolei | 10.8 | 5.2 | 1.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 349 | 95.6% |
| Pearl City | 14.7 | 6.3 | 3.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 359 | 98.4% |
| Sand Island | 14.0 | 8.8 | 3.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 362 | 99.2% |
| MAUI | | | | | | | | | | | | | | | | | | | |
| Kihei | 84.5 | 16.9 | 4.1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 365 | 357 | 97.8% |

Table 4-4. Attainment Determination of the 24-Hour PM_{2.5} NAAQS: SLAMS Stations

| Station | 2017 98 th value | 2018 98 th value | 2019 98 th value | 3-Year Average | Sites in violation of the NAAQS |
|-------------|-----------------------------|-----------------------------|-----------------------------|----------------|---------------------------------|
| Honolulu | 9.8 | 7.5 | 6.7 | 8 | 0 |
| Kapolei | 9.6 | 8.7 | 5.2 | 7.8 | 0 |
| Pearl City | 14 | 9.1 | 6.3 | 9.8 | 0 |
| Sand Island | 10 | 7.3 | 7.7 | 8.3 | 0 |
| Kihei | 11 | 11 | 16.9 | 13 | 0 |

Attainment: The 3-year average of the 98th percentile values must be less than or equal to 35 µg/m³.
In 2019, Hawaii was in attainment with the 24-hour PM_{2.5} NAAQS.

Table 4-5. Attainment Determination of the Annual PM_{2.5} NAAQS: SLAMS Stations

| Station | 2017 Ann. Avg. | 2018 Ann. Avg. | 2019 Ann. Avg. | 3-Year Average | Sites in violation of the NAAQS |
|-------------|----------------|----------------|----------------|----------------|---------------------------------|
| Honolulu | 3.0 | 3.7 | 3.2 | 3.3 | 0 |
| Kapolei | 4.3 | 2.5 | 1.8 | 2.9 | 0 |
| Pearl City | 4.4 | 3.0 | 3.3 | 3.6 | 0 |
| Sand Island | 3.0 | 3.7 | 3.9 | 3.5 | 0 |
| Kihei | 4.1 | 4.5 | 4.1 | 4.2 | 0 |

Attainment: The 3-year average of annual mean values must be less than 15 µg/m³.
In 2019, Hawaii was in attainment with the annual PM_{2.5} NAAQS.

Table 4-6. 2019 Summary of the 24-Hour PM_{2.5} Averages: SPM Stations

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 35 µg/m ³ | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery |
|--------------------------|----------------------|--------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|
| | 1 st High | 98 th % | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | |
| HAWAII | | | | | | | | | | | | | | | | | | |
| Hilo | 9.6 | 5.8 | 3.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 348 | 95.3% |
| Kona | 5.6 | 4.3 | 2.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 360 | 98.6% |
| Mt. View | 13.2 | 7.3 | 1.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 357 | 97.8% |
| Ocean View | 7.3 | 6.2 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 343 | 94.0% |
| Pahala | 25.3 | 7.7 | 2.7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 355 | 97.3% |
| Honaunau ¹ | 10.7 | 4.2 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 347 | 95.1% |
| Kailua-Kona ¹ | 5.2 | 4.4 | 2.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 340 | 93.2% |
| Keeau ¹ | 8.0 | 5.0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 345 | 94.5% |
| Naalehu ¹ | 11.0 | 5.2 | 2.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 343 | 94.0% |
| Waikoloa ¹ | 9.9 | 5.5 | 2.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 343 | 94.0% |
| KAUAI | | | | | | | | | | | | | | | | | | |
| Niumalu | 19.1 | 7.5 | 2.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 340 | 93.2% |
| MAUI | | | | | | | | | | | | | | | | | | |
| Kahului ² | 13.0 | 7.6 | 3.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 323 | 88.5% |

The special purpose stations on Hawaii island were established to monitor ambient air concentrations of PM_{2.5} from volcanic emissions. The special purpose station on Kauai was established to monitor emissions from cruise ships. The special purpose station on Maui was established to monitor emissions from agricultural burning.

¹ Preliminary data – for information only. Temporary stations were established in response to the 2018 Kilauea East Rift Zone eruption.

² Does not meet summary criteria, <75% data recovery in 1st quarter, substitution test valid.

Table 4-7. 2019 Summary of the 8-Hour O₃ Averages

| | Maximum | | | Annual Mean | No. of Daily Maximum 8-Hour Averages Greater than 0.070 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|-------------|----------------------|----------------------|----------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 2 nd High | 4 th High | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | | Dec |
| OAHU | | | | | | | | | | | | | | | | | | | | |
| Sand Island | 0.059 | 0.055 | 0.053 | 0.028 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 8502 | 97.1% |
| Kapolei | 0.056 | 0.053 | 0.052 | 0.029 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 8126 | 92.8% |

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Table 4-8. Attainment Determination of the 8-Hour O₃ NAAQS

| Station | 2017 4 th highest | 2018 4 th highest | 2019 4 th highest | 3-Year Average | Site in violation of the NAAQS |
|-------------|------------------------------|------------------------------|------------------------------|----------------|--------------------------------|
| Sand Island | 0.048 | 0.046 | 0.053 | 0.049 | 0 |
| Kapolei | 0.049 | 0.049 | 0.052 | 0.050 | 0 |

Attainment: The 3-year average of the annual 4th highest daily maximum 8-hour average must be less than or equal to 0.070 ppm.
In 2019, Hawaii was in attainment with the 8-hour O₃ NAAQS.

Table 4-9. 2019 Summary of the 1-Hour and Annual NO₂ Averages

| | Maximum 1-hr | | Annual Mean | No. of Daily Maximum 1-Hour Averages Greater than 0.100 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|---|----------------------|--------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 98 th % | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | | Dec |
| OAHU | SLAMS Station | | | | | | | | | | | | | | | | | | |
| Kapolei | 0.034 | 0.028 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8371 | 95.6% |
| KAUAI | SPM Station | | | | | | | | | | | | | | | | | | |
| Niumalu | 0.046 | 0.038 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8390 | 95.8% |
| Attainment of the annual NO ₂ NAAQS: The annual mean shall not exceed 0.053 ppm. In 2019, Hawaii was in attainment with the annual NO₂ NAAQS. | | | | | | | | | | | | | | | | | | | |

Table 4-10. Attainment Determination of the 1-Hour NO₂ NAAQS

| Station | 2017 98 th value | 2018 98 th value | 2019 98 th value | 3-Year Average | Site in violation of the NAAQS |
|---|-----------------------------|-----------------------------|-----------------------------|----------------|--------------------------------|
| OAHU | SLAMS Station | | | | |
| Kapolei | 0.033 | 0.027 | 0.028 | 0.029 | 0 |
| Attainment: The 3-year average of the 98 th percentile values must be less than or equal to 0.100 ppm. In 2019, Hawaii was in attainment with the 1-hour NO₂ NAAQS. | | | | | |

4-11. 2019 Summary of the 1-Hour SO₂ Averages

| | Maximum | | Annual Mean | No. of 1-hour Averages Greater than 0.075 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery |
|----------------------|--------------------------------|--------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|
| | 1 st High | 99 th % | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | |
| OAHU | SLAMS Stations | | | | | | | | | | | | | | | | | |
| Honolulu | 0.006 | 0.006 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8013 | 91.5% |
| Kapolei | 0.015 | 0.003 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 7762 | 88.6% |
| OAHU | SPM Stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Kahe | 0.070 | 0.062 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8520 | 97.3% |
| Waiau | 0.024 | 0.016 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8587 | 89.0% |
| HAWAII | SPM Stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Hilo | 0.013 | 0.011 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8105 | 92.5% |
| Kona | 0.004 | 0.003 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8546 | 97.6% |
| Mt. View | 0.013 | 0.008 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8473 | 96.7% |
| Ocean View | 0.003 | 0.003 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 7964 | 90.9% |
| Pahala | 0.017 | 0.009 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8474 | 96.7% |
| Keeau ¹ | 0.017 | 0.006 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 6128 | 70.0% |
| Naalehu ² | 0.094 | 0.003 | 0.002 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 6741 | 76.9% |
| Leilani ³ | 0.002 | - | 0.000 | - | - | - | - | - | - | - | - | 0 | 0 | 0 | 0 | 2601 | 2499 | 96.1% |
| KAUAI | SPM Station | | | | | | | | | | | | | | | | | |
| Niumalu ¹ | 0.052 | 0.001 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 7728 | 88.2% |

Attainment: The 3-year average of the 99th percentile values must be less than or equal to 0.075 ppm. Effective June 2, 2010.
In 2019, Hawaii was in attainment with the 1-hour SO₂ NAAQS (SLAMS stations only).

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations. The SPM station on Kauai was established to monitor emissions from cruise ships.

¹ Does not meet summary criteria, <75% data recovery in one or more quarters, substitution test valid.

² Does not meet summary criteria, <50% data recovery in 1st quarter, substitution test not allowed.

³ Station began sampling on 9/13/2019.

Table 4-12. Attainment Determination of the 1-Hour SO₂ NAAQS: SLAMS Stations

| | 2017 99 th value | 2018 99 th value | 2019 99 th value | 3-Year Average | Violation of the NAAQS |
|--|-----------------------------|-----------------------------|-----------------------------|----------------|------------------------|
| OAHU SLAMS stations | | | | | N= NO Y= YES |
| Honolulu | 0.004 | 0.003 | 0.006 | 0.004 | N |
| Kapolei | 0.008 | 0.006 | 0.003 | 0.006 | N |
| OAHU SPM stations (see NOTE) | | | | | |
| Kahe | 0.055 | 0.038 | 0.062 | 0.052 | N |
| Waiau | 0.015 | 0.016 | 0.016 | 0.016 | N |
| HAWAII SPM stations (see NOTE) | | | | | |
| Hilo | 0.359 | 0.191 | 0.011 | 0.187 | Y |
| Kona | 0.041 | 0.094 | 0.003 | 0.046 | N |
| Mt. View | 0.269 | 0.325 | 0.008 | 0.201 | Y |
| Ocean View | 0.480 | 0.887 | 0.003 | 0.457 | Y |
| Pahala | 0.674 | 0.686 | 0.009 | 0.456 | Y |
| KAUAI SPM station | | | | | |
| Niumalu | 0.002 | 0.003 | 0.001 ¹ | 0.002 | N |
| <p>Attainment: The 3-year average of the 99th percentile values must be less than or equal to 0.075 ppm. Effective June 2, 2010. In 2019, Hawaii was in attainment with the 1-hour SO₂ NAAQS (SLAMS stations only).</p> <p>NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations. The SPM station on Kauai was established to monitor emissions from cruise ships.</p> | | | | | |

¹ Does not meet summary criteria, <75% data recovery in 1st quarter, substitution test valid.

Table 4-13. 2019 Summary of the 3-Hour SO₂ Averages

| | Maximum | | Annual Mean | No. of 3-hour Averages Greater than 0.5 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery |
|----------------------|--------------------------------|----------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|
| | 1 st High | 2 nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | |
| OAHU | SLAMS stations | | | | | | | | | | | | | | | | | |
| Honolulu | 0.001 | 0.001 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2638 | 90.3% |
| Kapolei | 0.013 | 0.008 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2537 | 86.9% |
| OAHU | SPM stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Kahe | 0.044 | 0.039 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2805 | 96.1% |
| Waiau | 0.012 | 0.009 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2828 | 96.8% |
| HAWAII | SPM stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Hilo | 0.008 | 0.007 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2621 | 89.8% |
| Kona | 0.004 | 0.004 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2736 | 93.7% |
| Mt. View | 0.009 | 0.008 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2690 | 92.1% |
| Ocean View | 0.002 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2533 | 86.7% |
| Pahala | 0.007 | 0.007 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2729 | 93.5% |
| Keeau ¹ | 0.010 | 0.009 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 1777 | 60.9% |
| Naalehu ² | 0.003 | 0.002 | 0.000 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2192 | 75.1% |
| Leilani ³ | 0.001 | 0.001 | 0.000 | - | - | - | - | - | - | - | - | 0 | 0 | 0 | 0 | 867 | 819 | 94.5% |
| KAUAI | SPM station | | | | | | | | | | | | | | | | | |
| Niumalu ¹ | 0.018 | 0.002 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2428 | 83.2% |

Attainment: 3-hour values not to exceed 0.5 ppm more than once per year.
In 2019, Hawaii was in attainment with the 3-hour SO₂ NAAQS (SLAMS stations only).

NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 3-hour NAAQS from attainment determinations.

¹ Does not meet summary criteria, <75% data recovery in one or more quarters, substitution test valid.

² Does not meet summary criteria, <50% data recovery in 1st quarter, substitution test not allowed.

³ Station began sampling on 9/13/2019.

Table 4-14. 2019 Summary of the 24-Hour and Annual SO₂ Averages

| | Maximum | | Annual Mean All Hours | No. of 24-hour Averages Greater than 0.14 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery |
|--|--------------------------------|----------------------|--------------------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|
| | 1 st High | 2 nd High | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | |
| OAHU | SLAMS Stations | | | | | | | | | | | | | | | | | |
| Honolulu | 0.001 | 0.001 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 339 | 92.9% |
| Kapolei | 0.004 | 0.003 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 326 | 89.3% |
| OAHU | SPM Stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Kahe | 0.014 | 0.011 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 361 | 98.9% |
| Waiau | 0.004 | 0.002 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 363 | 99.5% |
| HAWAII | SPM Stations (see NOTE) | | | | | | | | | | | | | | | | | |
| Hilo | 0.004 | 0.004 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 360 | 98.6% |
| Kona | 0.003 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 364 | 99.7% |
| Mt. View | 0.005 | 0.005 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 365 | 100% |
| Ocean View | 0.001 | 0.001 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 336 | 92.1% |
| Pahala | 0.005 | 0.005 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 360 | 98.6% |
| Keeau ¹ | 0.002 | 0.002 | 0.001 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 207 | 56.7% |
| Naalehu ² | 0.001 | 0.001 | 0.000 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 284 | 77.8% |
| Leilani ³ | 0.000 | 0.000 | 0.000 | - | - | - | - | - | - | - | - | 0 | 0 | 0 | 0 | 109 | 106 | 97.2% |
| KAUAI | SPM Station | | | | | | | | | | | | | | | | | |
| Niumalu ¹ | 0.003 | 0.001 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 316 | 86.6% |
| Attainment: 24-hour values not to exceed 0.14 ppm more than once per year. In 2019, Hawaii was in attainment of the state 24-hour SO₂ standard (SLAMS stations only). | | | | | | | | | | | | | | | | | | |
| NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO ₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 24-hour NAAQS from attainment determinations. | | | | | | | | | | | | | | | | | | |
| Attainment: Annual average (from SLAMS stations only) not to exceed 0.03 ppm. In 2019, Hawaii was in attainment of the state annual SO₂ standard. | | | | | | | | | | | | | | | | | | |
| NOTE: The SPM stations on Hawaii island were established to monitor ambient air concentrations of SO ₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the annual NAAQS from attainment determinations. | | | | | | | | | | | | | | | | | | |

¹ Does not meet summary criteria, <75% data recovery in one or more quarters, substitution test valid.

² Does not meet summary criteria, <50% data recovery in 1st quarter, substitution test not allowed.

³ Station began sampling on 9/13/2019.

Table 4-15. 2019 Summary of the 1-Hour CO Averages

| | Maximum | | Annual Mean | No. of 1-hour Averages Greater than 35 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|-------------|-----------------------|----------------------|-------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 2 nd High | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | | Dec |
| OAHU | SLAMS stations | | | | | | | | | | | | | | | | | | |
| Honolulu | 1.4 | 1.3 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8035 | 91.7% |
| Kapolei | 0.9 | 0.5 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8470 | 96.7% |

Attainment: 1-hour values not to exceed 35 ppm more than once per year.
In 2019, Hawaii was in attainment with the 1-hour CO NAAQS.

Table 4-16. 2019 Summary of the 8-Hour CO Averages

| | Maximum | | Annual Mean | No. of 8-hour Averages Greater than 9 ppm | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery | |
|-------------|-----------------------|----------------------|-------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------------|---------------|------------------|-------|
| | 1 st High | 2 nd High | | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | | | | Dec |
| OAHU | SLAMS stations | | | | | | | | | | | | | | | | | | |
| Honolulu | 0.8 | 0.8 | 0.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 7756 | 88.6% |
| Kapolei | 0.3 | 0.3 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 8327 | 95.1% |

Attainment: 8-hour values not to exceed 9 ppm more than once per year.
In 2019, Hawaii was in attainment with the 8-hour CO NAAQS.

Table 4-17. 2019 Monthly Maximum of 24-Hour PM₁₀ Values (µg/m³)

The month with the highest value in the year is highlighted

The state and federal 24-hr PM₁₀ standard is 150 µg/m³

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Honolulu | 23 | 20 | 35 | 27 | 18 | 14 | 18 | 14 | 15 | 16 | 21 | 23 |
| Kapolei | 42 | 29 | 32 | 23 | 17 | 15 | 19 | 17 | 18 | 19 | 23 | 22 |
| Pearl City | 26 | 23 | 36 | 29 | 19 | 18 | 19 | 17 | 19 | 21 | 24 | 22 |

Table 4-18. 2019 Monthly Maximum of 24-Hour PM_{2.5} Values (µg/m³)

The month with the highest value in the year is highlighted

The federal 24-hr PM_{2.5} standard is 35 µg/m

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|------------------------|------|------|------|-----|-----|------|------|------|------|------|------|------|
| SLAMS Stations | | | | | | | | | | | | |
| Honolulu | 6 | 5.7 | 15.1 | 9.7 | 5.6 | 5 | 5.6 | 4.9 | 4.5 | 5.3 | 6.5 | 6.7 |
| Kapolei | 4.1 | 6.3 | 10.6 | 5.2 | 4.6 | 4.9 | 4.9 | 4.7 | 4.7 | 4.1 | 4.2 | 10.8 |
| Pearl City | 21 | 10.5 | 8.2 | 10 | 5.8 | 10.3 | 7.4 | 8.8 | 4.3 | 6.2 | 4.7 | 7.1 |
| Sand Island | 8.1 | 7.7 | 14 | 8.8 | 5.7 | 4.8 | 6.1 | 6.7 | 5.3 | 5.2 | 7.6 | 7.4 |
| Kihei | 7.8 | 7.1 | 7.9 | 6.5 | 4.9 | 5 | 84.5 | 40.5 | 23.6 | 13.1 | 18.8 | 12.9 |
| SPM Stations | | | | | | | | | | | | |
| Niumalu (cruise ships) | 8.1 | 8.4 | 19.1 | 5.5 | 3.9 | 3.8 | 5.4 | 4.8 | 4.8 | 6.8 | 7.5 | 8.1 |
| Hilo (volcano) | 4.7 | 4.8 | 9.6 | 4.8 | 5.5 | 5.9 | 6.2 | 6.2 | 5.5 | 4.6 | 4.3 | 4.8 |
| Kahului | - | 3.9 | 13 | 10 | 5.7 | 6.2 | 5.3 | 5.2 | 4.7 | 5.2 | 6.6 | 8.7 |
| Kona (volcano) | 4.9 | 3.2 | 4.4 | 5 | 3.6 | 4.9 | 4.5 | 3.9 | 5.6 | 2.4 | 3.2 | 3.3 |
| Mt. View (volcano) | 10.5 | 13.2 | 5.9 | 4.5 | 3.8 | 4.7 | 4.5 | 4.1 | 3.1 | 3.6 | 3.2 | 3.5 |
| Ocean View (volcano) | 5.9 | 5.5 | 6.2 | 7.3 | 4.8 | 3.1 | 3.8 | 3.5 | 3.6 | 2.8 | 3 | 3.2 |
| Pahala (volcano) | 17.2 | 3.5 | 8.9 | 5.6 | 3.8 | 7.5 | 6.9 | 8.2 | 3.9 | 5.6 | 3.6 | 25.3 |
| Honaunau (volcano) | 4 | 4.5 | 3.9 | 5.3 | 5.3 | 4.8 | 4.2 | 4.4 | 10.7 | 3.7 | 3.5 | 4 |
| Kailua-Kona (volcano) | 4 | 4 | 5.2 | 4.1 | 3.6 | 4.6 | 4.6 | 4.7 | 4.3 | 3.6 | 3.9 | 3.8 |
| Keeau (volcano) | 5.7 | 4.5 | 8 | 5.6 | 5 | 4.3 | 4.7 | 5 | 3.5 | 4.1 | 3.8 | 3.3 |
| Naalehu (volcano) | 5.9 | 4.2 | 11 | 5.4 | 4.3 | 5.2 | 5.7 | 4.8 | 3.4 | 3.4 | 3.5 | 8.4 |
| Waikoloa (volcano) | 5.1 | 6.8 | 9.9 | 6 | 5.6 | 5.4 | 5.5 | 4.2 | 3 | 4.6 | 3.8 | 4.5 |

Table 4-19. 2019 Monthly Maximum of 1-Hour NO₂ Values (ppm)

The month with the highest value in the year is highlighted

The federal 1-hour standard for NO₂ is 0.100 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| Kapolei | 34.4 | 34.1 | 32.6 | 24.4 | 25.1 | 17.9 | 15.8 | 17.9 | 19.7 | 23.3 | 24.5 | 30.1 |
| Niumalu | 40 | 30.6 | 43.3 | 46.2 | 37.5 | 23.7 | 25.1 | 24.2 | 26.2 | 30.6 | 29.7 | 38.7 |

Table 4-20. 2019 Monthly Maximum of 1-Hour CO Values (ppm)

The month with the highest value in the year is highlighted

The federal 1-hr CO standard is 35 ppm, the state standard is 9 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Honolulu | 1 | 1.1 | 0.9 | 0.6 | 1.4 | 0.7 | 0.7 | 0.8 | 0.8 | 0.9 | 0.5 | 1.2 |
| Kapolei | 0.4 | 0.3 | 0.5 | 0.4 | 0.4 | 0.1 | 0.2 | 0.4 | 0.5 | 0.5 | 0.4 | 0.9 |
| Kapolei Ncore | 0.7 | 0.6 | 0.5 | 0.5 | 0.4 | 0.3 | 0.2 | 0.4 | 0.4 | 0.4 | 0.4 | 1 |

Table 4-21. 2019 Monthly Maximum of 8-Hour CO Values (ppm)

The month with the highest value in the year is highlighted

The federal 8-hr CO standard is 9 ppm, the state standard is 4.4 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Honolulu | 0.6 | 0.8 | 0.7 | 0.5 | 0.5 | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.3 | 0.7 |
| Kapolei | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| Kapolei Ncore | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |

4-22. 2019 Monthly Maximum of 8-Hour O₃ Values (ppm)

The month with the highest value in the year is highlighted

The federal 8-hr O₃ standard is 0.070 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Sand Island | 45 | 47 | 59 | 48 | 56 | 34 | 21 | 23 | 31 | 33 | 43 | 44 |
| Kapolei NCore | 46 | 53 | 54 | 46 | 56 | 38 | 27 | 28 | 29 | 32 | 42 | 42 |

Table 4-23. 2019 Monthly Maximum of 1-Hour SO₂ Values (ppm)

The month with the highest value in the year is highlighted

The federal 1-hr SO₂ standard is 0.075 ppm (75 ppb)

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| SLAMS Stations | | | | | | | | | | | | |
| Honolulu | 1 | 0.6 | 1 | 0.7 | 6.1 | 1.1 | 1.2 | 1.4 | 0.7 | 0.2 | 0.9 | 0.5 |
| Kapolei | 13.4 | 15.3 | 2.3 | 3.3 | 1.9 | 2.6 | 3.1 | 3.1 | 2.6 | 3. | 1.3 | 2.8 |
| Kapolei Ncore | 15.8 | 14.8 | 5.7 | 4.8 | 11.2 | 2.8 | 6.6 | 5.3 | 7.7 | 2.3 | 4 | 7.7 |
| Kahe | 67.7 | 52.4 | 27.8 | 26.6 | 45.8 | 21.3 | 65.8 | 70 | 47.1 | 54.9 | 57.7 | 39.1 |
| Waiau | 7.1 | 12.6 | 8.8 | 15.5 | 11.7 | 1.8 | 7.3 | 0.2 | 0.4 | 4 | 5 | 5.7 |
| SPM Stations (see NOTE) | | | | | | | | | | | | |
| Niumalu (cruise ships) | 52.3 | 0.7 | 0.8 | 1.3 | 1 | 2 | 1 | 0.9 | 0.6 | 0.5 | 0.2 | 0.1 |
| Hilo (volcano) | 6.8 | 8.9 | 7.7 | 11.9 | 8 | 12.6 | 7.1 | 10.6 | 7 | 7.3 | 7.7 | 11.2 |
| Kona (volcano) | 1.6 | 1.8 | 1.4 | 2 | 1.9 | 2.5 | 2.5 | 2.3 | 2.2 | 3.6 | 0.3 | 0.4 |
| Mt. View (volcano) | 12 | 8 | 12.8 | 4.2 | 3.5 | 2.3 | 4.7 | 2.7 | 3.6 | 4.1 | 5.2 | 6.3 |
| Ocean View (volcano) | 0.7 | 0.6 | 0.5 | 1.4 | 1.1 | 1.7 | 1.4 | 0.4 | 1.3 | 0.5 | 0.2 | 0.9 |
| Pahala (volcano) | 16.5 | 5.8 | 5.6 | 10 | 6.2 | 7.7 | 7.6 | 6.6 | 8.4 | 9 | 7.6 | 9.1 |
| Keeau | 0.7 | 6.5 | 3.6 | 0 | 3.8 | 3.5 | 46 | 4.8 | 5.3 | 3.1 | 6.8 | 3.3 |
| Naalehu | - | - | 0.5 | 0.2 | 0.8 | 0.7 | 1.1 | 9.4 | 2 | 2.8 | 3.4 | 2.4 |
| Leilani ¹ | - | - | - | - | - | - | - | - | 1.5 | 1.1 | 1.5 | 1.6 |

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Although Hilo and Kona stations are designated SLAMS, the values are still mostly attributed to volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 1-hour NAAQS from attainment determinations.

¹ Station began sampling on 9/13/2019.

Table 4-24. 2019 Monthly Maximum of 3-Hour SO₂ Values (ppm)

The month with the highest value in the year is highlighted

The state and federal 3-hr SO₂ standard is 0.5 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------------------------|------|------|------|------|------|------|------|------|-----|------|-----|------|
| SLAMS Stations | | | | | | | | | | | | |
| Honolulu | 0.6 | 0.4 | 0.6 | 0.5 | 1.1 | 1.1 | 1.1 | 0.8 | 0.6 | 0.1 | 0.7 | 0.4 |
| Kapolei | 8 | 12.7 | 2 | 2.4 | 1.9 | 2.6 | 2.9 | 2.6 | 2.5 | 2.8 | 1 | 2.5 |
| Kapolei Ncore | 8.9 | 12.1 | 3.9 | 2.5 | 5.5 | 2 | 6.3 | 4.2 | 3.5 | 1.9 | 3 | 3.3 |
| Kahe | 44.3 | 22.6 | 18.7 | 17.6 | 30.1 | 15.1 | 33.7 | 37.8 | 27 | 36.3 | 38 | 18 |
| Waiau | 5.4 | 6.8 | 4.9 | 6.3 | 5.3 | 8 | 7.1 | 7.6 | 4.8 | 6.9 | 6.5 | 11.9 |
| SPM Stations (see NOTE) | | | | | | | | | | | | |
| Niimalu (cruise ships) | 18.4 | 0.6 | 0.7 | 1 | 1 | 1.5 | 0.9 | 0.7 | 0.5 | 0.4 | 0.1 | 0.1 |
| Hilo (volcano) | 5.3 | 0.6 | 5.6 | 7.4 | 4.3 | 7.1 | 4.9 | 5.9 | 4.8 | 5.2 | 5.6 | 7.5 |
| Kona (volcano) | 1.4 | 1.4 | 1.2 | 1.7 | 1.8 | 2.4 | 2.1 | 2.1 | 2.2 | 3.5 | 0.3 | 0.3 |
| Mt. View (volcano) | 9.1 | 6.7 | 5.5 | 2.1 | 2.5 | 2 | 3.3 | 2.2 | 2.8 | 3 | 3.8 | 4.4 |
| Ocean View (volcano) | 2.4 | 1.6 | 1.7 | 1.2 | 1.6 | 1.4 | 1.7 | 1 | 1.1 | 1.3 | 2.2 | 1.1 |
| Pahala (volcano) | 6.1 | 4.5 | 3.7 | 6.6 | 4.4 | 6.3 | 5.4 | 5.4 | 6.2 | 6.7 | 6.5 | 7 |
| Keeau | 1.2 | 3.6 | 8.9 | 4 | 9.5 | 2.3 | 3.2 | 3.3 | 3.1 | 2.4 | 3.7 | 2.1 |
| Naalehu | - | - | 0.4 | 0 | 0.1 | 0.3 | 0.4 | 3.4 | 0.5 | 2 | 2.4 | 1.2 |
| Leilani ¹ | - | - | - | - | - | - | - | - | 0.9 | 0.5 | 1 | 1 |

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 3-hour NAAQS from attainment determinations.

¹ Station began sampling on 9/13/2019.

Table 4-25. 2019 Monthly Maximum of 24-Hour SO₂ Values (ppm)

The month with the highest value in the year is highlighted

The state 24-hr SO₂ standard is 0.14 ppm

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--------------------------------|------|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|
| SLAMS Stations | | | | | | | | | | | | |
| Honolulu | 0.2 | 0.2 | 0.3 | 0.2 | 1 | 1 | 1.1 | 0.5 | 0.6 | 0 | 0.3 | 0 |
| Kapolei | 1.6 | 4.2 | 1.1 | 2.2 | 1.1 | 2.3 | 2.6 | 2.1 | 1.9 | 2.5 | 0.5 | 2.2 |
| Kapolei NCore | 1.8 | 3.8 | 1.1 | 1.1 | 1.6 | 1 | 5.6 | 1 | 1.1 | 0.7 | 1.1 | 0.9 |
| Kahe | 14.4 | 9.7 | 10.7 | 4.6 | 8.2 | 3.7 | 9.4 | 10.2 | 7.7 | 5.6 | 6.5 | 5.3 |
| Waiau | 1 | 1.1 | 1.4 | 1.2 | 1.3 | 1.5 | 1.3 | 1.8 | 1.2 | 1.4 | 1.6 | 4.4 |
| SPM Stations (see NOTE) | | | | | | | | | | | | |
| Niumalu (cruise ships) | 2.6 | 0.6 | 0.6 | 0.9 | 0.8 | 1.2 | 0.7 | 0.6 | 0.2 | 0.3 | 0 | 0 |
| Hilo (volcano) | 1.9 | 2 | 2.4 | 3 | 3 | 4.1 | 3.6 | 4 | 3.6 | 4 | 3.9 | 2.6 |
| Kona (volcano) | 1.2 | 1.3 | 1.2 | 1.6 | 1.7 | 2.1 | 1.9 | 1.9 | 2 | 3.2 | 0.2 | 0.2 |
| Mt. View (volcano) | 5.1 | 4.6 | 3.8 | 1.3 | 1.4 | 1.5 | 1.9 | 1.8 | 1.9 | 2.1 | 2.3 | 2.7 |
| Ocean View (volcano) | 0.8 | 0.7 | 0.8 | 0.7 | 0.9 | 0.9 | 1 | 0.8 | 0.3 | 0.6 | 1.2 | 0.7 |
| Pahala (volcano) | 2.5 | 1.7 | 2.2 | 2.5 | 2.5 | 2.9 | 3.3 | 3.5 | 3.8 | 4.1 | 4.5 | 4.7 |
| Keeau | 0.4 | 1.7 | 1.6 | - | 2.2 | 1.9 | 2.3 | 2.4 | 1.1 | 1 | 1.2 | 1 |
| Naalehu | - | - | 0 | 0 | 0 | 0 | 0 | 1.4 | 0.2 | 0.5 | 0.8 | 0.8 |
| Leilani ¹ | - | - | - | - | - | - | - | - | 0.3 | 0.1 | 0.2 | 0.3 |

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of SO₂ from volcanic emissions. Volcanic eruptions are considered natural events and therefore EPA may exclude the exceedances of the 24-hour NAAQS from attainment determinations.

¹ Leilani Started on 9/15/2019

Section 5

2019 PM_{2.5} SPECIATION DATA

Atmospheric aerosols are solid or liquid particles suspended in air that come directly from a variety of sources (primary) or are formed by chemical reactions (secondary). Primary and secondary particles tend to have long lifetimes in the atmosphere and can travel long distances, up to hundreds or perhaps thousands of miles. Sources include dust from roads, construction, and agriculture; combustion particles from motor vehicles, electric utilities and agricultural burning; and particles from natural sources such as the ocean or volcano.

Most of the PM_{2.5} is a combination of the following components: sulfates, nitrates, ammonium, elemental carbon, organic compounds, water and metals. The EPA selected target particulates of interest based on data use objectives, primary constituents of PM_{2.5}, and the capability and availability of current analytical methods.

The filter-based speciation sampler collects samples once every 3 days for analyses performed by an EPA contract laboratory. The speciation sampler is located at the Kapolei NCore monitoring station.

Table 5-1 lists the parameters measured, highest and second highest values recorded in the year, the annual arithmetic mean of all valid samples and the total number of samples collected in the year. Table 5-2 lists the analysis methods for each parameter.

With the exception of lead, there are no ambient air quality standards for the individual components of speciated PM_{2.5}.

For more information on EPA's speciation program, go to:
www.epa.gov/ttn/amtic/speciepg.html

Table 5-1. Annual Summary of PM_{2.5} Speciation Data

| Parameter | 1 st High (µg/m ³) | 2 nd High (µg/m ³) | Annual Mean (µg/m ³) | No. of Samples | Percent Recovery |
|------------------|---|---|----------------------------------|----------------|------------------|
| CARBON | | | | | |
| Organic Carbon | 0.497 | 0.485 | 0.2622 | 106 | 88% |
| Elemental Carbon | 0.553 | 0.440 | 0.1134 | 106 | 88% |
| METALS | | | | | |
| Aluminum | 0.121 | 0.075 | 0.0069 | 111 | 92% |
| Antimony | 0.028 | 0.027 | 0.0010 | 111 | 92% |
| Arsenic | 0.000 | 0.000 | 0.0000 | 111 | 92% |
| Barium | 0.043 | 0.043 | 0.0030 | 111 | 92% |
| Bromine | 0.003 | 0.002 | 0.0002 | 111 | 92% |
| Cadmium | 0.026 | 0.024 | 0.0020 | 111 | 92% |
| Calcium | 0.115 | 0.086 | 0.0332 | 111 | 92% |
| Cerium | 0.063 | 0.052 | 0.0010 | 111 | 92% |
| Cesium | 0.049 | 0.048 | 0.0051 | 111 | 92% |
| Chlorine | 1.485 | 1.470 | 0.4612 | 111 | 92% |
| Chromium | 0.007 | 0.006 | 0.0006 | 111 | 92% |
| Cobalt | 0.002 | 0.002 | 0.0002 | 111 | 92% |
| Copper | 0.009 | 0.007 | 0.0005 | 111 | 92% |
| Indium | 0.027 | 0.021 | 0.0024 | 111 | 92% |
| Iron | 0.068 | 0.061 | 0.0208 | 111 | 92% |
| Lead | 0.013 | 0.011 | 0.0011 | 111 | 92% |
| Magnesium | 0.198 | 0.183 | 0.0354 | 111 | 92% |
| Manganese | 0.009 | 0.007 | 0.0003 | 111 | 92% |
| Nickel | 0.012 | 0.011 | 0.0021 | 111 | 92% |
| Phosphorus | 0.003 | 0.002 | 0.0001 | 111 | 92% |
| Potassium | 0.428 | 0.067 | 0.0252 | 111 | 92% |
| Rubidium | 0.006 | 0.006 | 0.0003 | 111 | 92% |
| Selenium | 0.005 | 0.005 | 0.0003 | 111 | 92% |
| Silicon | 0.213 | 0.143 | 0.0166 | 111 | 92% |
| Silver | 0.030 | 0.019 | 0.0017 | 111 | 92% |
| Sodium | 1.172 | 1.075 | 0.3398 | 111 | 92% |
| Strontium | 0.008 | 0.005 | 0.0006 | 111 | 92% |
| Sulfur | 0.492 | 0.468 | 0.1803 | 111 | 92% |
| Tin | 0.024 | 0.024 | 0.0017 | 111 | 92% |
| Titanium | 0.009 | 0.008 | 0.0018 | 111 | 92% |
| Vanadium | 0.009 | 0.006 | 0.0009 | 111 | 92% |
| Zinc | 0.009 | 0.008 | 0.0020 | 111 | 92% |
| Zirconium | 0.018 | 0.018 | 0.0022 | 111 | 92% |

Table 5-1 Continued

| Parameter | 1 st High (µg/m ³) | 2 nd High (µg/m ³) | Annual Mean (µg/m ³) | No. of Samples | Percent Recovery |
|---------------|---|---|----------------------------------|----------------|------------------|
| IONS | | | | | |
| Ammonium Ion | 0.23 | 0.22 | 0.031 | 111 | 92% |
| Potassium Ion | 0.44 | 0.05 | 0.020 | 111 | 92% |
| Sodium Ion | 1.43 | 1.39 | 0.394 | 111 | 92% |
| Total Nitrate | 0.54 | 0.41 | 0.165 | 111 | 92% |
| Sulfate | 1.48 | 1.44 | 0.574 | 111 | 92% |

Table 5-2. Speciation Collection and Analysis Methods

| Parameter | Collection Method | Analysis Method |
|-----------|----------------------------|--------------------------------------|
| Carbon | URG 300N Quartz Filter | Thermal Optical Transmittance |
| Metals | Met-One SASS Teflon Filter | Energy Dispersive X-Ray Fluorescence |
| Ions | Met-One SASS Nylon Filter | Ion Chromatography |

Section 6

AMBIENT AIR QUALITY TRENDS

The following graphs illustrate 5-year trends for PM₁₀, PM_{2.5}, SO₂, NO₂, O₃, and CO from 2015 to 2019 at all SLAMS stations monitoring for those pollutants.

Figures 6-1 and 6-2 are graphs of the PM₁₀ annual and maximum 24-hour averages.

Figure 6-3 is the graph of the PM_{2.5} annual averages. Attainment of the PM_{2.5} 24-hour standard is based on the 98th percentile value at each station, which is depicted in Figure 6-4.

Figures 6-5 and 6-6 are graphs of the SO₂ annual and maximum 24-hour averages.

Figure 6-7 and 6-8 shows the annual and maximum 1-hour averages of NO₂ compared to the federal NAAQS.

Attainment of the 8-hour ozone standard is achieved by averaging 3 years of the fourth highest daily maximum 8-hour average concentrations, which must not exceed 0.070 ppm (standard effective October 26, 2015). Figure 6-9 is a graph of the fourth highest daily maximum values recorded at the Sand Island and Kapolei (since 2011) ozone monitoring stations in the past five years.

The graphs for 1-hour and 8-hour carbon monoxide (figures 6-10 and 6-11, respectively) represent the maximum 1-hour or 8-hour values recorded in the year.

Criteria pollutant levels remain below state and federal ambient air quality standards at all SLAMS stations in the state.

Figure 6-1. PM₁₀ Annual Average: 2015-2019

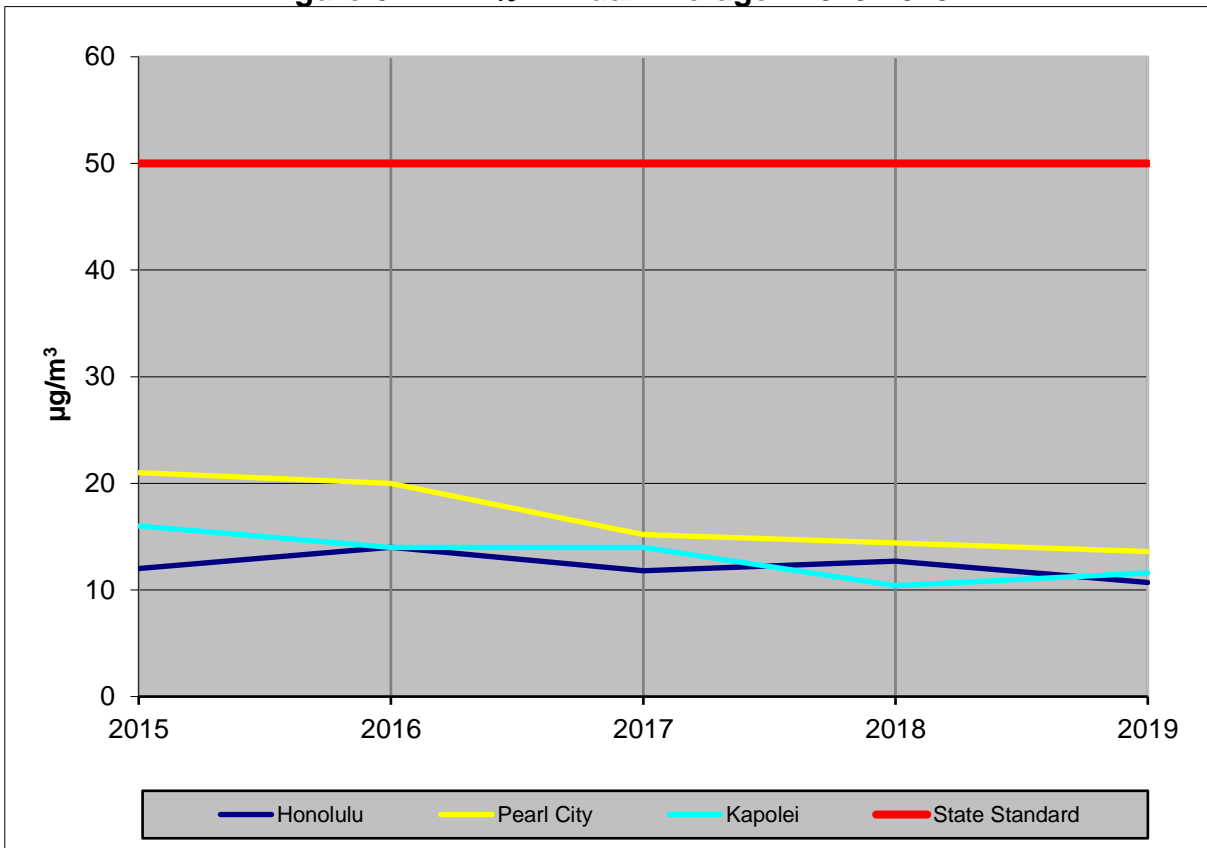


Figure 6-2. PM₁₀ Maximum 24-Hour Average: 2015-2019

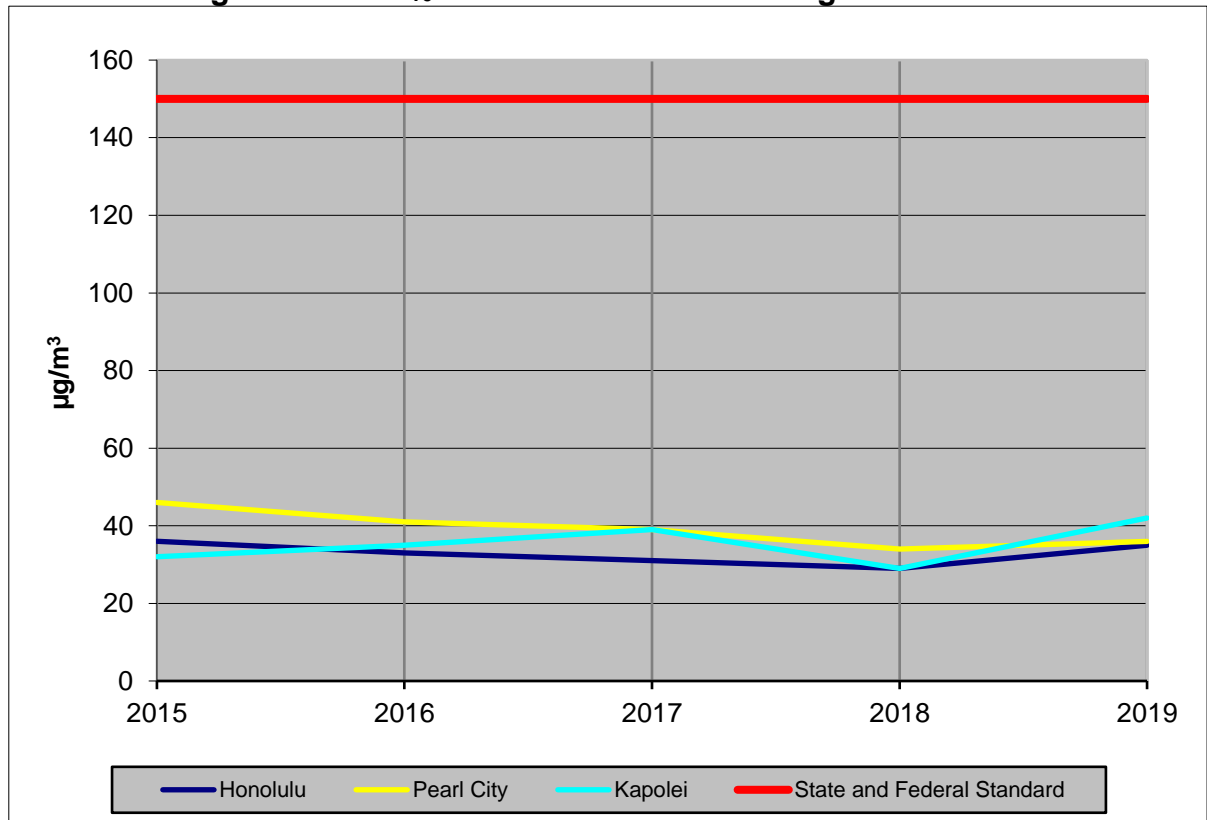


Figure 6-3. PM_{2.5} Annual Average: 2015-2019

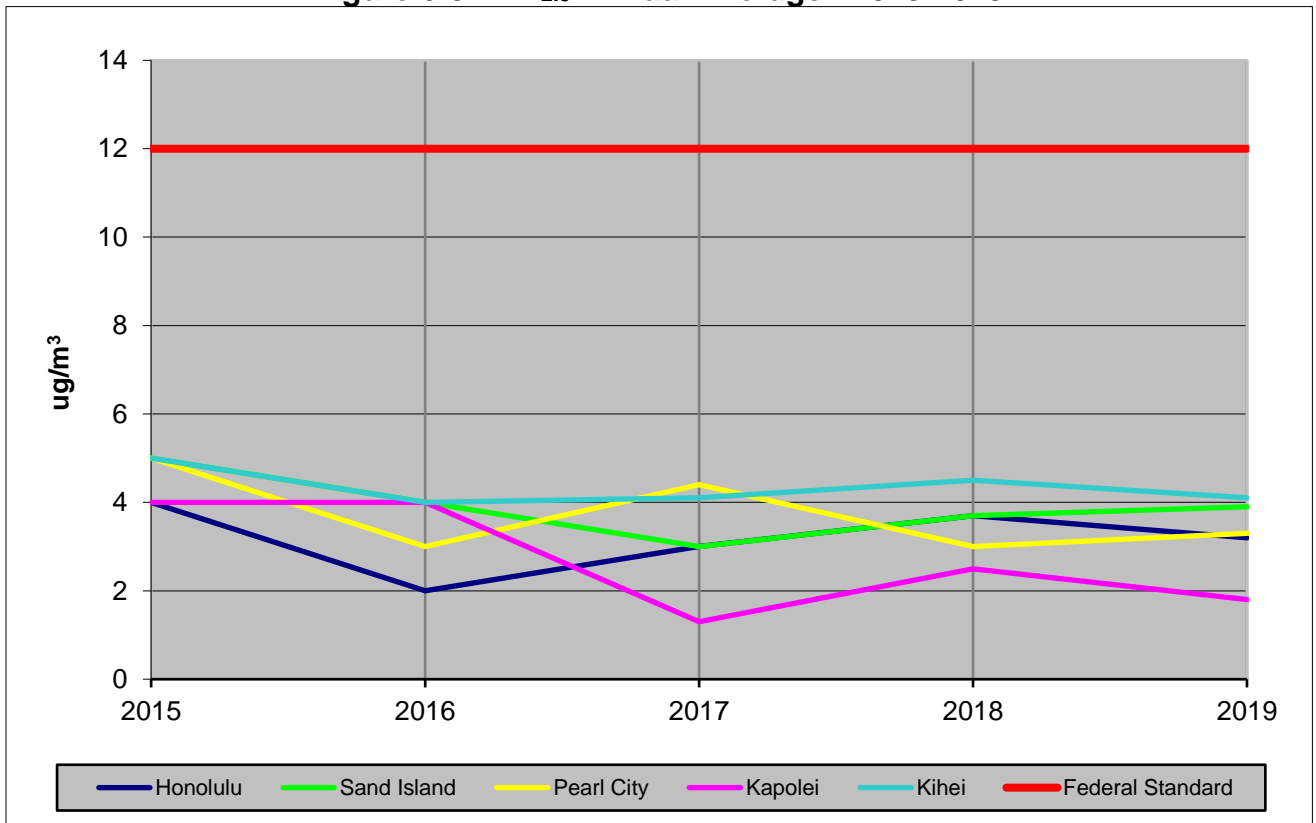


Figure 6-4. PM_{2.5} 98th Percentile 24-Hour Average: 2015-2019

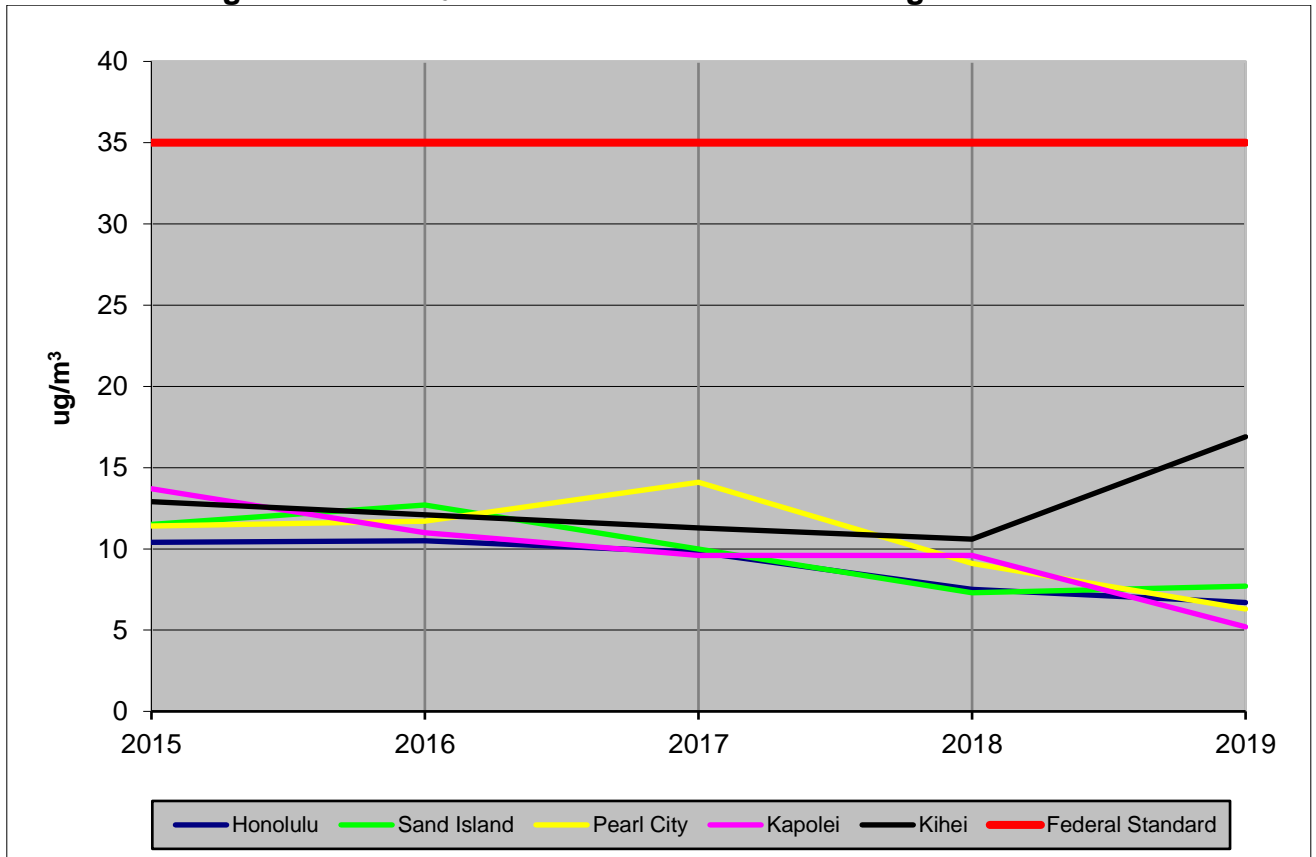


Figure 6-5. SO₂ Annual Average: 2015-2019

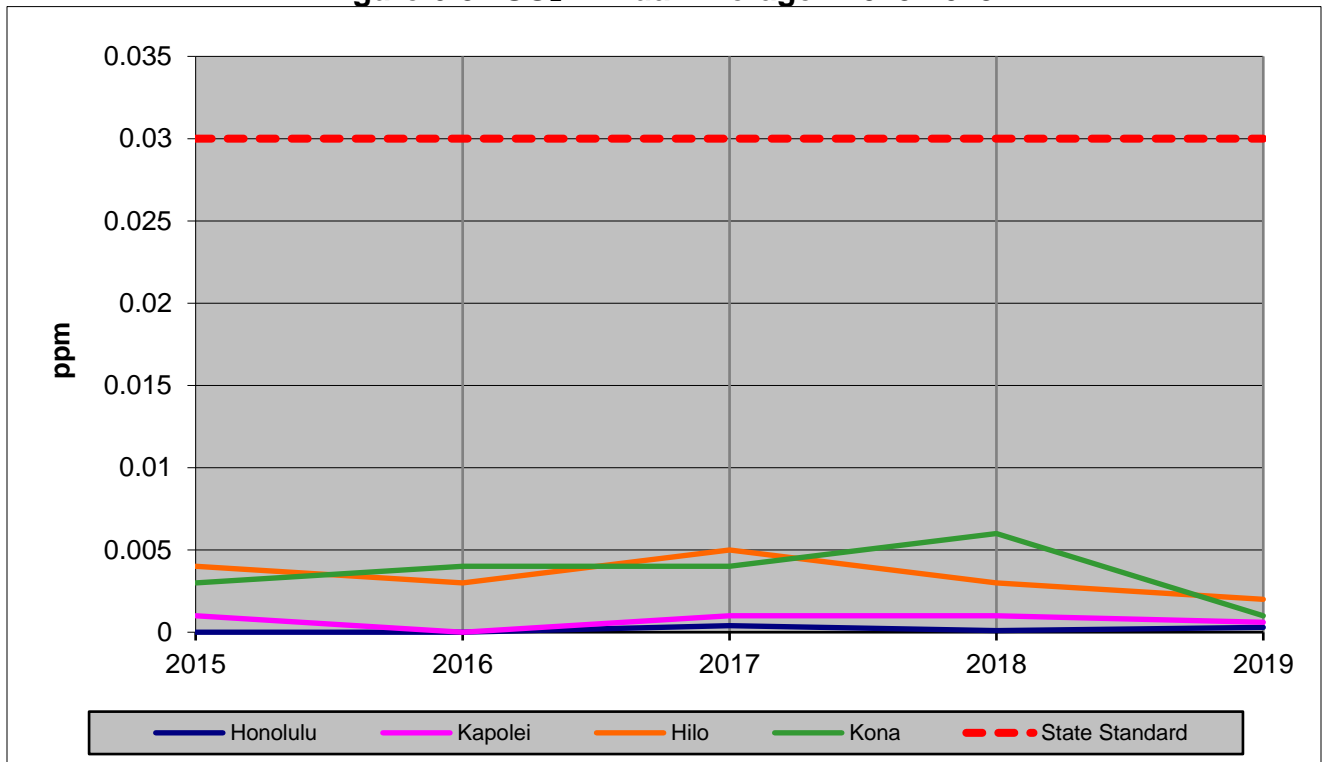


Figure 6-6. SO₂ Maximum 24-Hour Average: 2015-2019

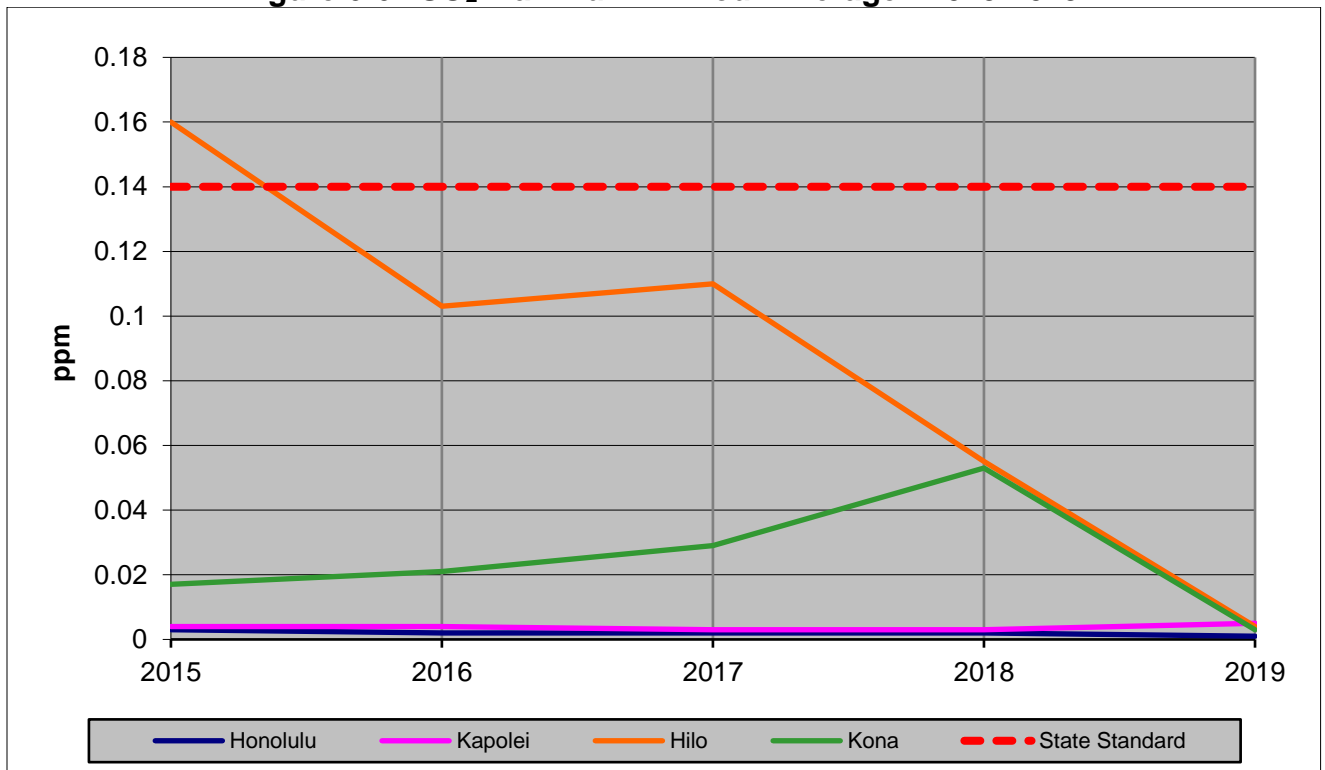


Figure 6-7. NO₂ Annual Average: 2015-2019

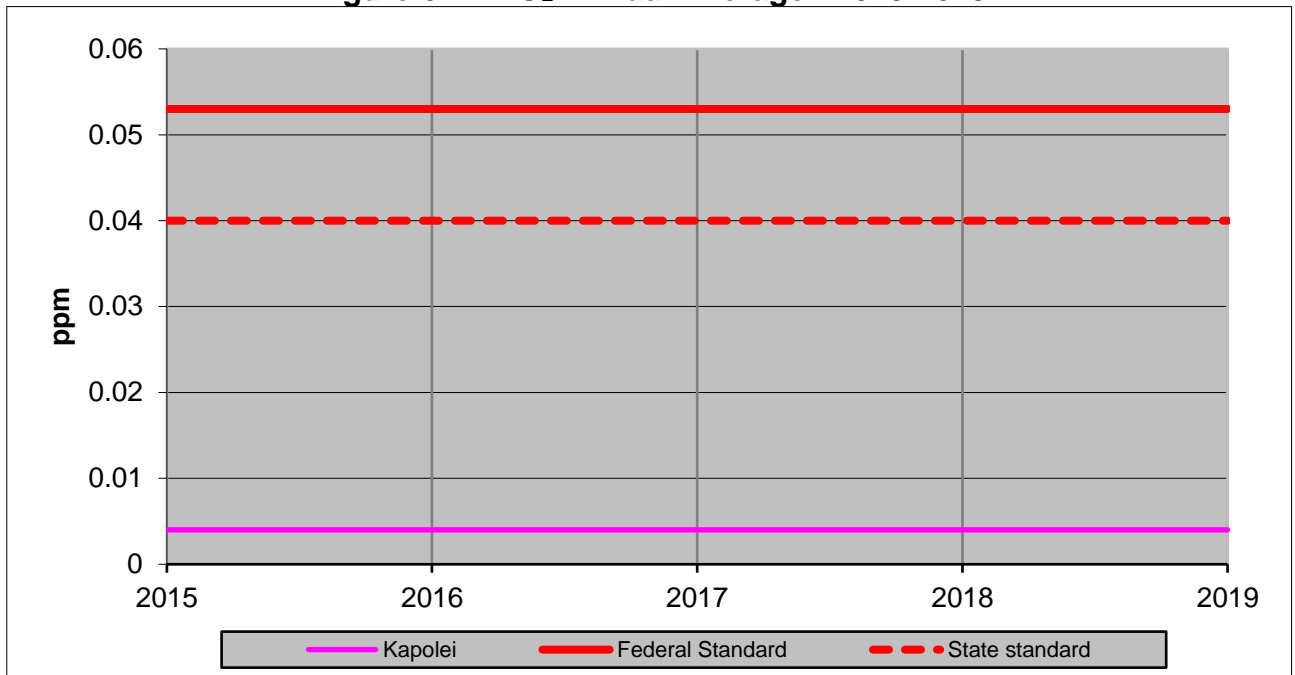


Figure 6-8. NO₂ Maximum 1-Hour Average: 2015-2019

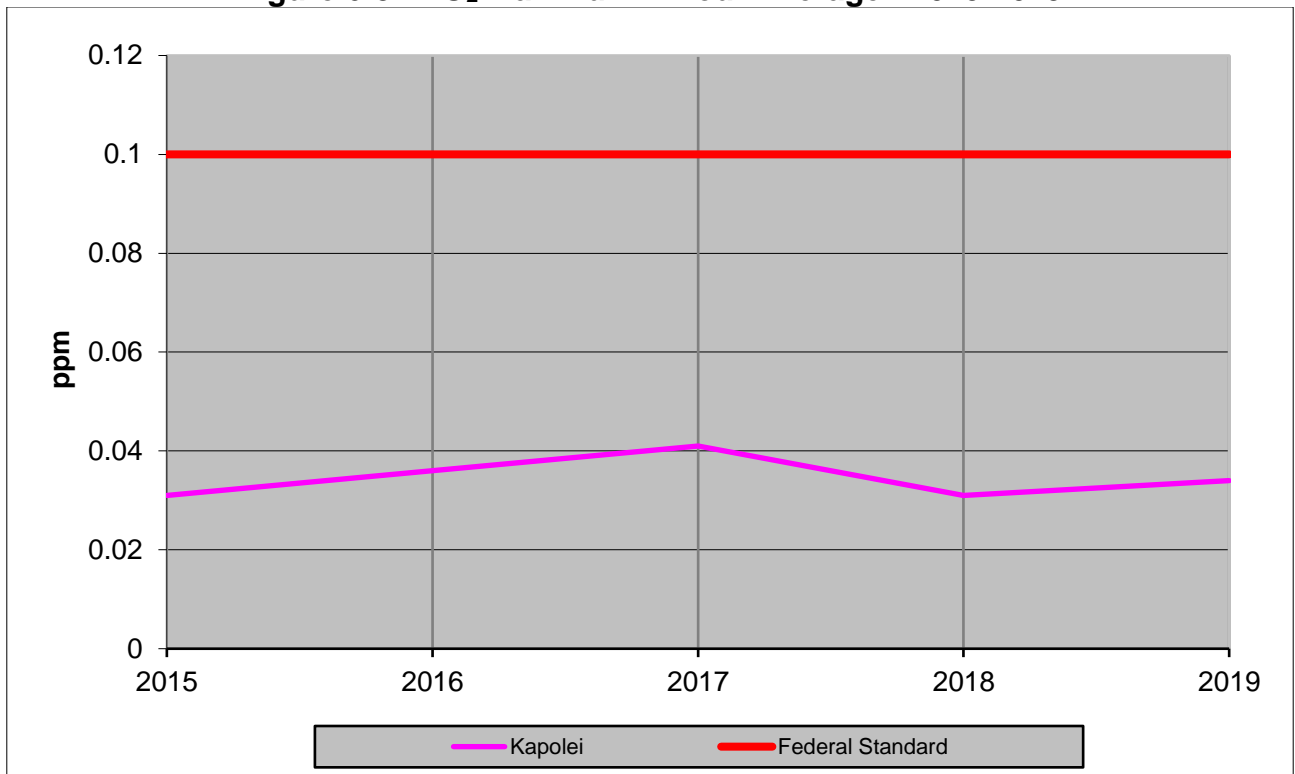


Figure 6-9. O₃ Fourth Highest Daily Maximum 8-Hour Average: 2015-2019

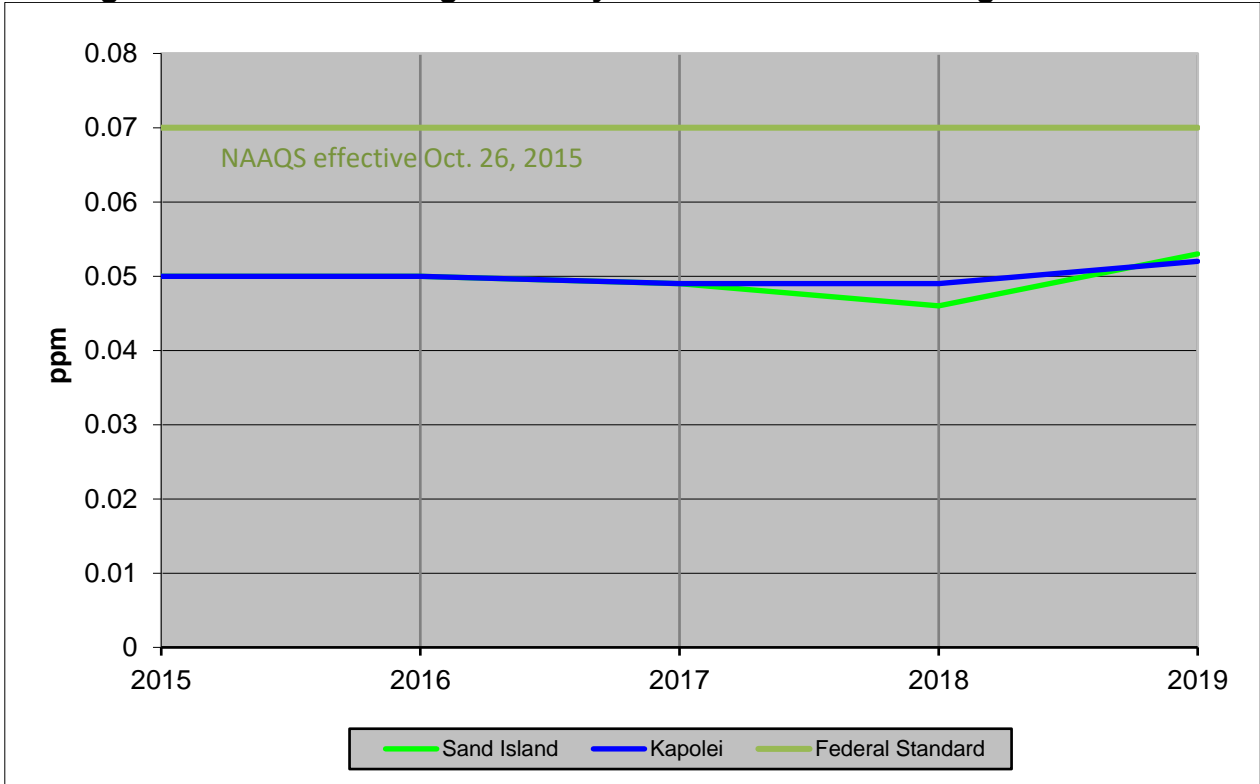


Figure 6-10. CO Maximum 1-Hour Average: 2015-2019

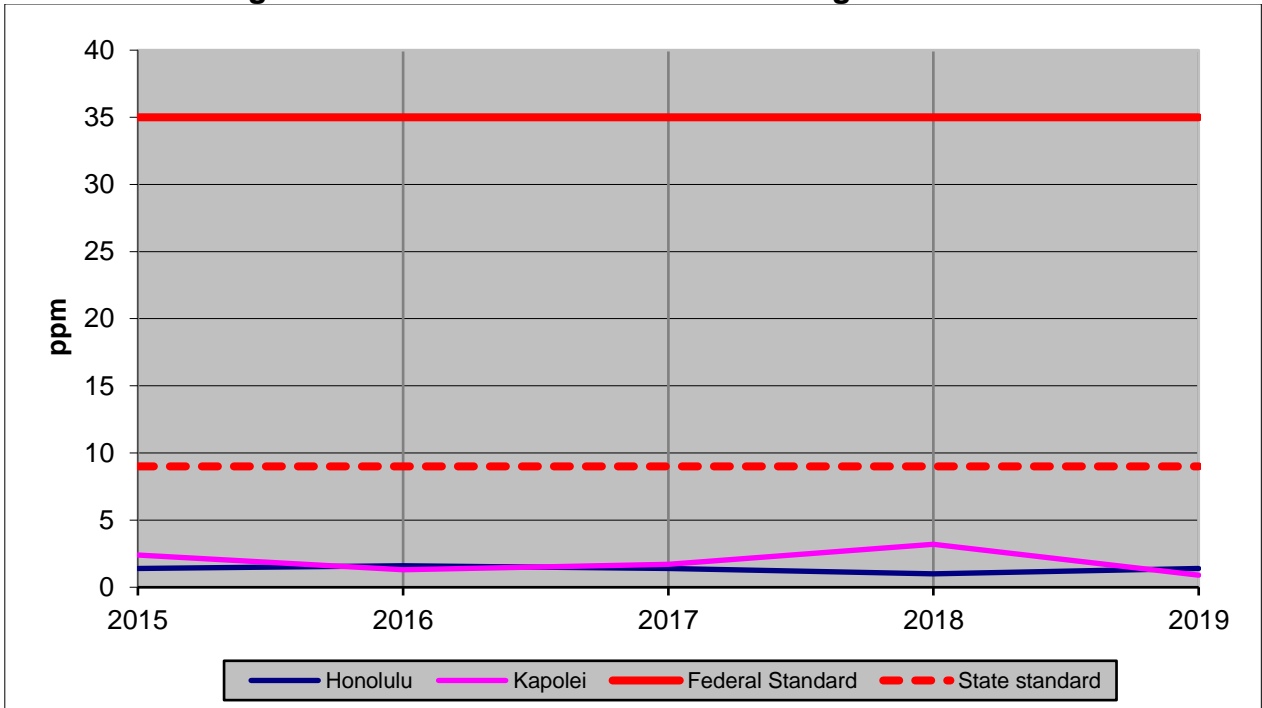
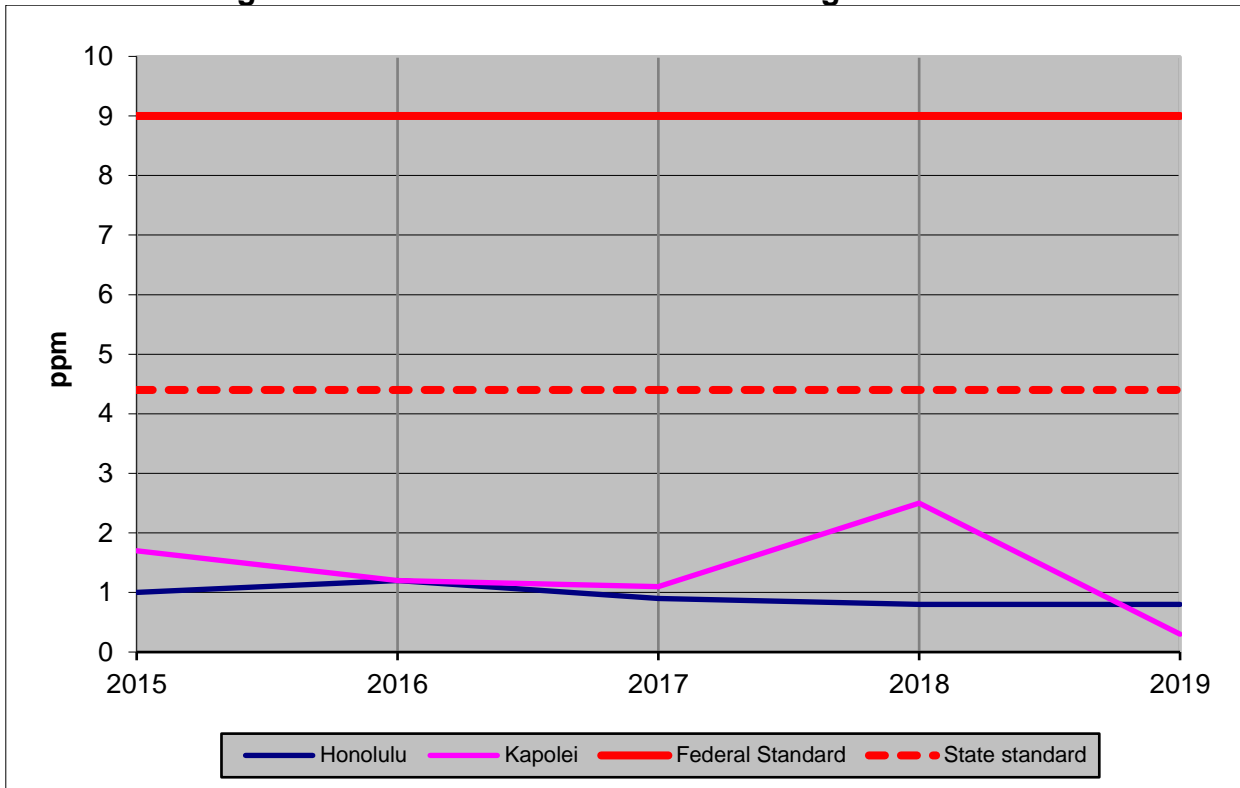


Figure 6-11. CO Maximum 8-Hour Average: 2015-2019



APPENDIX B
List of the Reported Crimes and the Location of Their
Occurrence

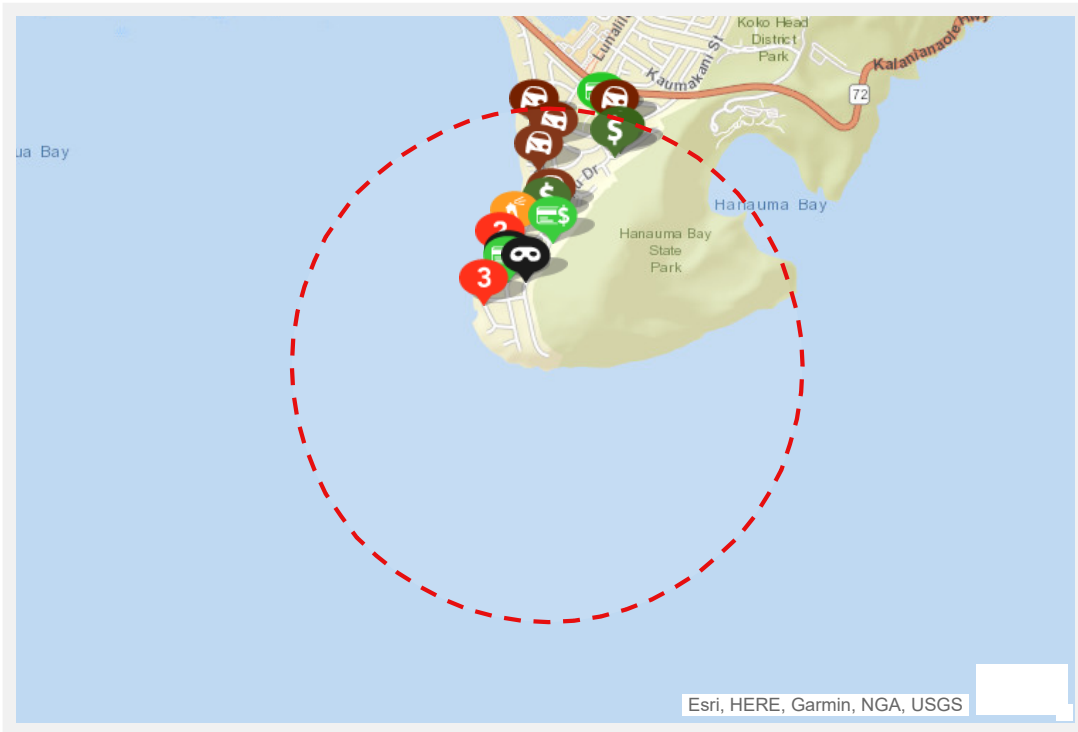
 [Print](#)

CrimeMapping.com Map

Thursday, February 11, 2021 through Monday, August 9, 2021

Showing crime types: Arson, Assault, Burglary, Disturbing the Peace, Drugs / Alcohol Violations, DUI, Fraud, Homicide, Motor Vehicle Theft, Robbery, Sex Crimes, Theft / Larceny, Vandalism, Vehicle Break-In / Theft, Weapons

Show crime report Show crime chart



Grab the bottom/right borders to resize the map or the handle in the bottom right corner.

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Crime Report

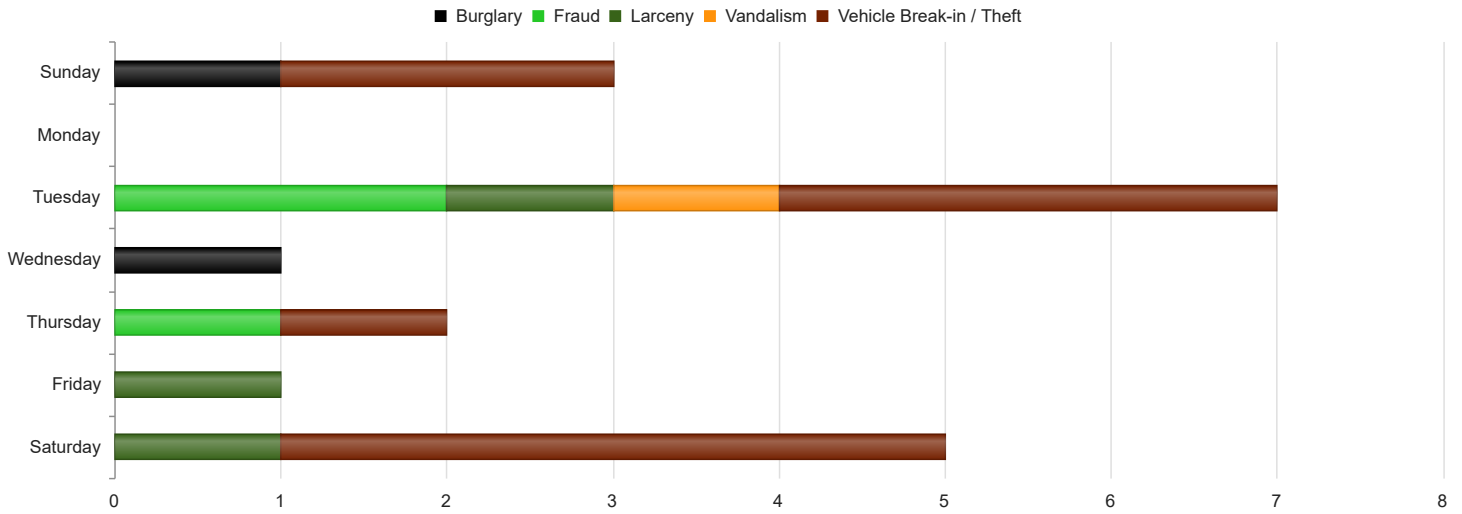
| Type | Description | Incident # | Location | Agency | Date |
|---|-----------------|-------------|-------------------------|-----------------|--------------------|
|  | PROPERTY DAMAGE | 210706-0802 | 500 BLOCK PORTLOCK RD | Honolulu Police | 7/6/2021 9:22 AM |
|  | LIC PLATE THEFT | 210703-0815 | 100 BLOCK POLIHALE PL | Honolulu Police | 7/3/2021 8:57 AM |
|  | BURGLARY | 210627-0946 | 100 BLOCK LUMAHAI ST | Honolulu Police | 6/27/2021 9:50 AM |
|  | IDENTITY THEFT | 210617-1267 | 100 BLOCK KALALAU ST | Honolulu Police | 6/17/2021 12:02 PM |
|  | FRAUD | 210615-0890 | 100 BLOCK POIPU DR | Honolulu Police | 6/15/2021 9:41 AM |
|  | UEMV | 210615-0884 | 000 BLOCK MAKAWELI ST | Honolulu Police | 6/15/2021 9:38 AM |
|  | BURGLARY | 210519-0633 | 100 BLOCK POIPU DR | Honolulu Police | 5/19/2021 7:43 AM |
|  | UEMV | 210508-1541 | 200 BLOCK POIPU DR | Honolulu Police | 5/8/2021 2:47 PM |
|  | UEMV | 210425-1158 | 100 BLOCK HANAPEPE LOOP | Honolulu Police | 4/25/2021 11:22 AM |
|  | UEMV | 210422-1900 | 000 BLOCK HANAPEPE LOOP | Honolulu Police | 4/22/2021 4:31 PM |
|  | UEMV | 210417-1827 | 300 BLOCK PORTLOCK RD | Honolulu Police | 4/17/2021 3:42 PM |
|  | THEFT | 210416-0883 | 100 BLOCK POLIHALE PL | Honolulu Police | 4/16/2021 8:53 AM |
|  | UEMV | 210413-1510 | 000 BLOCK HANAPEPE LOOP | Honolulu Police | 4/13/2021 1:59 PM |
|  | UEMV | 210411-1421 | 400 BLOCK PORTLOCK RD | Honolulu Police | 4/11/2021 1:31 PM |
|  | UEMV | 210403-1826 | 100 BLOCK WAIALEALE ST | Honolulu Police | 4/3/2021 3:49 PM |
|  | THEFT | 210316-1569 | 200 BLOCK POIPU DR | Honolulu Police | 3/16/2021 2:33 PM |
|  | UEMV | 210302-1346 | 000 BLOCK HANAPEPE LOOP | Honolulu Police | 3/2/2021 1:36 PM |
|  | UEMV | 210227-1155 | 100 BLOCK HANAPEPE LOOP | Honolulu Police | 2/27/2021 4:47 PM |
|  | FRAUD | 210216-1586 | 200 BLOCK LUMAHAI PL | Honolulu Police | 2/16/2021 2:52 PM |

Crime Incidents

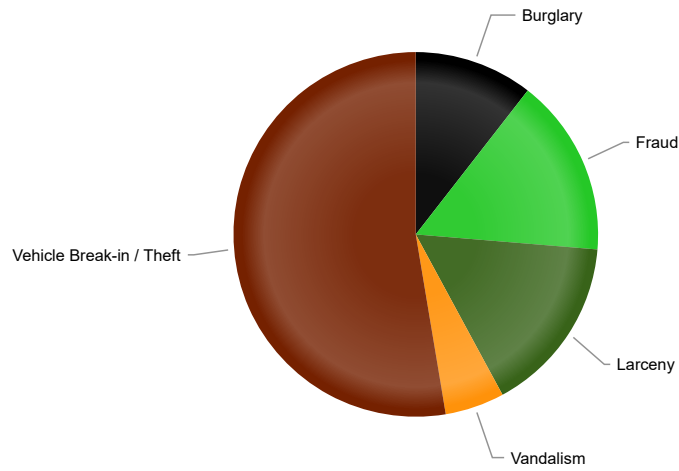
02-11-2021 to 08-09-2021 (180 Days)

19 Records

Day of Week Summary



Crime Summary



APPENDIX C

Archaeological Assessment

DRAFT—Literature Review and Field Inspection at 1 Lumahai Street, Maunalua Ahupua‘a, Kona District, Island of O‘ahu

TMK: (1) 3-9-013:030



Prepared For:

Charles Anderson and Alexandra Stanyon
6620 NE Bayview Blvd.
Bainbridge Island, WA 98110

September 2021

Keala Pono 

Keala Pono Archaeological Consulting, LLC • PO Box 1645., Kāne‘ohe, HI 96744 • Phone 808.381.2361

**DRAFT— Literature Review and Field Inspection at 1 Lumahai
Street, Maunalua Ahupua‘a, Kona District, Island of O‘ahu**

TMK: (1) 3-9-013:030

Prepared For:

Charles Anderson and Alexandra Stanyon
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Prepared By:

Kālenalani McElroy, MA
and
Windy K. McElroy, PhD

September 2021



Keala Pono Archaeological Consulting, LLC • PO Box 1645., Kāne‘ohe, HI 96744 • Phone 808.381.2361

MANAGEMENT SUMMARY

Keala Pono Archaeological Consulting conducted a literature review and field inspection at 1 Lumahai Street, on TMK: (1) 3-9-013:030 in the Portlock neighborhood of Maunaloa Ahupua'a, Kona District, on the island of O'ahu. The purpose of this work was to identify archaeological resources that may be located on the property in anticipation of the proposed construction of a single-family home.

A variety of archaeological sites have been documented in Portlock and nearby, such as ko'a, human remains, and historic military structures. However, as the project area lies on a cliff with little to no soil development, and construction dating to 1979 disturbed much of the ground surface, it is very unlikely that anything of archaeological importance remains today. No further archaeological work is recommended.

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INTRODUCTION

At the request of Masa Fujioka and Associates on behalf of Charles Anderson and Alexandra Stanyon, Keala Pono Archaeological Consulting conducted a literature review and field inspection (LRFI) for a single-family home on TMK: (1) 3-9-013:030 in Maunaloa Ahupua'a, Kona District, on the island of O'ahu. This work was designed to identify historic properties that may be located on the parcel in anticipation of the proposed construction.

The report begins with a description of the project area and an historical overview of land use and archaeology in the area. Results of the LRFI are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary at the end of the document.

The Project Location and Environment

The project area is located in Maunaloa Ahupua'a, Kona District in the Portlock neighborhood on the island of O'ahu (Figure 1). TMK: (1) 3-9-013:030 is a 0.403-ha (0.997-ac.) parcel at the southern end of Lumahai Street (Figure 2). The property is privately owned by Charles Anderson and Alexandra Stanyon and all former structures have been demolished.

The parcel is currently undeveloped and topography is gently to steeply sloping with a small gulch on the eastern edge (Figure 3). It is surrounded by private residences to the north and west, and a cliff line to the south and east. The southern-most (makai) portion of the property is a designated public access easement to the area known as Spitting Caves (see Figure 2).

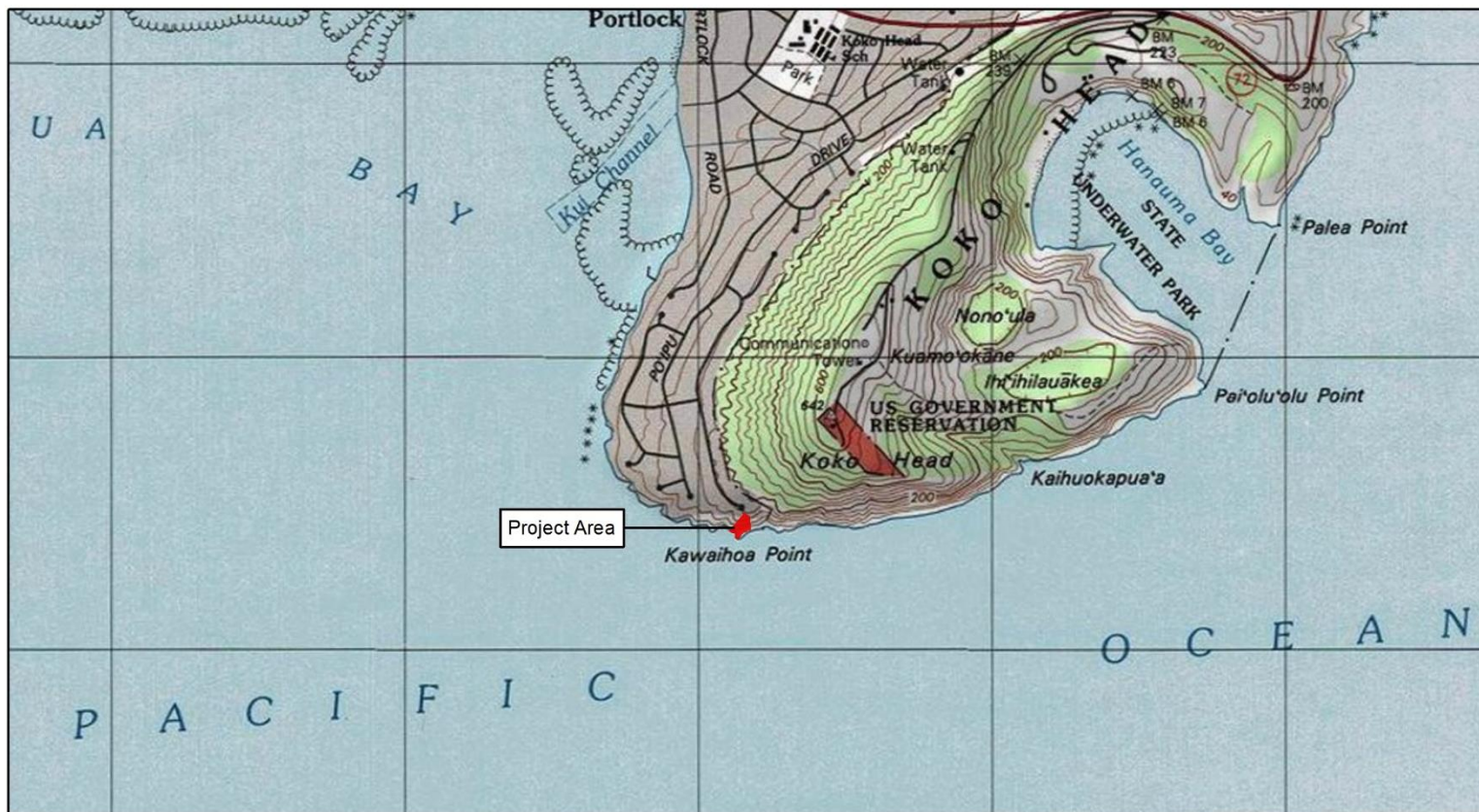
Rainfall in Portlock averages roughly 634 mm (25 in.) per year, with April through September being the driest months and October to March receiving the most rain (Giambelluca et al. 2013). There are no perennial streams in the immediate vicinity, and the rocky slopes are subject to slope wash during heavy rain. Soils of the project area consist entirely of rock outcrop (rRO) (Figure 4) (Foote et al. 1972). This soil type is described as:

Rock outcrop (rRO) consist of areas where exposed bedrock covers more than 90 percent of the surface. The rock outcrops are mainly basalt and andesite. This land type is gently sloping to precipitous. This land type is not suited to farming. It is used for water supply, wildlife habitat, and recreation. (Foote et al. 1972:119)

Other soils in the vicinity include Koko silt loam, 2–6% slopes (KsB); Koko silt loam, 6–12% slopes (KsC); and rock land (rRK). Vegetation consists predominantly of koa haole, ironwood, and grasses.

The Project

The project consists of proposed construction of a single-family home that hugs the contours of the landscape and mimics the shape of a cupped hand. The project includes construction of the residence, a lanai, and a swimming pool. The residence will be built using concrete foundations, a steel structure, and wood non-structural infill. The property is steeply sloping, and the first floor will include the swimming pool and a bathroom, with the master suite on the uppermost floor. The previous home on the property was built in 1979 and was 4,005 square feet. It was demolished in 2011 and at the time of the field inspection, only the paved driveway, walls, and foundations remained.



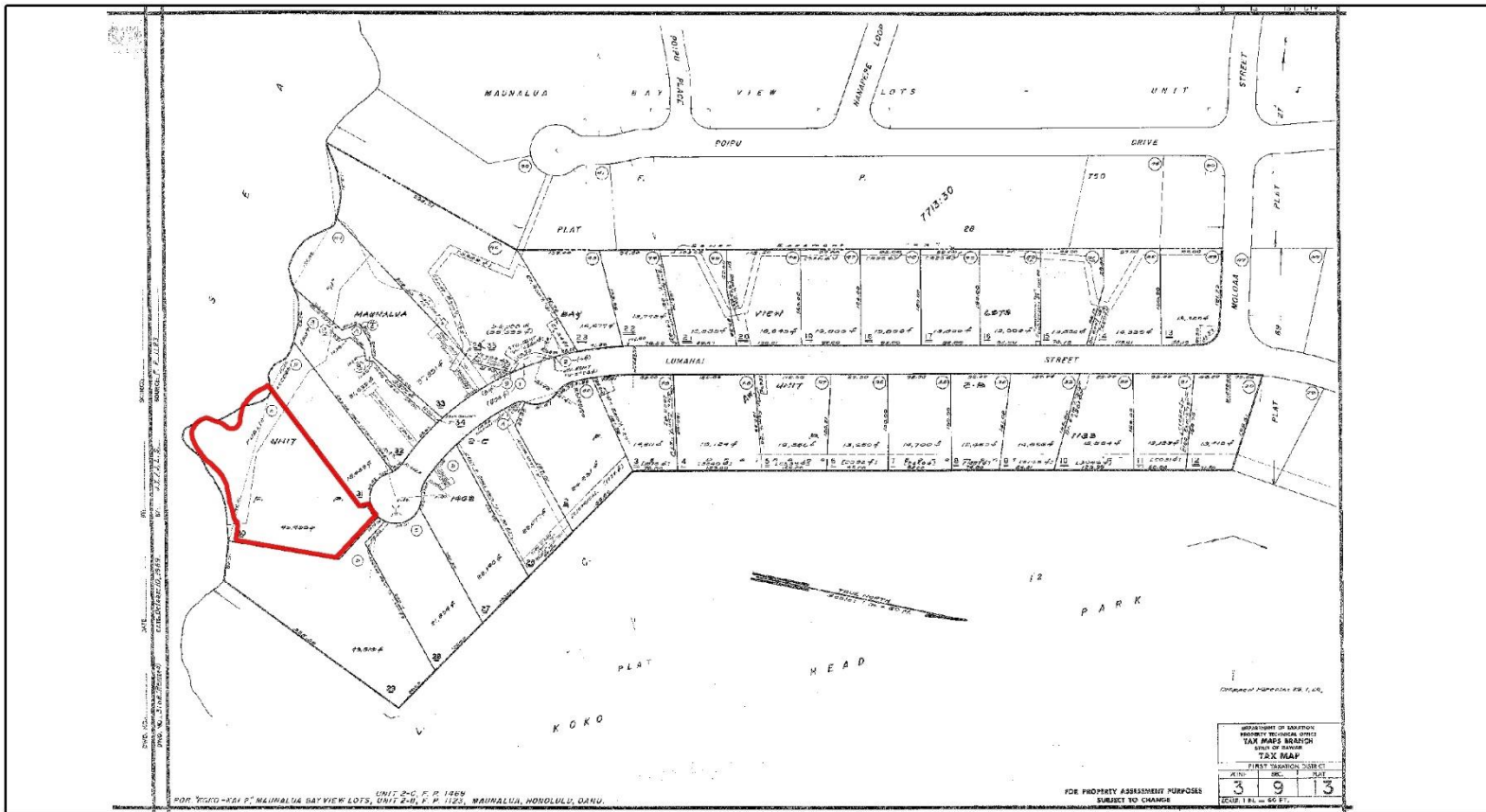
Legend

 Project Area



Service Layer Credits: USGS Topographic Quadrangle for Koko Head, HI 1999

Figure 1. Location of the project area on USGS topographic quadrangle for Koko Head (USGS 1999).



Legend

 Project Area



Figure 2. Project area on TMK plat map.

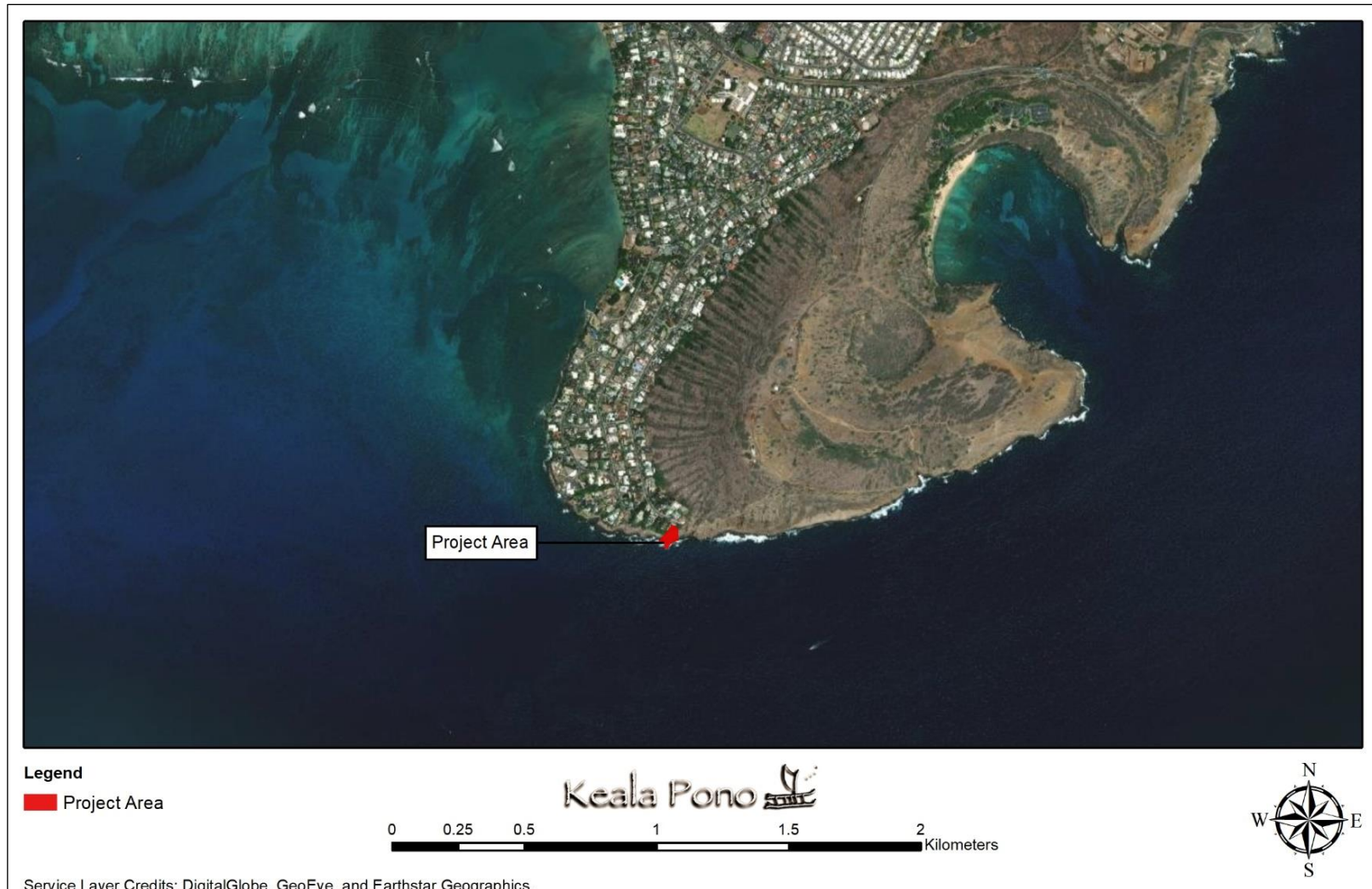


Figure 3. Satellite image of project area (in red) and surrounding region.

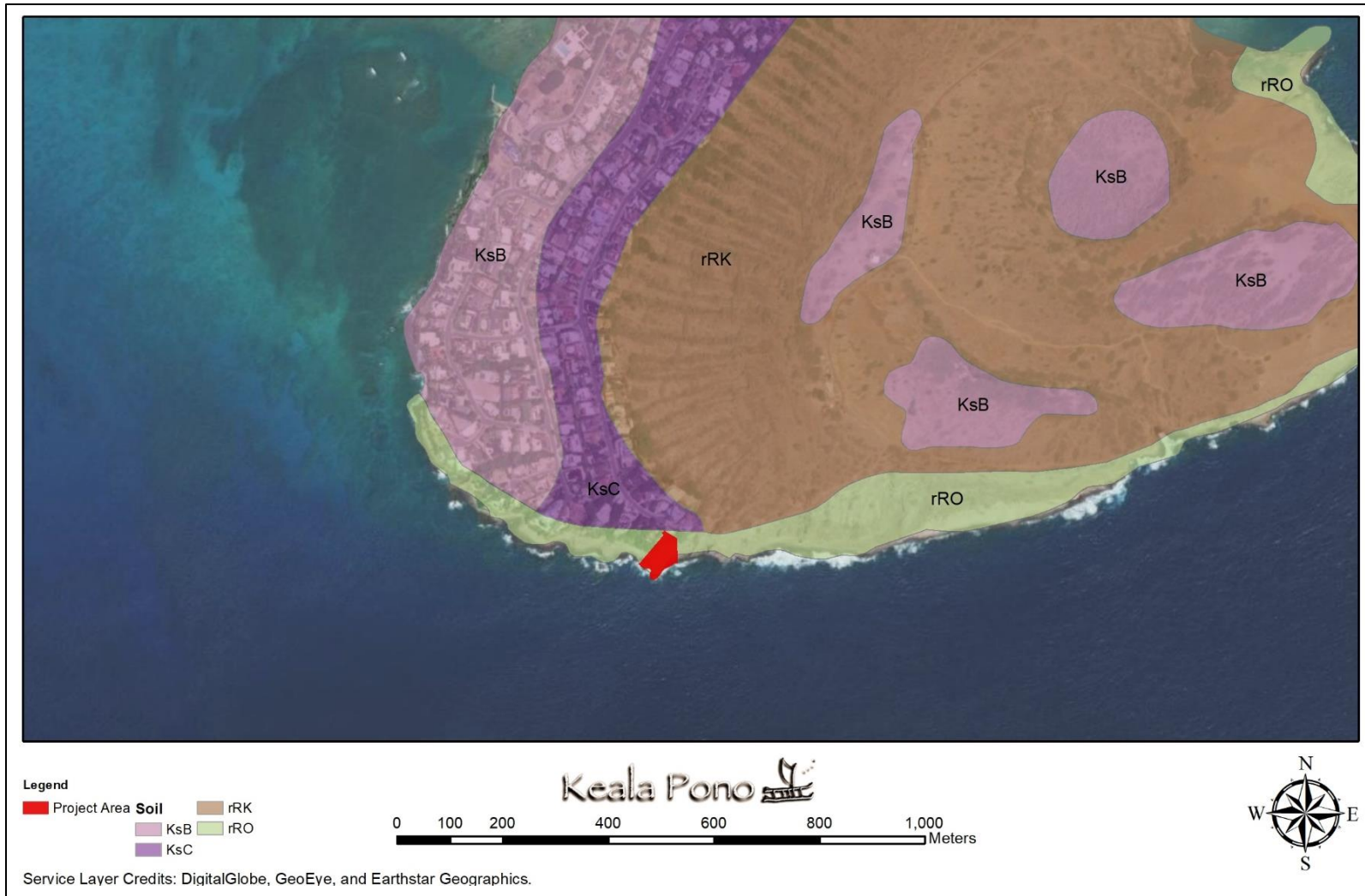


Figure 4. Soils in the vicinity of the project area (data from Foote et al. 1972).

BACKGROUND

A historic review of Maunalua Ahupua‘a is provided below, to offer a better holistic understanding of the use and occupation of the project area. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., mo‘olelo, ‘ōlelo no‘eau) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the University of Hawai‘i at Mānoa libraries, the State Historic Preservation Division (SHPD) library, and online on the Waihona ‘Aina database and the State of Hawai‘i Department of Accounting and General Services (DAGS) website. Historical maps, archaeological reports, Māhele data, and historical reference books were among the materials examined.

Maunalua in the Pre-Contact Era

Maunalua is the eastern-most ahupua‘a of the Kona district on O‘ahu’s south shore. The project area is located in the ahupua‘a’s southwestern portion at the top of the shoreline bluff known as Kawaihoa Point (Portlock Point). The name Maunalua translates to “two mountains” (Pukui et al. 1974:149).

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names “usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated...The place names provide a living and largely intelligible history” (Pukui et al. 1974:xii). Several place names associated with the study area are listed in the *Place Names of Hawaii* (Pukui et al. 1974), along with the meanings of the names and/or comments about the specific locales:

Hanauma. Beach park, bay, underwater park, and marine life conservation district created in 1967, Koko Head qd., O‘ahu (pronounced ha-nau-ma). The sand consists predominantly of green olivine crystals. *Lit.*, curved bay or hand-wrestling bay. (Pukui et al. 1974:41)

Hawai‘i Kai. Subdivision of Honolulu developed by Henry J. Kaiser, including golf course, recreation center, and drive. Streets here are named for localities on other islands. *Lit.*, sea Hawai‘i. (Pukui et al. 1974:43)

‘Ihi‘ihi‘lauākea. Crater west of Hanauma Bay, and bridge over ravine between Blowhole and Hanauma Bay, O‘ahu. *Lit.*, wide-leaf ‘ihi‘ihi (an extinct or unknown plant said to have grown at this site). (Pukui et al. 1974:55)

Kaihuokapua‘a. Land sections at Koko Head and at Waimano, O‘ahu; also a stone at Waimano. *Lit.*, the snout of the pig (Kamapua‘a). (Pukui et al. 1974:68)

Kawaihoa. Point beyond Portlock Road, Honolulu; the god Kāne brought forth water here. *Lit.*, the companion’s water. (Pukui et al. 1974:98)

Kohelepelepe. Old name for Koko Crater, O‘ahu. (For the story of the formation of the crater, see Pua‘a Kanu. Similar adventures began at Lele on Kaua‘i and Wailua Nui on Maui.) *Lit.*, vagina labia minor. (Pukui et al. 1974:115)

Koko Crater and Koko Head. Modern names for two well-known tuff cones east of Honolulu; the old name for Koko Crater was Kohelepelepe. Koko was formerly the name of a small cone landing at the Wai‘alae side of Koko Head, named for red earth, or for the blood (*koko*) of a man bitten by a shark. Today a City-County regional park area includes Koko Head District Park, Hālonā Blow Hole, Koko Crater Botanic Garden, Koko Head

Rifle Range, Hanauma Bay Beach Park, Koko Head Sandy Beach Park, and Koko Head Playground; nearby is Koko Head Elementary School. (Pukui et al. 1974:115)

Kuapā. Old name for Maunalua fishpond east of Honolulu, partly filled in for the Hawai'i Kai subdivision; the remnants of the pond are now a marina. It was once believed that the pond was partly constructed by Menehune and was connected by a tunnel to Ka'elepulu Pond, Kailua, O'ahu. *Lit.*, fishpond wall. (Pukui et al. 1974:119)

Maunalua. Section of Honolulu now known as Hawai'i Kai; bay also known as Wai'alaie Bay, forest reserve, and beach park. Koko Head qd., O'ahu. *Lit.*, two mountains. (Pukui et al. 1974:149)

Nono'ula. Crater west of Hanauma Bay, O'ahu, said to be named for a mythical creature created by Pele. *Lit.*, red sunburned. (Pukui et al. 1974:166)

Pai'olu'olu. Point, south side of Hanauma Bay, O'ahu. *Lit.*, lift gently. (Pukui et al. 1974:175)

Portlock. Road and point near Koko Head, Honolulu, named for British explorer Captain Nathaniel Portlock who commanded the British vessels King George and Queen Charlotte that anchored off the coast of O'ahu, May 31, 1786. He sent his men up Kuli'ou'ou Valley in search of water. Surfing area named after the road. (Pukui et al. 1974:190)

Subsistence and Traditional Land Use

The ahupua'a of Maunalua was traditionally known as a prime fishing spot and was also known for its large fishpond, Keahupua O Maunalua (the shrine of the baby mullet of Maunalua, also called Kuapā Fishpond or Maunalua Pond, although mo'olelo note a dearth of food in the area (Handy et al. 1972; Walker et al. 1996). Kuapā Fishpond is described as covering roughly 523 acres and was a shallow bay with a wall on the makai side with a gate to let fish in and out with the tide (Handy et al. 1972:483–484). The Maunalua coastline was dotted with numerous fishing shrines for akule and mullet, attesting to the importance of fish for those that lived in the region. Marine resources were predominantly supplemented with sweet potato. The fields covered the smaller valleys as well as the coastal plain (Sterling and Summers 1978:257).

From the lighthouse road to the small old crater in Kaiama [sic-Kalama] Valley are to be found traces of old Hawaiian sweet potato patches. Located on the crest of the old (red) lava flow are small piles of rocks, a foot or more high and a few feet apart, which comparatively clear spaces between them. It is said that sweet potatoes were planted between these rock piles in the rich red soil that covers this region. The distance from the road to the crater is about 800 feet, and the top of the flow, which was used for cultivation is between 250 and 350 feet wide. (McAllister 1933:64)

There are records of locals trading sweet potatoes with the whaling ships, therefore sweet potatoes flourished in Maunalua until at least the early historic era (Sterling and Summers 1978:257). The south shore was connected to the rest of O'ahu via two ala loa (main trails) that converged at Wai'alaie and continued "along Keahia and on to Maunalua, to the sea of Koko, and to Makapu'u." (Ī'i 1959:94) This trail allowed the Maunalua residents to easily access neighboring ahupua'a.

Many heiau are noted for Maunalua, including Pahua Heiau at the boundary of Kamilonui and Kamiloiki, and a prominent heiau located on Kaluanui Ridge known as Hāwea (Sterling and Summers 1978:264, 265). This heiau housed a sacred drum by the same name (Thrum 1907). It is said that when the renowned chief Kualii was born at Alala in 'Ewa, the Hāwea drum and another from Opuku were taken there for the event. Kualii would later unify all of O'ahu in the 16th century.

The Hāwea drum is also mentioned in a mo‘olelo involving the voyager La‘amaikahiki (Beckwith 1970). It is said that a man named Haikamalama heard the beating of the drum from the waters off Hanauma Bay and landed his canoe to investigate. After memorizing the drum’s rhythm and the drummer’s chant, he was able to get a close look at the drum and made his own replica.

Mo‘olelo

Mo‘olelo and accounts of Maunalua serve as testament to the cultural significance of the region. Maunalua is noted in several mo‘olelo and played a role in the spiritual and religious realm of Hawaiian culture shown through the stories of gods, goddesses, and menehune. The original name for Koko Crater was Kohelepelepe, and was associated with a mo‘olelo involving the volcano goddess Pele (Beckwith 1970:186–187; Pukui et al. 1974:115, 190). The pig god Kamapua‘a attacked Pele at Kalapana on Hawai‘i Island, and Pele’s sister, the sorcery goddess Kapo, detached her kohe, or vagina, and sent it to O‘ahu to lure Kamapua‘a away. Kamapua‘a followed the kohe to Koko Crater, where it left an impression that formed the hill and crater. Thus Kohelepelepe literally means “vagina labia minor” (Pukui et al. 1974:115). As a result of missionary influences, the name of the area was changed to Koko, which is still used today.

Another story mentions the Hawaiian gods Kane and Kanaloa in Maunalua. It is said that Koko Head was also called Kane‘apua’s Hill because of a story about Kane and Kanaloa’s younger brother. Kane and Kanaloa would drink ‘awa at Kawaihoa at a pool in what is now called Portlock Point. One day the pool vanished and the gods gave their brother Kane‘apua a container and told him to get more water from the top of Lepelepe hill at a spring called Waiaka‘aiea. Kane and Kanaloa told him that whatever he does, he can’t urinate on the way to the spring. Not listening to his brothers, Kane‘apua relieved himself and saw that the container began to fill up and the spring disappear. His older brothers saw what happened and Kane told Kanaloa, “thrust your cane down so that we may have water for our ‘awa.” He did this and the pool returned. While Kane‘apua was making his way back, Kane and Kanaloa turned their backs on him and started to head home, leaving their brother, who was calling out. In his shame for not obeying their instructions, he transformed into the hillside called Mo‘okua o Kane‘apua, Kane‘apua’s back bone (Mokumaia in *Nupepa Kuokoa* 1921). The pool at Kawaihoa since dried up leaving Koko Head arid and bare as it is today.

Another prominent location in Maunalua was its large fishpond. Kuapā Pond was started by a woman named Mahoe, but was completed in just one night by the menehune. On rare occasions, all the fish in the fishpond seem to suddenly disappear. It is said that there is an underground tunnel that crosses the mountain and connects Kuapā to the Kaelepulu Fishpond in Kailua (Sterling and Summers 1978:270). This is why sometimes the mullet disappear from one pond and appear in the other. During this time when there are no fish, Mahoe would take a newborn pig on the night of Kāne and carry the squealing animal around the fishpond. A kapu was in place on the night of Kāne until the following night of Lono, which prohibited fishing and any noise that would disturb the kahuna during this time. On the next night, Mahoe would place limu and ‘ilima on a shrine and after the night of Lono passed, the fish would return to the pond (Sterling and Summers 1978:270).

Another story explains about a large upright rock in the center of the wall of the fishpond. The stone is named Waiakaiaia after a resident of Maunalua.

This man was married to a woman of whom he was apparently very fond. In keeping with Hawaiian customs of marital life, Waiakaiaia gave consent for his wife to stay with other men. However, when she was away, he was greatly worried, and it preyed so consistently upon his mind that he became insane. One night when she was gone, he left the lonely hut and went to Hanauma Bay, where in great rage he tore up a large stone and

carried it to the fishpond wall. This was a superhuman feat, as one can see from the size of the stone. (Maly 1998:30)

A mo'ō akua named Lau Kupu resided in the Maunalua pond. Mo'ō akua were not the same as house lizards, but had “extremely long and terrifying bodies, and they were often seen in the ancient days at such places as Maunalua...” (Kamakau 1968:83) Lau Kupu was the guardian and caretaker of the fish in the region so all the people of Maunalua would never go hungry. When the residents cared for her, brought offerings, and remembered her, the fish would fill the pond and be fat, but if the people started to be stingy with their offerings, she would punish them (Westervelt in Sterling and Summers 1978:270).

‘Ōlelo No‘eau

Traditional proverbs and wise sayings, known as ‘ōlelo no‘eau, are another means by which the history of Hawaiian places has been recorded. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ‘ōlelo no‘eau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawai‘i well (Pukui 1983). There are two ‘ōlelo no‘eau mentioning Maunalua recorded in Pukui’s book; they are listed below.

Kai pakī o Maunalua.
The spraying sea of Maunalua.
(Pukui 1983:153)

Kona, mai ka pu‘u o Kapūkakī a ka pu‘u o Kawaihoa.
Kona, from Kapūkakī o Kawaihoa.
The extent of the Kona district on O‘ahu is from Kapūkakī (now Red Hill) to Kawaihoa (now Koko Head) (Pukui 1983:199)

Historic Maunalua

When the first Westerners arrived in the Hawaiian archipelago in 1778, the islands were not yet united under one sovereign. At that time, Maunalua and the entire island of O‘ahu were under the rule of Chief Kahahana. In 1783, Chief Kahahana’s reign was ended with the invasion and victory of Chief Kahekili of Maui. This would forever be the end of O‘ahu’s independence as a separate island kingdom. When Chief Kahekili died in 1794, control of O‘ahu went to his son Kalanikūpule. The following year, Chief Kamehameha of Hawai‘i Island invaded O‘ahu to engage Kalanikūpule in battle. Kamehameha overwhelmed Kalanikūpule’s warriors, effectively gaining control of all the islands from Hawai‘i to O‘ahu. Eventually, Kamehameha would make a peaceful agreement with Chief Kaumuali‘i of Kaua‘i, bringing that island and Ni‘ihau into the fold and thereby uniting the Hawaiian archipelago under one rule (Kamakau 1996; Kanahale 1995).

It is generally accepted that in 1778 James Cook became the first westerner to see the Hawaiian Islands. Following Cook, a wave of other western explorers landed on Hawai‘i’s shores. Around the same time as the arrival of the first westerners to Hawai‘i, O‘ahu was experiencing major political changes. It was during this time that O‘ahu’s sovereignty ended with the invasion of the Maui chiefs, and the Maui rule was subsequently overcome by the invasion of forces from Hawai‘i Island when all of the islands were united under Kamehameha I in 1795.

Early Historic Accounts

The earliest historical accounts of Maunalua come from British sea captains Portlock and Dixon, who anchored at Maunalua Bay in the summer of 1786 (Stump 1981). The *King George* captained by Nathaniel Portlock and the *Queen Charlotte* captained by George Dixon were the first fir traders to reach the islands and the second foreigners to make landfall in Hawai'i after Captain Cook. The Portlock neighborhood, road, and point were named after the captain of the *King George*. Portlock noted a shortage of fresh water in the area and encountered a small but friendly population who traded provisions and furs for nails and beads.

In 1826, Levi Chamberlain travelled across O'ahu and passed through Maunalua where he stopped at a village and walked the length of the fishpond. He chronicled his voyage:

(Coming from Makapuu)...I descended with my attendant, and near the shores of a large pond containing a surface of many hundred acres, I came to a little settlement called Keawaawa and stopped a few moments to enquire the way and to allow my attendant the luxury of a whiff of tobacco. Thence I walked on by the side of the pond in a southerly direction about a mile, having the eminence Mounalua on my left—I then came to a narrow strip of land resembling a causeway partly natural and partly constructed extending in a North west direction across what appeared to be considerable of a bay forming a barrier between the sea and the pond. At the furthest end of the causeway sluices are constructed and the waters of the sea unite with the pond and at every flood tide replenish it with fresh supply of water. Near the middle of this causeway there is a settlement of 18 houses belonging to Kaloa called Mounalua. (Chamberlain 1826)

After Kamehameha I united the Hawaiian Islands in 1795, he began improvements to fishponds and agricultural fields that had fallen into neglect during many years of war. The fishpond at Maunalua (Kuapā) was one of the ponds he personally helped to reconstruct (Kamakau 1996:192). While working in Maunalua, Kamehameha I gave control over the ahupua'a to one of his stewards, Chief Ku'ihelani.

Kamehameha encouraged the chiefs and commoners to raise food and went fishing and would work himself at carrying rock or timber...He worked at the fishponds at Kawainui, Ka'elepulu, Uko'a, Maunalua, and all about O'ahu. (Kamakau 1961:192)

There were at least three villages in Maunalua during the 19th century (Stump 1981). Maunalua Settlement was situated near the opening of the fishpond and was known to be occupied in the early 1800s. The Keawa'awa fishing village was still located at the end of the fishpond. In 1821 the village comprised approximately 100 hale. Wāwāmalu, on the Waimānalo side of Sandy Beach, was a provisioning stop for whaling ships from roughly 1825 to 1850.

Changes in Land Tenure

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

In the fall of 1850 Legislature was passed allowing citizens to present claims before the Land Commission for lands that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 kuleana land claims were awarded to kama'āina totaling only about 30,000 acres and recorded in ten large volumes. Land Commission Awards (LCA) generated during the Māhele offer valuable information regarding land use, traditional and historic boundaries and landmarks, as well as the natural resources of the area.

During the Māhele of 1848, Maunalua was awarded to Victoria Kamāmalu, sister of Kamehameha IV and V, and granddaughter of Kamehameha I as LCA 7713. There were no native tenants that were awarded kuleana lands in the ahupua'a. A map from 1851 shows the extent of Kamāmalu's property totaling 7,464 acres with Kuapā Fishpond covering 523 acres (Figure 5). In 1856 Kamāmalu leased all of Maunalua to cattle rancher William Webster. The terms of the lease were as follows:

Land of Maunalua in the district of Kona, Island of Oahu, an area of 5,680 acres at yearly rental rate of \$300.00...All rights excepting only the Konohiki's legal fishing rights in the sea for a term of 30 years...The said lessee will build or cause to be built within one year from the date of these presents, a sufficient permanent fence to stop cattle on the boundary line...(Bureau of Conveyances Lib. 7:525, 526 in Maly 1988)

Ten years later, upon Kamāmalu's death, Maunalua was transferred to the Bishop Estate. In the early 1870s, various lands in Maunalua and the fishpond were leased. Individuals who applied for a lease included J. Kānepu'u, M. Pico, and D. Kalākaua prior to becoming king. It is likely that J. Kānepu'u is the same person as the author of a *Nupepa Kuoka* article about fishing rights in Maunalua Bay. The article shows that fishing and traditional land management by a konohiki were still being practiced in Maunalua in 1868. Many place names are noted as well:

E IKE AUANEI NA KANAKA A PAU, OWAU A ME NA makaainana o Maunalua, ka poe i Hui a hoolimalima i ke awawa o Hahaione Kaelekei a me ke kai lawaia e pili ana ma na palena o Moanalua, mai ka lae o Makapuu, Awawamalu, a hiki i ka lae o Kawaihoa, ke kai kohola o Koke a me Kaliawa a hiki mai i na pelena o Kulionoa koe aku o Hanauma. Ua hoolimalima aku makou me ka Makua Alii ka Mea Kiekie M. Kekuanaoa, a i kopeia ma ka Buke Aupuni. Nolaila, ke hai ia aku nei ka lohe. Ua kapu loa i na kanaka e ae a pau o kahi e, hele ana malaila e lawaia wale ai me ka hoonele i ko makou pono e pili ana ma ko ke konohiki mahele. A i na ua lawaia wale kekahi kanaka a mau kanaka paha mamua iho nei, e hiki no i luna a makou koho ai ke koi aku a ko, e ili auanei maluna o ia luna ke poho no ka hoomaanea ana. Aole nae i pili keia olelo papa i ka poe e lawaia ana me ka haawi ana i ko ke Konohiki kapa. J. H. KANEPUU.

Luna Hoolimalima no ka poe Hai. Moanalua, Oahu, Okt. 29, 1868. 361-2ts

Let it be known to all, that I and the makaainana of Maunalua, lease lands in the valley of Hahaione Kaelekei and the fishing grounds next to the edge of Moanalua, from the peninsula of Makapuu, Awawamalu all the way to the promontory of Kawaihoa, the ocean of Koke and Kaliawa to the edge of Kulionoa with the exception of Hanauma. We lease land from Makua Ali'i and the Honorable M. Kekuanaoa as recorded in the government records. Therefore let it be known that it is forbidden for all persons from other parts to trespass and take fish and deprive us of what is our provision according to that which is afforded us by the konohiki. And if any person or persons takes fish without permission it is with in our right to choose and required reparation to for what was lost. This mandate does not apply to those person who fish with the kapa given by the Konohiki. J. H. KANEPUU. (*Nupepa Kuokoa* 1868)

Ultimately, Ruth Ke‘elikōlani decided to retain the entire ahupua‘a of Maunalua and voided all remaining leases (Maly 1988:25). In the late 1880s, the fishpond was leased to Chinese tenants and caretakers.

Late 19th Century and Beyond

A map of the south side of O‘ahu compiled shoreline and topography data from a Hawaiian Government Survey completed in 1878 (Figure 6). The large fishpond is not named, but a main road can be seen passing behind both the pond and Koko Crater before continuing around Makapu‘u Point towards Waimānalo. Kawaihoa Point is marked at the project area and the summit of Koko Head is labeled with a height of 644 feet.

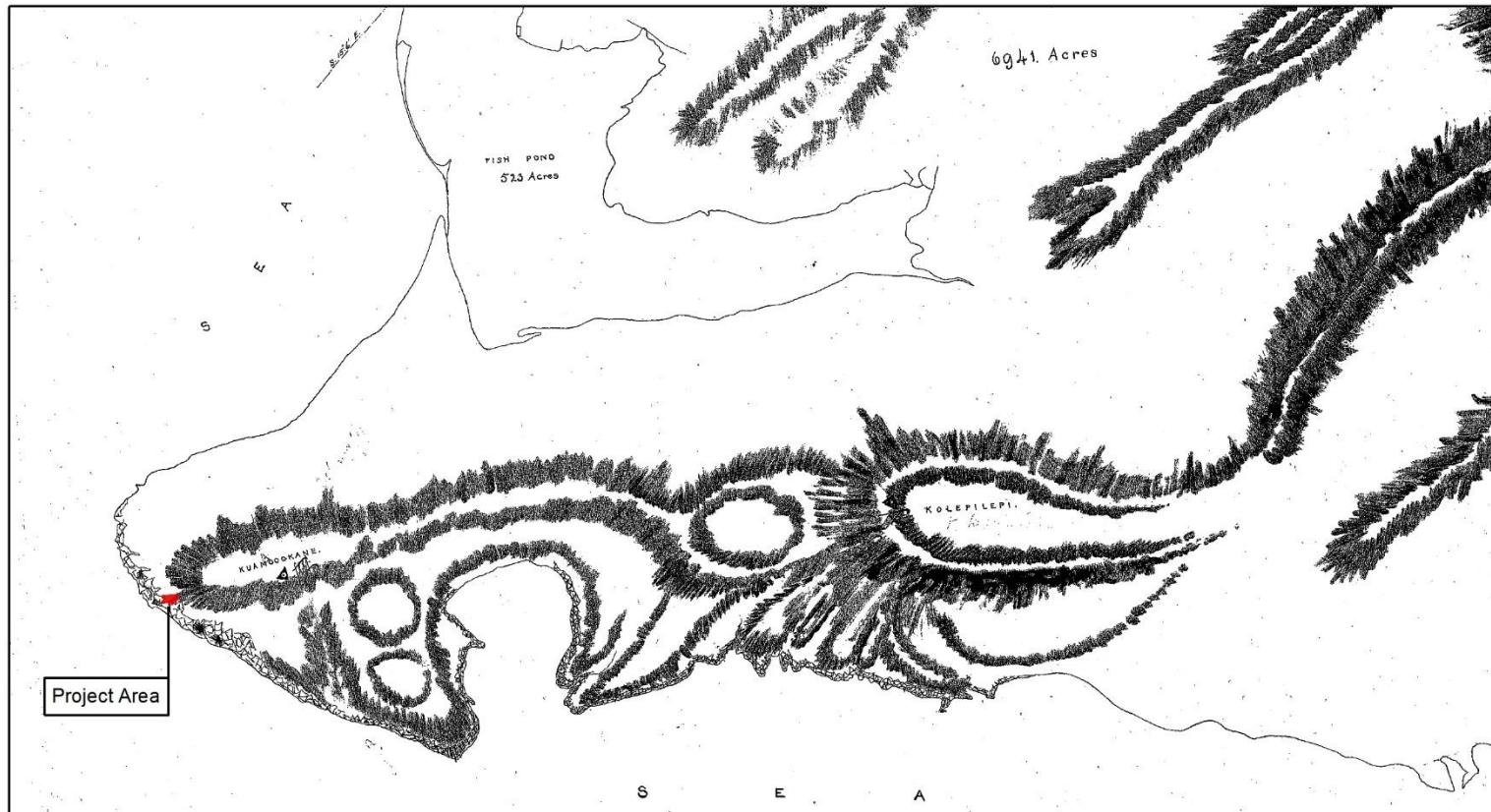
Another map in the same series shows additional information (Figure 7). Kuapā Fishpond is labeled and a narrow strip of land crosses the mouth of the pond. The inside of the bay reads “Dry at L.W. (low water)” on the east side and “Partly dry at L.W.” on the west with a canal running through the center. A second road encircles the pond with a few structures visible. The small village is labeled as Koko. The peninsula where the project area is located is called Kuamookane and Koko Head.

At the turn of the 20th century, cattle were brought to the ahupua‘a in conjunction with the establishment of Maunalua Ranch in 1900 by the Damon family (Stump 1981). In the early 1900s, land was utilized largely for agriculture and livestock farming, with mullet being raised commercially in Maunalua Bay, a Kamehameha Schools vocational farm in Hahaione Valley, and pig farms occupying Kalama Valley. A map showing land use on O‘ahu from 1902 showcases the extent of the grazing lands, which covered the entire flat area of Maunalua Ahupua‘a with the exception of Kuapā Pond and the steep areas of Koko Head and Koko Crater (Figure 8). The grazing lands spanned from Alan Davis Beach near Makapu‘u all the way to Diamond Head and Wai‘alae (yellow outline), while Kuli‘ou‘ou Valley was designated as public lands (green shading). While no structures or villages are depicted, a new third road going from the makai edge of Kuapā Pond to Hanauma Bay is seen. The ahupua‘a is labeled with Kamāmalu’s LCA 7713.

Additional development in the early 1900s includes a Federal Aviation Administration communications center with several radio towers which stood where the Hawaii Kai Golf Course is now. The Makapu‘u Lighthouse was constructed in 1906 after the luxury ocean liner Manchuria ran aground on the Makapu‘u reef (Stump 1981), and the Makapu‘u Military Reservation was established in the lighthouse area in 1922 (Farrell and Spear 2002).

A map from 1913 illustrates the fisheries on the south shore (Figure 9). The project area is located adjacent to waters of the Maunalua Fishery, which was owned by the Bishop Estate. This fishery extends all the way until Makapu‘u Point and is bounded by the Makapu‘u Point Fishery on the east and the small Kuliouou Fishery on the west. Kuapā Fishpond is shown with a slightly different shape than previous maps. Much more land separates it from the ocean, and a road now runs along both sides of the pond and behind Koko Crater. The road connecting the pond to Hanauma Bay shown on an earlier map is not depicted, and this area is labeled as belonging to the Bishop Estate.

Fishing was still practiced at Kuapā Pond in the 1930s, as evidenced by a photo from that era (Figure 10). The photo shows traditionally-constructed rock walls of the fishpond with sluice gates between them, as well as wooden structures that were used as fishing shacks. Utility poles can be seen near the structures, illustrating the juxtaposition between traditional and modern technologies.



Legend

■ Project Area



Figure 5. Portion of a map showing the property of Kamāmalu in Maunaloa (Anonymous 1851).

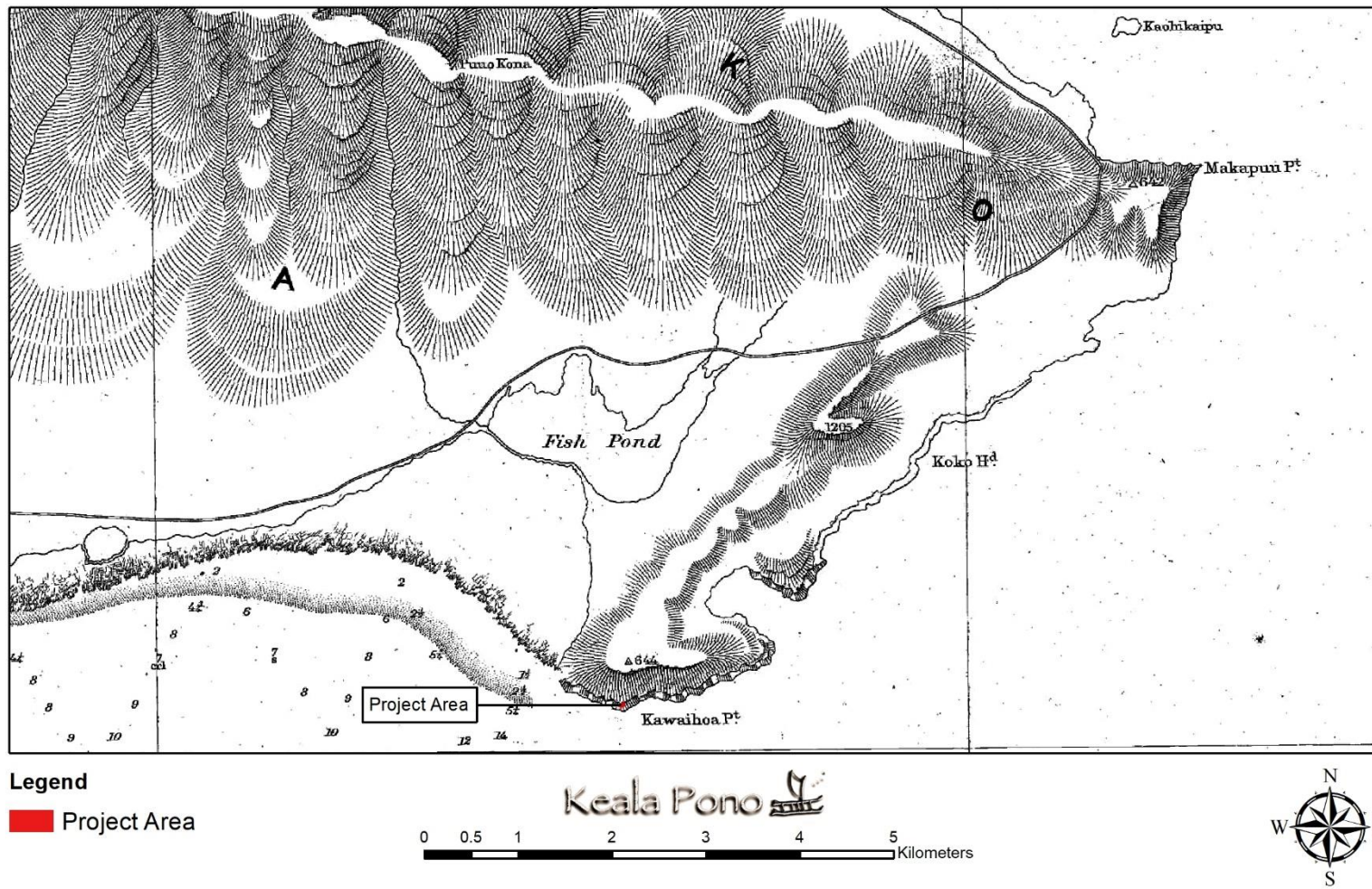


Figure 6. Portion of a map showing the south shore of O'ahu (Anonymous 1878a).

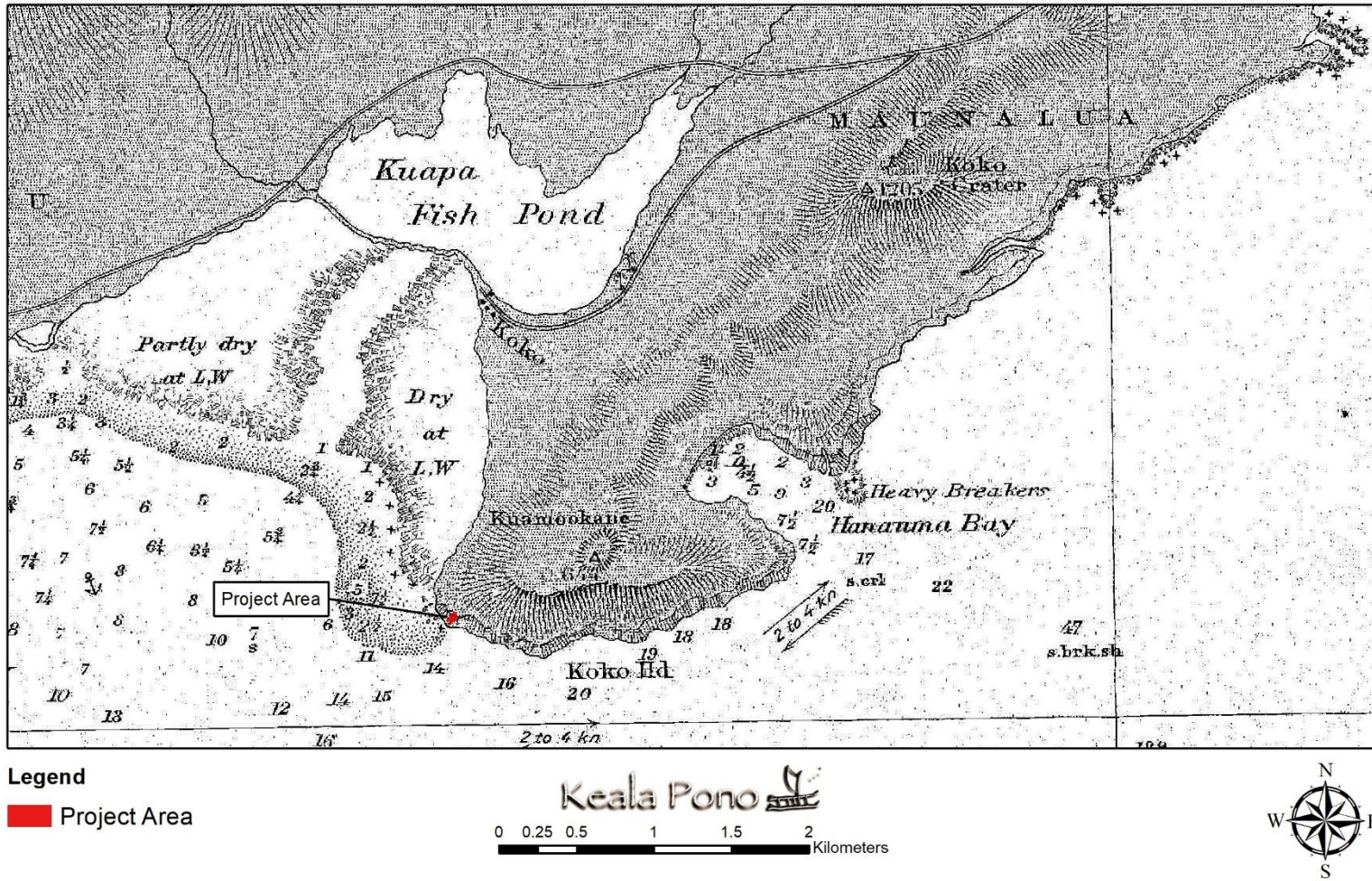
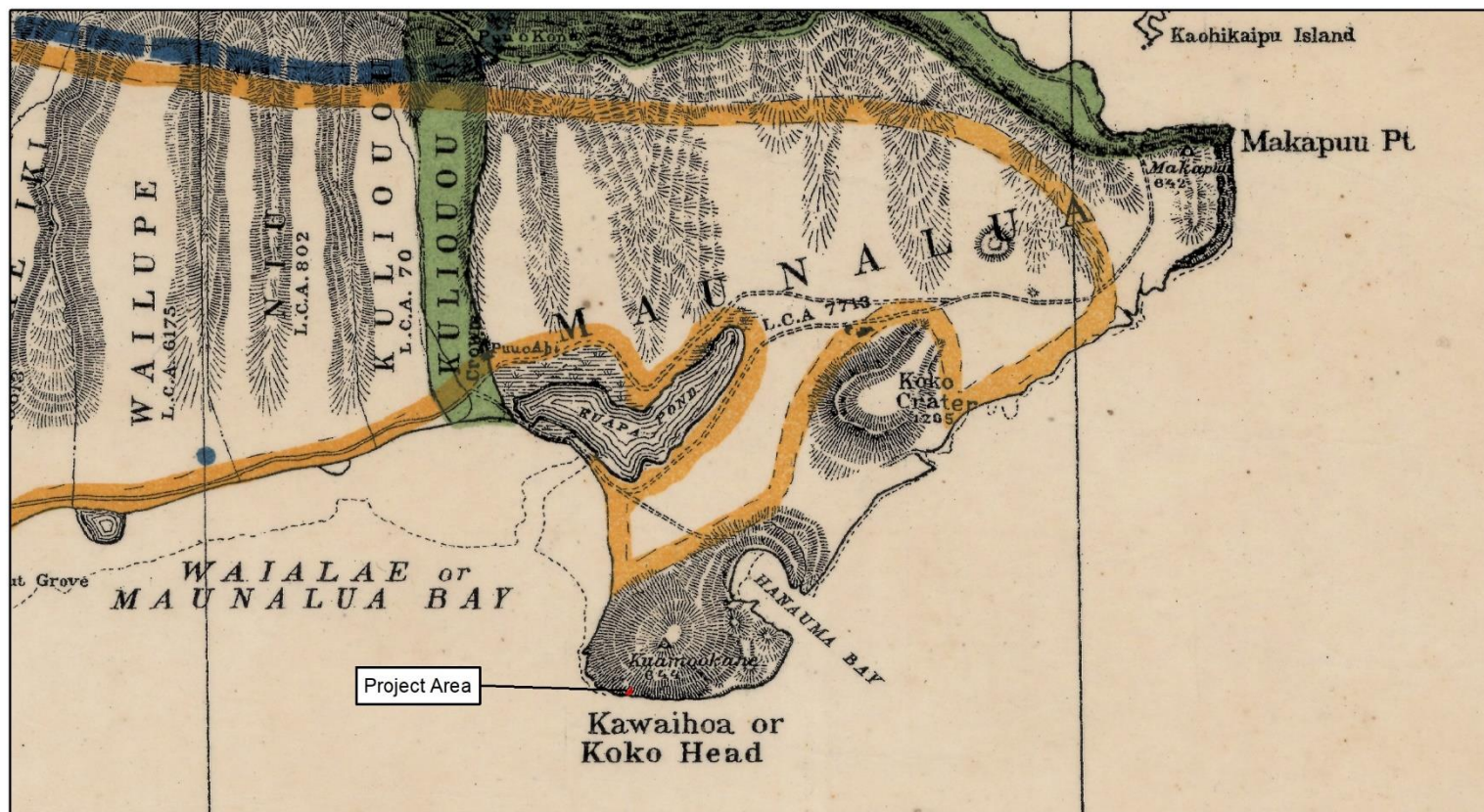


Figure 7. Maunaloa section of a map of the south shore of O'ahu (Anonymous 1878b).



Legend

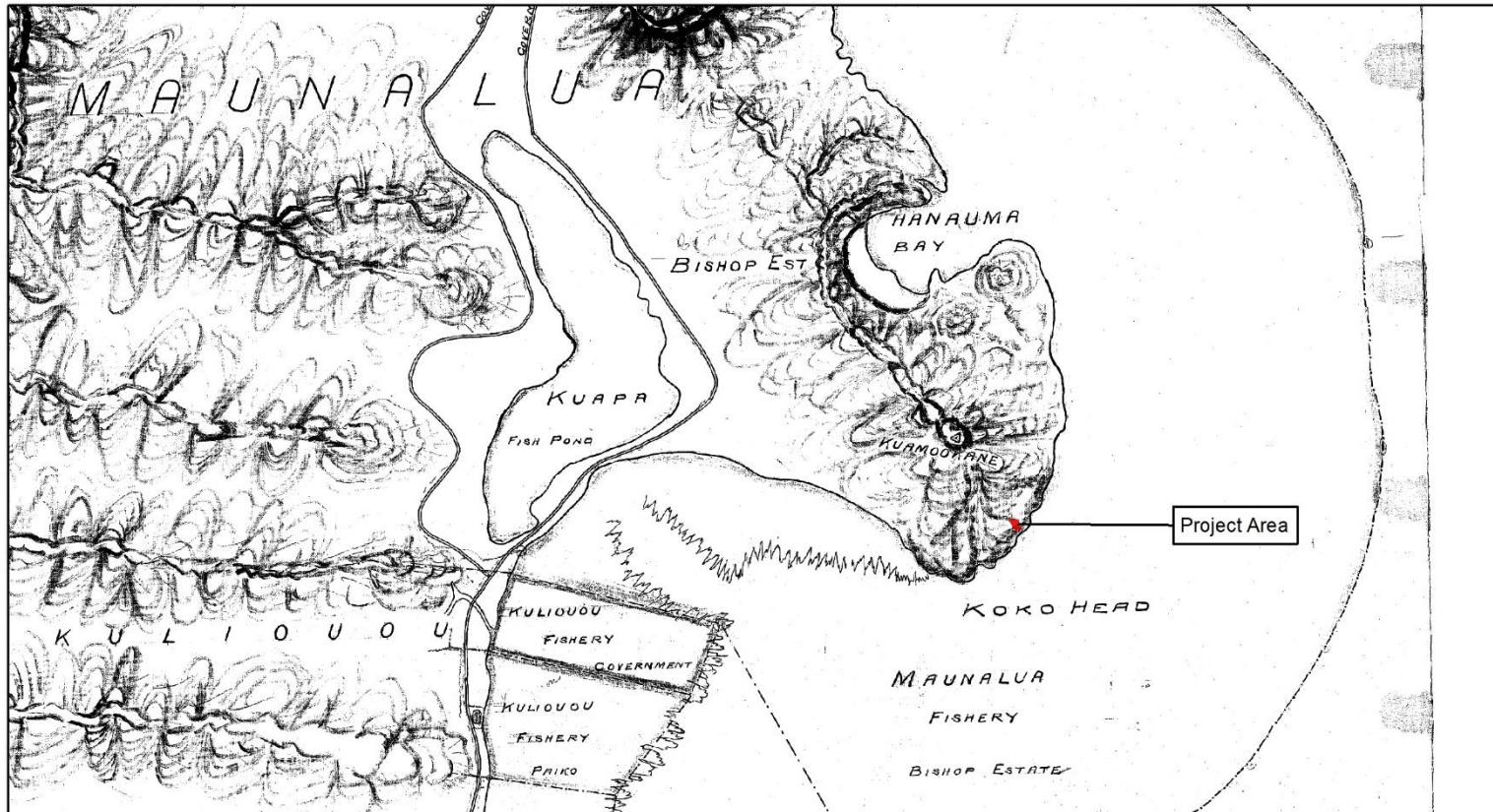
■ Project Area

Keala Pono

0 0.5 1 2 3 4 5 Kilometers



Figure 8. Portion of an O'ahu map showing land use (Wall 1902).



Legend

■ Project Area



Figure 9. Portion of a map depicting the fisheries on the south shore of O'ahu (Monsarrat 1913).



Figure 10. 1930s fishing shacks on Kuapā Pond (Maunalua.net n.d.).

In 1932 Bishop Estate trustee Alan Davis leased 600 acres of land for cattle ranching near Queen’s Beach (Stump 1981). The area would later come to be known as “Alan Davis.” A 1946 tsunami destroyed Davis’ ranch along with many coastal sites in the ahupua’a. In 1961 the Bishop Estate entered into a development agreement with Henry J. Kaiser, and Maunalua’s name was changed to “Hawai’i Kai” (Hancock 1983). The estate of Henry J. and Alyce Kaiser in the Portlock neighborhood is listed on the National Register of Historic Places (NRHP). The house, which was constructed in 1959 still remains. In addition to the main house, there are several outbuildings, walls, and water features on the property. A 1970 aerial photo included in the NRHP nomination form shows the estate (Figure 11).

In the 1970s housing and business development began to dominate the landscape, and today Hawai’i Kai is a highly developed residential and commercial area. As the population in Honolulu grew and tourism increased, Hanauma Bay and Maunalua’s other natural features began drawing visitors to the area. Today, Hanauma Bay is one of the main tourist attractions on O’ahu. The cliffs at Portlock Point continue to be a favored fishing spot for locals, while surfers are drawn to the area’s prime surf breaks.

Previous Archaeology

Previous archaeological surveys offer significant information regarding traditional and historic land use. Several archaeological projects have been conducted in the vicinity of the current project area, predominantly for Koko Head Regional Park, which spans from Koko Crater to Koko Head (Figure 12; Table 1). Archaeological sites with known locations are shown in Figure 13; State Inventory of Historic Places (SIHP) numbers are prefixed with 50-80-15. The following discussion summarizes the findings of cultural resources identified in the immediate vicinity of the current subject property, based on reports found at the SHPD library in Kapolei, Hawai’i.



Figure 11. 1970 aerial photo showing the Kaiser Estate (Minatoishi 2016:53).

McAllister (1933) recorded numerous sites within Maunaloa including three ko‘a near the project area (Sites 46, 47, and 48) in addition to the Koko Head petroglyphs (Site 44), a platform on Koko Crater (Site 45), and the Kuapā Fishpond (Site 49) farther away. He noted that the three ko‘a in the area were named Paliālae, Huanui, and Hina. Paliālae (Site 46) was described as “merely a stone at the edge of the water, but it had great attraction for mullet” (McAllister 1933:68). Huanui (Site 47) was also for attracting mullet and is “not far from the one described in Site 48 and is an exact duplicate, except that it is slightly larger” (McAllister 1933:68). Site 48 is Hina, which was used for attracting akule (McAllister 1933:68). A legend ties the female Hina shrine to a male shrine named after Kū, though McAllister never mentions a Kū ko‘a during his survey of Maunaloa. However he does describe the Hina ko‘a in detail:

The shrine is roughly square in shape with the corners rounded, and measures 16.5 feet across. It is formed by coral walls 1 foot high and from 1 to 2 feet wide. Inside the walls is a paving of small bits of coral and sand which is about 6 inches higher than the outside. Facing the sea is an entrance 2.5 feet wide. Just within the entrance are six sharp lava stones forming an oval about 1 foot wide and 1.5 feet long. It was here that the offering of fish was placed. A foot from the wall opposite the entrance are two flat coral stones embedded securely in the paving. They protrude about 6 inches. (McAllister 1933:68)

The Koko Head petroglyphs are located in a cave on the coastline between Hanauma Bay and Koko Crater, not in the vicinity of the project area. The site was first documented in 1899 by C.L.

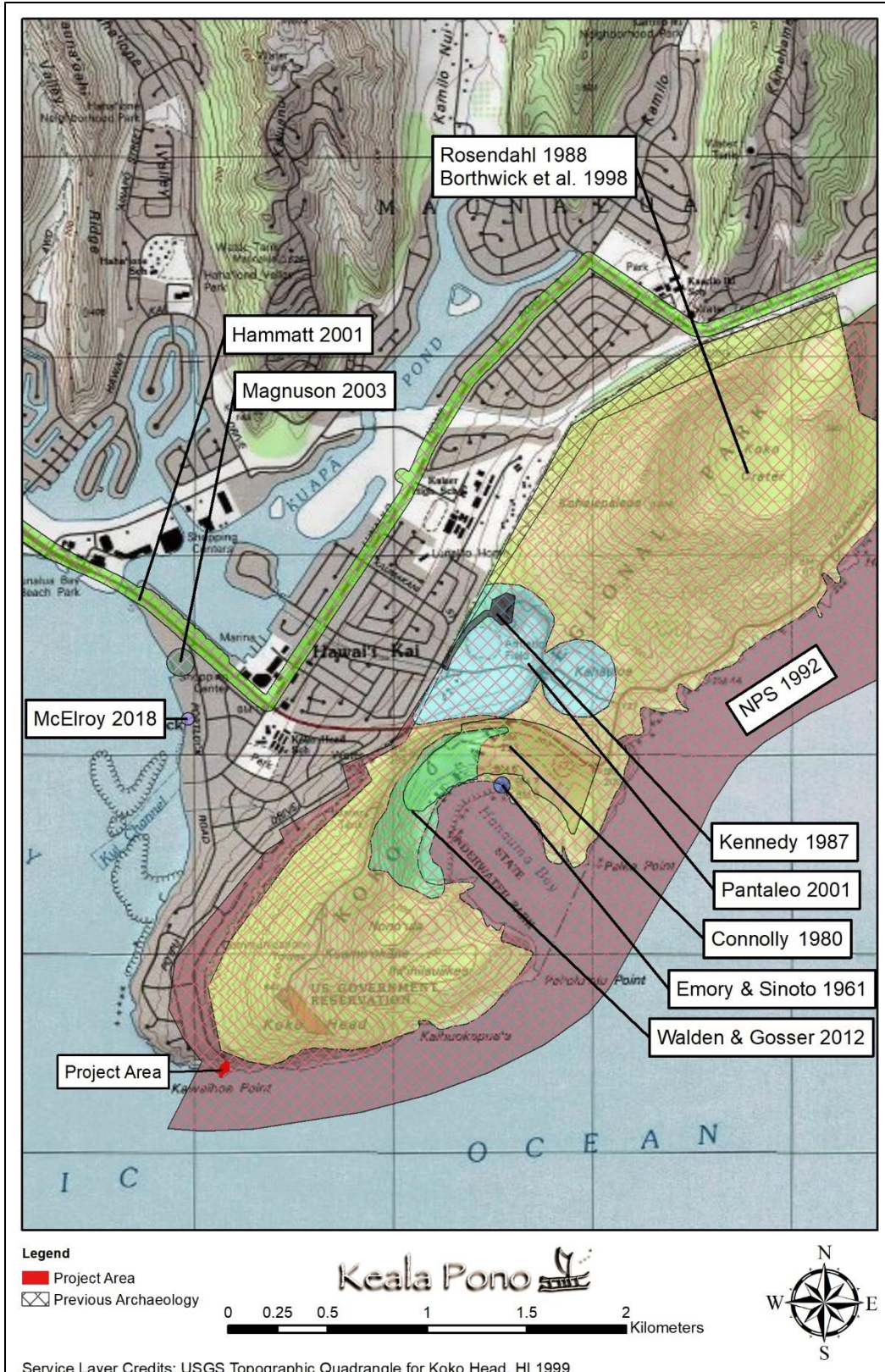


Figure 12. Locations of previous archaeological studies near the project area.

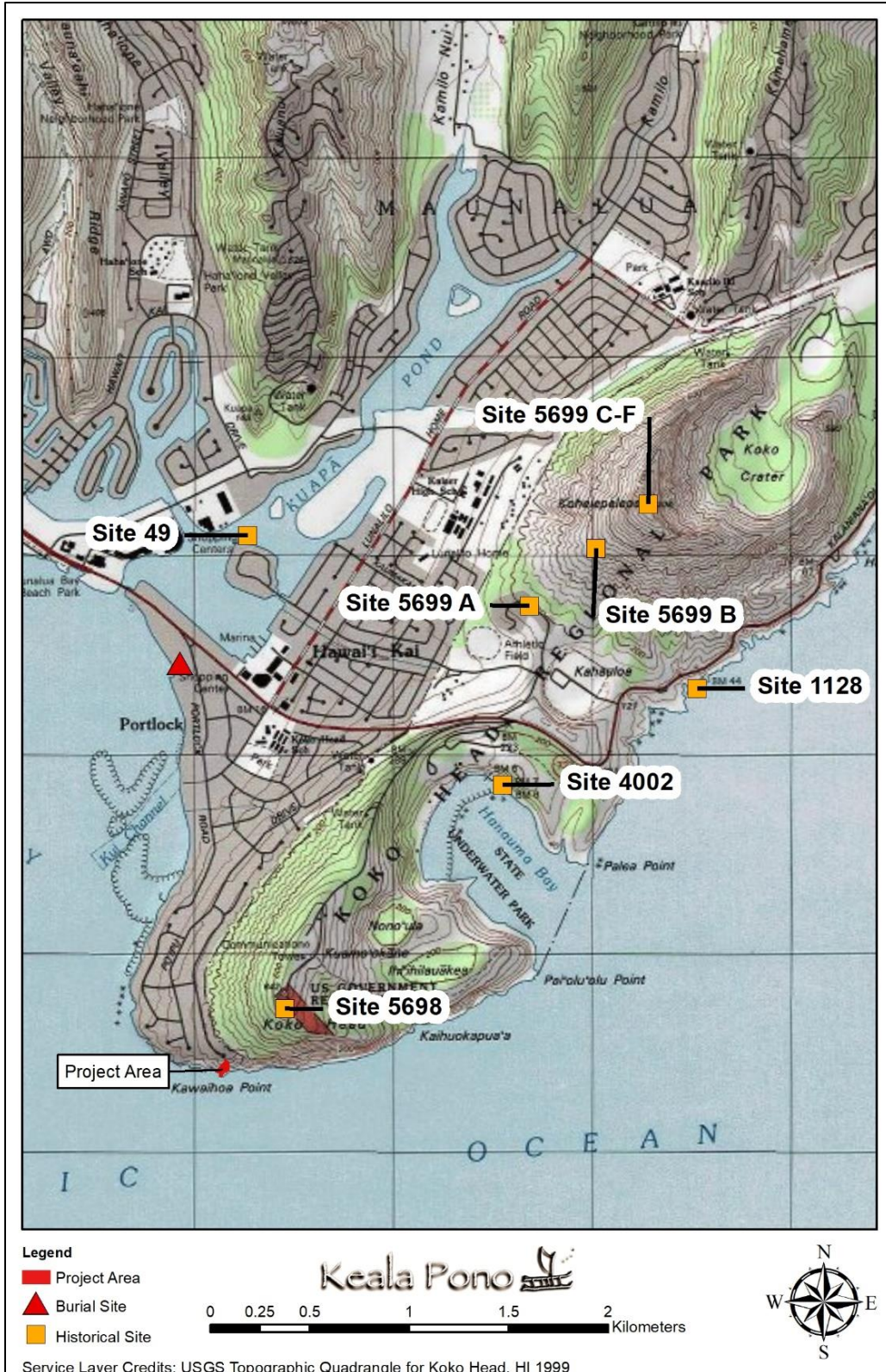


Figure 13. Previously recorded archaeological sites near the project area with known locations. Note that no SIHP number was assigned for the burial site.

Table 1. Previous Archaeology in the Vicinity of the Project Area

| Author/Year | Location | Work Completed | Findings |
|------------------------|--|--|---|
| McAllister 1933 | Island-wide | Survey | Recorded three ko‘a near the study area (Sites 46, 47, and 48) and the Koko Head petroglyphs (Site 44), a platform (Site 45), and Kuapā Fishpond (Site 49) in the greater region. |
| Emory and Sinoto 1961 | Island-wide | Archaeological Excavations | Conducted excavations at the Hanauma Shelter, SIHP 4002. Most of the 121 artifacts recovered were related to fishing and it was determined that the cave was a pre-contact temporary shelter for collecting resources at the bay. |
| Connolly 1980 | Hanauma Bay | Reconnaissance Survey | No findings. It was noted that two comfort stations off of Palea Camp Road were more than 50 years old. |
| Kennedy 1987 | Former Hawai‘i Kai Job Corps Center | Archaeological Monitoring | No findings. The area was highly disturbed and no further archaeological work was recommended. |
| Rosendahl 1988 | Koko Head Regional Park | Field Inspection | Relocated the previously identified Koko Head Petroglyphs (Site 44). No new findings were documented. |
| NPS 1992 | Ka Iwi Shoreline | Reconnaissance Survey | Reviewed traditional and historic land use; listed threats to natural and cultural resources such as erosion, invasive species, development, overuse, and unregulated recreational use. |
| Maly 1998 | Maunaloa Ahupua‘a | Historical Documentary Research | Provided insight into the cultural practices, customs, and traditional history of Maunaloa. |
| Borthwick et al. 1998 | Koko Head Regional Park | Archaeological Inventory Survey | Documented two historic military sites: bunkers and an associated structure at Koko Head (SIHP 5698) and remnants of the Koko Crater radar station (SIHP 5699). |
| Pantaleo 2001 | Koko Head District Park and Shooting Complex | Archaeological and Cultural Assessment | No findings; recommended documentation of any historic structures at the shooting range, which was established in 1937. |
| Hammatt 2001 | 112.6 miles of road corridor across O‘ahu | Archaeological Inventory Survey | No findings. |
| Magnuson 2003 | 251 Portlock Road | Archaeological Monitoring | Human remains were encountered during monitoring, however no SIHP number was given. |
| Walden and Gosser 2012 | Hanauma Bay | Archaeological Inventory Survey | No findings. Concrete footings and an unmodified overhang shelter noted outside the project boundaries. |
| McElroy 2018 | 317 Portlock Road | Field Inspection | No findings. |

Beal who returned to make rubbings a year later. His rubbings showed a figure with a “spiked headdress” which was not there in later rubbings from 1915. McAllister (1933) used a photograph of the rubbings to sketch the layout and scale of the figures and noted that it was identical as reported in 1915. The Koko Head petroglyphs are located on the slanted floor of a low cave that gets wet during high tide.

The cave has a low ceiling and a sharply inclined roof of hard tufa. Photographing the carvings is not an easy task in consequence. The surf at high tide washes into the mouth of the cave and the lower carvings are much corroded. There is no evidence now that the cave was or was not walled up. Figures are in three sizes, respectively six, nine, and fifteen inches in length. In some of the figures an attempt has been made to show the contour of the thigh and calf; the knee is small and in some figures the toes and heels are shown. All of the arms save in one figure point down. (There is another figure toward the center of the group in which both arms are turned up.) This one figure has its right arm raised and has a head dress of four spikes radiating from one side of the head. Some of the figures represent neither men nor women...All the carvings are three-quarters to one-sixteenth of an inch deep. There is no evidence that the cutting had been made with an iron instrument. The bodies of several men are square, all the interior of the square being removed evenly...Storms have swept all through the cave and there are but few of the inscriptions left but they probably at one time covered the entire floor of the cave. The area covered by the carvings is about six and one half by eleven feet. Several figures may be of four-footed animals. (McAllister 1933:68)

The Koko Head petroglyphs were documented again during a field inspection for the Koko Head Regional Park and were designated SIHP 1128 (Rosendahl 1988). The survey produced no new findings, however it was noted that some of the petroglyphs were destroyed by wave erosion or had been cut out and taken by collectors. Rosendahl annotated McAllister’s drawing of the figures to show the portions that were missing in the late 1980s (Figure 14).

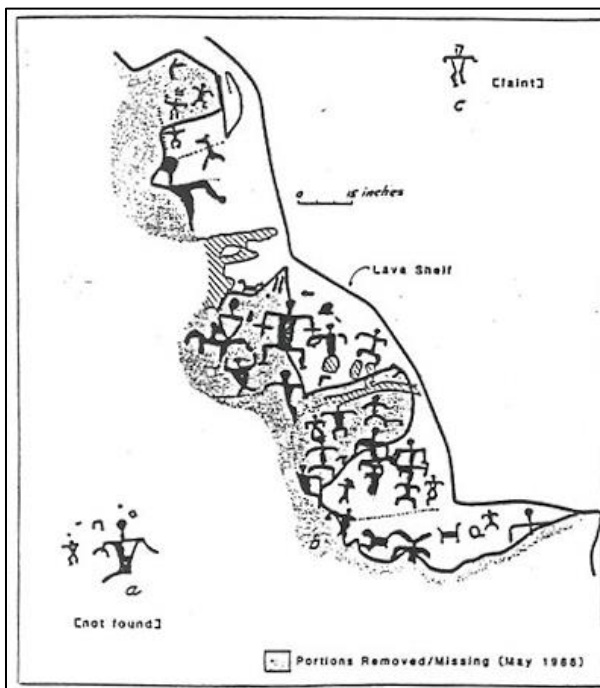


Figure 14. Sketch of the Koko Head petroglyphs (Site 44, SIHP 1128) in May 1988 showing portions that were missing compared to McAllister’s survey in 1933 (Rosendahl 1988).

The earliest archaeological excavations in the region were completed at Hanauma Bay in 1961 as part of island-wide excavations (Emory and Sinoto 1961). A 210 square foot area of the Hanauma Shelter was excavated by archaeologists from the University of Hawai'i. This cave shelter, designated as SIHP 4002, is located below the cliffside along the beach on the east side of the bay before the swimming spot known as the Toilet Bowl. Due to the presence of 121 artifacts predominantly associated with fishing activities, the cave was determined to be a pre-contact temporary habitation used for collecting resources from the bay. In 1980, an archaeological reconnaissance survey was required for planned development at Hanauma Bay Beach Park. The pedestrian surface survey covered the entire 47-acres of the beach park including the beach, cliffs, and plateau above the bay (Connolly 1980). No new archaeological sites were encountered, however two dilapidated comfort stations on the makai side of Palea Camp Road were more than 50 years old and therefore historic structures. Much later in 2012, an archaeological inventory survey was completed for a rockslide potential inspection and mitigative improvements at the bay (Walden and Gosser 2012). The survey produced no findings and was presented as an archaeological assessment. An unmodified overhang shelter and three concrete footings of unknown age were recorded, but were located outside the project boundaries.

Archaeological monitoring was conducted for upgrades to the sewer system at the former Hawai'i Kai Job Corps Center located within the Koko Head District Park adjacent to the baseball diamonds (Kennedy 1987). No archaeological sites were found during monitoring and no further work was recommended. The area was recorded as having "abundant landfill materials" and was highly disturbed by prior development of the Job Corps and park facilities (Kennedy 1987).

In 1992, the National Park Service conducted a reconnaissance survey of three sections on O'ahu to determine if they should be considered as part of the National Park system (NPS 1992). The sections were the Koko Rift Unit, Waimānalo Bay Unit, and Maunawili Valley Unit. The Koko Rift Unit covered the Ka Iwi Coastline from Koko Head to Makapu'u Point including Mānana and Kāohikaipu islands. Traditional and historic land use of the region were analyzed including natural and cultural resources, and threats to these resources. Nearly all of the cultural resources mentioned were located near Makapu'u and Sandy Beach. Threats to natural and cultural resources such as erosion, invasive species, development, overuse (Hanauma Bay), and unregulated recreational use were listed. 'Ihi'ihi (*Marsilea villosa*) and 'āwiwi (*Centaurium sebaeoides*) are two endangered plants observed by researchers in the Koko Rift Unit, while the only endangered animals found were the Hawaiian monk seal (*Monachus schauinslandi*) and the Hawaiian hoary bat (*Aeorestes semotus*).

Multiple studies have been completed for the Koko Head Regional Park. Historical documentary research of the entire ahupua'a of Maunaloa was required as part of an environmental impact statement for the park and nature preserve (Maly 1998). The report consists of archival research covering pre-contact and post-contact era land use and previously documented archaeological sites by McAllister (1933). The same year, an archaeological inventory survey for the Koko Head Regional Park identified two historic sites associated with military activities (Borthwick et al. 1998). A set of three concrete bunkers and a basalt and mortar structure were designated as SIHP 5698. The bunkers are located on the southwest edge of Koko Head and were determined to be fire control stations constructed in 1934 in support of Battery Granger Adams at Black Point. Remnants of the Koko Crater radar station were also documented, consisting of a Quonset hut at the base, the tramway, summit support buildings, structures, and platforms at Koko Crater (SIHP 5699). The radar station was built in 1942 and operated until 1966 with facilities on the crater, slope and below the slope.

In 2001, an archaeological and cultural assessment for safety improvements at the Koko Head District Park and Shooting Complex produced no findings (Pantaleo 2001). No further

archaeological work was recommended except for documentation of any remaining historic structures at the shooting range, which was established in 1937.

An archaeological inventory survey was required for the Sandwich Isles Communication Fiber Optic Cable Project that covered 112.6 miles (181.6 km) of road corridors across O‘ahu (Hammatt 2001). The section nearest the current project area runs into Hawai‘i Kai along Kalaniana‘ole Highway (Route 72) and turns northeast on Lunalilo Home Road before turning on Hawai‘i Kai Drive to pass mauka of Koko Crater before meeting Kalaniana‘ole Highway again near Sandy Beach. Hammatt (2001) considered this section to be of low potential for encountering historic properties, as no LCAs or previously recorded archaeological sites were located along the route.

Two studies were completed on Portlock Road. Archaeological monitoring and a surface survey were required after human remains were inadvertently discovered at 251 Portlock Road during excavations for landscaping (Magnuson 2003). A site visit by Dr. Sara Collins of SHPD identified four fragmentary human bones and three bone fragments from a mammal. The sternal end of a human rib bone was encountered during monitoring of an irrigation line on the property. The surface survey identified a human bone and a faunal bone along a seawall on the adjacent property owned by the Bishop Estate. It was determined to be a left rib bone and was missing the sternal end. The bone was probably of a male since it was “very robust with an unusually large costal tubercle” (Magnuson 2003). No SIHP number was assigned to the remains. Also on the same street, a field inspection was conducted for drainage outfall improvements at 317 Portlock Road (McElroy 2018). The study was requested by SHPD since the Hina Ko‘a (Site 48) noted by McAllister (1933) may possibly be in the vicinity. No evidence of the ko‘a or any other archaeological site was observed and no further work was recommended.

Summary of Background Research and Anticipated Finds

Pre-contact use of Maunaloa likely centered around fishing and the large, well known fishponds in the area. The large fishpond known today as Kuapā extended for more than 500 acres (Sterling and Summers 1978). This was clearly a significant source of food in such a dry ahupua‘a. As the region is too arid for irrigated agriculture, dryland farming persisted in addition to fishing and collecting other marine resources. Dryland farming of sweet potato took place “in the small valleys such as Kamilonui, as well as on the coastal plain” (Handy 1940:155).

Habitation areas might have been located along the coast or in areas such as Hahaione Valley, where a large fishing village once stood at the head of the pond (McAllister 1933:69). This settlement was located on the flat between Kuapā Pond and Koko Head. At least two other 19th century villages were located in the ahupua‘a (Stump 1981).

Religious practices were carried out at Hāwea Heiau on Kaluanui Ridge. Mentioned in several mo‘olelo, the renowned Hāwea drum was housed at the heiau. Thus a model of traditional settlement pattern would place religious activity on the ridge, dryland farming in the valleys and coastal plain, fishing at the coast and at the large Kuapā Pond, and habitation areas around the pond.

The historic era saw widespread changes to the region, as cattle ranching was introduced in the early 1900s. Maunaloa Ranch Co. leased nearly the entire ahupua‘a until 1925, when the operation failed. From the mid-1900s, housing developments and businesses began to emerge, and Maunaloa has grown into a thriving urban center and destination for tourists.

Previous archaeological studies have recorded many sites within Maunaloa. In the Portlock neighborhood of which the current project area is located, human remains and fishing shrines have

been documented. At the top of Koko Head above the project area and at Koko Crater, historic military structures were identified. Two pre-contact sites, the Koko Head petroglyphs and a temporary habitation cave associated with traditional fishing practices were recorded near Hanauma Bay.

As noted above, a variety of archaeological resources have been noted for Maunalua. However, due to the exposed cliffside environment and extensive development of Portlock and the specific project area, it is unlikely that any new historic properties will be encountered during the project.

FIELD INSPECTION

A field visit was conducted on August 26, 2021 by Keala Pono archaeologist Kālenalani McElroy, MA and principal investigator Windy McElroy, PhD. The accessible portions of the project area were walked to determine if there are any surface archaeological remains present and which areas of the property might have a likelihood of supporting archaeological features.

The property is sloping down to the southwest, with a sheer cliff on the south and east that drops down to the basalt shelf where the Spitting Caves area is located. Vegetation on the property consists mostly of koa haole, ironwood, and grasses, and there are remnants of the former home that once stood there (see cover photo). These remnants are on two tiers, with the upper tier almost entirely covered in concrete (Figure 15), and steps leading down to the lower tier (Figure 16), which is mostly covered in concrete as well (Figure 17). A low, mortared rock wall runs along much of the length of the cliff edge (Figure 18).

Another set of stairs leads down from the upper tier of the property to the Spitting Caves area below (Figure 19). Additional structural remnants were observed on the slope in this area (Figure 20). The cliff face was inspected for evidence of archaeological remains or any natural features such as caves or overhangs that might have been utilized in the past. None were found, and the portions of cliff that could be observed are nearly vertical with no caves or overhangs large enough to provide human shelter (Figure 21). Parts of the cliff face were obscured by vegetation and debris however, and other parts were inaccessible, thus the entire cliff line could not be inspected.

The previous home on the property was built in 1979 and therefore its remains are not more than 50 years old. The home was demolished in 2011 and these are the structural remnants that were observed. The area where the home once stood is almost entirely paved, with little to no soil development on the unpaved portions. Thus it is very unlikely that any archaeological resources occur either on the surface or subsurface. The area with the highest likelihood of encountering archaeological resources is the cliff line, as caves or overhangs may have been utilized in the past. However, no evidence of these kinds of natural features or anything archaeological was found.



Figure 15. Upper tier of the property, facing northwest.



Figure 16. Steps connecting the two tiers of the property, facing east.



Figure 17. Lower tier of the property, facing southeast.



Figure 18. Mortared rock wall on the cliff line, facing northeast.



Figure 19. Cliff line (left) and stairs leading down to Spitting Caves (center), facing northeast.



Figure 20. Structural remains on the southeastern slope of the property, facing east.



Figure 21. Southeastern cliff line, facing northwest.

ASSESSMENT AND RECOMMENDATIONS

A literature review and field inspection were conducted for TMK: (1) 3-9-013:030 in Maunalua Ahupua‘a, Kona District, on the island of O‘ahu, where a single-family home is proposed. The project area consists of the entire TMK parcel, which covers 0.403 ha (0.997 ac.) at the southern end of Lumahai Street. The literature review consisted archival research, and the field visit did not identify any surface archaeological resources. Subsurface archaeological resources are not likely due to a lack of soil development and previous construction and paving on the property.

Several archaeological implications can be made based on the literature review presented above. Key data include LCA information, historical maps, the results of previous archaeological work, and other data for former land use. The project area vicinity is mostly developed with structures, driveways, and Lumahai Street. It is not likely that any surface or subsurface archaeological features remain, and a brief field visit did not identify anything of archaeological importance.

Results of Land Commission Awards Search

There were no LCA awards in the vicinity of the project area. Maunalua was awarded as LCA 7713 to Victoria Kamāmalu, sister of Kamehameha IV and V, and granddaughter of Kamehameha I. There were no native tenants that were awarded kuleana lands in the ahupua‘a.

Results of Historical Map Research

Several maps were found that depict the project area, and a selection of these dating from 1851–1913 are presented above. The large Kuapā Fishpond dominates the Maunalua landscape, and nothing of archaeological significance is shown in the project area or immediate vicinity on any of the maps.

Knowledge from Previous Archaeological Studies

No archaeological materials or features have been noted in the immediate vicinity of the project area. However, fragmented human remains were found on the opposite side of the Portlock neighborhood from the project area (no SIHP number), and military structures were identified high above the project area at Koko Head (SIHP 5698). Fishing shrines were also known for the Portlock neighborhood, although their exact locations are uncertain. Two pre-contact sites, the Koko Head petroglyphs and a temporary habitation cave associated with traditional fishing practices, were recorded near Hanauma Bay.

Insights on Previous Land Use

Pre-contact use of Maunalua likely centered around ocean fishing as well as aquaculture at the 500-acre Kuapā Fishpond. This was clearly a significant source of food in the dry ahupua‘a. As the region is too arid for irrigated agriculture, dryland farming of sweet potato persisted in addition to fishing and collecting other marine resources. Habitation areas might have been located along the coast or in areas such as Hahaione Valley, where a large fishing village once stood at the head of the pond. Religion and ceremony in Maunalua were carried out at Hāwea Heiau on Kaluanui Ridge, which are far from the current project. Thus a model of traditional settlement pattern would place religious activity on the ridge, dryland farming in the valleys and coastal plain, fishing at the coast and at the large Kuapā Pond, and habitation areas around the pond.

The historic era saw widespread changes to the region, as cattle ranching was introduced in the early 1900s. Maunalua Ranch Co. leased nearly the entire ahupua‘a until 1925, when the operation failed. From the mid-1900s, housing developments and businesses began to emerge, and the iconic estate of Henry J. and Alyce Kaiser was built in Portlock in 1959.

Summary and Recommendations

A variety of archaeological resources have been documented in Portlock and nearby, such as ko‘a, human remains, and historic military structures. However, as the project area lies on a cliff line with little to no soil development, and construction dating to 1979 disturbed much of the ground surface, it is very unlikely that anything of archaeological importance remains today. No further archaeological work is recommended.

GLOSSARY

| | |
|----------------------|---|
| ahupua‘a | Traditional Hawaiian land division usually extending from the uplands to the sea. |
| akua | God, goddess, spirit, ghost, devil, image. |
| akule | Big-eyed or goggled-eyed scad fish (<i>Trachurops crumenophthalmus</i>). |
| ala loa | Highway, belt road around island. |
| ‘awa | The shrub <i>Piper methysticum</i> , or kava, the root of which was used as a ceremonial drink throughout the Pacific. |
| Heiau | Place of worship and ritual in traditional Hawai‘i. |
| ‘ilima | <i>Sida fallax</i> , the native shrub whose flowers were made into lei, and sap was used for medicinal purposes in traditional Hawai‘i. |
| ironwood | <i>Casuarina equisetifolia</i> , a large tree introduced to Hawai‘i in the historic era. |
| kahuna | An expert in any profession, often referring to a priest, sorcerer, or magician. |
| kama‘āina | Native-born. |
| Kanaloa | A major god, typically associated with Kāne. |
| Kāne | The leading of the traditional Hawaiian deities. |
| kapu | Taboo, prohibited, forbidden. |
| ko‘a | Fishing shrine. |
| koa haole | The small tree <i>Leucaena glauca</i> , historically-introduced to Hawai‘i. |
| konohiki | The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights. |
| Kū | The Hawaiian god of war. |
| kuleana | Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership. |
| limu | Refers to all sea plants, such as algae and edible seaweed. |
| loko kuapā | A fishpond composed of a stone wall built upon a reef. |
| Māhele | The 1848 division of land. |
| makai | Toward the sea. |
| mauka | Inland, upland, toward the mountain. |
| mo‘o | Lizard, dragon, water spirit. |
| mo‘olelo | A story, myth, history, tradition, legend, or record. |
| ‘ōlelo no‘eau | Proverb, wise saying, traditional saying. |
| pre-contact | Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew. |

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APPENDIX D

Shoreline Certification and Approval Letter

DAVID Y. IGE
GOVERNOR OF HAWAII



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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 13, 2021

File No.: OA-1919

Walter P. Thompson, Inc.
P. O. Box 3351
Honolulu, Hawaii 96801

Dear Applicant:

Subject: Transmittal of Signed Shoreline Certification Maps
Owner(s): Charles S. Anderson & Alexandra Stanyon
Tax Map Key: (1) 3-9-013:030

Enclosed please find three (3) copies of the certified shoreline survey maps for the subject property.

If you have any questions, please feel free to call us at (808) 587-0424. Thank you.

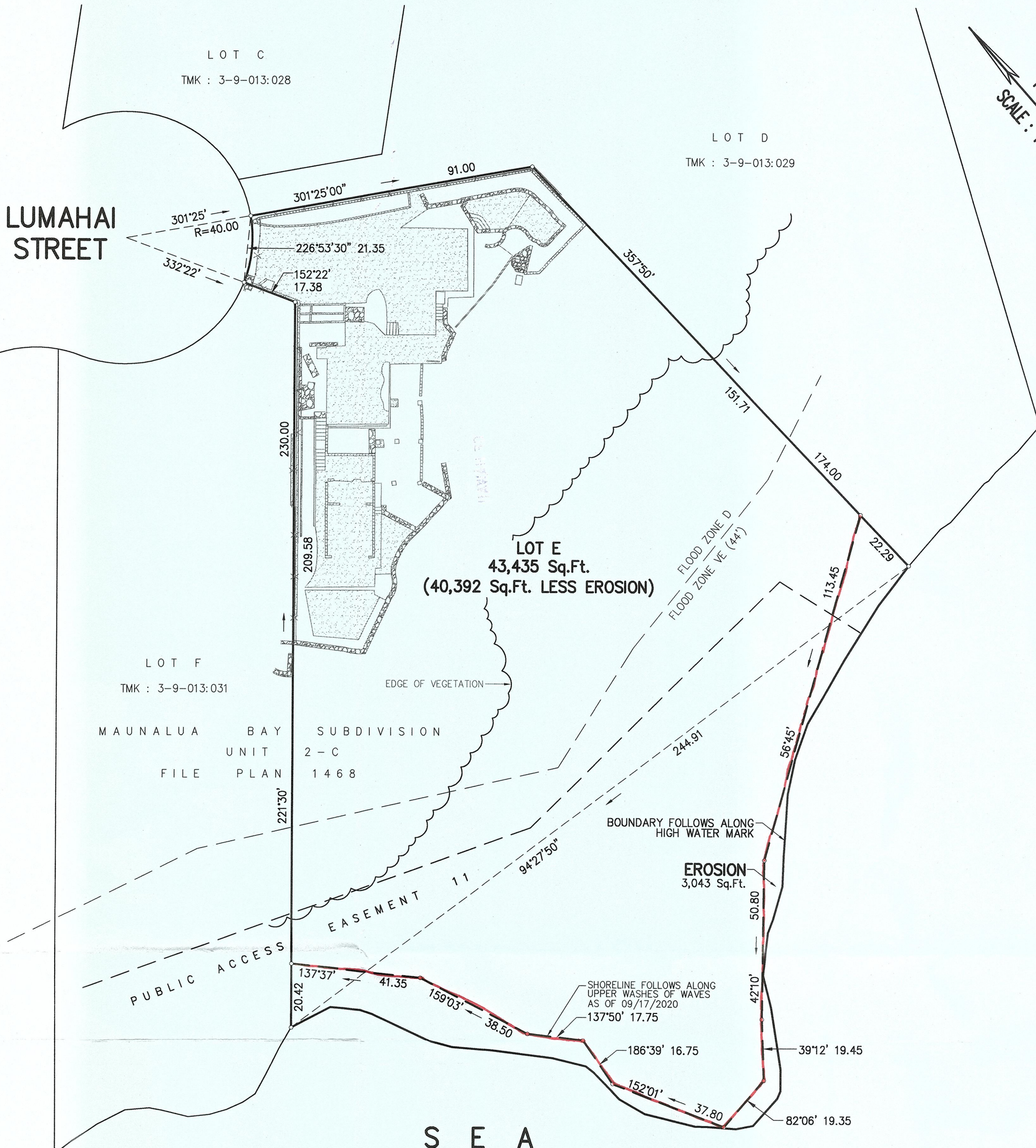
Sincerely,

A handwritten signature in black ink, appearing to read "Cal Miyahara".

Cal Miyahara
Shoreline Disposition Specialist

Enclosures

cc: DAGS



The shoreline as delineated in red is hereby certified as the shoreline as of

JAN 13 2021

[Signature]
 Chairperson, Board of Land and Natural Resources

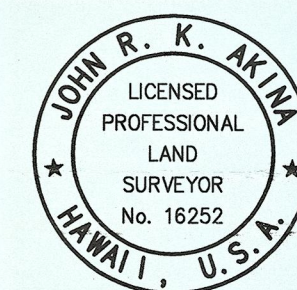
PROPERTY ADDRESS: 1 LUMAHAI STREET
 HONOLULU, HI 96825

MAP SHOWING
 SHORELINE AFFECTING
 LOT E
 MAUNALUA BAY SUBDIVISION
 UNIT 2-C
 FILE PLAN 1468

AT MAUNALUA, HONOLULU, OAHU, HAWAII

SCALE: 1 IN. = 30 FT.

OCTOBER 14, 2020 WALTER P. THOMPSON, INC.



THIS WORK WAS PREPARED BY
 ME OR UNDER MY SUPERVISION

[Signature: John R. K. Akina]
 Exp. 04/30/22

APPENDIX E

East Honolulu Sustainable Communities Plan



A BILL FOR AN ORDINANCE

TO ADOPT THE REVISED EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN FOR THE CITY AND COUNTY OF HONOLULU.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION 1. Purpose. The purpose of this ordinance is to repeal the existing Sustainable Communities Plan for East Honolulu, Chapter 24, Article 4 of the Revised Ordinances of Honolulu 1990, and to adopt a new Article 4 incorporating the revised East Honolulu Sustainable Communities Plan.

This development plan ordinance adopts a revised sustainable communities plan for East Honolulu that presents a vision for East Honolulu's future development consisting of policies, guidelines, and conceptual schemes that will serve as a policy guide for more detailed zoning maps and regulations and for public and private sector investment decisions.

This ordinance is enacted pursuant to the powers vested in the City and County of Honolulu by Chapter 46, and Section 226-58 of the Hawaii Revised Statutes.

SECTION 2. Article 4 of Chapter 24, Revised Ordinances of Honolulu 1990 ("East Honolulu"), is repealed.

SECTION 3. Chapter 24, Revised Ordinances of Honolulu 1990, is amended by adding a new Article 4 to read as follows:

"Article 4. East Honolulu

Sec. 24-4.1 Definitions.

Unless the context otherwise requires, the following definitions govern the construction of this article.

"Department" means the department of planning and permitting of the city.

"Development" means any public improvement project, or any public or private project requiring a zoning map amendment.



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"Development plan" or "sustainable communities plan" means a plan document for a given geographic area that consists of conceptual schemes for implementing and accomplishing the development objectives and policies of the general plan for the several parts of the city.

"Director" means the director of planning and permitting.

"East Honolulu SCP" means the revised East Honolulu Sustainable Communities Plan attached hereto as Exhibit A and made a part hereof.

"Environmental assessment" and "EA" means a written evaluation prepared in compliance with the environmental council's procedural rules and regulations implementing HRS Chapter 343 to determine whether an action may have a significant environmental effect.

"Environmental impact statement" and "EIS" means an informational document prepared in compliance with the procedural rules and regulations of the environmental council established in HRS Section 341-3(c) for the implementation of HRS Chapter 343; and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic and social welfare of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

"Finding of no significant impact" and "FONSI" means a determination, based on an environmental assessment that the subject action will not have a significant effect and, therefore, will not require the preparation of an environmental impact statement.

"Functional plan" means the public facility and infrastructure plans prepared by public agencies to further implement the vision, policies, and guidelines set forth in the East Honolulu SCP.

"General plan" means the general plan of the city as defined by Charter Section 6-1508.

"Planning commission" means the planning commission of the city.

"Project master plan" means a conceptual plan that covers all phases of a development project. The project master plan consists of that portion of an environmental assessment or environmental impact statement that illustrates and describes how the project conforms to the vision for East Honolulu, and the relevant policies and guidelines for the site, the surrounding lands, and the region.



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"Significant zone change" means a zone change that involves at least one of the following:

- (1) Changes in zoning of 10 or more acres of land to any zoning district or combination of zoning districts, excluding preservation or agricultural zoning districts;
- (2) Any change in zoning of more than five acres to a residential or country zoning district;
- (3) Any change in zoning of more than five acres to an apartment, resort, commercial, industrial, or mixed use zoning district; or
- (4) Any development that may have a major social, environmental, or policy impact, or major cumulative impacts due to a series of applications in the same area.

"Special area" means a designated area within the East Honolulu SCP area that requires more detailed planning efforts beyond what is contained in the East Honolulu Sustainable Communities Plan.

"Special area plan" means a plan for a special area.

"Unilateral agreement" means a conditional zoning agreement made pursuant to Section 21-2.80 ROH or any predecessor or successor provision that imposes conditions on a landowner or developer's use of the property at the time of the enactment of an ordinance for a zoning change.

"Vision" means the future outlook for the East Honolulu region extending out to the year 2040 and beyond that entails the creation of a community growth boundary, an open space network for preserving natural features, scenery, and shoreline areas for recreational use by the public, protection of historic and community resources, and provision of adequate infrastructure and community facilities to address the anticipated impacts of climate change and to meet East Honolulu's future needs.

Sec. 24-4.2 Applicability and intent.

- (a) The East Honolulu SCP encompasses the entire area from the mountains to the southern shoreline of Oahu stretching from Makapuu Point on the eastern sector, along the ridgeline of Koolau Mountain Range in a westerly direction to the Waialae Nui Gulch Stream.



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- (b) It is the intent of the East Honolulu SCP to provide a guide for orderly and coordinated public and private sector development in a manner that is consistent with applicable general plan provisions, recognizing this urban fringe area as one of the principal stable areas in the county for low-density residential development.
- (c) The provisions of this article and the East Honolulu SCP are not regulatory. Rather, they are established with the explicit intent of providing a coherent vision to guide all new public and private sector development within East Honolulu. This article shall guide any development for East Honolulu, public investment in infrastructure, zoning and other regulatory procedures, and the preparation of the city's annual capital improvement program budget.

Sec. 24-4.3 Adoption of the East Honolulu SCP.

- (a) This article is enacted pursuant to Charter Section 6-1509 and provides a self-contained development plan document for East Honolulu. Upon enactment of this article, all proposed developments will be evaluated against how well they fulfill the vision for East Honolulu enunciated in the East Honolulu SCP and how closely they meet the East Honolulu SCP policies and guidelines set forth to implement that vision.
- (b) The plan entitled, "East Honolulu Sustainable Communities Plan," attached to this ordinance as Exhibit A, is hereby adopted by reference and made a part of this article.
- (c) Chapter 24, Article 1, entitled "Development Plan Common Provisions," in its entirety, is no longer applicable to the East Honolulu SCP area. This article and the East Honolulu SCP, as adopted by reference in this article, supersedes any and all common provisions previously applicable to the East Honolulu SCP.

Sec. 24-4.4 Existing zoning and subdivision ordinances, approvals, and applications.

- (a) All existing subdivisions and zoning approved prior to the effective date of this ordinance for projects, including but not limited to those subject to unilateral agreements, continue to remain in effect following the enactment of this ordinance.



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- (b) Subdivision and zoning ordinances applicable to the East Honolulu SCP area enacted prior to the effective date of this ordinance continue to regulate the use of land within demarcated zones of the East Honolulu SCP area until such time as the subdivision and zoning ordinances may be amended to be consistent with the revised East Honolulu SCP.
- (c) Notwithstanding adoption of the East Honolulu SCP, applications for subdivision actions and land use permits accepted by the department for processing prior to the effective date of this ordinance continue to be subject only to applicable ordinances and rules and regulations in effect at the time the application is accepted for processing.

Sec. 24-4.5 Consistency.

- (a) In the performance of their prescribed powers, duties, and functions, all city agencies shall conform to and implement the policies and provisions of this article and the East Honolulu SCP. Pursuant to Charter Section 6-1511.3, public improvement projects and subdivision, and zoning ordinances must be consistent with the East Honolulu SCP.
- (b) Any questions of interpretation regarding the consistency of a proposed development with the provisions of the East Honolulu SCP and the objectives and policies of the general plan will ultimately be resolved by the council.
- (c) In determining whether a proposed development is consistent with the East Honolulu SCP, the responsible agency shall primarily take into consideration the extent to which the development is consistent with the vision, policies, and guidelines set forth in the East Honolulu SCP.
- (d) Whenever there is a question regarding consistency between existing subdivision or zoning ordinances, including any unilateral agreement, and the East Honolulu SCP, the existing subdivision or zoning ordinances prevail until such time as they may be amended to be consistent with the East Honolulu SCP.

Sec. 24-4.6 Review of development and other applications.

The review of applications for zone changes and other development approvals will be guided by the vision of the East Honolulu SCP. Decisions on all proposed developments must be based on the extent to which the project, enabled by the development approval, supports the policies and guidelines of the East Honolulu SCP.



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The director may review other applications for improvements to land, to help the responsible agency determine whether a proposed improvement supports the policies and guidelines of the East Honolulu SCP.

Sec. 24-4.7 Zone change applications.

- (a) All zone change applications relating to land in the East Honolulu SCP area will be reviewed by the department for consistency with the general plan, the East Honolulu SCP, and any applicable special area plan.
 - (1) The director shall recommend either approval, approval with amendments, or denial. The director's written review of the application shall become part of the zone change report, which will be sent to the planning commission and the city council.
 - (2) A project master plan must be part of an EA or EIS for any project involving 25 acres or more of land. The director shall review the project master plan for its consistency with the East Honolulu SCP.
 - (3) Any development or phase of development already covered by a project master plan that has been fully reviewed under the provisions of this article does not require a new project master plan; provided that the director determines the proposed zone change is generally consistent with the existing project master plan for the affected area.
 - (4) If a final EIS has already been accepted for a development, including one accepted prior to the effective date of this ordinance, then a subsequent project master plan is not required for the development.
- (b) Projects that involve a significant zone change will be required to submit an EA to the department prior to an application for a zone change being accepted. Any development or phase of a development that has already been assessed under the National Environmental Policy Act ("NEPA"), HRS Chapter 343 (the Hawaii Environmental Policy Act or "HEPA"), Chapter 25, or the provisions of this article, and for which a FONSI has been filed or a required EIS has been accepted, is not subject to further EA or EIS requirements under this article, unless otherwise required by NEPA or HEPA.
- (c) The department shall review the EA, and based on the review of the EA, the director shall determine whether an EIS will be required or whether a FONSI will be issued.



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- (d) If an EIS is required, the EIS must be accepted by the director prior to the acceptance of a zone change application.
- (e) Zone changes are to be processed in accordance with this section; Section 5.5 of the East Honolulu SCP; Chapter 2, Article 24, Part A; and all applicable requirements under Chapter 21.

Sec. 24-4.8 Annual capital improvement program review.

Annually, the director shall work jointly with the director of budget and fiscal services and other city agencies to review all projects in the city's capital improvement program and budget for compliance and consistency with the general plan, the East Honolulu SCP and other development plans, any applicable special area plan provisions, and the appropriate functional plans. The director shall prepare a written report of findings to be submitted to the council in accordance with Charter Section 6-1503.

Sec. 24-4.9 Ten-year review.

- (a) The department shall conduct a comprehensive review of the East Honolulu SCP, adopted by reference in Section 24-4.3(b), every ten years subsequent to the effective date of this ordinance, and shall report its findings and recommended revisions, if any, to the council.
- (b) The East Honolulu SCP will be evaluated to assess the appropriateness of the plan's regional vision, policies, guidelines, and implementing actions, as well as its consistency with the general plan.
- (c) Nothing in this section should be construed as prohibiting the processing a revision to the East Honolulu SCP at any time in the event the director or the council recommends consideration of such a revision, pursuant to the Charter.

Sec. 24-4.10 Authority.

Nothing in this article shall be construed as an abridgement or delegation of the responsibility of the director, or of the inherent legislative power of the council, to review or revise the East Honolulu SCP pursuant to the Revised Charter and the above procedures.



A BILL FOR AN ORDINANCE

Sec. 24-4.11 Severability.

If any provision of this article or the application thereof to any person or property or circumstances is held invalid, such invalidity does not affect the validity of the other provisions or applications of this article that may be given effect without the invalid provision or application, and to this end the provisions of this article are declared to be severable.

Sec. 24-4.12 Conflicting provisions.

Any provision contained in this article as it pertains to land within the East Honolulu SCP area, prevails should there be any conflict with the common provisions or any other provisions under Chapter 24."

SECTION 4. Effective Date of the East Honolulu SCP. The City Clerk is hereby directed to date the East Honolulu Sustainable Communities Plan attached as Exhibit A to this ordinance with the effective date of this ordinance.

SECTION 5. In SECTION 3 of this ordinance, the Revisor of Ordinances shall, pursuant to the Revisor of Ordinances' authority under Section 1-16.3(b)(1), Revised Ordinances of Honolulu 1990, replace the phrase "effective date of this ordinance" with the actual effective date.



A BILL FOR AN ORDINANCE

SECTION 6. The ordinance takes effect upon its approval.

INTRODUCED BY:

Ann Kobayashi (br)

DATE OF INTRODUCTION:

October 29, 2020
Honolulu, Hawaii

Councilmembers

APPROVED AS TO FORM AND LEGALITY:



Deputy Corporation Counsel

APPROVED this 21st day of April, 20 21.



RICK BLANGIARDI, Mayor
City and County of Honolulu

EXHIBIT A



EAST HONOLULU

SUSTAINABLE COMMUNITIES PLAN



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PREFACE AND EXECUTIVE SUMMARY

PREFACE

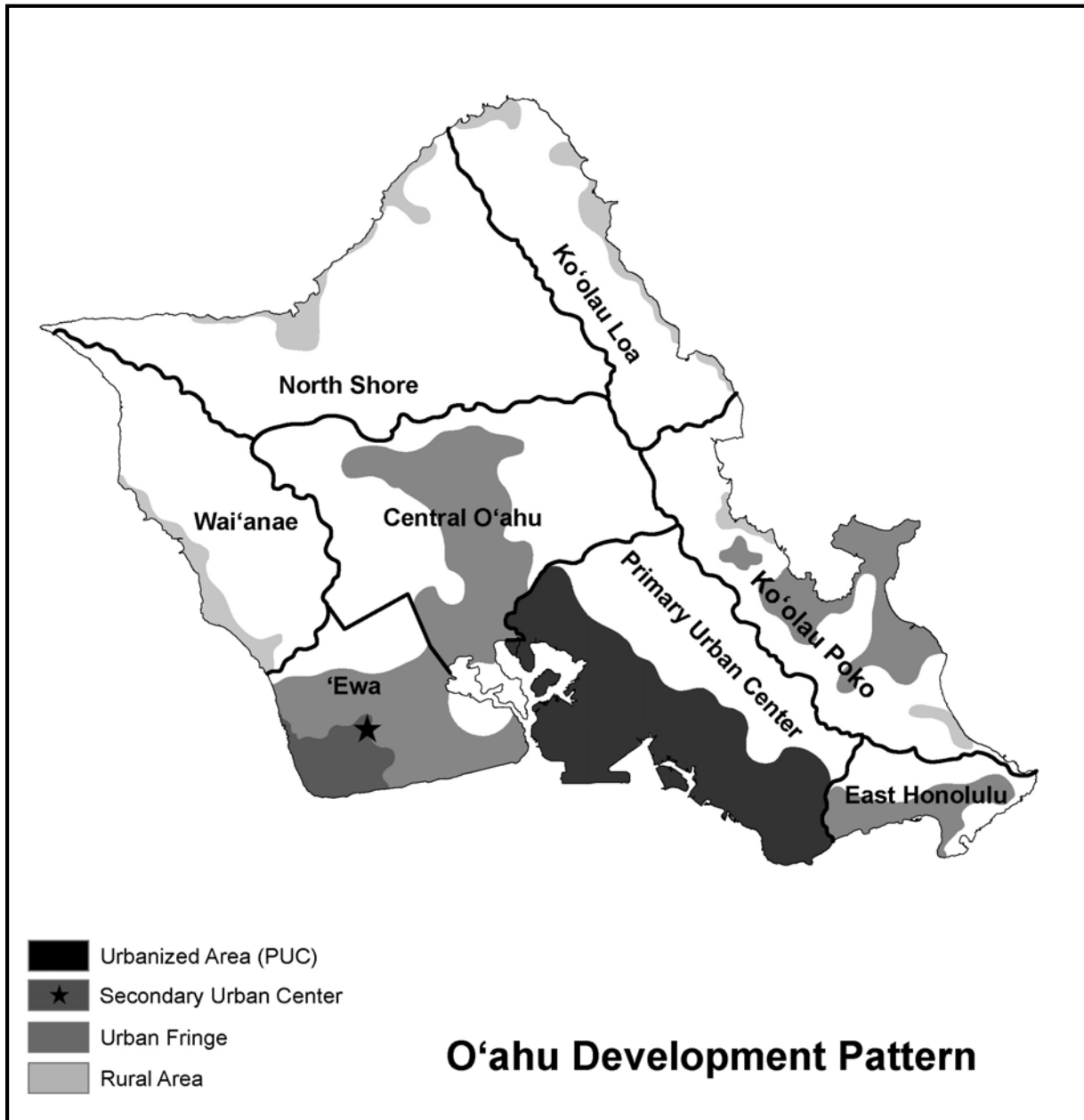
The **East Honolulu Sustainable Communities Plan** (the "**Plan**") has been prepared in accordance with the **City Charter** prescribed requirements for development plans and is to be accorded force and effect as such for all Charter and Ordinance-prescribed purposes. It is one of a set of eight community-oriented plans intended to help guide public policy, investment, and decision-making over the next 25 years. Each of the plans addresses one of eight geographic planning regions on O'ahu, responding to specific conditions and community values of each region. **Exhibit ES-1** on the following page illustrates these planning regions.

Of the eight documents, the plans for 'Ewa and the Primary Urban Center (PUC) are the areas to which the **General Plan** says population growth and development activity are to be directed over the next 25 years and beyond. The plans for these regions will continue to be titled "Development Plans" and will serve as the policy guides for the development decisions and actions required to support that growth.

Plans for the remaining six areas, including East Honolulu, which are envisioned as relatively stable regions for which public actions will focus on supporting existing populations, have been entitled "Sustainable Communities Plans" in order to properly indicate their intent.

The vision statement and implementing policies for the **Plan** are intended to sustain East Honolulu's character, lifestyle, and economic opportunities while stabilizing East Honolulu's share of O'ahu's population at approximately five percent, or 50,000 (in 2010, East Honolulu had 5.2 percent of O'ahu's population).

Exhibit ES-1: Development Plan and Sustainable Communities Plan Areas for O'ahu



THE SUSTAINABLE COMMUNITIES PLAN REVIEW PROCESS

This **Plan** is a revision of the **Plan** adopted by the City Council in 1999. The 1999 **Plan** was the second of the eight plans revised in response to a 1992 **City Charter** amendment which changed the nature of the Development Plans from relatively detailed, parcel-specific plans to conceptual, visionary plans.

As required by the adopting ordinance, the **Plan** is to be reviewed starting ten years after adoption to assess if the **Plan** vision, land use and infrastructure policies and guidelines, and implementation methods are still appropriate and consistent with the **General Plan**.

This document is the culmination of a community-based planning effort led by the Department of Planning and Permitting (DPP) which involved public meetings and workshops, interviews, focus groups, and numerous meetings since 2005.

In its final form, the **Plan** incorporates and responds to comments received from the public. The DPP performed numerous outreach events with community leaders and organizations, business and labor representatives, landowners, developers, and public and private agency staff through a variety of formats including: public workshops, workgroup meetings, and presentations and meetings with trade groups, companies, and Non-Governmental Organizations (NGOs). The DPP also conducted phone interviews and in-person meetings with community leaders, researchers, and residents.

The **East Honolulu Sustainable Communities Plan Technical Report** (the "**Technical Report**") provides relatively detailed documentation of the review process, comments and suggestions received, and research on significant land use and infrastructure issues. The **Technical Report** also includes proposed revisions to the **Plan** and improvements to its implementation. Like this **Plan**, the **Technical Report** is available on the DPP website.

A SUSTAINABLE FUTURE FOR O‘AHU

There has been a recent surge in widespread community discussions, actions and laws adopted to address sustainability. In 2005, the State Legislature convened a statewide group to draft a **Hawai‘i 2050 Sustainability Plan**, whose primary purpose is to provide policy recommendations for creating a sustainable Hawai‘i. In 2007, greenhouse gas emissions goals for 2020 were enacted by Act 234 (2007). There was a mandate in 2015 that 100 percent of Hawai‘i’s energy generated by 2045 must come from renewable resources (Act 97). In 2016, the City and County conducted a review of its building codes to ensure that new structures would be able to meet the new challenges presented by climate change and sea level rise. In 2017, the Hawai‘i Climate Change Mitigation and Adaptation Commission published its findings and recommendations to the State Legislature in the **Sea Level Rise Vulnerability and Adaptation Report**.

Public service announcements dealing with conserving water and electricity abound. The concept of buildings that are designed, built and occupied with environmental considerations at the forefront largely did not exist when the Development Plans and Sustainable Communities Plans were first adopted. This setting raises the question of the role of the Development Plans and Sustainable Communities Plans. Are they the City’s version of a sustainability plan?

The answer is that they are the land development portion of a larger blueprint for sustainability. As discussed below, the **General Plan** sets long-term goals for the City and County of Honolulu, across 11 major elements. Perhaps it’s most substantive chapter deals with population, and hence land development distribution. **The General Plan** sets the growth management strategy for O‘ahu. The Development Plans and Sustainable Communities Plans provide more detail on this land management strategy, assuring that how we use the land now, and in the future, responds to the three major elements of a Sustainable Place: economic health, social equity, and environmental protection.

Since 1977, the City’s policy, as adopted by the City Council in the O‘ahu **General Plan**, has been to reduce development pressures within the rural areas of O‘ahu by fully developing downtown Honolulu from Pearl City to Kāhala, by building O‘ahu’s Second

City in 'Ewa, and by developing surrounding suburban “urban fringe” areas in 'Ewa and Central O'ahu. There has been substantial investment in roadways, schools, sewers, water systems, and other infrastructure to support this pattern of development.

The most recent projections show that O'ahu will need 77,700 new housing units to meet expected population growth between 2010 and 2040. The **General Plan**, and the Development Plans and Sustainable Communities Plans adopted by the City Council to implement the **General Plan**, provide capacity for most new homes to be built either in the Primary Urban Center, 'Ewa, or Central O'ahu.

The issues addressed either directly or indirectly by these regional plans certainly overlap with other planning responsibilities of other departments, such as water delivery and consumption, wastewater services, community resilience and hazard mitigation, crime reduction, increasing public health, developing responsive transportation systems, and recreation facilities. Collectively, these efforts comprise the strategy of developing a sustainable future for O'ahu.

INTEGRATING PRINCIPLES OF SUSTAINABILITY INTO DECISION-MAKING PROCESSES

A community that can successfully manage change will flourish and prosper in the future. For this **Plan**, this means ensuring that planned growth and development respects and adheres to the following principles of sustainability that are intended to promote the long-term health of the land and its people, and its community resources for current and future generations:

- Adopt the concept of ahupua'a in land use and natural resource management;
- Protect lands designated for recreation, agriculture, physical and environmental resources, and where appropriate, open spaces and view planes;
- Use resources so they are not depleted, permanently damaged or destroyed;

- Plan, develop, and utilize construction technologies that minimize negative environmental impacts and promote restoration of natural processes;
- Adapt infrastructure and programs to be more accessible and age-friendly based on the recommendations in the Honolulu Age-Friendly City Action Plan;
- Respect the cultural, social and physical resources that shape and reinforce residents' sense of community and quality of life;
- Guide the process of change. Strive to make decisions based on an understanding of the cumulative effects such decisions will have on the land and community resources;
- Improve community resilience to natural and man-made hazards, including climate change and sea level rise, in accordance with the **O'ahu Resilience Strategy**;
- Balance economic prosperity, social and community well-being, and environmental stewardship; and
- Encourage greater collaboration across agencies and with the community to manage and protect resources.

THE HONOLULU LAND USE PLANNING AND MANAGEMENT SYSTEM

The City and County of Honolulu guides and directs O'ahu land use and development through a three-tier system of objectives, policies and guidelines, and regulations.

- The **General Plan** forms the first tier of this system. First adopted by resolution in 1977, the **General Plan** is a relatively brief document, consisting primarily of one-sentence statements of objectives and policies. It has been amended several times, but the basic objectives and policies set forth in the 1977 plan remain intact.
- The second tier of the system is formed by the **Development Plans and Sustainable Communities Plans**, which are adopted and revised by ordinance. These plans address eight geographic regions of the island, including the Primary Urban Center, 'Ewa, Central O'ahu, Wai'anae, North Shore, Ko'olau Loa, Ko'olau Poko, and East Honolulu.

- The third tier of the system is composed of implementing ordinances and regulations, including the **Land Use Ordinance** (Honolulu's zoning code), the **Subdivision Rules and Regulations**, and the City's Capital Improvement Program. Mandated by the **City Charter**, these ordinances and regulations constitute the principal means for implementing the City's plans. These ordinances and regulations are required to be consistent with the **General Plan**, the Development Plans and Sustainable Communities Plans, and each other.

In addition, the Development Plans and Sustainable Communities Plans are supplemented by two planning mechanisms:

- Functional plans, like the **O'ahu Regional Transportation Plan** or the **O'ahu Water Management Plan**, or City departmental plans, which are required by **City Charter** for solid waste or parks and recreation, some of which are mandated by state or federal regulations, provide long-range guidance for the development of public facilities and infrastructure; and
- **Special Area Plans** give specific guidance for neighborhoods, communities or specialized resource areas. There are currently no **Special Area Plans** in East Honolulu.

AUTHORITY OF THE DEVELOPMENT AND SUSTAINABLE COMMUNITIES PLANS

The authority of the Development Plans and Sustainable Communities Plans is derived from the **City Charter**, which mandates preparation of a **General Plan**, Development Plans, and Sustainable Communities Plans to guide the development and improvement of the City. The **City Charter** states the purpose of these plans are:

“to recognize and anticipate the major problems and opportunities concerning the social, economic and environmental needs and future development of the city and to set forth a desired direction and patterns of future growth and development.” (Section 6-1507)

Together, Development Plans and Sustainable Communities Plans provide policies to guide land use and budgetary actions of the City and to evaluate progress toward the goals and objectives put forth in the **General Plan**.

The **City Charter** provides that "public improvement projects and subdivision and zoning ordinances should be consistent with the development plan for that area." Although the Development Plans and Sustainable Communities Plans are not themselves regulatory, they provide guidance that decision makers and administrators should follow in approving project development and in revising rules and regulations and standard policies. The plans are policy tools and are to be used, in conjunction with the programs and budgets of the City, to accomplish the objectives of the City as guides for decisions.

Consistent with the **City Charter**'s description of Development Plans and Sustainable Communities Plans conceptual schemes and policy guides, the language, maps, and illustrations of the plans shall serve as a policy guide for regulations which will implement the plans.

The Development Plans and Sustainable Communities Plans are also intended to aid decisions made in the public and private sector by clearly indicating what the City's development priorities are, where development is appropriate, and what kinds of development are appropriate in each location.

The 1992 **City Charter** amendments established that the purpose of the Development Plans and Sustainable Community Plans is to be conceptual plans whose purposes are to provide:

- "priorities ... (for the) coordination of major development activities;" and
- sufficient description of the "desired urban character and the significant natural, scenic and cultural resources ... to serve as a policy guide for more detailed zoning maps and regulations and public and private sector investment decisions."

The revised **Plan** presented in this document conforms to that mandate.

EXECUTIVE SUMMARY

This **Plan** is organized in five chapters and an appendix, as follows:

- Chapter 1: East Honolulu’s Role in O’ahu’s Development Pattern defines the region’s role and identity within the overall framework of islandwide planning and land use management;
- Chapter 2: The Vision for East Honolulu’s Future summarizes the community-based vision for the future of the region, discusses key elements of that vision, and presents illustrative maps and tables;
- Chapter 3: Land Use Policies and Guidelines provides the land use policies needed to implement the vision for East Honolulu described in Chapter 2;
- Chapter 4: Public Facilities and Infrastructure Policies and Guidelines provides the infrastructure policies needed to implement the vision for East Honolulu described in Chapter 2 and Chapter 3;
- Chapter 5: Implementation identifies the means through which the policies will be applied, including zone changes, and infrastructure budgeting and development outlined by the Plan; and
- Appendix A includes:
 - Three conceptual maps (Open Space, Urban Land Use, and Public Facilities) which illustrate the vision and policies of the Plan; and
 - A glossary of terms used in the **Plan** and on those maps.

The following summary provides an overview of the vision, land use and infrastructure policies of the **Plan** and the means of implementation.

EAST HONOLULU’S ROLE IN O’AHU’S DEVELOPMENT PATTERN

- Limited development and population growth so that East Honolulu’s share of O’ahu’s population remains stable at approximately five percent, or 50,000;

- Maintenance as a predominantly residential area characterized by generally low-rise, low-density development; and,
- Moderate growth of business centers, retail and service commercial uses, and satellite institutional and public uses geared to serving the needs of households.

THE VISION TO 2040

East Honolulu is a safe, clean community with unique landscapes and natural and cultural resources. Each residential neighborhood has its own special quality and sense of place. The suburban development patterns of the 20th century have been modified to provide for more walkable streets and local convenience stores. There is a full range of commercial, medical and legal services to meet the needs of the elderly community members. Agricultural areas have been preserved and are producing food for the East Honolulu community. Community organizations partner with government agencies and develop plans and strategies to adapt and respond to the challenges of climate change, sea level rise, flooding, severe coastal storms, inundation of coastal areas and Kalaniana'ole Highway, and wildfires. Best management practices have been implemented to retain stormwater runoff, replenish valuable ground water reserves and improve the quality of nearshore ocean waters.

- Population remains stable at approximately 50,000, or five percent of O'ahu's population, through 2035 and 2040;
- An estimated 24 percent of O'ahu residents will be 65 years and older by 2040 with approximately 37 percent of East Honolulu residents that will be 65 years and older, the highest on O'ahu; and,
- Job stabilization and slight growth from 10,240 civilian jobs in 2010 to 10,400 jobs.

ELEMENTS OF THE VISION

- Protect Community Resources by:
 - Protecting scenic views, particularly the Kaiwi Scenic Shoreline;
 - Providing and improving access to shoreline and mountain recreational areas;
 - Creating more complete streets that are walkable, facilitate ease of use for pedestrians, cyclists, and other alternative mode uses that adhere to the following key principles:
 - Safety;
 - Context sensitive solutions;
 - Accessibility and mobility for all;
 - Use and comfort of all users;
 - Consistency of design;
 - Energy efficiency;
 - Health; and
 - Green infrastructure.
 - Promoting stewardship of natural and cultural resources;
 - Implementing the goals and actions of the **O‘ahu Resilience Strategy**.
 - Preserving significant historic, cultural, and archaeological features;
 - Protecting and preserving existing agricultural areas; and
 - Containing all urban development within the existing Community Growth Boundary.
- Adapt to Changing Community Needs by:
 - Improving and replacing the region's aging infrastructure, as needed;
 - Preparing the community and infrastructure for anticipated impacts from natural disasters and climate change by providing community-based training, and creating or strengthening existing shelters capable of withstanding Category 3 hurricanes;
 - Adapting the housing supply, public spaces, and street orientation to meet the expected aging of the population; and

- Focusing commercial centers on serving the region's neighborhoods.

IMPLEMENTING POLICIES AND GUIDELINES

Chapter 5 discusses the various measures that support implementation of this **Plan**, including the regulatory mechanisms, physical improvements, and other actions that are needed to realize the **Plan**'s vision. **Section 5.7** presents an Implementation Matrix to help organize and facilitate plan implementation. The Implementation Matrix, which is based on the policies and guidelines presented in Chapters 3 and 4, identifies the specific actions, corresponding plans and/or codes, and public and private entities responsible for implementation.

Land use development policies and implementing guidelines are provided for:

- Open space preservation, natural resources, and scenic views;
- Recreational access to shoreline and mountain areas;
- Island-based and community-based parks and recreation;
- Historic and cultural resources;
- Residential communities and commercial redevelopment; and
- Disaster Preparedness.

Infrastructure policies and implementing guidelines are provided for:

- Transportation systems;
- Water allocation and systems development;
- Wastewater treatment;
- Electrical and communications systems;
- Solid waste handling and disposal;
- Drainage systems;

- School facilities; and
- Civic and public safety facilities.

The means for implementing the **Plan** are provided through:

- Focusing residential and non-residential development to areas within the Community Growth Boundary;
- Guiding development within areas of critical concern with Special Area Plans, as needed;
- Incorporating the **Plan** vision and policies in the review of zone changes and other land use approvals and in establishing conditions for these land use approvals which will help ensure the vision and policies are implemented;
- Incorporating the **Plan** vision and policies in the review of projects to be added to the Public Infrastructure Map and funded through the Capital Improvement Program budget; and
- Conducting a periodic evaluative review of the **Plan** vision, policies and implementation.

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1. EAST HONOLULU'S ROLE IN O'AHU'S DEVELOPMENT PATTERN

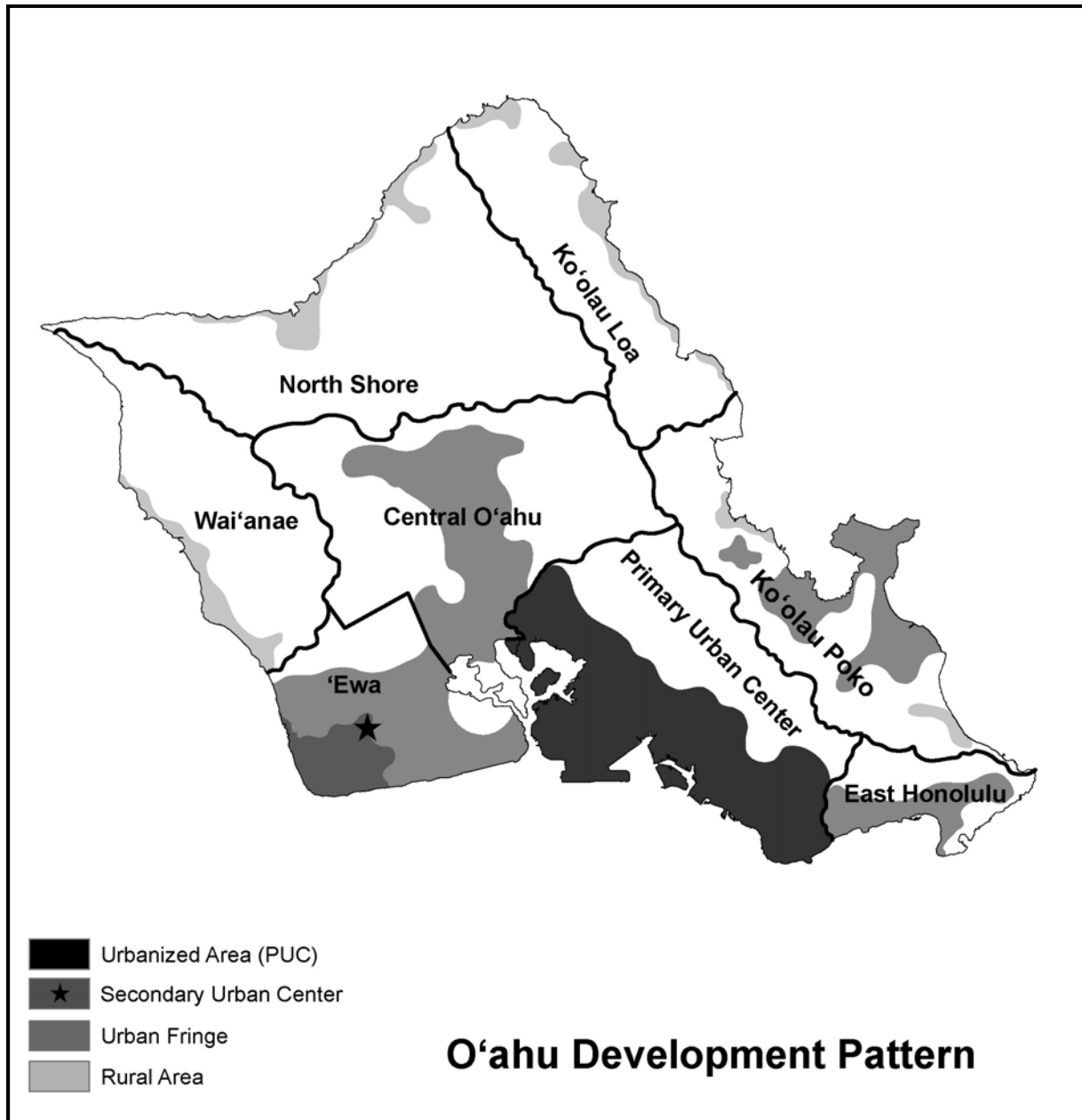
The East Honolulu region spans from Makapu'u Point in the east to Wai'alaie Nui stream and gulch in the west and is further defined by the peaks of the Ko'olau Range, the shoreline, and Maunalua Bay. The **General Plan** of the City and County of Honolulu designates the **East Honolulu Sustainable Communities Plan** (the "**Plan**") area, shown in **Exhibit 1-1**, as an urban fringe area which is to remain predominantly residential communities characterized by generally low-rise, low-density development. **General Plan** policies call for sustaining those development and environmental characteristics which make East Honolulu a desirable place to live, and maintaining East Honolulu's existing population at around 50,000, which is within the **General Plan**'s allotment of five percent of O'ahu's projected population in 2040.

The present land use pattern and suburban character of East Honolulu began to take shape with the inauguration of the master planned community of Hawai'i Kai (Maunalua) in 1961. Prior to that time, most of the region was regarded as too far removed from Honolulu to be suitable for large-scale residential development.

Building on the momentum that development in Hawai'i Kai (Maunalua) was creating in the 1960s and 1970s, residential development spread quickly to the valleys of Kamilo Iki and Kalama and to Mariners Ridge. With the development of newer communities at Kamehame Ridge, Hawai'i Loa Ridge, and portions of Wai'alaie Iki, most of the ridges and valleys in East Honolulu from Kāhala to Kalama Valley have been developed for residential use.

In the past three decades, however, the rate of urban growth in East Honolulu has slowed as the availability of suitable development sites has diminished.

Exhibit 1-1: Development Plan and Sustainable Communities Plan Areas for O'ahu



This update reaffirms East Honolulu's role in O'ahu's development pattern as intended in the **General Plan** policies by establishing the following guidelines for future land use and development in the **Plan**:

- Limit the potential for substantial new housing in the region so that significant residential growth is directed instead to the Primary Urban Center, the 'Ewa Development Plan area, and the Central O'ahu Sustainable Communities Plan area;
- Revitalize existing commercial centers while limiting the expansion of commercial and other economic activities in the region to promote the development and growth of employment in the Primary Urban Center, Central O'ahu, and 'Ewa while reorienting existing commercial centers to better serve their neighborhood community needs;
- Maintain the predominantly low-rise, low-density form of residential development in the neighborhoods;
- Redesign and repurpose infrastructure and programs to become a more age-friendly community with a focus on senior housing and complete streets;
- Avoid flood damage, slippage and other problems associated with development of steep slopes and sites with expansive soils;
- Create resilient, disaster-ready communities that are strategically and physically prepared for disasters and environmental stressors;
 - Improve evacuation area designations and procedures;
 - Increase cooperation with neighborhood emergency preparedness groups;
 - Create a City-community liaison to leverage non-profit and volunteer assets;
 - Seek to harden emergency shelters to be capable to minimally withstand winds from a Category 3 hurricane;
- Address, minimize risks from, and adapt to the impacts of climate change and sea level rise;

- Integrate climate change adaptation into the planning, design, and construction of all significant improvements to and development of the built environment;
- Prepare for the anticipated impacts of sea level rise on existing communities and facilities through remediation, adaptation, and other measures;
- Utilize the design capacity of Kalanianaʻole Highway, the region’s key component of transportation, as a means to manage urban growth;
- Preserve scenic views of ridges, upper valley slopes, and shoreline areas along Kalanianaʻole Highway, popular hiking trails, and the Kaiwi Scenic Shoreline;
- Promote access to mountain and shoreline resources for recreational purposes and traditional hunting, fishing, gathering, hiking, religious, and cultural practices; and
- Adopt and implement the ahupuaʻa concept to improve downstream water quality through improved upland management and the implementation of low-impact development (LID) standards when properties or infrastructure are redeveloped.

2. THE VISION FOR EAST HONOLULU'S FUTURE

This chapter presents the vision for East Honolulu's future, discusses the key elements of the vision, and presents illustrative maps and tables.

This vision for East Honolulu has two horizons. The first horizon extends from the present to the year 2040. The 2040 horizon is used to project likely socio-economic change in East Honolulu and to assess the infrastructure and public facility needs that will have to be met over that period. The second horizon is used for the purposes of illustrating long-term, gradual trends and extends to 2050 and beyond.

2.1 VISION STATEMENT

East Honolulu is a safe, clean community with unique landscapes and natural and cultural resources. Each residential neighborhood has its own special quality and sense of place. The suburban development patterns of the 20th century have been modified to provide for more walkable streets and local convenience stores. There is a full range of commercial, medical and legal services to meet the needs of the elderly community members. Agricultural areas have been preserved and are producing food for the East Honolulu community. Community organizations partner with government agencies and develop plans and strategies to adapt and respond to the challenges of climate change, sea level rise, flooding, severe coastal storms, inundation of coastal areas and Kalaniana'ole Highway, and wildfires. Best management practices have been implemented to conserve and recover natural and cultural areas, retain stormwater runoff, replenish valuable ground water reserves, and improve the quality of nearshore ocean waters.

The Vision to 2040 – Through 2035 and 2040, East Honolulu is projected to experience population stabilization. According to projections by the Department of Planning and Permitting (DPP), East Honolulu's population is expected to remain stable at approximately 50,000, or roughly five percent of O'ahu's total population, which is consistent with the **General Plan**. The region is expected to experience a growing elderly population and an associated decrease in average household size.

Due to the expected population stabilization, there is not anticipated to be significant demand for additional commercial development or major investments in infrastructure and public facility capacity in East Honolulu. As a consequence, job growth in East Honolulu is expected to be minimal, remaining close to 2010 levels at approximately 10,400 jobs.

To forestall anticipated impacts of climate change, East Honolulu must begin taking active steps to improve resiliency to hurricanes, coastal and inland erosion, inundation, and flooding.

Beyond 2040 – There will be little residential development capacity available in East Honolulu beyond 2040. Capacity will be limited to infill and redevelopment opportunities. After 2040, the impacts of climate change will become more evident, requiring East Honolulu to actively manage adaptation and improve resiliency to hurricane winds, coastal and inland erosion, inundation, flooding, and impacts to watersheds.

As discussed below, the vision for East Honolulu focuses on the long-term protection of community resources and adapting to changing community needs.

2.1.1 PROTECT COMMUNITY RESOURCES

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

- **Protect natural and Scenic Resources** – Significant scenic views of ridges, upper valley slopes, and shoreline areas along Kalanianaʻole Highway, popular hiking trails, and the Kaiwi Scenic Shoreline, mauka to makai, are protected from residential and commercial development and degradation by vehicle operations. Furthermore, access to shoreline areas and mountainous regions are improved and provided for all to use responsibly. Urban uses are contained within the Community Growth Boundary protecting agricultural lands in Hawai'i Kai (Maunaloa),

undeveloped ridges and valley walls throughout East Honolulu, and important wildlife habitat areas. Key open space areas within the Community Growth Boundary are retained to provide active and passive recreation and community gathering places. Maunalua Bay continues to serve as one of East Honolulu's primary viewsheds, recreational assets, and important habitats for various native aquatic species.

- **Preserve Cultural and Historical Resources** – Visual landmarks and significant views are retained, and significant historic, cultural, and archaeological features from East Honolulu's past are preserved.

2.1.2 ADAPT TO CHANGING COMMUNITY NEEDS

The Plan provides a vision for the gradual physical transformation of East Honolulu to address changing demographics and aging of housing stock and infrastructure.

- **Address Changing Demographics** – Different housing types and services are developed to meet the needs of East Honolulu's growing elderly population, "empty nesters" who want to move out of single-family dwellings, and younger families who want to move into these dwellings. In addition, the need to provide for the increasing number of "multi-generation" households, as well as smaller, more affordable housing types, such as accessory dwelling units (ADUs) is being addressed.
- **Address Aging Housing and Infrastructure** – The region's housing stock and infrastructure systems are aging. Incrementally, existing structures and facilities are modified, expanded, or replaced due to obsolescence. As changes are made, new structures and facilities are designed to adapt to and mitigate the impacts of climate change. New structures and facilities are also designed to respond to the needs for ecological restoration through low-impact development standards, increased energy efficiency, and potable water conservation.

2.2 KEY ELEMENTS OF THE VISION

The vision for East Honolulu’s future will be implemented through the following key elements:

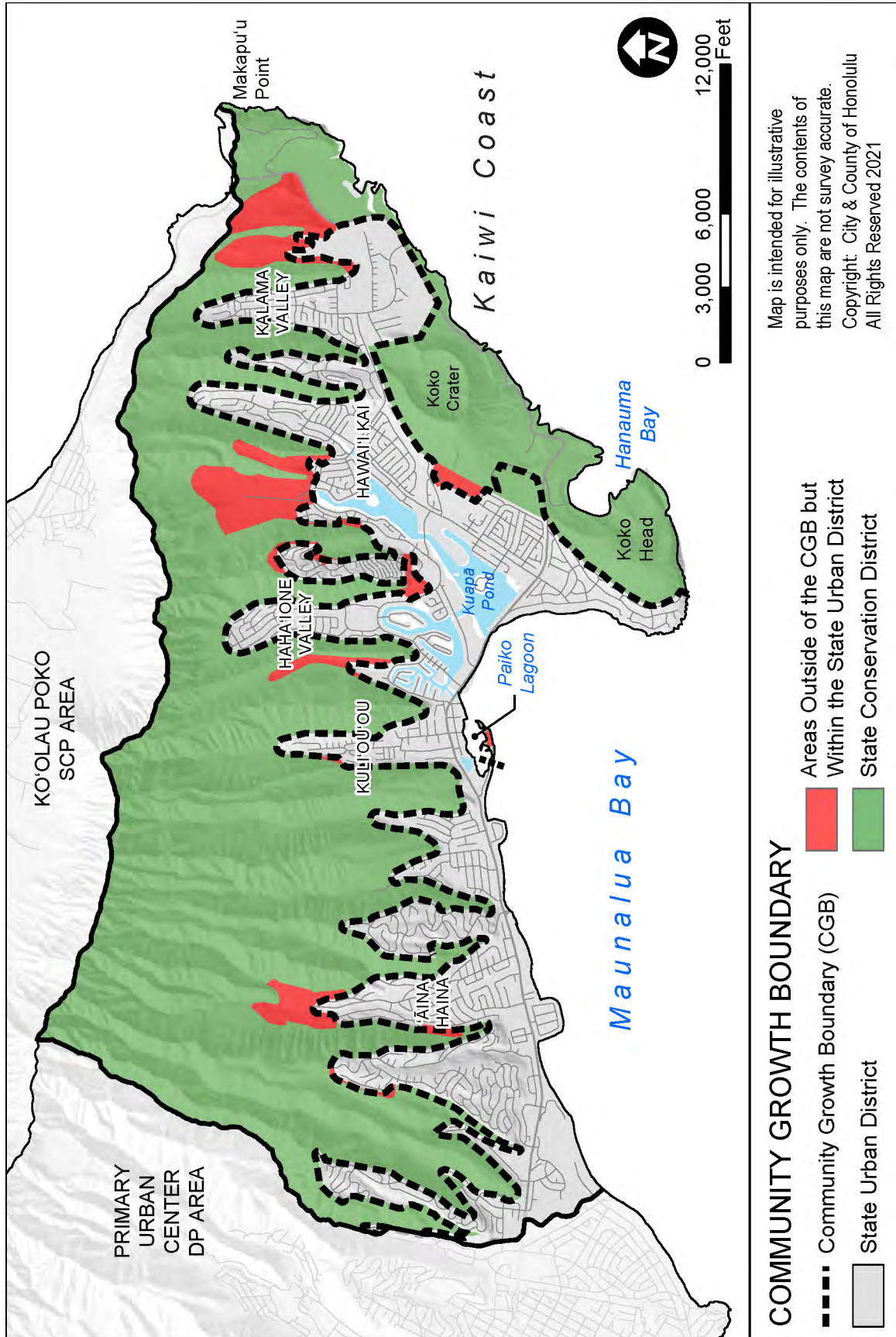
- 2.2.1 Community Growth Boundary, and Agricultural and Preservation Lands;
- 2.2.2 Adoption of the Concept of Ahupua‘a in Land Use and Natural Resource Management;
- 2.2.3 Kaiwi Scenic Shoreline;
- 2.2.4 Ridge-and-Valley Neighborhoods;
- 2.2.5 Mauka-Makai Recreational Access;
- 2.2.6 Protection and Preservation of Natural Areas;
- 2.2.7 Housing Stability and Age-Friendly Communities;
- 2.2.8 Commercial Centers Refocused; and
- 2.2.9 Climate Change Adaptation.

2.2.1 COMMUNITY GROWTH BOUNDARY, AND AGRICULTURAL AND PRESERVATION LANDS

The Community Growth Boundary (previously Urban Community Boundary) was established to guide development and preserve open space and agricultural areas in East Honolulu. Lands outside the Community Growth Boundary are identified as either Agricultural Lands or Preservation Lands.

The Community Growth Boundary will remain fixed through the 2040 planning horizon and is intended to help guide future development, redevelopment, and resource management within existing zoning designations or future zoning designations. Other standards or guidelines may be developed in response to established entitlements, or in accordance with pertinent policy and guidelines described in this **Plan** (see **Exhibit 2-1** and conceptual maps in **Appendix A**).

Exhibit 2-1: Community Growth Boundary



Map is intended for illustrative purposes only. The contents of this map are not survey accurate.
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Areas Outside of the CGB but Within the State Urban District
 State Conservation District

COMMUNITY GROWTH BOUNDARY

- Community Growth Boundary (CGB)
- State Urban District

Areas within the Community Growth Boundary characteristically include extensive tracts of residential or commercial development clearly distinguishable from undeveloped or more natural portions of the region's environment. The Community Growth Boundary may include areas designated park or preservation, or areas with development-related hazards such as steep slopes or unstable soils. These areas, while inside the boundary, will not be developed with uses unsuitable to their designations or in ways that may tend to exacerbate hazards.

The Community Growth Boundary is intended to confine most new development to infill sites that are within or adjacent to existing urbanized areas. Existing homes and property adjacent to new development on infill sites should be protected from adverse effects of the new development. A more compact form of development will result in relatively lower site development costs, more efficient utilization of existing urban infrastructure systems, and reduced reliance on the automobile by making transit ridership, walking, and bicycling more feasible and attractive as modes of travel.

The Community Growth Boundary is generally coterminous with the State Urban District boundary, but excludes the following areas of the State Urban District listed below and shown in **Exhibit 2-1**. These exclusions highlight the need for City planners and community members to guard against State decisions for its State Urban District that may negatively impact this and other Sustainable Communities Plans.

- 'Āina Haina Nature Preserve;
- Areas committed to agricultural use by long-term leases (i.e., the farm lot subdivisions in Kamilo Nui Valley and adjacent to Kaiser High School);
- Undeveloped areas in Kamilo Nui Valley which are adjacent to existing agricultural uses but zoned as preservation;
- Large tracts of undeveloped lands at higher elevations that are prominently visible from the coastal highway or other public areas and are desirable natural scenic features;
- Mauka lands along the Kaiwi coast are zoned as preservation and located outside of the Community Growth Boundary to protect open space;

- Significant undeveloped Urban District land areas identified as suspect areas for land movement by the U.S. Geological Survey; and,
- Keawāwa Marsh and Wetlands.

The six main objectives of the Community Growth Boundary are to:

- **Avoid Development of Hazardous Areas** – Undeveloped lands on the fringes of urbanized areas which are characterized by steep slopes and/or unstable soils are placed outside the Community Growth Boundary to prevent potential property damage and threats to public safety. These physical constraints also increase site development costs, which are passed on to housing consumers.
- **Support General Plan Policy** – Consistent with **General Plan** policy Housing Objective B, Policy 1, which aims to encourage the State government to coordinate its urban-area designations with the developmental policies of the City and County, the Community Growth Boundary indicates an appropriate adjustment to the State Land Use Urban District boundary.
- **Support Agricultural Use** – Two areas in Hawai'i Kai (Maunalua) are placed outside the Community Growth Boundary to protect agricultural lots with long-term leases. Preventing the encroachment of suburban residential development supports active use of these lots for agricultural purposes.
- **Provide Sufficient Capacity for Projected Population Stability** – Excluding the amount of land reserved for parks and open space, there is sufficient capacity within the Community Growth Boundary to accommodate anticipated residential and commercial development to 2040 (see **Table 2-1**). About 300 new housing units can be identified as probable or possible within the Community Growth Boundary under existing zoning. This translates to a total potential population in East Honolulu consistent with the DPP's projected population for 2035-2040 of about 50,000 residents (or approximately five percent of O'ahu's population) to counteract shrinking household sizes.

Table 2-1: Potential Housing within CGB on Lands Zoned for Residential Use

| Project Areas | Probable Units¹ | Possible Units² | Description |
|--------------------------|-----------------------------------|-----------------------------------|--|
| Wai‘alae Nui | 14 | | Ord. 96-69 limits site to 14 units |
| Wai‘alae Iki | 9 | | Owner-build lots |
| ‘Āina Haina | 8 | | Lower ‘Āina Haina (8) |
| Hawai‘i Loa Ridge | 26 | | Owner-build lots |
| Niu Valley | | 30 | 3 large adjacent lots with 6 existing units |
| Kamilo Iki Valley | | 16 | Large vacant lot |
| Hawai‘i Kai (Maunaloa) | 28 | | Remaining units from Ord. 99-54 & Ord. 00-70 |
| Nā Pali Hāweo (Kamehame) | 16 | | Owner-build lots |
| Lower Kalama Valley | 21 | | 2015/CL-5 (14) & 499 Kealahou (7) |
| Infill Vacant Lots | 50 | | Vacant standard-size lots within the Plan area |
| ‘Ohana or ADU units | 50 | | Assumes 2-3 units per year from 2020-2040 |
| Total | 222 | 54 | |
| Cumulative Total | 276 units | | |

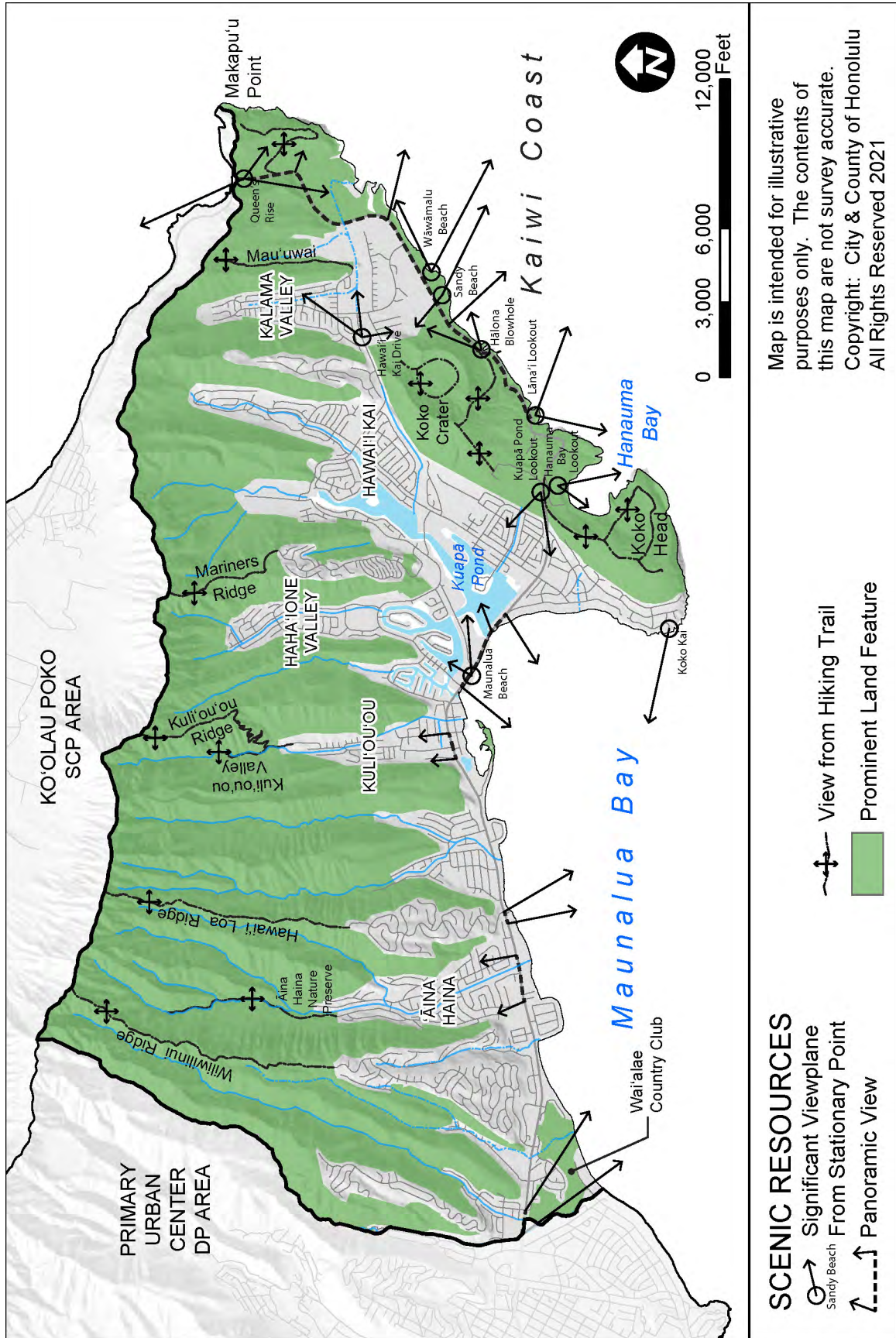
¹ Includes unbuilt units with approved building permits, units approved as part of a larger development or cluster project, vacant standard-size lots within approved subdivisions, and ‘Ohana/ADU units at 2-3 per year.

² Estimates based on lot size built to underlying zoning density after accounting for steep lands and clustering of units.

- Promote an Efficient Pattern of Urban Development** – The Community Growth Boundary confines most new development to infill sites that are adjacent to existing urbanized areas on relatively level terrain. A more compact form of development on the coastal plain will result in relatively lower site development costs, more efficient utilization of existing urban infrastructure systems, and reduced reliance on the automobile by making transit ridership, walking, and bicycling more feasible and attractive as modes of travel.

- **Protect Natural and Scenic Resources** – By confining the potential area for new urban development through the Community Growth Boundary, significant natural landscape features can be protected from physical changes that will permanently impair their scenic value. These scenic landscape elements include the ridges and valley walls that are visible from Kalanianaʻole Highway, particularly in the area between Koko Head and Makapuʻu Head, and the unaltered shoreline (See **Exhibit 2-2**).

Exhibit 2-2: Scenic Resources



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SCENIC RESOURCES

- Significant Viewplane From Stationary Point
- Panoramic View
- View from Hiking Trail
- Prominent Land Feature

2.2.1.1 Agricultural Lands

Agricultural lands are identified to protect the region's economic and open space values. The primary uses for all lands designated as agricultural lands are open space, agriculture uses, or uses directly supportive of agriculture and farming for food sustainability.

Two areas in Hawai'i Kai (Maunalua) are identified as agricultural lands: the farm lots in Kamilo Nui Valley and lands adjacent to Kaiser High School. See **Appendix A-2**. Both agricultural areas are in active use and have long-term leases. In addition, undeveloped areas in Kamilo Nui Valley that are adjacent to existing agricultural uses are placed within the Agriculture Lands. Preventing the encroachment of urban fringe residential development within the existing agricultural uses supports active use of these lots for agricultural purposes while preventing adverse impacts associated with residential development including an increase in stormwater, sediment, and toxic pollutant runoff from the addition of impermeable surfaces.

2.2.1.2 Preservation Lands

Preservation lands are identified to protect undeveloped lands which form an important part of the region's open space fabric but that are not valued primarily for agricultural uses. Such lands include important native (i.e., indigenous and endemic) Hawaiian plant, invertebrate and wildlife habitat, archaeological or historic sites, significant landforms or landscapes over which significant views are visible, recreational areas, agricultural areas, areas important to the health of the watershed, and areas hazardous to potential development.

Preservation lands generally include undeveloped lands that:

- Are necessary for protection of watersheds, water resources, and water supplies;
- Are necessary for the conservation, preservation, and enhancement of sites with scenic, recreational, historic, cultural, archaeological, or ecological significance;

- Are necessary for providing and preserving parklands, wilderness, and beach reserves, and for conserving natural ecosystems of indigenous and endemic plants, invertebrates, fish and wildlife, for forestry, and other activities related to these uses;
- Are located at an elevation below the maximum inland line of the zone of wave action, and marine waters, fishponds, and tide pools unless otherwise designated;
- Are generally characterized by topography, soils, climate or other related environmental factors that may not be normally adaptable or presently needed for urban or agriculture use;
- Have general slopes of 20 percent or more and which provide for open space amenities and/or scenic values;
- Are susceptible to floods and soil erosion, are undergoing major erosion damage and requiring corrective attention, or are necessary to the protection of the health, safety and welfare of the public by reason of soil instability or the land's susceptibility to landslides and/or inundation by tsunami and flooding;
- Are used for State parks outside the Community Growth Boundary or City parks within the Community Growth Boundary;
- Are suitable for growing commercial timber, grazing, hunting, and recreation uses, including facilities accessory to such uses when such facilities are compatible with the natural and physical environment;
- Have historical significance. Preserve and enhance significant historic and prehistoric features including Native Hawaiian cultural and archaeological sites especially:
 - 'Ihi'ihilauākea Preserve;
 - Makani 'olu Shelter;
 - Hāwea Heiau Complex; and
 - Pahua Heiau.
- Retain visual landmarks and significant vistas including:
 - The Kaiwi coast;

- Views of Maunalua Bay and other shoreline areas from Kalanianaʻole Highway; and
- Views from ridge, valley, and shoreline hiking trails.
- Limit building heights to low-rise and mid-rise structures to protect panoramic views and the existing character of the built environment; and,
- Limit vehicle operations which could cause degradation to the dunes, vegetation, and beach at Wāwāmalu Beach.

2.2.2 AHUPUAʻA IN LAND USE AND NATURAL RESOURCE MANAGEMENT

Prior to Western contact, Hawaiians managed the environment and organized their society through a land division system known as ahupuaʻa. Ahupuaʻa boundaries are similar to those of watersheds. Pukui and Elbert provide the following definition of ahupuaʻa:

Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (puaʻa).¹

The ahupuaʻa has also been described as follows:

A principle very largely obtaining in these divisions of territory was that a land should run from the sea to the mountains, thus affording to the chief and his people a fishery residence at the warm seaside, together with the products of the high lands, such as fuel, canoe timber, mountain birds, and the right of way to the same, and all the varied products of the intermediate land as might be suitable to the soil and climate of the different altitudes from sea soil to mountainside or top.²

The ahupuaʻa system recognizes the interconnected relationship between land-based and marine-based natural resources, focusing on streams as the connecting element

¹ Pukui, M.K. and Elbert, S.H. **Hawaiian Dictionary**, 1986.

² Ibid.

between ridge and reef, especially in an island environment. The ahupua'a concept is still a useful concept for managing the natural environment and fostering desirable community development, adapted to the context of today's community needs and technology. It also serves as a logical foundation for sub-planning areas.

East Honolulu contains and is comprised of two larger ahupua'a: the Waimānalo Ahupua'a, spanning from Waimānalo to Kuli'ou'ou in the moku of Ko'olau Poko, and the Waikīkī Ahupua'a, spanning from Niu to Mānoa and Ala Moana in the moku of Kona.

East Honolulu previously contained several fishponds including Wailupe, Kānewai, and Loko I'a o Maunalua, one of the largest inland fishponds in Hawai'i. In addition to aquaculture, these fishponds, surrounding wetlands, and upland land management assisted in controlling the distribution of stormwater, sediment, and toxic pollutant runoff into Maunalua Bay. These fishponds have since been filled in, degraded, or developed for other use. Over the past few decades, the community has made efforts to ensure the revitalization of fishponds, especially in the case of Kānewai Spring, which was acquired using Clean Water and Natural Lands Fund moneys.

The filling of wetlands and fishponds has been restricted for decades. Regulatory and management practices have been improved to promote more effective maintenance of these resources and deter land-based activities which contribute to their degradation. In addition, wetlands to detain and retain stormwater have been protected to increase infiltration and reduce polluted runoff into streams, estuaries and nearshore waters.

As applied to East Honolulu's drainage system, the ahupua'a management concept involves the retention of natural stream beds and, as feasible, partial or full restoration of drainage ways that have been altered by concrete-lined channels. A streamside management zone or buffer area along natural streambeds defines where uses or activities are controlled or modified to protect water quality and aquatic resources and reefs. Revised or new public works standards have allowed the dedication of passive stormwater drainage systems and minimal channel modifications to provide flood protection for the redevelopment of properties.

Adapting and implementing the ahupua‘a concept requires significant cooperation and integration of efforts among the various government agencies whose jurisdictions encompass all or part of each ahupua‘a, community organizations, large landowners, and those looking to redevelop.

2.2.3 KAIWI SCENIC SHORELINE

The rugged coastal lands of the Kaiwi coast, also known as the Maunaloa-Makapu‘u State Scenic Byway, are composed of the areas between Koko Head and Makapu‘u Head. The Kaiwi coastline is among O‘ahu’s most unique and spectacular scenic resources, offering mauka and makai views from many vantage points (see **Exhibit 2-2**, above). Protection of the scenic value of the Kaiwi viewshed has island wide importance because of its attraction to both residents and visitors. Preserving O‘ahu’s open space resources is critical to the economy since tourism is a base industry.

Nowhere else on the island, with the exception of the Ka‘ena coastline, are there elements of a natural environment in one large, contiguous area of undeveloped open space. Unfortunately, like Ka‘ena, the Wawamalu Beach section of Sandy Beach Park, which is the site of dunes and white-sand beaches, suffers from unconstrained vehicle incursions from Kalaniana‘ole Highway, resulting in the degradation of the area’s historic, cultural, or ecological resources. Overuse and misuse are pressures that threaten the integrity of this coastal area.

Historic, cultural, ecological, and recreational resources of the Kaiwi region should be protected and enhanced. The publicly-owned Koko Head Regional Park, which includes Hanauma Bay Nature Preserve and Sandy Beach Park, should continue to provide world-class educational and recreational opportunities for residents and visitors alike. At the same time the value of historic, cultural, and ecological resources are protected from overuse. This area also provides critical habitat, as designated by the U.S. Fish and Wildlife Service, for at least six endangered native or endemic plants, and potentially habitat for the endangered native yellow-faced bee, which is managed by the State Department of Land and Natural Resources (DLNR).

2.2.4 RIDGE-AND-VALLEY NEIGHBORHOODS

East Honolulu's residential communities, and their geographic extent, are physically defined by the topography of the region. A series of ridges and valleys serve as natural boundaries separating one community from the next. The first areas to develop, in approximate order, were the coastal plains of Wai'alae, the Wailupe coastal plains and flatter valley floors (now known as 'Āina Haina), Kuli'ou'ou, and Niu. Over time, further subdivision into smaller lots, infill lot developments, and home expansions have intensified the use of these areas. Also, development has extended deeper into the valleys and up the lower slopes of valley walls.

Residential development of hillsides and descending ridges generally followed the development of the coastal plain and valleys. Most of the residential zoned areas of these hillsides have been fully developed, but there is some vacant land which is zoned residential remaining in upper and side slope fringes. Hawai'i Kai (Maunalua), located in the eastern portion of the region, is a large, mixed-use master-planned community containing a broad mix of housing types. It was inaugurated on a grand scale in the 1960s with the dredging of the coastal wetland for a marina, housing subdivisions, and apartment complexes. The master plan encompassed several geographic sub-areas: the Marina, Haha'ione Valley, Mariners Ridge, Kamilo Nui Valley, Kamilo Iki Valley, Kamehame Ridge, Kalama Valley, and Queen's Beach. Most of these areas have been fully developed except for Queen's Beach, which is zoned preservation but is still within the State Urban District.

Kalaniana'ole Highway is the primary linkage between these hillside and valley neighborhoods. It is a major route for joggers and bicyclists, as well as vehicles, and its attractively landscaped median helps to unify the image of East Honolulu as a distinct region.

With most of O'ahu's future population growth being directed to the Primary Urban Center, 'Ewa and Central O'ahu regions, no major developments are expected in East Honolulu. New construction that will occur in East Honolulu should be on infill properties within existing built-up areas rather than spreading development onto steep

slopes, higher elevations, undeveloped mountain ridges and valley walls, or deeper recesses of the valleys.

The character of existing neighborhoods must not only be protected, but also enhanced through effective design of public and private infrastructure and other community facilities. East Honolulu's existing communities may need to adapt facilities and services to accommodate the changing composition of the region's population, particularly for the elderly (see **Section 2.2.7**).

2.2.5 MAUKA-MAKAI RECREATIONAL ACCESS

The Ko'olau Mountain Range provides a wealth of actual and potential recreational opportunities including, but not limited to, hiking, hunting, biking, bird-watching, and camping opportunities. It is important that access to the shoreline and publicly-owned trails be made as open as possible while balancing the potential ecological impacts of hikers, as well as the potential disruption to adjacent communities caused by hikers. The State, City, and communities, both open and gated, should collaborate to ensure that visitor parking and access to trails are provided to the public. If these agreements do not work, consideration should be given to purchasing or condemning land and easements.

Existing mauka-makai beach access and rights-of-way in East Honolulu should be maintained and new perpendicular and lateral shoreline access ways should be provided as the opportunities arise. Erosion and sea level rise are expected to continue to reduce lateral shoreline access, furthering the need for better mauka-makai access.

Along Portlock Road there are approximately 19 private shared driveways with access to the coastline occurring approximately every 200 feet. At least three public access points should be acquired along Portlock Road in order to meet the City's standard of public shoreline access at approximately one-quarter-mile intervals. Furthermore, access to the Kaiwi shoreline, which extends from Koko Head to Makapu'u Head, should be improved as part of the Maunaloa-Makapu'u State Scenic Byway Corridor. Wāwāmalu Beach should be developed as a nature park with the addition of

demarcated parking and installation of barriers to protect natural dunes, native vegetation, beach rock, and beach.

2.2.6 PROTECTION AND PRESERVATION OF NATURAL AREAS

Natural areas in East Honolulu include, but are not limited to, the following areas:

- Kānewai Spring and Fishpond
- Paikō Lagoon Wildlife Sanctuary
- 'Ihi'ihilauākea and Nono'ula Preserves
- Kaiwi Scenic Shoreline
- Kaiwi Mauka Lands
- Wailupe Nature Preserve
- Keawāwa Marsh and Wetlands
- Kuli'ou'ou and Honolulu Watershed Forest Reserves
- Hanauma Bay Marine Life Conservation District
- Hanauma Bay Nature Preserve
- Maunalua Bay

These natural areas will be protected and preserved by providing proper management and security to protect endangered species habitat, and by monitoring and regulating uses to avoid overuse and misuse of resources. Access to these areas and the provision of facilities will be provided to the public insofar as to mitigate existing impacts or not adversely impact existing habitats these areas provide to endangered, indigenous, and endemic plants, animals, and invertebrates.

The policies in this **Plan** are intended to protect the aforementioned natural areas and supplement the zoning ordinance and State Land Use District through the **Plan's** horizons. However, to protect the land from development in perpetuity, community leaders and organizations have partnered together, and with the City, to purchase either the title to the land or a conservation easement. Mauka lands near the Kaiwi Scenic Shoreline area and in the back of Wailupe Valley were purchased as a means to protect both areas' rich recreational, scenic, and historic resources (see **Section 3.2.1.2**). Kānewai Spring was also purchased to protect and restore the culturally and

ecologically important spring. Other areas have been examined for purchase agreements including Paikō Ridge.

Community residents and organizations will continue to serve as stewards of natural areas and nearshore waters. Environmental and community organizations have a stewardship role in engaging the larger community, applying political pressure, fundraising for the purchase of lands for preservation, and routine beach cleanup events protecting Maunalua Bay from stormwater, sediment, and toxic pollutant runoff and invasive algae.

2.2.7 HOUSING STABILITY AND AGE-FRIENDLY COMMUNITIES

East Honolulu should remain a relatively stable residential area, with only modest growth in housing stock or changes in household characteristics. In 1990, the owner occupancy rate for East Honolulu was approximately 79 percent, compared to 49 percent for the island as a whole, and remained fairly constant up to 2000. Population in East Honolulu is projected to remain stable at around 50,000 until 2035 and 2040. See **Table 2-2**. With a minimal population change in East Honolulu, housing stability will not be affected by rapid growth and new developments.

Table 2-2: Population and Projections by Development Plan Area

| DP Area | 2000 Pop | 2000 % Share | 2010 Pop | 2010 % Share | 2035 Pop | 2035 % Share | 2040 Pop | 2040 % Share |
|-------------------------|----------------|-----------------|----------------|-----------------|------------------|-----------------|------------------|-----------------|
| PUC | 419,333 | 47.9% | 435,118 | 45.6% | 458,200 | 42.8% | 467,100 | 43.0% |
| ‘Ewa | 68,696 | 7.8% | 101,397 | 10.6% | 173,800 | 16.2% | 172,700 | 15.9% |
| Central O‘ahu | 148,208 | 16.9% | 168,643 | 17.7% | 189,500 | 17.7% | 192,400 | 17.7% |
| East Honolulu | 46,735 | 5.3% | 49,914 | 5.2% | 48,900 | 4.6% | 50,000 | 4.6% |
| Ko‘olau Poko | 117,999 | 13.5% | 115,164 | 12.1% | 110,800 | 10.3% | 113,300 | 10.4% |
| Ko‘olau Loa | 14,546 | 1.7% | 16,732 | 1.8% | 18,000 | 1.7% | 18,100 | 1.7% |
| North Shore | 18,380 | 2.1% | 17,720 | 1.9% | 19,200 | 1.8% | 19,600 | 1.8% |
| Wai‘anae | 42,259 | 4.8% | 48,519 | 5.1% | 52,900 | 4.9% | 53,600 | 4.9% |
| Population Total | 876,156 | 100% | 953,207 | 100% | 1,071,200 | 100% | 1,086,700 | 100% |

The gradually changing composition of East Honolulu’s population, however, could have an impact on housing supply. O’ahu, and East Honolulu, have a significant and growing percentage of elderly residents. However, the growth rate of East Honolulu’s elderly population continues to outpace that of O’ahu as a whole with an estimated 37 percent of East Honolulu’s population to be 65 and older in 2040. See **Table 2-3**.

Table 2-3: Percentage of Area Population 65 Years and Older

| Area | 1980 ¹ | 1990 ¹ | 2000 ¹ | 2010 ¹ | 2015 ¹ | 2040 |
|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|--------------------|
| East Honolulu | 9.3% | 11.7% | 18.2% | 21.6% | 23.5% | 37% ² |
| All O’ahu | 7.3% | 10.9% | 13.4% | 14.5% | 16.2% | 23.7% ³ |

Sources: ¹ U.S. Census & ACS 5-Year Est., 2015. ² DPP Projections, 2018. ³ DBEDT 2045 Series, 2017.

This aging trend, however, is not consistent throughout the region. In the region around Lunalilo Home Road and Kaiser High School, approximately 24.7 percent of the population is 65 years or older (Census Tract 1.12). In comparison, 14.2 percent of Kalama Valley residents are 65 years or older (Census Tract 1.10).

The trend for the aging population in East Honolulu and the island in general is expected to continue to accelerate through 2040 and beyond, indicating an increasing need for geriatric services, including long-term and care home services, alternative transportation modes, and alternative living accommodations for seniors such as retirement communities and group homes. East Honolulu will strive to create “an inclusive and accessible urban or suburban environment that encourages active and healthy aging” in accordance with the goals and visions from **Making Honolulu an Age-Friendly City: An Action Plan**.

These changing demographics may require different housing types and could result in changes to mature neighborhoods through the expansion of existing dwellings or the further addition of “ohana” units, or accessory dwelling units, on a long-term basis. Zoning, infrastructure, and other community guidelines will need to ensure that neighborhood character is not adversely altered by the incremental intensification of existing residential lots.

To meet the need for affordable housing for seniors, for those who are downsizing, for students and young families who are just starting out, and for others, residential uses should be allowed as a permitted use above the first floor of parcels zoned B-1 Neighborhood Business District or B-2 Community Business District. In most cases these areas are well-served by bus service, allowing the occupants to minimize use of personal automobiles and thereby increasing the affordability of such units.

2.2.8 REFOCUS COMMERCIAL CENTERS

East Honolulu’s commercial areas should continue to be oriented primarily to the region’s residential community. **General Plan** policy discourages major new employment growth in this region. Any significant retail and office expansion in this region would countervail the **General Plan** policy to direct job growth to the Primary Urban Center and Secondary Urban Center. Furthermore, given the small amount of population growth that is forecast for East Honolulu, there is expected to be only modest growth in the demand for commercial land uses to support the communities of the East Honolulu region.

The Hawai’i Kai Towne Center, with over 200,000 square feet of gross leasable area, is East Honolulu’s largest retail complex and includes “big box” stores that cater to the community and attract shoppers from outside the region. It is expected to maintain its role as the region’s major commercial center. Its present floor area could be increased to accommodate more retail establishments to fulfill future demand without any expansion of land area.

The smaller Koko Marina Shopping Center serves a dual market, containing specialty stores and services oriented to both local residents and tourists, particularly visitors to Hanauma Bay.

East Honolulu’s five other retail complexes, those at the community and neighborhood scale, are spaced at somewhat even intervals between ‘Āina Haina and Kalama Valley. The market areas of the ‘Āina Haina, Niu Valley, Haha’ione Valley, Hawai’i Kai (Maunalua), and Kalama Valley shopping centers are limited mostly to the communities for which they are named, emphasizing food, household products, and personal

services. None of these retail areas should require additional land area for expansion. The Kalama Village Center continues to be under-leased, primarily because it serves a very limited market area that is not expected to grow significantly. Consequently, the land presently planned for expansion of this commercial center could be redesignated to serve as a residential or residential-mixed use project. In addition, to meet the need for affordable housing for seniors who are downsizing and for students and young families who are just starting out, residential uses above the first floor should be allowed as a permitted use.

2.2.9 CLIMATE CHANGE ADAPTATION

East Honolulu faces new and emerging challenges within both of the **Plan**'s horizons as a result of climate change. Some of these changes likely include: rising sea levels, increasing coastal erosion, storm surge flooding, salt water intrusion, a rising water table and groundwater inundation in low-lying areas, rainfall that may deviate from historical records including drought, and frequency and scale of flooding. To counter the increase in risk associated with these hazards, the communities of East Honolulu will mitigate and minimize the vulnerability of social and physical infrastructure while increasing community resiliency as outlined in the **O'ahu Resilience Strategy**.

The City and County of Honolulu and the State are taking steps to mitigate and adapt to the impacts of climate change, sea level rise, and increased threat of hurricanes, higher intensity rainfall, and wildfires. The City and County of Honolulu participates in the State Building Code Council which establishes the State building code through the timely adoption of national building codes, including the International Building Code.

The State Office of Planning/Coastal Zone Management Program examined the building codes and development controls in effect for the City and County of Honolulu with the objective of developing a model ordinance for all the Hawai'i counties to strengthen and/or replace existing standards and regulations in order to reduce existing and future building vulnerability to coastal hazards and climate impacts. The City will work cooperatively to develop and implement land use policies, hazard mitigation actions, and design and construction standards that mitigate and adapt to the impacts of climate change and sea level rise.

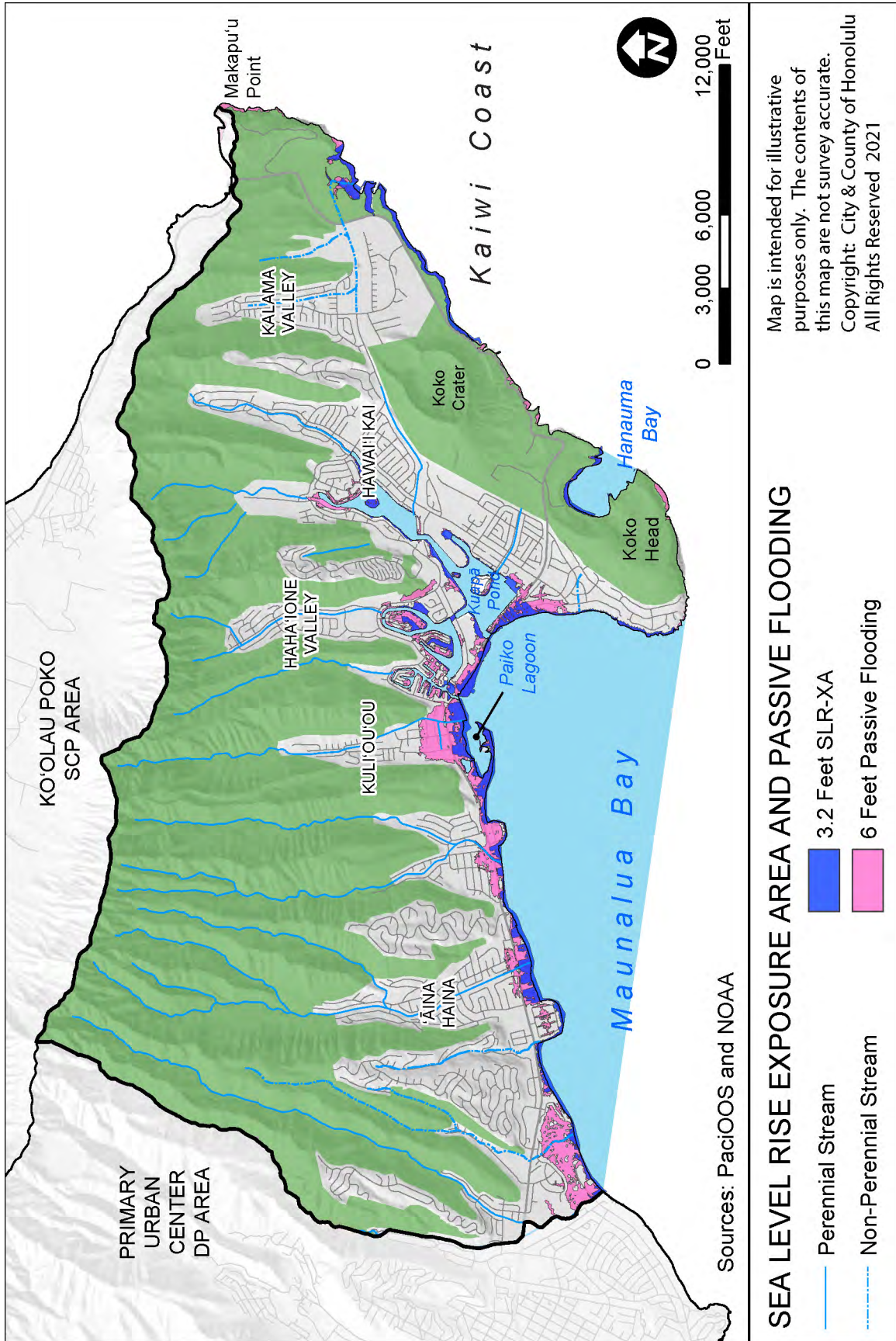
The State of Hawai'i published the **Sea Level Rise Vulnerability and Adaptation Report** in December 2017. On June 5, 2018, the City Climate Change Commission published **Sea Level Rise Guidance** and an accompanying **Climate Change Brief**. The Guidance was followed by Directive No. 18-2 in which the Mayor directed that all City departments and agencies are required to use the Guidance, Brief, and Report in their plans, program, and capital improvement decisions.

The **Sea Level Rise Vulnerability and Adaptation Report** and accompanying online Hawai'i Sea Level Rise Viewer project sea level impacts from passive flooding, annual high wave flooding, coastal erosion, and groundwater inundation for an overall Sea Level Rise Exposure Area (SLR-XA) with sea level rise of 0.5 feet, 1.1 feet, 2.0 feet, and 3.2 feet. The **Sea Level Rise Guidance** recommends that the SLR-XA at 3.2 feet be adopted as a vulnerability zone (hazard overlay) for planning by the City. Further, the **Sea Level Rise Guidance** recommends that it is reasonable to set, as a planning benchmark, up to six feet of sea level rise for critical infrastructure projects with long expected lifespans and low risk tolerance. City shoreline maps and regulations will be updated based on guidance from the City Climate Change Commission. Proposed projects should reflect up-to-date data from the most current versions of the **Sea Level Rise Guidance** and **Climate Change Brief**.

Exhibit 2-3 shows the SLR-XA with 3.2 feet of sea level rise as published in the **Sea Level Rise Vulnerability and Adaptation Report**, and passive flooding with 6 feet of sea level rise from the NOAA Sea Level Rise Viewer. East Honolulu communities are especially vulnerable to flooding and sea level rise if the main transportation connection, Kalaniana'ole Highway, become impassible. Access between neighborhoods needs to be maintained and restored in a timely manner after flooding to ensure the safety of residents and the efficiency in distribution of emergency resources and supplies. Additional protections should be made to Kalaniana'ole Highway, particularly in the vicinity of Kuli'ou'ou, to mitigate the anticipated impacts from sea level rise.

Climate change and sea level rise increase disaster risk and the cost of disasters. In recognition of this, the City’s Office of Climate Change, Sustainability and Resiliency has prepared the **O’ahu Resilience Strategy** to guide preparation and recovery from potential disasters. Redevelopment and disaster recovery in East Honolulu will “build back better and smarter” by incorporating adaptive design and resiliency strategies that consider location, structure, and operations plans.

Exhibit 2-3: Sea Level Rise Exposure Area and Passive Flooding



Sources: PacIOOS and NOAA

SEA LEVEL RISE EXPOSURE AREA AND PASSIVE FLOODING

- Perennial Stream
- Non-Perennial Stream
- 3.2 Feet SLR-XA
- 6 Feet Passive Flooding

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3. LAND USE POLICIES AND GUIDELINES

The vision for East Honolulu described in the preceding chapter will be implemented through application of the following land use general policies and guidelines.

3.1 OPEN SPACE PRESERVATION AND DEVELOPMENT

Open space preservation and development is a key element of the vision for East Honolulu's future. Long-term protection and preservation of scenic resources, natural areas, and recreational areas are important to maintaining the desirability and attractiveness of East Honolulu for both residents and visitors.

3.1.1 GENERAL POLICIES

Open space will be used to:

- Protect scenic views;
- Provide and maintain recreational access to shoreline and mountain areas;
- Meet the need for both passive and active open space;
- Define the boundaries of communities;
- Promote and support the long-term viability of agriculture;
- Protect endangered species habitats;
- Re-establish and restore native Hawaiian plant, animal, and invertebrate species and habitats in open space areas;
- Protect aesthetic and biological values of wetlands, beaches, nearshore marine environments, natural streams, and other drainage ways;
- Provide and maintain fire safety buffers where developed areas border "wildlands" either in preservation areas within the Community Growth Boundary or in the State Conservation District;

- Create a linear system of landscaped pathways and bikeways along roadways and drainage channels to visually enhance the different communities, create more complete streets, and assist with stormwater retention;
- Slow the rate of stormwater runoff into drainageways through increasing ground absorption and reducing the amount of impermeable surfaces on both public and private lands; and
- Prevent development of areas susceptible to natural hazards such as soil movement, rock falls, coastal erosion, and sea level rise.

3.1.2 PLANNING GUIDELINES

The following sections provide a description of regional open space resources in East Honolulu, followed by their respective guidelines for implementing the general policies. The open space system shall consist of areas in both active and passive uses.

3.1.2.1 Mountain Areas

Access to mountain areas for passive uses and resource gathering, including parking areas, should be made available in accordance with Hawai'i Revised Statutes (HRS) 115, 171, and 264.

“The absence of public access to Hawai'i's shorelines and inland recreational areas constitutes an infringement upon the fundamental right of free movement in public space and access to and use of coastal and inland recreational areas.” HRS 115-1.

Passive areas include lands in the State Conservation District, drainage and utility corridors, nature preserves, and lands undeveloped because of physical constraints or hazards.

Seventeen major trails, inventoried by the State Department of Land and Natural Resources (DLNR), provide access to the mountainous areas of East Honolulu. Four of

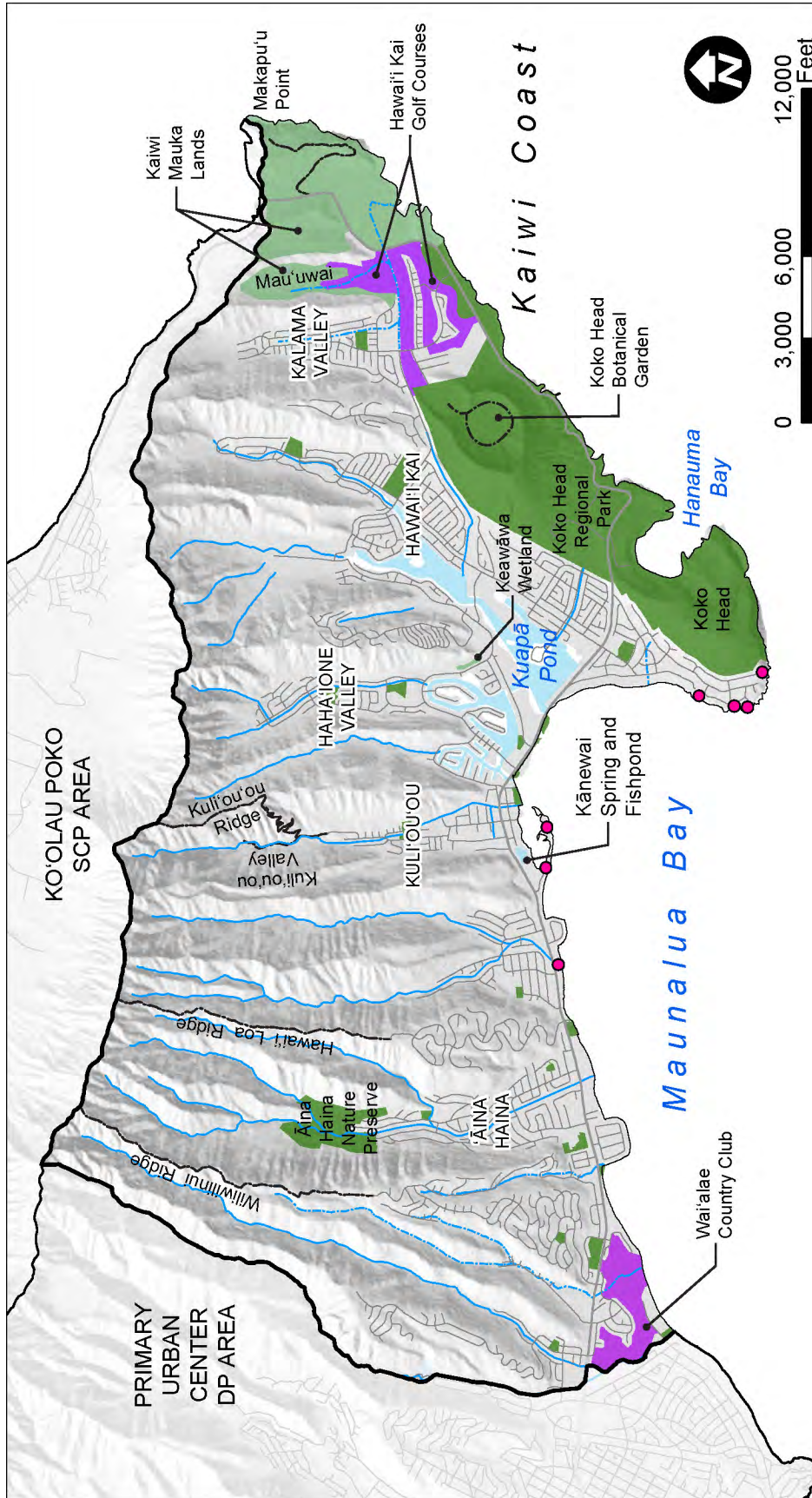
these trails (see **Exhibit 3-1**) are actively managed by the State's Nā Ala Hele program and are described below. Other trails that are not actively managed by the DLNR Nā Ala Hele Trail and Access Program, are included in **Table 3-1**. The DLNR State Parks also manages the two-mile Makapu'u Point Lighthouse Trail within the Kaiwi coast.

- **Wiliwilinui Ridge Trail** – Half of the 3-mile trail to the crest of the Ko'olau Range is comprised of a dirt access road.
- **Hawai'i Loa Ridge Trail** – This trail begins at the top of the Hawai'i Loa community and extends 2 miles to the crest of the Ko'olau Range.
- **Kuli'ou'ou Valley Trail** – Beginning at the back of Kuli'ou'ou Valley, this trail runs for 1.0 miles to approximately the 520-foot contour.
- **Kuli'ou'ou Ridge (Koko Head) Trail** – This 2.5-mile trail is an extension of the Kuli'ou'ou Valley trail, extending to the crest of the Ko'olau.

Public access to trails in East Honolulu and in other urban fringe neighborhoods is a source of controversy because community residents and large landowners are concerned about liability, security, loss of privacy, and parking congestion with the use of private roads by hikers and hunters. Consequently, hikers driving to the trails have been subjected to certain restrictions including signing of waivers of liability, parking at the base of the ridge miles away from the trailhead, having to show a driver's license, or no access at all. Landowners, however, are protected from liability in making their land and water areas available to the public for recreational purposes in accordance with HRS 520.

Mountainous areas in East Honolulu are in the State Conservation District and thus the State Board of Land and Natural Resources (BLNR) has the authority to decide what uses are allowed in these areas. Landowners and residential associations should cooperate with the BLNR to ensure that access to the trails and visitor parking are provided to the public. If a suitable mechanism for public access cannot be agreed upon, consideration should be given to acquiring fee ownership or easements for public use either by a government agency or third-party organization. Furthermore, the State and City should negotiate, in advance, provision for public access easements and visitor parking near the trailheads with the concerned property owners, with representative community associations, and with Non-Governmental Organizations (NGOs).

Exhibit 3-1: Public Parks, Trails, and Open Space



PUBLIC PARKS, TRAILS, AND OPEN SPACE

- Public Beach ROW
- Maintained Trail
- City-Owned Parklands
- Open Space with Managed Access
- Golf Course (Private)

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Table 3-1: East Honolulu Trails Not Actively Managed by the State DLNR

| Trail Name | Miles |
|---|--------------|
| Wai'alaie Nui Ridge / Kalani Iki Ridge | 3.0 |
| Wailupe Nature Preserve | 1.5 |
| Kulu'i Ridge | 2.3 |
| Pia Valley / Niu Valley | 1.0 |
| Niu Ridge / Kūlepiamoā Ridge | 3.0 |
| Kūpaua Valley | 2.0 |
| Kuli'ou'ou Ridge - Diamond Head (Paikō Ridge) | 3.0 |
| Kuli'ou'ou Center Ridge | 4.0 |
| Ka'alākei Ridge | 2.0 |
| Mauna'ō'ahi Ridge | 3.0 |
| Haha'ione Valley (Ka'alākei Valley) | 2.0 |
| Mariners Ridge / Kaluanui Ridge | 1.5 |
| Kamilo Nui Valley | 2.0 |
| Kamilo Iki Ridge | 1.8 |
| Kamehame Ridge | 1.2 |
| Ko'olau Summit and Spine / Makapu'u to Pu'u Konahuanui | 16 |
| Tom-Tom Waimānalo | 1.0 |
| Mau'uwai (Kaiwi Mauka) | 1.0 |
| Kaiwi Shoreline Trail | 1.4 |
| Koko Crater Botanic Garden (City maintained) | 2.2 |
| Koko Crater Railway Line (Kohelepelepe) | 1.0 |
| Koko Crater Blowhole | 1.5 |
| Lāna'i Lookout to Bamboo Ridge and Hanauma Bay | 1.5 |
| Koko Head / 'Ihi'ihilauākea Preserve (within Hanauma Bay Nature Preserve) | 4.0 |

Demand for outdoor recreational activities in maintained and unmaintained and undeveloped areas will continue to increase. Action is needed at the City and State level to:

- Protect important natural resources in the State Conservation District;
- Control the number and range of feral animals and other alien species;

- Prevent overuse and misuse of natural resources;
- Prevent the destruction of habitats of native and endangered species;
- Mitigate erosion; and
- Mitigate the social impacts of congestion.

Guidelines pertaining to mountain areas are as follows:

- **Access** – Make access to mountain areas (including provision of parking areas) readily available for passive uses and resource gathering, in accordance with HRS 115, 171, and 264.
- **Access Easements** – Acquire and maintain public access easements, or encourage the transfer of easements to the State or NGOs that preserve access to open space areas.
- **Parking** – Provide public parking for trail users near the trailhead.
- **Native Upland Forests** – Maintain, protect, and/or restore upland native forests in the State Conservation District.
- **Lowland Forests and Vegetation** – Maintain, protect, and/or restore native Hawaiian plant communities in lowland native grasslands and scrublands and dry forests.
- **Utility Impacts** – Avoid disturbances caused by utility corridors and other uses on areas with high concentrations of native species.
- **Habitat** – Identify and protect endangered species habitats and other important ecological zones from threats such as fire, alien species, feral animals, and human activity.
- **Alien Species** – Control the number and range of feral animals and other alien species which could lead to the destruction of habitats of native or endangered species and erosion. Prevent the establishment of new alien species.
- **Resource Management** – Create a City Resource Management Program to address the demands from outdoor recreational activities and the associated stresses to the natural and built environment.

- **Trail Maintenance** – Increase trail maintenance to mitigate the impacts from hikers on the natural environment and improve safety.
- **More Trails** – Balance trail demands across East Honolulu and alleviate overcrowding at residential trailheads through the opening and sanctioning of additional trails, particularly in Mariners Ridge, Niu Valley, Kamilo Nui Valley, and the Wailupe Nature Preserve.
- **Wildfire Hazards** – Implement the findings and recommendations from the **Kamilo Nui – Mariner’s Cove Firewise Hazard Assessment**.

3.1.2.2 Shoreline Areas

East Honolulu’s shoreline extends for approximately 13 miles between Wai’alae and Makapu’u Head. The shoreline provides residents and visitors with significant active and passive recreational value. Existing beach access and rights-of-way should be preserved, and new shoreline access ways should be provided as the opportunities arise. Prior to the issuance of permits that may affect public access to the ocean, the shoreline, or any coastal or inland public recreational areas, there should be assurance that a public right-of-way is available to access all public recreational areas, including beaches, the shoreline, parks, and trails.

Shoreline access is protected under HRS 115-1, referenced in **Section 3.1.2.1**. The absence or loss of mauka-makai access to the shoreline is largely the result of the intensity of urban development and policy decisions in maintaining remaining access routes.

Over the **Plan’s** long-term horizon, East Honolulu will face increased threats from coastal hazards and flooding as a result of climate change. While the causes of climate change are global, its impacts – sea level rise, ground water inundation, and increased rainfall intensity – will occur locally. Impacts from high tide flooding will be observed decades before permanent inundation by sea level rise. Tidal flooding will become more frequent and more damaging as ocean levels rise. A number of residential neighborhoods bordering Maunalua Bay and portions of Kalaniana’ole Highway will become more vulnerable to routine flooding and coastal erosion as a result of sea level

rise, particularly around Paikō Drive and makai areas of Kuli'ou'ou (see **Exhibit 2-3**, above).

In addition to recreational and ecological value, shoreline areas in East Honolulu, particularly along the Kaiwi coastline, offer unparalleled scenic value. As such, views from Kalaniana'ole Highway to the shoreline should be preserved.

The East Honolulu shoreline is characterized into two distinct regions:

- **Wai'alae to Koko Head** – Few areas along this shoreline are accessible to the public due to residential development along Kalaniana'ole Highway. Access points to the shoreline along this stretch include Wailupe, Kawaiku'i, Kuli'ou'ou, and Maunalua Bay Beach Parks and a few mauka-makai public pedestrian easements.

Physical and visual access to the shoreline is limited because of rather continuous residential development and the erection of sound barrier walls to screen traffic noise. However, there are a few points where public pedestrian easements to the shoreline could be expanded as properties are redeveloped or subdivided.

Vertical seawalls and revetments have been constructed along many of the properties between Wai'alae and Koko Head. Seawalls and revetments have caused beach narrowing and loss in nearby unhardened areas which disrupt natural processes. Beach loss will accelerate in the coming decades with sea level rise, especially if widespread coastal armoring is permitted.

According to research published by the University of Hawai'i School of Ocean and Earth Science and Technology, the following shorelines erode up to one foot per year: near the Kāhala Resort beach, just east of Wailupe Peninsula, Paikō Peninsula and in the Portlock area between the Hawai'i Kai Marina entrance channel and the former Henry Kaiser Estate. Additional minimum shoreline setbacks for structures have been recommended as a management strategy to protect remaining sandy beaches in these segments. With the projected rate of sea level rise by 2050 and 2100, and the compounding effects that sea level rise has on

shoreline erosion, shoreline setbacks will have to be reviewed and increased routinely to mitigate further damages.

In the residential area near Koko Head, there are numerous points of public access to the shoreline from Portlock Road, which occur approximately every 200 linear feet. These access routes occur along privately owned, shared driveways. Members of the Portlock Community Association have said the association is dedicated to ensuring the existing 19 driveways remain open to the public for shoreline access.

Lateral shoreline access along this stretch of coastline is a desirable goal but difficult to achieve because of physical constraints, land ownership patterns, the extent of urban development, and geophysical changes that are a result of beach erosion and sea level rise.

It is also important in this area to retain and, if possible, expand visual access to the shoreline from the coastal highway. Presently, the most significant makai views are from the H-1 Freeway viaduct looking across the Wai'alaie Country Club golf course and from Kalaniana'ole Highway fronting the Wailupe, Kawaiku'i, and Maunalua Bay Beach Parks.

- **Kaiwi Scenic Shoreline** – Mauka-makai and lateral shoreline access is more prevalent between Koko Head and Makapu'u Head, particularly beginning at Sandy Beach. The shoreline between Koko Head Regional Park and Makapu'u Head is frequented by residents and visitors for various recreational and educational activities. The 354-acre Kaiwi Coast area is located along the Maunalua-Makapu'u State Scenic Byway Corridor, which was nominated by the Livable Hawai'i Kai Hui in addition to the Hawai'i Kai Neighborhood Board, and designated by the State of Hawai'i Department of Transportation as a State of Hawai'i Scenic Byway in 2013. The State Scenic Byway Corridor extends from Hawai'i Kai Drive to Makai Research Pier. A Corridor Management Plan focused on preserving and protecting the resources along Kaiwi coastline was prepared in 2018 by Livable Hawai'i Kai Hui and the Ka Iwi Coalition (see **Section 3.2.1.2**). The Kaiwi Scenic Shoreline was established to preserve the area's natural and scenic resources and to provide educational and passive recreation opportunities. There are continuous views of the ocean and mountains from Kalaniana'ole Highway between Koko Head and Makapu'u Head as well as shoreline access. This segment of

Kalaniana'ole Highway is the highlight of a continuous visual sequence of the coastline extending from Hawai'i Kai (Maunaloa) to Waimānalo.

Guidelines pertaining to shoreline areas are listed below:

- **Makai Views** – Maintain makai view channels along the H-1 Freeway or Kalaniana'ole Highway between Wai'alaie and Koko Head. Avoid obstructions such as walls and landscaping, designed to screen out traffic noise.
- **Natural Landscape** – Maintain the natural landscape quality of the Kaiwi coast, mauka to makai, as a high priority viewshed. Limit recreational vehicle operations which could cause degradation to the dunes, vegetation, and beach at Wāwāmalu Beach. Any modification to this shoreline area will be done in a manner that preserves the aesthetic values of the undeveloped xerophytic landscape (plants adapted to a dry environment). Work with the State on efforts to protect and maintain or recover distressed shoreline environments, and encourage natural dunes, native vegetation, and natural shoreline rock formations.
- **Kaiwi Scenic Shoreline** – Protect and preserve the long-term recreational and scenic value of the shoreline between Koko Head and Makapu'u Head through responsible maintenance.
- **Lateral Access** – Improve, protect, and maintain lateral shoreline access.
- **Shoreline Access** – Pursue opportunities to secure additional pedestrian rights-of-way from the nearest street or highway to the shoreline in sections that have high recreational value, but no similar public access within at least a quarter of a mile, particularly in the areas of Kai Nani, Wailupe Peninsula, and Niu Peninsula.
- **Feedback** – Encourage citizen reporting of shoreline access issues to the DLNR Office of Conservation and Coastal Lands. DLNR should report back to the communities of East Honolulu the status of oceanfront issues.
- **Vegetation** – Landowners along the shoreline shall maintain vegetation so as to not encroach into the public right-of-way, particularly as the shoreline erodes, pushing the right-of-way inland.

- **Sea Level Rise Impact on Lateral Access** – Include sea level rise and shoreline erosion projections when establishing protections for lateral shoreline access.
- **Codify Access** – Recognize and codify mauka-makai shoreline access into the Revised Ordinances of Honolulu (ROH).
- **Setbacks** – Increase minimum shoreline setbacks and implement other management strategies to account for anticipated impacts from climate change and coastal erosion. Revise and amend shoreline rules and regulations to incorporate sea level rise into the determination of shoreline setbacks and Special Management Area (SMA) use requirements.
- **Armoring** – Conserve and enhance a natural, dynamic shoreline wherever possible. Restrict shoreline hardening. Shoreline hardening should only be considered as a last resort where it supports significant public benefits and will result in insignificant negative impacts to coastal resources and natural shoreline processes.
- **Protect Infrastructure** – Mitigate impacts to critical public and private infrastructure subject to sea level rise exposure through elevation, relocation, or other adaptation measures.
- **Sea Level Rise Impact on New Projects** – Analyze the impact of sea level rise for new public and private projects in shoreline and low-lying areas. If it is likely that sea level rise will increase the risk of flooding during the lifespan of the project, incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise.
- **Current Information** – Use the most current versions of the City Climate Change Commission’s **Sea Level Rise Guidance, Climate Change Brief**, and the State of Hawai’i **Sea Level Rise Vulnerability and Adaptation Report** and associated Viewer for managing assets, reviewing permitting requests, and assessing project proposals.
- **Building Codes** – Work cooperatively to develop design and construction standards that mitigate and adapt to the impacts of climate change and sea level rise.
- **Hazard Assessment** – Incorporate assessments of all hazards into the land development application process.

- **Redevelopment District** – Form a community-based redevelopment district, similar to a business improvement district, that would protect, adapt, and relocate residential and commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion.
- **“Build Back Better and Smarter”** – Map repetitive loss areas and develop and implement a “build back better and smarter” strategy to mitigate future damage costs.
- **Disaster Plans** – Develop short- and long-term resiliency and recovery plans to:
 - Develop a network of Community Resilience Hubs;
 - Designate evacuation routes;
 - Increase coordination with neighborhood emergency preparedness groups and create a liaison between City agencies and NGOs;
 - Encourage residents to have their own emergency supplies and be knowledgeable about what they will do in the event of a disaster;
 - Expedite the recovery of East Honolulu; and
 - Outline the vision and methods for how East Honolulu can “build back better and smarter” following disasters.

3.1.2.3 Agricultural Areas

The physical and economic conditions and suburban development pattern of East Honolulu preclude large-scale agricultural operations. There are two concentrations of small-scale diversified agricultural operations – the larger one in Kamilo Nui Valley and the other above Kaiser High School on the slopes of Koko Crater – which should be preserved as being consistent with the overall community vision underlying this **Plan**. In both areas, individual farm lots on long-term leases are used for nursery and vegetable production and have remained commercially viable due to low lease rents and by serving a mostly East Honolulu market.

When lease terms end for the agricultural areas, their continued commercial viability will likely depend upon revision of lease rents and the leaseholders continued interest in farming. An economic feasibility study would assist in determining the continued viability of agriculture in Kamilo Nui Valley and identify potential arrangements that would be suitable and acceptable to concerned parties. Community groups are working to protect agricultural lands in perpetuity through fee purchase, easements, or land swaps.

Prior to the adoption of the 1999 **Plan**, approximately 17 acres of agricultural lands located outside the Community Growth Boundary in Kamilo Nui were rezoned from the general agricultural district to the low-density apartment district. The 1999 **Plan** did not reflect this change as the project, now known as Leolani, did not receive its final approvals until June 2000, after the adoption of the **Plan**. The 17-acre Leolani development is displayed within the Community Growth Boundary since the development was approved and is now complete. Other existing agricultural use and preservation lands in Kamilo Nui Valley will remain outside the Community Growth Boundary.

Water supply is sufficient in Kamilo Nui Valley, although short winter days are a limitation on the types of crops that can be grown. There is also the potential for conflict between farming in Kamilo Nui Valley, where agriculture existed prior to adjacent urban development, and nearby suburban residential areas. This has resulted in complaints from neighbors about nuisance dust, noise, chemical overspray, odors, and other normal impacts of farming. In turn, this can lead to operational changes that may be required by the enforcement of public health regulations and that adversely affect the feasibility of agriculture. The most effective way to avoid this conflict is to provide adequate separation between agricultural and residential uses.

Guidelines relating to agricultural areas are listed below:

- **Accessory Uses** – Design and locate buildings and other facilities that are accessory to an agricultural operation in a way that minimizes the impact on nearby urban areas and the street system.

- **Existing Uses** – Encourage continued use of small lots for agricultural uses, and promote compatibility of nearby residential areas with those uses. Maintain the existing buffer between agricultural lands and residential development.
- **Kamilo Nui Valley** – Designate undeveloped areas in Kamilo Nui Valley which are on the ‘Ewa side of the existing farm lots for agricultural use.
- **Agricultural Leases** – Encourage continued long-term agricultural leases at reasonable rates consistent with feasible agricultural use by having such areas remain outside the Community Growth Boundary.
- **Community Growth Boundary** – Preserve the Community Growth Boundary through the foreseeable future to prevent further residential encroachment around the two active farm areas and to mitigate potential nuisances associated with farming from impacting new residential development.
- **Runoff** – Implement agricultural best management practices (BMPs) to mitigate stormwater, sediment, and toxic pollutant runoff from agricultural uses and stockpiling from adversely impacting downstream water quality.
- **Food Sufficiency** – The existing agricultural lots should be maintained to support State and County goals.

3.1.2.4 Runoff, Natural Gulches, and Drainage Corridors

Water springs sustain life in this low rainfall region. Springs are found at Ka‘alawai, Wai‘alae, Wailupe Beach Park, Kalauha‘iha‘i Fishpond at Niu, Kawaiku‘i Beach Park, Kanewai Spring and Elelupe Spring at Kuli‘ou‘ou, Keawāwa Wetland, and Kawaiakane at Kawaihoa Point. Smaller seeps are located along the shoreline.

Streams in the region also play an important role in the traditional sustainability of the region. Kapakahi Stream was once rich with o‘opu. Many of East Honolulu’s streams have lost their essential functions when they were concreted and channelized. Nevertheless, they retain potential for restoration. Wailupe Stream is one of the only streams that has not been concreted completely.

The ridges and valleys in East Honolulu form a series of drainage ways extending across the region. All but two of the streams have been channelized as a means for conveying stormwater from valley watersheds to the sea as quickly as possible. These stream channels are capable of handling stormwater runoff from normal rainfall amounts if properly maintained. During periods of intense rainfall, however, a number of these drainage ways have experienced flooding problems (see **Chapter 4**).

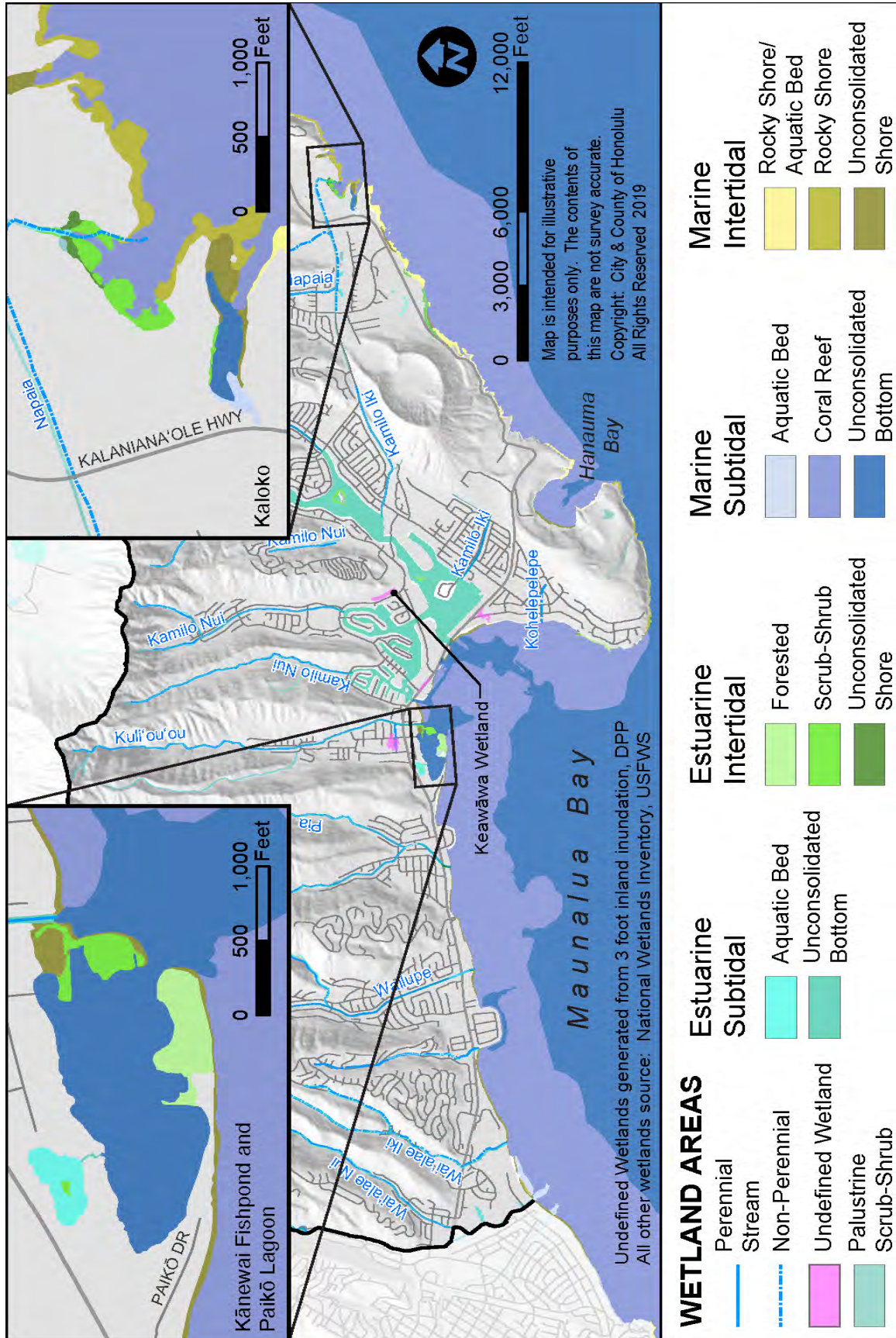
The swift conveyance of stormwater through the channelization of streams in East Honolulu impacts downstream water quality, particularly when those waters reach Maunalua Bay. If stormwater is not given time to settle, it will often carry sedimentation and other particulate matter downstream leading to the deterioration of nearshore waters and reefs. Dechannelization, or restoration of natural stream beds, can improve downstream water quality, increase groundwater recharge, and help in re-establishing habitats for native species. Restoration of upland areas and reestablishment of native vegetation can also assist in controlling and absorbing precipitation and lengthen the period of discharge potentially reducing flood rates.

Wetlands play a vital ecological role in providing habitat and holding and filtering stormwater and sediment runoff. Wetlands are difficult to replace or reconstruct in their entirety and will be preserved where possible. A map of the **National Wetlands Inventory** is shown in **Exhibit 3-2**.

Guidelines concerning natural gulches and drainage ways are as follows:

- **Drainage Ways** – Preserve and restore the aesthetic values and biological functions of significant streams, wetlands, natural gulches and other drainage ways by requiring setbacks, where appropriate and feasible, as part of the open space system. These include:
 - Perennial streams identified in the Hawai'i Stream Assessment prepared by the State Commission on Water Resource Management;
 - Wetlands identified by the Army Corps of Engineers and/or identified on the Fish and Wildlife Service's National Wetland Inventory maps;

Exhibit 3-2: Wetland Areas



- Other drainage ways identified by the Department of Design and Construction or the Department of Planning and Permitting;
 - For other streams, including intermittent streams, require applicants for development to show that the open space system will not be significantly impacted and that biological values will not be significantly disturbed if setbacks are not provided; and,
 - Improve drainage channels, not just to convey runoff downstream as quickly as possible, but to increase permeability and retention.
- **Low-Impact Development** – Implement low-impact development standards and other green infrastructure to restore ecological function to the area, particularly along and adjacent to stream channels, and reduce the amount of stormwater, sediment, and toxic pollutant runoff entering Maunalua Bay.
 - **Green Incentives** – Provide incentives for owners of existing homes, particularly those adjacent to drainage ways, to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.
 - **Preservation** – Preserve the remaining natural gulches within the Community Growth Boundary that are necessary to provide flood protection in a way which protects aesthetic values and biological functions and avoids degradation of stream, coastline and near shore water quality.
 - **Remediation** – Clean up contaminated areas that pose hazards to soil and downstream water quality, particularly any properties adjacent or directly upland of a stream channel.
 - **Recreation Corridors** – Incorporate landscaped pathways and bikeways adjacent to stream channels and drainage corridors, where appropriate and feasible.
 - **Retention** – Retain stormwater, sediment, and toxic pollutant runoff through the installation of linear landscaping features and permeable pavement along roadways, particularly Kalanianaʻole Highway, which should be used to visually enhance the different communities.

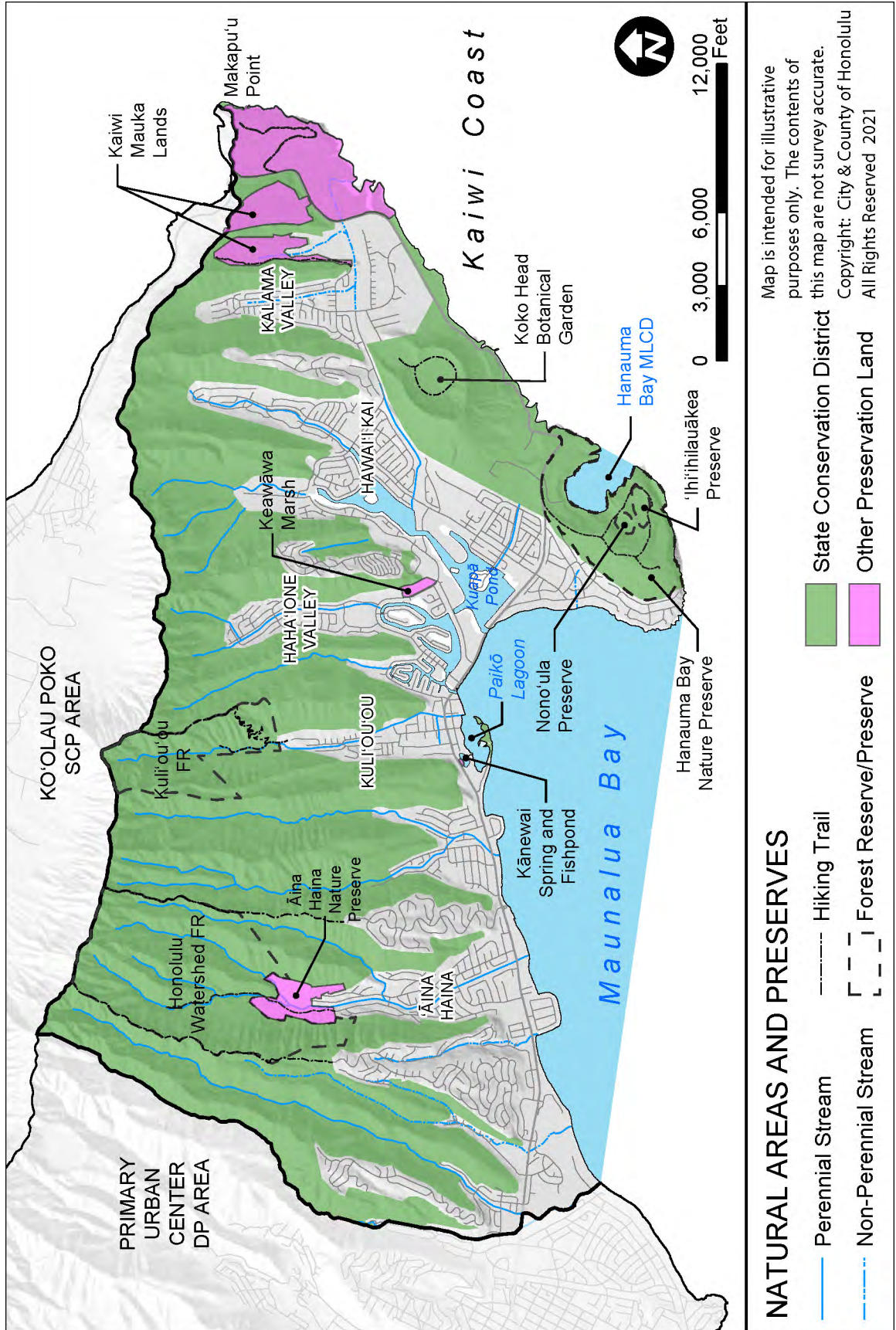
- **Preservation Lands** – Use preservation lands, located within and outside of the Community Growth Boundary to prevent further degradation of nearshore water quality.
- **Natural Improvements** – Identify potential natural improvements to park and preservation lands within the Community Growth Boundary to improve its ecological function and retain an open, undeveloped character, particularly on lands near Hawai'i Kai Marina and Maunalua Bay, including along Keāhole Street.

3.1.2.5 Natural Resources and Preserves

East Honolulu is home to the following recognized wildlife preserves (see **Exhibit 3-3**):

- **Kānewai Spring and Fishpond** – The freshwater spring is located makai of Kalaniana'ole Highway and feeds freshwater into the adjacent fishpond which flows into Paikō Lagoon and Maunalua Bay. The spring was purchased for protection with public and private funds.
- **Paikō Lagoon Wildlife Sanctuary** – Paikō Lagoon, formerly a coastal fishpond, is fed by a freshwater spring and Kuli'ou'ou Stream and is managed by the DLNR. The lagoon's water level varies with the tides and occasionally exposes the saline mudflats. This wildlife sanctuary provides habitat to the endangered Hawaiian Stilt as well as other migratory water birds. The proximity of residential uses may threaten the sanctuary due to intrusions by humans and domesticated animals.
- **'Ihi'ihilauākea and Nono'ula Preserves** – These preserves are located on the southern rim of the Hanauma Bay ridgeline on land owned by the City and County of Honolulu, and managed by the Nature Conservancy of Hawai'i (NCH) through a cooperative agreement with the City. The preserves maintain a pool for the endangered 'Ihi'ihī (*Marsilea villosa*), an ephemeral plant appearing only during periods of rainfall. The preserves include mixed herbland and shrubland, the moisture regime, and subcanopy and understory native plant species.

Exhibit 3-3: Natural Areas and Preserves



- **Kaiwi Scenic Shoreline** – An undeveloped natural area between Koko Head and Makapu‘u Head located makai of Kalaniana‘ole Highway. The Kaiwi coast contains one of O‘ahu’s last undeveloped, rugged coastlines. These lands contain beaches, dunes, trails, rocky cliffs, historic sites, and viewpoints.
- **Kaiwi Mauka Lands** – Kaiwi mauka lands contain lands between Koko Head and Makapu‘u Head located mauka of Kalaniana‘ole Highway. The Kaiwi Mauka Lands were acquired with public and private funds for the purpose of preserving the undeveloped region as an open, rugged landscape.
- **Keawāwa Marsh and Wetlands** – Keawāwa Wetlands and adjacent Hāwea Heiau complex are located on the mauka corner of Hawai‘i Kai Drive and Keāhole Street. The wetlands provide refuge for the native, endangered Hawaiian moorhen in addition to other migratory birds and insects. The Hāwea Heiau complex contains ancient walls, petroglyphs, terraces, a coconut grove, and heiau. The property is preserved in perpetuity through the purchase of the land by the Livable Hawai‘i Kai Hui. Keawāwa Marsh and Wetlands are located outside of the Community Growth Boundary.
- **Kuli‘ou‘ou and Honolulu Watershed Forest Reserves** – The upper ranges of the Kuli‘ou‘ou Mountains fall within into two forest reserve systems, both of which are located within the State Conservation District and managed by the DLNR. The reserves are host to designated critical habitats for endangered species including the O‘ahu ‘Elepaio. Two public trails, the Kuli‘ou‘ou Ridge Trail and the Wiliwilinui Trail, traverse the Kuli‘ou‘ou and the Honolulu Watershed Forest Reserves, respectively.
- **Hanauma Bay Marine Life Conservation District (MLCD)** – Established in 1967 by the Department of Land and Natural Resources, the Hanauma Bay MLCD was once a popular site for fishing and throw netting. State law now protects wildlife within Hanauma Bay. The adjoining Hanauma Bay Nature Preserve is part of Koko Head Regional Park, administered by the City. In order to protect the marine resources and limit crowding of this popular visitor destination, the City restricts the daily number of visitors that have access to the bay. The City closes the Nature Preserve once per week for maintenance. The City also collects entry and parking fees used to fund maintenance and capital projects at Hanauma Bay.

- **Hanauma Bay Nature Preserve** – The nature preserve was established to protect and preserve one of Hawai‘i’s most spectacular natural resources. The preserve includes the Marine Education Center which opened in August 2002 where residents and visitors are welcomed to Hanauma Bay and taught how to respect and safeguard the fragile marine life found in the Hanauma Bay MLCD.
- **‘Āina Haina Nature Preserve** – In 2000 the City purchased land in the back of the residential neighborhood of ‘Āina Haina, below the Honolulu Watershed Forest Reserve, for the purposes of preserving the land from further suburban development.
- **Maunalua Bay** – Although the Bay is not listed as a preserve, it serves as a defining scenic, recreational, and marine resource for East Honolulu. The bay has many users including fishermen, cultural practitioners, surfers and boaters, and supportive commercial uses for these activities. With its unique mixture of fresh and salt water, Maunalua Bay provides a unique near shore habitat for various aquatic species. Community groups conduct studies, organize community events, and develop plans in order to restore Maunalua Bay.

There are a few other areas located within the Community Growth Boundary that could be preserved other than for the sake of protecting wildlife:

- **Great Lawn** – The “Gateway to Hawai‘i Kai” is an unimproved grassy space bounded by Hawai‘i Kai Drive, Kalaniana‘ole Highway, Keāhole Street, and the marina. The lawn primarily serves as open space, and, for two weeks a year, a carnival. Natural improvements could improve ecological function to the preservation area.
- **Rim Island 2** – An area previously used for dredging spoils in the upper Hawai‘i Kai Marina, comprised of approximately 3.25 acres, has become an additional established habitat for several species of endangered Hawaiian waterfowl. However, there have been studies regarding the viability of the fill lands as being unable to support the birds attracted there. Continued use of this site for dredging spoils should be further evaluated, especially if alternative spoils dumpsites are available.

Guidelines relating to wildlife preserves in East Honolulu are as follows:

- **Encroachment** – Avoid encroachment or intensification of residential or other urban uses near preservation lands.
 - Prohibit the reduction in preservation zoning in the vicinity of the Paikō Lagoon or intensification of residential use in this zone.
 - Designate any property with an existing residential use for low-density residential use and to an appropriate residential zone.
- **Management** – Implement management programs in areas where intense human activity threaten the sustainability of the resources. This could include, for example, impact monitoring studies, limits on the number of visitors, and admission fees such as at Hanauma Bay.
- **Biological Study** – Conduct a biological study to determine if Rim Island 2 is eligible for declaration as a recognized endangered species habitat.

3.1.2.6 Marina

The 260-acre Hawai'i Kai Marina provides protected water for small sail and motor craft, water skiing, and fishing. Residences fronting the marina have launching ramps and mooring facilities. In addition, there are boating facilities adjacent to the Koko Marina Shopping Center that can accommodate boats up to 40 feet in length.

The Hawai'i Kai Marina also serves as the focal point for commercial activity in Hawai'i Kai (Maunalua). East Honolulu's three largest commercial centers, the Hawai'i Kai Towne Center, Hawai'i Kai Shopping Center, and Koko Marina Shopping Center, front the marina on the east and west sides.

The Hawai'i Kai Marina contributes to the open space system by providing recreational value and visual relief from adjacent urban uses. It also has a cooling effect and thus offers climatic benefits for commercial and residential uses that front the water.

Guidelines concerning the Hawai'i Kai Marina are listed below:

- **Recreational Boating** – Enhance the recreational value of this open space feature by improving facilities in support of boating.
- **Pedestrian Access** – Improve access to and along the marina's edge by way of a multi-use path for people walking and biking.
- **Waterfront** – Ensure that marina and commercial waterfront uses do not present a barrier for pedestrians desiring to visit more than one destination along the waterfront.
- **Bridge** – Link the Hawai'i Kai Towne Center and the Hawai'i Kai Shopping Center with a pedestrian bridge in order to provide convenient access between the two commercial centers.
- **Viewshed** – Maintain and improve views across the marina, especially from Kalaniana'ole Highway and other major roadways.
- **Screening** – Install and maintain landscaping, where appropriate, to screen areas of the marina not intended for public views and to intercept stormwater, sediment, and toxic pollutant runoff.
- **Best Management Practices** – Utilize BMPs for marina uses to mitigate degradation of water quality to both the marina and Maunalua Bay.

3.1.3 RELATIONSHIP TO MAP A-1 – OPEN SPACE MAP

The following components of the regional open space system are shown on **Map A-1, Open Space Map** in **Appendix A**:

- **Mountain and Agricultural Areas** – These areas are to remain outside the Community Growth Boundary, and are not intended for development.
- **Shoreline Areas** – All beaches and shoreline areas with high scenic or wildlife value, especially areas along the Kaiwi Scenic coast and at Paikō Peninsula, are designated for preservation and are located outside the Community Growth Boundary. Construction of seawalls and rock revetments has had a severe negative impact on beaches in the Plan area, particularly between Wai'alaie and Portlock.

- **Parks** – Areas designated as island-based and district parks are shown, as well as the general location of community and neighborhood parks. Additions to the community-based park system are determined more by community facility design considerations (see **Section 3.3**) than by their relationship to the regional open space network.
- **Golf Courses** – The three golf courses in East Honolulu are shown because of their recreational value and visual contribution to the open space landscape.
- **Hazard Areas** – Certain undeveloped lands within the State Urban District that have either experienced significant damage from soil movement or potential rock falls, or are highly susceptible to such problems, particularly in ‘Āina Koa, ‘Āina Haina, and Kuli‘ou‘ou; are located outside the Community Growth Boundary and designated for preservation.
- **Marina** – Hawai‘i Kai Marina is located within the Community Growth Boundary.
- **Streams** – Major channelized and unchannelized stream channels which may provide habitat and convey water from upland areas.

3.2 ISLAND-BASED PARKS AND RECREATIONAL AREAS

This section presents an overview of island-based parks and recreational areas in East Honolulu. This is followed by general policies and guidelines for the recreational development of these resources. The location of the region’s island-based parks and recreational areas are shown in **Appendix A, Maps: A-1 Open Space, A-2 Urban Land Use, and A-3 Public Facilities**.

3.2.1 OVERVIEW

The City and County of Honolulu Department of Parks and Recreation (DPR) develops and maintains a system of park and recreation facilities that it classifies in a hierarchical manner. The largest and most specialized parks are classified as island-based parks since they serve the needs of all O‘ahu residents. This group includes regional parks, beach/shoreline parks, beach/shoreline right-of-ways, nature parks/reserves, botanical

gardens, golf courses, and zoological parks (see **Table 3-2**). The locations of public parks and recreation areas in East Honolulu are shown in **Exhibit 3-1**.

Table 3-2: Types of Island-Based Parks

| | |
|-------------------------------|--|
| Regional Parks | Large areas that may serve the entire island or a region of the island and may include a variety of recreation park types and facilities, natural and cultural sites. |
| Beach/Shoreline Parks | Areas and sites along the shoreline that may include facilities and support services for water activities, hiking, sunbathing, picnicking, and other passive activities. |
| Beach/Shoreline Rights-of-Way | Access lanes to beaches and the shoreline where residential or other uses prevent development of a beach/shoreline park. |
| Nature Parks/Reserves | Areas maintained primarily to preserve or conserve unique natural features. |
| Botanical Gardens | Areas to plan, develop, curate, maintain, and study documented dryland plants for the purposes of conservation, botany, horticulture, education, and passive recreation. |

As shown in **Table 3-3**, East Honolulu contains 10 island-based parks that are maintained by the DPR. A brief description of East Honolulu's regional parks, various beach parks, and three privately operated golf courses, two of which offer public play, is provided below.

Table 3-3: DPR Island-Based Parks and Preserves in East Honolulu

| Park Type/Name | Acreege | Park Type/Name | Acreege |
|--|-------------|--------------------------------------|----------------|
| Beach/Shoreline Parks | | Regional Parks | |
| Maunalua Bay Beach Park | 5.4 | Koko Head Regional Park ¹ | 951.4 |
| Sandy Beach Park (including Wāwāmalu Beach Park) | 22.6 | Nature Preserve/Reserves | |
| Kawaiku'i Beach Park | 4.1 | 'Āina Haina Nature Preserve | 85.2 |
| Kuli'ou'ou Beach Park | 3.2 | Hanauma Bay Nature Preserve | 50.0 |
| Wai'alaē Beach Park | 4.4 | Botanical Gardens | |
| Wailupe Beach Park | 1.2 | Koko Crater Botanical Garden | 200.0 |
| Subtotal | 40.9 | | |
| Grand Total | | | 1,327.5 |

¹ Acreege figure excludes Sandy Beach Park, Hanauma Bay Nature Preserve, Koko Crater Botanical Garden (listed separately) and Koko Head District Park (see **Section 3.3**).

3.2.1.1 Koko Head Regional Park

The 1,264-acre Koko Head Regional Park encompasses the most popular recreation areas in East Honolulu, including:

- Hālonā Blowhole Lookout
- Hanauma Bay Nature Preserve
- Old Hawai'i Job Corps Center
- Koko Crater Stables
- Koko Head Rifle Range
- Koko Crater Botanical Garden
- Koko Head District Park
- Sandy Beach Park

The park was established in 1928 when the City acquired the property from the Estate of Bernice Pauahi Bishop for a fee of one dollar. In exchange for the nominal charge, the City agreed to extend and maintain the municipal water system through Maunaloa. Further, the deed stipulated that use of the property be restricted to public parks or rights-of-way. Other uses of the property would require approval by the Bishop Estate Trustees.

In 1992, the **Koko Head Park Master Plan** was completed. The plan contains elements regarding the preservation and enhancement of the park's recreational and educational resources that are generally consistent with the guidelines set forth in this **Plan** (discussed in **Section 3.2.4**).

Expansion of Koko Head Regional Park through the City's acquisition in 2002 of the 32-acre parcel known as Golf Course 5 and 6 properties, located mauka of Sandy Beach and Kalaniana'ole Highway, completes the Kaiwi Scenic Shoreline. The 38-acre park visually links the existing Koko Head Regional Park and the Kaiwi Scenic Shoreline and provides a continuous stretch of open space with recreational opportunities extending from Koko Head to Makapu'u Head totaling about 600 acres. This area is now used for active recreation with playfields and open space for kite flying and other outdoor activities. There will be no courts or paved areas.

3.2.1.2 Kaiwi Coast

A 354-acre scenic shoreline area has been established in the Queen’s Beach/Makapu’u Head region of East Honolulu adjacent to Koko Head Regional Park. The Kaiwi Scenic Shoreline was established as a means to protect the area’s rich recreational and scenic resources and natural environment. A master plan for the Kaiwi Scenic Shoreline was prepared in October 1995 by the DLNR pursuant to House Concurrent Resolution No. 261 (1988).

Hiking is a very popular form of recreation along the Kaiwi coast. Substantial improvements have been made to parking, access, and trail amenities along the Makapu’u Point Lighthouse Trail. Further implementation of the master plan has been halted due to community concerns that construction of comfort stations or a visitor’s center will detract from the region’s undeveloped, wilderness character.

In 2016, the region known as Queen’s Rise, or Kaiwi Mauka, located mauka of Kalaniana’ole Highway between Hawai’i Kai Golf Course and Makapu’u Head, was purchased with public and private funds to set aside for preservation purposes. Although the land is zoned for preservation, it is within the State Urban District and should be redesignated for conservation. The preservation of mauka lands from development will further preserve the scenic characteristics defined by the adjacent, rugged landscape of the Kaiwi Scenic Shoreline.

3.2.1.3 Beach and Shoreline Parks

East Honolulu’s seven existing beach parks are Maunalua Bay, Sandy Beach (including Wawamalu), Kawaiku’i, Kuli’ou’ou, Wai’alae, Joe Lukela Beach Park, and Wailupe. The City has acquired lands comprising the Kaiwi Scenic Shoreline at Queen’s Beach/Makapu’u Head. Improvements to Wāwāmalu Beach as a nature park would help to protect the natural dunes, native vegetation, beach rock, and beach.

A mix of low- and medium-intensity recreational uses is envisioned along the Kaiwi Scenic Shoreline. The primary purpose of the park is to preserve the area's natural resources and to provide educational and passive recreation opportunities.

3.2.1.4 Aquatic Recreation

In addition to recreation lands under the jurisdiction of the DPR, another asset of East Honolulu is its near shore waters which help to define much of its character. Maunalua Bay extends from Kūpikipiki'ō (Black Point) to Kawaihoa Point spanning two ahupua'a (Waimanalo and Waikīkī) and seven watersheds (Wai'alae Nui, Wailupe, Niu, Kuli'ou'ou, Kamilo Nui, Kamilo Iki, and Portlock). Maunalua Bay hosts a variety of users including, but not limited to, fishermen, boaters, kayakers, surfers, cultural practitioners, and stewardship organizations. These user groups comprise residents and tourists for commercial and non-commercial uses. Regulation of aquatic uses falls under State jurisdiction.

3.2.2 GENERAL POLICIES

The following general policies relate to island-based parks and recreational resources in East Honolulu:

- Increase the inventory of island-based parks, where feasible and supportive of open space general policies and guidelines, by expanding the boundaries of existing parks and/or creating new parks.
- Maintain and enhance, to the extent possible, existing island-based parks by utilizing land area that has not been fully developed for recreation use. Island-based parks are part of the region's abundance of natural and scenic resources and contribute to the attractiveness of East Honolulu to residents and visitors.
- Expand access to existing park lands by improving neighborhood linkages along shared paths for people walking and biking, and blending park boundaries through the transition of park space to adjacent paths or greenways.

- Preserve the Kaiwi coast as one of O‘ahu’s last undeveloped, rugged coastlines.
- Prohibit alterations to the shoreline to avoid disrupting natural processes and avoid the potentially adverse impacts armoring has on adjacent areas.
- Develop additional trails and bike paths to balance trail demands across East Honolulu and alleviate potential overuse at existing trails.

3.2.3 PLANNING GUIDELINES

The general policies for island-based parks and recreation complexes, including golf courses, are supported and implemented by the following planning guidelines:

- **Appropriate Screening and Siting** – Carefully site active playfields and supporting facilities intended for intensive use, and use generous landscape screening to reduce the potential impacts on surrounding areas.
- **Environmental Compatibility** – Construct park facilities in a manner that avoids adverse impacts on natural resources or processes in the coastal zone or any other environmentally sensitive area. In the design of recreation areas, incorporate natural features of the site and use landscape materials that are indigenous to the area where feasible in order to retain a sense of place.
- **Community Integration** – Link recreational attractions that may be designed to have distinct identities and entries, with surrounding areas through the use of connecting roadways, bikeways, walkways, landscape features and/or architectural design.
- **Irrigation** – The Board of Water Supply (BWS) Rules and Regulations require the use of non-potable water for irrigation of large landscaped areas. For large landscaped areas, the feasibility of using non-potable water for irrigation should be investigated. If non-potable water is either unavailable or infeasible, a report of the investigation should be coordinated and submitted to the BWS prior to considering the use of potable water.

3.2.3.1 Passive or Nature Parks

- **Kaiwi and Koko Crater** – Preserve and enhance the Kaiwi Scenic Shoreline’s recreational and educational resources by implementing the following:
 - Convert the portion of Kalaniana’ole Highway between Lunalilo Home Road and Wāwāmalu Beach Nature Park to a 25-mile per hour scenic roadway.
 - Maintain and facilitate access to the important fishing resources.
 - Develop new walking/hiking trails within Koko Crater Botanical Garden for better viewing of plant collections.
 - Prohibit access to any trails or paths from outside of Koko Crater Botanical Garden to the garden.
 - With community input, explore the possibility of reinstating the shared use of Koko Crater Botanical Gardens and the Koko Crater Stables through a shared use agreement that includes a plan for well-marked horseback-riding trails and the prompt cleaning of horse droppings by stable employees.
 - Continue to develop Koko Crater Botanical Garden as a conservation site of global importance for rare and endangered species from Hawai’i and other tropical dryland areas.
 - Maintain Koko Crater Botanical Garden with drought-tolerant plant species.
 - Minimize adverse lighting impacts on aquatic life and avifauna, as well as adverse aesthetic impacts, particularly from stationary point lookouts and along significant view planes.
- **Preservation and Recreation** – Maintain the Kaiwi Scenic Shoreline in a manner that preserves the area’s natural scenic quality and provides educational and passive recreation opportunities.
- **Management** – Protect fragile natural resources, such as the wildlife at Hanauma Bay Nature Preserve, from overuse through continued management and control of visitor numbers and impacts such as walking on the reef and sunscreen pollution.

- **Wāwāmalu Beach Nature Park** – Develop Wāwāmalu Beach as a nature park with the addition of demarcated parking and installation of barriers to protect natural dunes, native vegetation, beach rock, and beach.

3.2.3.2 Active Recreation Areas

- **Expansion** – Expand the Koko Head Regional Park boundary to include the open space/preservation lands mauka of Kalanianaʻole Highway (previously known as Golf Courses 5 and 6), thereby increasing East Honolulu’s active recreation areas.
- **Sport Venues** – Locate areas designed for sporting events that attract high numbers of people along major collector streets or accesses that are separated as much as possible from residential areas and wildlife habitats.
- **Screening and Aesthetics** – Minimize the visibility of perimeter fencing along major collector streets, large recreation buildings or structures, lighting, parking lots and other utilitarian elements through plantings or other appropriate visual screens adjacent to residential areas and major roadways, particularly to soften the view of the park from above at the roadside vista point along Kalanianaʻole Highway.
- **Transit** – Locate bus stops and loading areas at principal entries and adjacent to convenient pedestrian accesses to main activity areas within the park.
- **Lighting** – Reduce light pollution's adverse impact on wildlife and human health, and its unnecessary consumption of energy by using, where sensible, fully shielded lighting fixtures using lower wattage.
- **Access to Recreation Facilities** – Public recreation facilities should be available to users of all skill levels and incomes, particularly Koko Crater Stables to continue horseback riding for public recreational use.

3.2.3.3 Golf Courses

There are three 18-hole golf courses in East Honolulu. The Hawai'i Kai Championship Golf Course and the Hawai'i Kai Executive Golf Course and a driving range are open to

the public, while the Wai‘alae Country Club is a members-only course (**Table 3-4**). These three golf courses are important elements of East Honolulu’s open space system because they provide areas for active recreation and offer visual relief from adjacent urban uses. No additional golf courses are proposed.

Table 3-4: East Honolulu Golf Courses

| Golf Course Name | Use and Ownership | Acreage |
|--|-----------------------------------|----------------|
| Hawai‘i Kai Championship Course | Open to Public Privately Owned | 129.1 |
| Hawai‘i Kai Executive Course and Driving Range | Open to Public Privately Owned | 54.9 |
| Wai‘alae Country Club | Members Only Privately Owned | 144.9 |
| Total | | 328.9 |

Guidelines relating to golf courses in East Honolulu are listed below:

- **Viewsheds** – Maintain golf course designs to provide view amenities for adjacent urban areas, especially from well-used public rights-of-way, parks and vista points.
- **Retention** – Optimize the function of golf courses as passive drainage ways, maximizing their potential to retain or detain stormwater runoff.
- **Through Access** – Provide and maintain safe access along golf courses for regional continuity of pedestrian and bicycle systems.
- **Screening** – When necessary for safety reasons, use screening, landscaping, setbacks, and modifications to the course layout, where feasible, rather than fencing or solid barriers.
- **Irrigation** – Use of non-potable water for irrigation of large landscaped areas in accordance with the BWS Rules and Regulations. If non-potable water is either unavailable or infeasible, a report of the investigation should be coordinated and submitted to the BWS prior to considering the use of potable water.

3.3 COMMUNITY-BASED PARKS

The following section provides an overview and a list of general policies and guidelines pertaining to community-based parks and recreation areas.

3.3.1 OVERVIEW

Park areas that serve more localized populations are classified as community-based parks. There are 122.7 acres of community-based parks in East Honolulu. This includes district, community, and neighborhood parks as well as other, smaller park areas (see **Table 3-5**). The main purpose of community-based parks is to provide active recreation space for residents of the region in the form of playfields and gyms, among others. In addition to meeting the active recreation needs of the region, community-based parks also serve as open space elements and add aesthetic value to the region by providing visual relief from urban land uses.

Table 3-5: Types of DPR Community-Based Parks

| Park Type | Average Acres | Population Service Size | Typical Facilities |
|--------------|---------------|-------------------------|---|
| District | 20 | 25,000 | Playfields, play courts, passive areas, gym/recreation complex, swimming pool |
| Community | 10 | 10,000 | Playfields, play courts, passive areas, recreation building |
| Neighborhood | 6 | 5,000 | Playfields, play courts, passive areas, comfort station |
| Mini Park | Varies | High-Density Area | Benches, picnic tables, children's play area |

The largest community-based park in East Honolulu is the 40-acre Koko Head District Park (see **Table 3-6**). Expansion of this park to 59 acres is possible by incorporating the adjacent former Job Corps site. In East Honolulu, this is the most appropriate location for sports and active recreation facilities designed for league play and other major sporting events. This complex should also include passive use areas for quiet enjoyment and nature learning activities. These areas can also serve as buffers from adjacent residential areas or from natural features, such as the slopes of Koko Crater.

Table 3-6: DPR Community-Based Parks in East Honolulu

| Park Type/Name | Acres | Park Type/Name | Acres |
|------------------------------------|--------------|---|--------------|
| District Parks | | Dog Parks | |
| Koko Head District Park | 40.0 | Hawai'i Kai Dog Park | 1.8 |
| Subtotal | 40.0 | Subtotal | 1.8 |
| Community Parks | | Mini Parks | |
| Kalama Valley Comm. Park | 6.0 | Koko Kai Park | 0.6 |
| Kamilo Iki Community Park | 18.5 | Kamole Mini Park | 2.2 |
| 'Āina Haina Community Park | 6.2 | Kōke'e Park | 0.5 |
| Subtotal | 30.7 | Subtotal | 3.3 |
| Neighborhood Parks | | Private Recreation Facilities (not managed by the DPR) | |
| 'Āina Koa Neighborhood Park | 2.4 | <i>The O'ahu Club</i> | 7.6 |
| Haha'ione Neighborhood Park | 4.1 | <i>The Peninsula</i> | 4.3 |
| Haha'ione Valley Neighborhood Park | 6.2 | <i>Wai'ala'e Iki V Pavilion</i> | 3.1 |
| Kamilo Iki Neighborhood Park | 7.2 | <i>Hawai'i Loa Ridge Clubhouse</i> | 3.1 |
| Koko Head Neighborhood Park | 6.8 | <i>Nā Pali Haweo Lookout Park</i> | 1.4 |
| Kuli'ou'ou Neighborhood Park | 4.4 | <i>Queen's Gate Recreation Center</i> | 1.2 |
| Nehu Neighborhood Park | 1.3 | <i>Kuapā Isle Clubhouse</i> | 0.8 |
| Niu Valley Neighborhood Park | 2.1 | <i>Mariners Village III Rec. Center</i> | 0.5 |
| Wai'ala'e Iki Neighborhood Park | 9.9 | <i>Koko Isle Clubhouse</i> | 0.5 |
| Wailupe Valley Neighborhood Park | 2.5 | Subtotal | 22.5 |
| Subtotal | 46.9 | | |
| Subtotal All Public Parks | 122.7 | Grand Total Public Parks and Private Recreation Facilities | 145.2 |

Private recreation facilities in Hawai'i Kai (Maunaloa) also meet some of the demand for neighborhood parks such as at Mariner's Cove, the Esplanade and others. While private facilities may not be accessible to the general public, they have the ability to reduce demands on nearby public recreation facilities.

In evaluating community-based recreational park needs, the DPR uses a general standard of two acres per 1,000 persons, with one acre per thousand needed for district parks and one acre needed for community parks, neighborhood parks, and mini-parks. Even if these standards are met, there may still be unmet park needs due to demographic, topographic, or other community conditions. Based on this general park

area-to-population standard and East Honolulu's 2010 population of 49,900, the community-based park area of 122.7 acres is approximately 22.9 acres above the minimum requirement. Based on population stabilization anticipated by 2040, there is not a need for new community-based parks in East Honolulu.

There is only one District Park in the region, while DPR's population service ratio (see **Table 3-5**) would suggest the need for two such parks in East Honolulu. However, the land area for Koko Head District Park is twice as large as DPR's standard for District Parks. Moreover, as noted previously, this park can be expanded to 59 acres by incorporating the adjacent Job Corps site.

As suggested in the discussion of Koko Head District Park, the distribution of community-based parks within East Honolulu is slightly uneven. The Hawai'i Kai Neighborhood Board area has approximately 36 acres above the minimum requirement for community-based parks, while the Kuli'ou'ou-Kalani Iki Neighborhood Board area has a deficit of approximately 10 acres according to DPR's population ratios.

However, as mentioned previously, population is not the only factor to consider when evaluating community-based park needs. Other factors, such as the demographic composition and maturity of a neighborhood, should also be taken into account. In East Honolulu, the Kuli'ou'ou-Kalani Iki Neighborhood Board area has a higher share of residents over the age of 65, an older housing stock, and fewer households with related children compared to the Hawai'i Kai Neighborhood Board area. As such, the Kuli'ou'ou-Kalani Iki community does not currently have a strong demand for park facilities such as children's play areas, but conversely, may develop a need for more facilities supporting passive recreation.

There is the potential for an increase in "multi-generation" households (i.e., aging parents living with adult children and pre-school or school-age grandchildren), particularly in the Kuli'ou'ou-Kalani Iki community, as children of elderly residents either move in to care for their aging parents or are unable to live on their own due to economic pressures and high housing costs. These trends may play an important role in the life cycle of the Kuli'ou'ou-Kalani Iki community and may increase the

requirements, by amount and type, and mixture of active and passive recreation facilities over time. (Also see related discussion on housing in **Section 3.5**)

DPR has no current plans to acquire additional land for community-based park development in the region. Expansion of community-based parklands is possible in Hawai'i Kai (Maunaloa), but is limited in the Kuli'ou'ou-Kalani Iki Neighborhood Board area by the lack of available land. However, there are opportunities to expand the availability of recreational facilities oriented to a younger population in the Kuli'ou'ou-Kalani Iki area by jointly, with the Department of Education (DOE), using and improving elementary and intermediate school recreational facilities as community-based parks to overcome the current shortfall.

3.3.2 GENERAL POLICIES

General policies pertaining to community-based parks are as follows:

- Provide adequate parks to meet the recreational needs of the neighborhood residents, particularly community gardens.
- Observe the DPR standard for community-based parks of a minimum of two acres of community-based parks per 1,000 residents, with one acre for district parks and a total of one acre for community parks, neighborhood parks, and mini-parks.
- Expand active recreational facilities at Koko Head District Park by incorporating and developing the adjacent Job Corps Center site.
- Modify recreational facilities in existing parks and increase access to public school facilities in areas where there is limited opportunity to expand park space to respond to changing demographic profiles or recreational needs.
- Expand access to existing park lands by improving neighborhood linkages for non-motorized transportation modes and disguising park boundaries through the transition of park space to paths or greenways.
- Continue efforts to co-locate Neighborhood or Community Parks with elementary or intermediate schools and coordinate the design of facilities

when efficiencies in the development and use of athletic, recreation, meeting, and parking facilities can be achieved.

- Develop additional trails and bike paths to balance trail demands across East Honolulu and alleviate potential overuse at existing trails.

3.3.3 PLANNING GUIDELINES

The following guidelines implement the general policies for community-based parks:

- **Connectivity** – Provide and improve linkages with bikeways and walking paths off-site with the redevelopment of existing parks.
- **Residents' Needs** – Modify community-based parks in areas where recreational needs of residents are not being adequately met.
- **Aesthetic Improvements** – Design and site structural improvements and landscaping in community-based parks to create or add to the aesthetic value of these open space elements.

3.4 HISTORIC AND CULTURAL RESOURCES

The following sections provide an overview and a listing of policies and guidelines for the preservation of historic and cultural resources in East Honolulu.

3.4.1 OVERVIEW

Much of East Honolulu is defined by the old Maunalua Fishpond. Maunalua Fishpond, referred to traditionally as Loko I'a o Maunalua or Keahupua o Maunalua, was 523 acres and the largest ancient fishpond of the Hawaiian Islands. The Maunalua Fishpond was reportedly connected via a tunnel to Ka'ele'pulu Pond, now known as Enchanted Lake, in Kailua. In the 1960s, Kamehameha Schools leased much of what is now Hawai'i Kai (Maunalua) to Henry J. Kaiser who dredged and filled the fishpond to create a subdivision and the private marina.

While many of the ancient fishponds have been filled, wall remnants of large fishponds remain visible. At Wailupe is the 41-acre Loko Nui o Wailupe with its 2,500-foot-long wall. Niu Peninsula is the former Kūpapa Fishpond with its 2,000-foot-long wall.

Cultural and natural resources were carefully conserved by Hawaiian konohiki, or land managers. An advanced system of land and ocean management once fed the regional population sustainably. ‘Uala (sweet potato), ama‘ama (mullet) and limu (seaweed) were among the foods cultivated in East Honolulu. Feral pigs are another traditional food source. Community subsistence hunters continue to hunt the large population in the valleys and mauka areas.

Fish catches were historically shared with kūpuna from the Lunalilo Home for elderly Hawaiians. The Home is a historic landmark that has been in the Maunalua region since the 1920s. Fish and limu were also sold and bartered within the community. Kapu or rest periods for fishing were instituted during fish spawning and managed by the konohiki. In Maunalua Bay konohiki used a flag system to alert boaters when fish were spawning. Muliwai (stream estuaries that meet the ocean), umu (nearshore fish houses) and ko‘a (ocean fish gathering areas) were part of the sustainable aquacultural production system.

While unmarked today, these historic fish gathering sites remain high value areas for community sustainability. Named ko‘a were Keahupua o Maunalua located near the bridge at Kuli‘ou‘ou Beach Park. Pali‘alaea and Huanui were shrines where mullet gathered, while Hina was for akule. These now destroyed sites were located along the Portlock shoreline. Traditional muliwai sites are located at Kapakahi Stream in Kāhala, near Wailupe Beach Park, Niu Stream, Kuli‘ou‘ou Stream, Kamilonui Valley and Kaloko at Wāwāmalu. Hanauma Bay also was favored greatly by the ali‘i for its fishing grounds.

Today, Native Hawaiians and the community at large are working to access, perpetuate, and steward East Honolulu’s resources. Invasive species currently envelop large acreages and active management is necessary. Historic trails and mauka to makai pathways should be restored and maintained. Well known examples of these can be found in the ahupua‘a trail in the back of Wailupe Valley, recently purchased by the City

as the Wailupe Nature Preserve, and the Kealaikapapa paved roadway near Makapu'u. Access to traditional resource gathering should also be preserved. In particular, the former salt making area at the bridge mauka of Joe Lukela Beach Park should be restored and maintained.

Access for surfing, fishing, hunting and diving should be maintained and improved to reopen more customary paths to resources. Buffer and kapu areas also play a role in managing sensitive resources within the landscape.

Large scale ranching and numerous dairies were active in the 19th and first half of the 20th centuries. Piggeries and poultry operations were also part of the agricultural production. The latter part of the 20th century saw a shift away from agricultural sustainability with rapid urbanization. The farms at Kamilonui Valley and Koko Head as well as the Koko Head Stables retain the historic legacy of the area and should be perpetuated. The Koko Crater Stables has been a community resource since its inception in 1962, after the City and County of Honolulu closed a municipal stable located at Kapiolani Park. The Koko Head Regional Park, which encompasses the Koko Crater Stables, was deeded to the City by the Estate of Bernice Pauahi Bishop for one dollar in exchange for the City's agreement to extend and maintain the municipal water system through Maunaloa. The deed further stipulated that use of the property be restricted to public parks or rights-of-way unless otherwise approved by the Bishop Estate Trustees. The Koko Crater Stables has contributed to the community for decades by providing equestrian education and recreation for riders of all ages and levels, and perpetuating East Honolulu's paniolo history. Efforts should be made to preserve the Koko Crater Stables for public recreational use.

In 1930, an archaeological survey of O'ahu documented approximately 60 sites in the area now defined as East Honolulu. Many of these sites, however, have since been destroyed by land-altering activities such as ranching, development, and construction, as well as by erosion and the 1946 tsunami. Numerous archaeological sites do remain though they have not been formally recorded, and lie in undeveloped areas.

Pohaku markers and stone boundary walls distinguish resource districts. Many remain today on hillsides and play a part in water management in addition to their historic

value. Exceptional dry stack walls can still be found along the slopes above Kāhala, Wailupe, and Niu as well as scattered eastward.

Coconut groves that were planted in traditional times remain today. Near Wai‘alae Beach Park are the remnants of what was once the second largest grove on O‘ahu. The shoreline retains groves near Kāhala, Kawaiku‘i Beach Park and Kānewai Spring in Kuli‘ou‘ou.

Traditional burials remain throughout the region. Cliff sides and caves in each valley as well as sand dunes are known burial grounds. Many of these sites have been looted or had the iwi removed to the Bishop Museum. Burial sites retain cultural significance for the descendants and community and should be preserved without disturbance. Lava tubes often contain burials as well as act as conduits for freshwater. They are of great age and care should be taken to maintain their integrity whenever possible. One noted lava tube was said to be a fish passage between Ka‘ele‘pulu Fishpond in Kailua and the Maunaluā Fishpond.

Within the Koko Head Regional Park, a survey conducted in 1988 located one of five sites identified in the 1930 archaeological study. This site, the Koko Head Petroglyphs, was discovered in 1899 and is situated near the Lāna‘i Lookout. The petroglyphs have been extensively altered by erosion and vandals since the 1930 survey, but nevertheless remain significant examples of petroglyph art.

Similarly, in the Queen’s Beach area, approximately 20 sites were documented in the 1930 survey. The features included fishing shrines, house platforms, and a habitation cave. Although survey work done in 1984 found none of these sites, the large quantity of sites recorded earlier make it likely that subsurface cultural deposits and scattered human burials remain in the areas within and surrounding Koko Head Regional Park.

West of Koko Head, archaeological sites consist of shelters, shrines, heiau, burial caves, and burial cliffs. A system of heiau were once found often at ridge elevations overlooking Maunaluā Bay. While many have been destroyed, these sites remain worthy of preservation and restoration when appropriate. Many of the sites require a line of sight view plane to the next heiau as well as to the ocean. Often elevations were

used as kilo or fish spotting points where a spotter would find fish schools and signal to the fisherman out in the ocean. Kilo points include Kawaihoa Point and Hawai'i Loa Ridge.

The Hāwea Heiau complex contains ancient walls, petroglyphs, terraces, a coconut grove, and heiau and is located near the intersection of Hawai'i Kai Drive and Keāhole Street. Pahua Heiau, located at the end of Makahū'ena Place, underwent restoration work during the 1980s. Besides its significance as a fourteenth to eighteenth century heiau, Pahua Heiau is also noted as the Office of Hawaiian Affairs' first landholding.

Makani'olu Shelter in Kuli'ou'ou is on the Hawai'i Register of Historic Places and is one of two such registered sites in East Honolulu. Makani'olu is a pre-contact cave in good condition and is a good representative of its class. Makani'olu is where the first radio-carbon dating in the Pacific was done. The U.S. Coast Guard Makapu'u Point Lighthouse is also on the National Register of Historic Places.

There are also archaeological sites on undeveloped parcels located along cliff faces and deep within the region's valleys. These areas have not been impacted by the tsunami of 1946 or by previous development activity. Some of these areas, however, have been subject to intensive agricultural use in the past.

For example, a privately initiated pedestrian survey of surface and possible subsurface material remains was conducted on a parcel located in Kamilo Nui Valley near the planned extension of Hawai'i Kai Drive. Three archaeological sites were identified: a single, isolated rock pile feature; a small bedrock cavity containing a human molar; and a historic wall which was probably a remnant of a larger complex. Of these sites, only the bedrock cavity was recommended for in-situ preservation.

3.4.2 GENERAL POLICIES

General policies pertaining to historic and cultural resources are as follows:

- Emphasize physical references to East Honolulu's history and cultural roots.

- Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks.
- Preserve and actively maintain significant historic features from earlier periods.
- Retain, whenever possible, significant vistas associated with archaeological features.

3.4.3 PLANNING GUIDELINES

The treatment of a particular historic or cultural site should depend upon its characteristics and preservation value. The following planning guidelines should be used to implement the general policies and determine appropriate treatment:

- **Preservation and Protection** – Determine the appropriate preservation methods on a site-by-site basis in consultation with the State Historic Preservation Officer and cultural practitioners of the area.
 - Require preservation in-situ only for those features for which the State Historic Preservation Officer has recommended such treatment.
 - Recommend in-situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features.
- **Compatible Setting** – Determine the appropriate treatment for a historic site by the particular qualities of the site and its relationship to its physical surroundings in consultation with the State Historic Preservation Officer. The context of a historic site is usually a significant part of its value and care should be taken in the planning and design of adjacent uses to avoid conflicts or abrupt contrasts that detract from or destroy the physical integrity and historic or cultural value of the site. Include sight lines that are significant to the original purpose and value of the site in criteria for adjacent use restrictions.
- **Accessibility** – Determine the degree of access that would best promote the preservation of the historic, cultural and educational value of the site in consultation with the State Historic Preservation Officer, Hawaiian cultural

organizations, and the landowner, recognizing that economic use is sometimes the only feasible way to preserve a site. Public access to a historic site can take many forms, from direct physical contact and use to limited visual contact. In some cases, however, it may be highly advisable to restrict access to sites to protect their physical integrity or sacred value.

3.5 RESIDENTIAL USE

An overview of residential development in East Honolulu is presented below. This is followed by a description of general policies and guidelines that are to be applied to existing and planned residential developments.

3.5.1 OVERVIEW

With the establishment of the Community Growth Boundary to contain the spread of development, housing capacity in East Honolulu should only be increased through infill development. This will occur through development of the few remaining scattered vacant parcels on the relatively level valley floors and on previously developed ridges; through minor subdivisions of some larger residential lots at scattered locations throughout the region; and expansions of existing homes.

The development of 'ohana units, or accessory dwelling units (ADUs), represents a significant opportunity to provide smaller, affordable units as part of the planned infill development. However, out of the approximately 1,800 eligible parcels in East Honolulu, at the current rate of construction, there will be approximately only 50 'ohana units or ADUs built in East Honolulu by 2040. Increasing the number of 'ohana units or accessory dwelling units has the potential to:

- Enable long-term rental housing opportunities affordable to low- and moderate-income, gap group, elderly, and single person households; and
- Assist in making more housing affordable by providing the potential for a built-in (rental) income stream that could partially offset housing and mortgage costs.

This would be particularly advantageous for ADUs within a convenient walking distance (1/4 mile) of shopping centers served by city bus lines. This would increase transit accessibility and reduce reliance on automobiles for households in the 'ohana units.

While the development of large vacant parcels through the normal development process is readily identified and their effects are more immediately apparent, the physical changes wrought by incremental intensification of residential use in existing built-up neighborhoods through minor subdivisions and home expansions will be slower and more dispersed.

Effective residential lot design standards that limit building height, coverage, paving, and removal of landscaping are implemented through the Land Use Ordinance (LUO). These should be reviewed and if necessary modified to minimize the long-term cumulative impact of this gradual transformation, which could otherwise adversely affect the character of existing neighborhoods.

3.5.2 GENERAL POLICIES

The following general policies may be applied to existing and planned residential developments to preserve and enhance the quiet bedroom communities of East Honolulu:

- Accommodate a slight increase of housing capacity in East Honolulu by:
 - Development of new homes on the few remaining vacant lots designated for low-density residential use.
 - Expansion of existing homes (especially 'ohana units on eligible parcels) in built-up residential neighborhoods.
- Respond to the special needs of an aging population by providing future housing opportunities for a variety of living accommodations which are affordable to low- and moderate-income, gap group, and other elderly households. These accommodations could include several forms; such as houses that can accommodate multi-generation households, 'ohana units, home expansions, group living facilities, adult residential care homes,

assisted living units, and continuing care retirement communities such as the Kāhala Nui assisted living units and the Hawai'i Kai retirement community.

- Encourage the development of medical care facilities, including, but not limited to, facilities that provide palliative and hospice care.
- Modify residential neighborhood street design to provide greater emphasis on safe, accessible, convenient and comfortable pedestrian routes, bus stops, bike routes, and landscaping with shade trees. Methods include, but are not limited to: slowing travel speeds, less direct routes, adding and improving crosswalks, and converting on-street automobile parking spaces into seating areas and shaded landscaping. Revision of City street standards, subdivision regulations, and use of traffic calming measures may be required in order to support these policies and the policies identified in the **Complete Streets Design Manual** (2016). Policies that emphasize Complete Streets adhere to the following key principles:
 - Safety;
 - Context sensitive solutions;
 - Accessibility and mobility for all;
 - Use and comfort of all users;
 - Consistency of design;
 - Energy efficiency;
 - Health;
 - Green infrastructure.
- Create an inclusive and accessible urban or suburban environment that encourages active and healthy aging, specifically age-in-place principles and the Universal Design Standards that address or include the following:
 - Equitable, flexibility, simple and intuitive, perception information, tolerance for error, low physical effort, and size and space.
- Suggest the formation of a community-based redevelopment district that would protect, adapt, and relocate residential and commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion.
- Adopt maps and regulations to incorporate the guidance from the **City Climate Commission** and the **Hawai'i Sea Level Rise Vulnerability and Adaptation Report** on vulnerability to coastal erosion and flooding and

other science based projections of climate change impacts into land use regulations and permit processes.

- Encourage new structures to be designed to withstand the anticipated impacts of sea level rise over the building's lifespan.
- Enforce regulations relating to the operation of transient vacation units in residential neighborhoods.

3.5.3 PLANNING GUIDELINES

A summary of the guidelines to implement the general policies are provided below with additional discussion in the following sections:

- **Physical Character and Definition of Neighborhoods** – Establish design guidelines to minimize long-term adverse impacts of new infill development on surrounding neighborhoods. Encourage use of sloped roof forms with wide overhangs. Enhance the boundaries of existing neighborhoods through the use of landscaping, natural features, and building form and siting. Focus neighborhood activity on the local street, common pedestrian rights-of-way, or recreation areas.
- **Transit, Bicycle and Pedestrian-Oriented Residential Streets** – Encourage bus, pedestrian, and bicycle travel, particularly to reach neighborhood destinations such as schools, parks, and convenience stores, by seeking to reduce the number of vehicle miles traveled per person and recognizing the need for accessible design and safe travel conditions for elderly and disabled people. Implement passive and active automobile traffic calming measures on residential neighborhood streets and add street trees to provide shading for sidewalks and bus stops. Implement the policies and guidelines in the **O'ahu Bike Plan**, **Bike Plan Hawai'i**, the **Statewide Pedestrian Master Plan**, and, when completed, the **O'ahu Pedestrian Plan**.
- **Environmental Compatibility** – Encourage energy-efficient features, such as the use of solar panels for generating electricity and heating water, and passive solar design, such as the use of window recesses and overhangs and orientation of openings to allow natural cross-ventilation.

- **Low-Impact Development and Stormwater Retention** – Follow low-impact development standards as properties are redeveloped to encourage the capture of stormwater, sediment, and toxic pollutant runoff on-site and reduce pollutant loads into downstream water bodies. Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.

3.5.3.1 Residential Development

Three categories of urban residential development are recognized by this **Plan**: Single-Family Residential, Low-Density Apartment and Medium-Density Apartment. All of these categories are found only within the Community Growth Boundary.

- **Residential** – Dwellings in this category consist of single-family detached and attached homes or townhouses with individual entries. Density of development may range from 5-12 dwelling units per acre. Building heights generally do not exceed two stories.
- **Low-Density Apartment** – This category consists of predominantly two- and three-story townhouse complexes, stacked flats, or low-rise apartment buildings; parking provision may comprise a separate story. Overall building height should not exceed 40 feet. Buildings may have elevators and common entries for multiple dwellings. Density of development may range from 10-30 dwelling units per acre. The Low-Density Apartment designation will be applied only to sites that have already been developed in a manner that is consistent with the density and building height guidelines for this category, and to undeveloped areas zoned for the Apartment District as of the effective date of this **Plan**.
- **Medium-Density Apartment** – This category of residential development takes the form of multi-story apartment buildings with densities in the range of 25-90 dwelling units per acre. Medium-Density Apartment designation is applied only to sites that have already been developed in a manner that is generally consistent with the density and building height guidelines for Medium-Density Apartment use, or are collocated on a site designated for commercial use and proposed mixed-use development.

For all existing developments in the Medium-Density Apartment category:

- Maintain building height setbacks and landscaping to reduce the direct visibility of taller buildings from lower density residential areas and from the street front. Possibly add low-rise accessory buildings within the height setback areas to provide a visual transition from the high-rise apartment building to adjacent areas. Building height should not exceed 90 feet.
- Consider mixed-use zoning to permit limited commercial uses, primarily to serve residents of an apartment complex and the immediate neighborhood, depending on site characteristics and adequate justification for the need for such commercial uses based on demand and convenience to residents.

3.5.3.2 Special Needs Housing and Senior Housing

Special Needs Housing comprises facilities designed for certain segments of the population, such as elderly and disabled persons. Often such housing includes special features, such as: congregate dining and social rooms; laundry, housekeeping and personal assistance services; shuttle bus services for residents; skilled nursing beds, and physical therapy clinics.

Group living facilities are allowed in all residential areas. Special needs housing for the elderly can be located in apartment, apartment mixed use, and business mixed use districts. Both types of facilities require a Conditional Use Permit Major (CUP-Major), which requires a public hearing.

The guidelines for special needs housing and senior housing are as follows:

- **Proximity to Transit** – Locate special needs housing near transit services and commercial centers.
- **Universal Design** – Apply the seven principles of Universal Design to projects to support the seniors who wish to age-in-place, as articulated in the **Making Honolulu an Age-Friendly City: An Action Plan**.

- The seven principles of universal design, intended to make products or environments accessible to everyone in society, incorporate or address the following: equitable, flexibility, simple and intuitive, perception information, tolerance for error, low physical effort, and size and space.
- **Density** – Accommodate an allowable building density of 10-40 units per acre, not including beds in skilled nursing facilities. Allow designated affordable housing projects of up to 40 units per acre.
- **Design** – Utilize building and roof form, orientation, location of entries, landscape screening, and height to maintain compatibility with the existing residential uses and scale.
- **Map** – This land use is not specifically designated on **Map A-2, Urban Land Use** as it is an allowable use inclusive in residential areas.

3.5.4 OTHER USES IN RESIDENTIAL AREAS

The following uses are not specifically designated on **Map A-2, Urban Land Use**, but are allowed in all residential areas: elementary schools, parks, churches, community centers, child care centers, and public facilities and utilities serving the area.

3.6 NON-RESIDENTIAL DEVELOPMENT

This section provides an overview of non-residential development in East Honolulu followed by general policies and planning guidelines for the location, expansion or renovation of such uses. Non-residential use includes retail commercial, office, service-oriented industrial, visitor accommodations, and institutional uses.

3.6.1 OVERVIEW

East Honolulu has seven commercial centers. Hawai'i Kai Towne Center, the largest retail complex in East Honolulu, provides parking for approximately 1,010 vehicles and attracts shoppers from outside the region with big box stores as anchor tenants.

Koko Marina Shopping Center, the second largest complex, includes ocean recreation-related services such as boating equipment and repair and dive tour headquarters; restaurants and entertainment attractions; and retail shops that serve the needs of both visitors and residents in the area. The other commercial centers located in the **Plan** area include the Hawai'i Kai Shopping Center, Niu Valley Shopping Center, 'Āina Haina Shopping Center, Haha'ione Valley Center, and Kalama Village Center.

The market areas for other commercial centers listed above are limited mostly to the communities for which they are named, emphasizing food, household products and personal services. In all of these smaller centers, additional floor area could be developed within their existing land areas with more efficient site design. However, demand for expansion has not been strong, and given the minimal anticipated population growth, there is little prospect for commercial expansion.

Only the first phase of Kalama Village, occupying less than a third of the land area that had been designated for this project, has been developed, and it has struggled to lease the developed floor area.

Some commercial activities in the Niu Valley Center are anticipated to be displaced and their functions moved to nearby neighborhood commercial centers. A religious community, which has moved into the shopping center, is diminishing the original commercial function.

Expansion of Costco and the addition of a storage facility has increased the commercial square footage in Hawai'i Kai (Maunaloa). Commercial zones in East Honolulu appear sufficient in view of the projected population stabilization. However, an opportunity still exists for additional commercial space within existing commercial-zoned parcels.

There is approximately 468,000 square feet of office space supply in the **Plan** area, a majority of which is located in Hawai'i Kai (Maunaloa). Historically, East Honolulu's vacancy rate for office space has been one of the lowest on O'ahu, with some of the highest asking base rent.

With the exception of the Japan-America Institute of Management Science (JAIMS), which is a private institute, most of East Honolulu’s office inventory is located within and adjacent to the Koko Marina Shopping Center in two buildings, Hawai’i Kai Corporate Plaza and Hawai’i Kai Executive Plaza, that are located along Kalaniana’ole Highway makai of the Hawai’i Kai Towne Center. These areas provide a combined total of nearly 200,000 square feet of office floor area. **Table 3-7** lists the locations and gross leasable area.

Table 3-7: Office Inventory in East Honolulu

| Office Building | Year Opened | Gross Leasable Area (Approx.) |
|---|-------------|-------------------------------|
| Japan-America Institute of Management Science (JAIMS) | 1972 | 257,000 |
| Koko Marina Office Space | 1963 | 47,760 |
| Hawai’i Kai Executive Plaza | 1990 | 41,582 |
| Hawai’i Kai Corporate Plaza | 1987 | 39,355 |
| ‘Āina Haina Professional Building | 1982 | 22,550 |
| Koko Head Plaza | 1975 | 21,226 |
| Hawai’i Kai Medical/Office Center | 1987 | 16,598 |

There is a probable demand for certain light industrial uses that are oriented to the East Honolulu communities. Such uses could include, among others, small warehousing facilities, and appliance and automobile repair shops. However, the anticipated demand for space in this region is not sizable and the type and scale of such uses that may be needed could be conveniently located in a large commercial center with appropriate environmental and aesthetic controls to promote compatibility with adjacent uses. Many of these types of uses are in fact already located within some of East Honolulu’s commercial centers.

East Honolulu has only one resort hotel – the Kāhala Hotel and Resort – which was developed in the 1970s, and continues to serve visitors and residents.

3.6.2 GENERAL POLICIES

For purposes of this **Plan**, the various types of non-residential uses are defined and designated in four categories: Neighborhood Commercial Center, Regional Town Center, Resort and Institutional. The policies pertaining to each of these categories are as follows:

- **Neighborhood Commercial Center** – The existing centers in ‘Āina Haina, Niu Valley, Kalama Village, and Haha‘ione Valley will continue to function as Neighborhood Commercial Centers. There is no need to designate additional land for expansion of the Neighborhood Commercial Centers. In fact, market response suggests that land that was originally designated for expansion of the site area of Kalama Village Center should be redesignated for residential or mixed-use (residential and commercial/office). Modest additions of floor area and parking could be made to these centers through redesign of the sites they presently occupy, if needed. These centers should be oriented to serve the local community.
- **Regional Town Center** – Create a “Regional Town Center” in the Hawai‘i Kai Marina area by strengthening the relationship between the existing commercial uses in this area, increasing the mix of uses and types of services and activities in this commercial zone, and providing more convenient transportation access and improved amenities and connections for people who walk and bike.
- **Resort and Institutional** – Prohibit new or expanded land areas for resorts and institutional campuses. A new or expanded resort destination in East Honolulu would be contrary to **General Plan** policy. The population forecast for 2040 in East Honolulu does not warrant major new schools, hospitals, or similar institutions to serve these communities, and establishment of a large institution in East Honolulu for the purposes of creating additional employment in the region would be contrary to the **General Plan** policy to direct job growth to the Primary Urban Center, ‘Ewa, and Central O‘ahu.

- **Mixed Uses in Business Districts** – Allow low-rise, multi-family residential use as a permitted accessory use above the first floor in the B-1 Neighborhood Business District and the B-2 Community Business District.

In addition to the policies pertaining to the specific uses above, the following general policy may be applied to existing and planned non-residential development:

- **Sea Level Rise** – Protect, adapt, or relocate commercial structures, public facilities, and natural and cultural resources vulnerable to sea level rise impacts, including coastal flooding, inundation, and erosion as feasible.

3.6.3 PLANNING GUIDELINES

The following planning guidelines apply to neighborhood and community commercial centers. They should apply to the expansion or renovation of existing commercial centers, as well as to the development of new neighborhood commercial centers.

- **Scale and Purpose of Neighborhood Commercial Centers** – Neighborhood Commercial Centers are located on 5 to 10 acres or less, within or adjacent to a residential area, and whose primary access and frontage is from a collector street. The center may have up to 100,000 square feet of floor area. These centers emphasize retail stores, personal services, and public facilities designed to serve the needs of the surrounding community; i.e., typically residents within a one- to two-mile radius. If redeveloped, Neighborhood Commercial Centers should take into account the potential impacts of climate change and sea level rise over the life of the center. Building heights must conform to development standards of the underlying zoning district.
- **Mix of Uses in the Regional Town Center** – The Regional Town Center serves as the regional hub for commercial activity serving both neighborhood residents and visitors. This center comprises four components:

- The Hawai'i Kai Towne Center, given its size and location relative to principal travel routes in the region, is the de facto focal point for regional shopping and services. Enhance the Hawai'i Kai Towne Center as a focus of activity by offering a greater diversity of uses potentially including: long-term apartment uses, public uses, and indoor small- to medium-size “service-industrial” establishments.
- The Koko Marina Shopping Center, while physically separated from the Hawai'i Kai Towne Center, plays a complementary role with a focus on marina and ocean recreation services, specialty shops and entertainment attractions. Enhance the Koko Marina Shopping Center as a recreation/entertainment oriented commercial complex with the addition of more services for ocean recreation, restaurants, and similar attractions.
- The two office buildings are the third component of the Regional Town Center. Convert excess ground or second-floor space in office buildings to retail or other commercial uses if there is a demand for other uses.
- The fourth component of the Regional Town Center is the Hawai'i Kai Shopping Center. Its size and tenant mix is similar to that of a Neighborhood Commercial Center. The Hawai'i Kai Shopping Center continues to play a supporting role in the Regional Town Center through improvements in physical linkages.
- **Resorts and Institutional** – If redeveloped, the resort area in Kāhala needs to take into account the projected impacts of climate change and sea level rise over the length of the building’s lifespan.
 - Limit building heights generally to not exceed 60 feet for Institutional use and 70 feet for Resort use. Height setback transitions will be provided from street frontages, the shoreline, and adjacent residential areas.
 - Signage will be non-illuminated or indirectly illuminated. Appropriately shield high-intensity lighting downward to minimize impact on adjoining or affected uses and wildlife.
- **Physical Linkages and Accessibility** – Incorporate site design and facilities to promote pedestrian, bicycle, and transit access in Neighborhood Commercial Centers and the Regional Town Center.

- Provide at least one pedestrian access way from the public sidewalk or other off-site pedestrian pathway to the entrance of establishments in the commercial center that does not require crossing a traffic lane or parking lot aisle or driveway.
- Place parking and service areas behind the buildings or otherwise visually screened from streets and residential areas.
- Prioritize pedestrian and bicycle access as more important for the Neighborhood Commercial Centers, while transit access is more significant for the Regional Town Center.
- Achieve efficiencies and other improvements in traffic and parking conditions by redesigning or re-siting parking lots, driveways and walkways and providing shuttle bus services between the components of the regional Town Center.
- Develop a pedestrian route along the marina and bridges to link the adjacent components to provide convenient access between the two commercial centers and enhance the recreational value of the marina.
- Encourage businesses to develop evacuation plans and guidelines in the event of a disaster.
- **Appropriate Scale and Architectural Style** – Maintain consistency between the building mass of a commercial center and its urban and natural setting.
 - Strive to have Neighborhood Commercial Centers reflect a residential architectural character.
 - Allow the Regional Town Center to reflect a more varied, urban architectural character. Future additions or renovations to the Hawai'i Kai Towne Center, in particular, will reflect a more positive orientation to its Marina frontage.
 - Provide a landscaped screen of trees and hedges for parking areas in setbacks with shade trees throughout the parking lot for aesthetics and stormwater retention.
 - Use only low-level or indirect lighting, appropriately shielded and pointed downward, which meets safety and security requirements in parking lots.

- Ensure compatibility between the type, size, design, placement, and color of signage and the context of adjacent facilities and uses.
- Avoid blank facades on portions of buildings visible from a street or the Hawai'i Kai Marina by using texture, articulation, color, and fenestration to create visual interest.
- **Environmental Compatibility** – Encourage energy-efficiency features, such as the use of solar panels for generating electricity and heating water, and passive solar design, such as the use of window recesses and overhangs and orientation of openings to allow natural cross-ventilation.
 - Incorporate resource conservation measures, such as water constrictors and facilities for the sorting of waste materials for recycling, in the design of new development.
 - Require the use of low-impact development standards for any significant new construction or redevelopment, particularly in areas that may have large impervious surfaces, in order to hold stormwater on-site instead of discharging it into storm drains or stream channels.
 - Provide incentives for owners to develop rain gardens, permeable parking lots and driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.
 - Projects shall comply with the Clean Water Act.

3.6.4 OTHER USES IN NON-RESIDENTIAL AREAS

Other uses in non-residential areas are shown on **Map A-2**, Urban Land Use in **Appendix A** as follows:

Elementary schools, churches, child care centers, fire stations, and other public facility and utility uses serving the area are not specifically designated on the Urban Land Use Map, but are allowed in all residential and commercial areas, subject to appropriate zoning controls to assure compatibility with surrounding uses. The general locations of existing larger institutions, such as high schools, are indicated by special symbols.

4. PUBLIC FACILITIES AND INFRASTRUCTURE **POLICIES AND GUIDELINES**

The vision for East Honolulu will be implemented in part through application of the general policies and guidelines for public facilities and infrastructure that are presented in the following sections.

4.1 TRANSPORTATION SYSTEMS

This section describes the existing road, transit, and bikeway network in East Honolulu as well as plans for future improvements. These elements are shown in the Public Facilities Map in **Appendix A**. The section concludes with general planning policies and guidelines to direct future transportation system development in East Honolulu.

4.1.1 EXISTING AND PLANNED ROADWAY NETWORK

4.1.1.1 Existing Roadways

The only major roadway arterial in East Honolulu is Kalanianaʻole Highway (State Highway 72), which links the Primary Urban Center to the communities of East Honolulu and is also a scenic, secondary route between Kailua/Waimānalo and Honolulu.

Kalanianaʻole Highway consists of six lanes (three lanes in each direction). One of the lanes is designated as a High Occupancy Vehicle (HOV) contra-flow lane, thus providing four Honolulu-bound lanes during the morning peak between West Halemaʻumaʻu Street and ʻĀinakoā Avenue. This HOV lane is restricted to buses, vanpools, motorcycles, and carpools. Other improvements made to this section of the highway include left turn lanes, bus turnouts, improved traffic control systems, and improved lighting.

Major roadway collectors in East Honolulu are those leading from Kalanianaʻole Highway into the ridge and valley neighborhoods. Important intersections include, but are not limited to, ʻĀinakoā Avenue, Kalani Iki Street, West Hind Drive, Hawaiʻi Kai Drive, Keāhole Street, and Lunalilo Home Road. Hawaiʻi Kai Drive runs parallel to Kalanianaʻole Highway through parts of Hawaiʻi Kai (Maunaloa). A portion of the Hawaiʻi Kai Drive Extension was constructed with a narrower width of 26 feet rather than the normal 40-foot width to reduce the amount of through traffic allowed.

American commuting habits, and therefore their parking needs, are changing. People are increasingly leaving their cars behind in favor of riding transit, ridesharing, walking, biking, and even scootering. Additionally, as the population of East Honolulu continues to age, there will be fewer commuters resulting in potentially less congestion during peak hours.

4.1.1.2 Planned Roadways

Planning and development of roadways are the responsibility of the State Department of Transportation and the City Department of Transportation Services. Roadway projects using federal transportation funds also involve the Oʻahu Metropolitan Planning Organization (OMPO), a joint City-State agency.

In April 2016, OMPO published the **2040 Oʻahu Regional Transportation Plan (ORTP)**. The **2040 ORTP** recognizes the impact of the transportation and land use cycle which has resulted in the urban fringe development pattern found in East Honolulu. According to the **2040 ORTP**, no major projects are planned for East Honolulu's roads. Therefore, it is not anticipated that there will be an increase in pressure for development.

4.1.2 TRANSIT SYSTEM

East Honolulu is served by 11 bus routes. Bus service in Hawaiʻi Kai (Maunaloa) is complemented by the Hawaiʻi Kai park and ride facility on Keāhole Street across from the Hawaiʻi Kai Towne Center. Park and ride facilities, which serve as a central access

point for buses and autos, are ideal for lower-density areas such as Hawai'i Kai (Maunaloa).

There are no plans to extend or expand the number of routes, but the frequency and capacity of transit service may be increased by switching to a hub-and-spoke system, potentially freeing up existing buses. Additional service enhancements are also possible by adding more bus stops, shifting to smaller vehicles for upper valley neighborhoods, and making highway and street improvements designed to make bus travel more efficient, convenient, and comfortable.

4.1.3 BIKEWAY SYSTEM

As of 2013, O'ahu had at least 134 miles of bikeways, including at least 40 miles of new bikeways since 1994. **Bike Plan Hawai'i** (2013), the current State master plan for bikeways, proposes another 13 miles for East O'ahu. In addition to the State's **Bike Plan Hawai'i**, the City and County of Honolulu Department of Transportation Services also publishes the **O'ahu Bike Plan**, published in August 2012, and updated in 2019. Both plans contain timetables for development dependent upon construction feasibility (including right-of-way acquisition) and funding. The **O'ahu Bike Plan** defines the various types of bikeways as follows:

- **Shared Use Paths** – Shared use paths are two-way facilities that are physically separated from motor vehicle traffic and used by bicyclists, pedestrians, and other non-motorized users. Shared use paths are often located in an independent alignment, such as a greenbelt or abandoned railroad right-of-way, and are used for recreation, leisure, and commuting.
- **Protected Bike Lanes** – Protected bike lanes (also known as separated bike lanes or cycletracks) are an exclusive bikeway facility that combines the user experience of a shared use path with the on-street infrastructure of a conventional bike lane. They are physically separated from motor vehicle traffic and distinct from the sidewalk.
- **Buffered Bike Lanes** – Buffered bike lanes are created by painting a flush buffer zone between a bike lane and the adjacent travel lane. While buffers are typically used between bike lanes and motor vehicle travel lanes to increase bicyclists' comfort, they may also be provided between

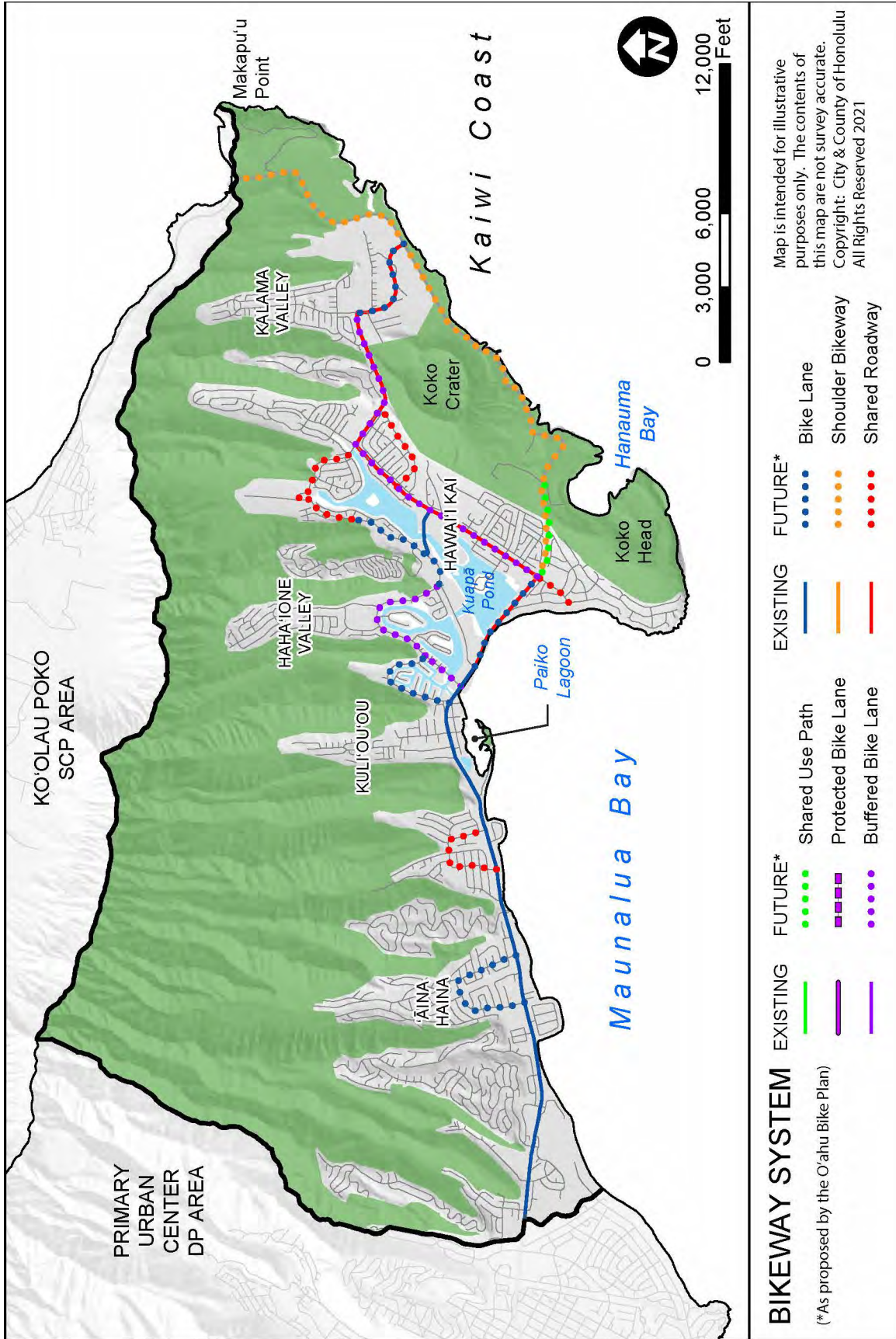
bike lanes and parking lanes to discourage bicyclists from riding too close to parked vehicles.

- **Bike Lanes** – Bike lanes provide an exclusive space for bicyclists in the roadway through the use of lines and symbols. Bike lanes are for one-way travel and are normally provided in both directions on two-way streets, and on one side of a one-way street. When roadway width is limited and the road is sloped, a bike lane may be provided in only the uphill direction. This is referred to as a climbing lane.
- **Shoulder Bikeways** – Shoulder bikeways are typically reserved for rural road cross-sections. Paved shoulders provide a range of benefits: they reduce motor vehicle crashes; reduce long-term roadway maintenance; ease short-term maintenance, such as debris clearing; and provide space for bicyclists and pedestrians.
- **Shared Roadways** – Shared roadways are bikeways where bicyclists and motor vehicles are expected to share the same travel lane. They are denoted by pavement marking (sharrows) and/or signage. They are typically used in locations with low traffic speeds and volumes or as a temporary solution on constrained higher-traffic streets.

In East Honolulu, the existing bikeway system consists of a bike lane along Kalaniana'ole Highway from Kāhala (‘Āinakoā Street) to Hawai‘i Kai (Keāhole Street); a signed shared roadway along Kalaniana'ole Highway from Keāhole Street to Lunalilo Home Road; a signed roadway along Lunalilo Home Road to Hawai‘i Kai Drive; and a bike lane along Wailua Street between Hawai‘i Kai Drive and Lunalilo Home Road. (see **Exhibit 4-1**).

The State's **Bike Plan Hawai‘i** proposes substantial additions to East Honolulu's bikeway system. Proposed signed shared roadways would be included on various roadways extending into ‘Āina Haina, Niu Valley, Haha‘ione Valley, and Hawai‘i Kai (Maunalua). A signed shared roadway is proposed along the Hawai‘i Kai Drive-Kealahou Street corridor and along ‘Anali‘i Street and Po‘olā Street. Kalaniana'ole Highway from Lunalilo Home Road, past Hanauma Bay and Sandy Beach, to Makapu‘u is recognized as a candidate for a shared-road shoulder bikeway. Such a bikeway would take advantage of the State's scenic Maunalua-Makapu‘u Scenic Byway.

Exhibit 4-1: Bikeway System



4.1.4 GENERAL POLICIES

The following general policies support the vision for complete streets, age-friendly communities, and a multi-modal transportation system in East Honolulu:

- Maintain East Honolulu’s role as a predominantly residential urban fringe area with limited future growth by designing a transportation system that provides:
 - Adequate and comfortable access between communities, shopping, and recreation centers in East Honolulu.
 - Improved access to adjacent areas.
 - Adequate person-carrying capacity for peak-period commuting to and from work in the Primary Urban Center for all modes of travel.
- Reduce reliance on the private passenger vehicle through the implementation of the findings and recommendations found in the Statewide Pedestrian Master Plan, the Honolulu Complete Streets Design Manual, the Bike Plan Hawai‘i, the O‘ahu Bike Plan, the O‘ahu Pedestrian Plan, and the Honolulu Age-Friendly City Action Plan.

4.1.5 PLANNING GUIDELINES

- **Commuter Travel** – For commuter trips the objective is to minimize the impact of population growth on travel times and improve safety of all commuters.
 - Provide improved services and facilities for express buses, such as more frequent and more comfortable vehicles.
 - Expand improved park-and-ride facilities, including possible relocation and provision of compatible accessory uses.
 - Promote ridesharing and vanpooling.
 - Increase person-carrying capacity on Kalaniana‘ole Highway for commuter travel without expanding automobile rights-of-way by constructing facilities to increase the safety and comfort of users of active modes of travel.

- Decrease the use of single-occupant, or even zero-occupant, automobile trips during commute times by:
 - Converting regular automobile lanes into additional HOV lanes during regular or rush hour times.
 - Increasing the vehicle occupancy requirement of the use of the HOV lane.
- Improve pedestrian and bicycle conditions along Kalanianaʻole Highway to improve safety and mobility, consistent with the **Statewide Pedestrian Master Plan**.
- **Local Trips** – For local trips, the objective is to promote alternative modes of travel and less automobile travel.
 - Modify rights-of-way design in selected areas, particularly along designated bike lanes and routes, principal pedestrian routes and street crossings, and near bus stops. Change travel way widths or curb radii, pavement texture, introduce appropriate signage, and provide generous landscaping for both aesthetics and stormwater retention. Implement lane restriping during repaving projects.
 - Design on-street and off-street parking facilities more efficiently to encourage joint use of parking in ways that ensure public safety and better manage stormwater, sediment, and toxic pollutant runoff.
- **Streetscape** – Roadway design should be altered to encourage greater bicycle and pedestrian use and support users of all ages.
 - Provide more convenient pedestrian paths within commercial centers, transit stops, parks, beaches, schools, senior living facilities, and other high-activity areas to encourage people to walk short distances for multi-purpose trips instead of moving the vehicle to another parking facility.
 - Ensure street furniture is comfortable and does not impede sidewalk movement. See the **Complete Streets Design Manual**.
 - Ensure all lighting is shielded and pointed downward to protect the night sky, reduce light pollution, and protect wildlife, particularly in key areas such as along the Kaiwi coastline. Any additional lighting or changes to existing lighting should maintain or improve night sky visibility while also creating places that feel safe and secure.

- Discourage the use of gated communities and encourage existing gated communities to improve adjacent streetscape and disguise the public-private boundary.
- Support the Safe Routes to School program and projects to improve pedestrian and bicycle links around schools.
- Preserve and enhance existing crosswalks. Install additional enhanced crosswalks, especially near open spaces, parks, shopping centers, and other public gathering places.
- Include more landscaping along roadways to improve aesthetics, to manage stormwater, sediment, and toxic pollutant runoff, and to filter oils and sediment from the roadway improving downstream water quality.
- Implement a pedestrian system around the Hawai'i Kai Marina to improve accessibility to various waterfront locations (see **Section 3.1.2.6**).
- Implement traffic-calming measures in appropriate residential areas to reduce average motor vehicle speeds and make vehicular routes less direct, thereby increasing safety and enjoyment for pedestrians and bicyclists.
- Design on-street and off-street parking facilities more efficiently to encourage joint use of parking in ways that ensure public safety and better manage stormwater, sediment, and toxic pollutant runoff.
- **Resiliency** – Roadway design, particularly along Kalaniana'ole Highway in the vicinity of Kuli'ou'ou, should take into account the anticipated impacts of sea level rise to ensure safe and efficient access between neighborhoods is maintained.

4.2 WATER ALLOCATION AND SYSTEMS DEVELOPMENT

4.2.1 OVERVIEW

In 1987, the State enacted the Water Code (HRS Chapter 174C) in order to protect, control, and regulate the use of the State’s water resources. This Code is implemented through the **Hawai’i Water Plan**, which addresses water conservation and supply issues on a statewide level by incorporating county water plans and water-related project plans.

The **O’ahu Water Management Plan** (OWMP), last published in 2008, is the City and County of Honolulu’s component of the **Hawai’i Water Plan**. The OWMP sets forth strategies to guide the State Commission on Water Resource Management (CWRM) in planning and managing O’ahu’s water resources. The BWS’s **Water Master Plan** was adopted by the Board in October 2018. The Water Master Plan is a comprehensive “living” document that will guide future water system improvements.

Another component of the **Hawai’i Water Plan** is the **Water Resource Protection Plan** (2019). According to the CWRM, “the objective of the **Water Resource Protection Plan** is to protect and sustain ground and surface water resources, watersheds, and natural stream environments statewide. Such protection requires a comprehensive study of occurrence, sustainability, conservation, augmentation, and other resource management measures.”

The BWS has begun the development of **the East Honolulu Watershed Management Plan**, one of eight district water management plans that comprises **the O’ahu Water Management Plan**. The **East Honolulu Watershed Management Plan** will detail any new water source development or redistribution changes that would impact East Honolulu’s water importation from Primary Urban Center or Windward water sources.

In East Honolulu, potable water is primarily supplied by the BWS. Between 2013 and 2017, East Honolulu consumed about 6 percent of the island wide potable water, a total 8.4 mgd, down from 9.3 in 2010. According to the BWS, by 2040 East Honolulu will

continue to experience a similar average demand for potable water of approximately 8.6 mgd due to continued conservation efforts and little to no anticipated population growth.

Previously, BWS identified several potential well sites in the Wai'alaie East and West aquifers that could provide sufficient water supply for East Honolulu. The Wai'alaie West aquifer has a sustainable yield of 2.5 mgd, of which 2.797 mgd is permitted and 1.75 mgd is used. The Wai'alaie East aquifer has a sustainable yield of 2 mgd, of which 0.79 mgd is permitted and 0.16 mgd is used. The balance of available supply consists of low-yield, very expensive wells.

For the near term, BWS does not have plans to develop any groundwater sites in East Honolulu due to decreasing demand and economic feasibility. Other management strategies identified in the OWMP include water conservation, groundwater development in outlying areas, surface water development, desalination, and water recycling. Although the BWS would be responsible for the development of any new wells, the State CWRM has final authority in all matters regarding administration of the State Water Code.

Projected decreases in rainfall due to climate change will also encourage adaptations and redevelopments which conserve potable water and develop alternative non-potable water sources.

4.2.2 GENERAL POLICIES

General policies pertaining to East Honolulu's potable and non-potable water systems are as follows:

- Integrate management of all potable and non-potable water sources, including groundwater, stream water, stormwater, and effluent, following State and City legislative mandates.
- Adopt and implement water conservation and stormwater management practices, in the design of redevelopment projects and the modification of existing uses, including landscaped areas.

- Research and prepare for the potential impacts of sea level rise on ground water aquifers and water supply infrastructure.

4.2.3 PLANNING GUIDELINES

- **Development and Allocation of Potable Water** – BWS will coordinate development of potable water sources and allocation of all potable water intended for urban use on O‘ahu.
- **Certification of Capacity** – BWS will certify that adequate potable and non-potable water is available in order for a new residential or commercial development to be approved.
- **Water Conservation Measures** – Conserve potable water by implementing the following measures, as feasible and appropriate:
 - Encourage the use of low-flush toilets, flow restrictors, and other water-conserving devices in commercial and residential redevelopments.
 - Encourage the use of indigenous, drought-tolerant plants and drip irrigation systems in landscaped areas and promote stormwater retention and infiltration on-site.
 - Encourage timely leak repair for distribution systems.
 - Encourage the use of tertiary-treated recycled water for the irrigation of golf courses and other landscaped areas where this would not adversely affect potable groundwater supply.
 - Expand use of reclaimed water in State and County Facilities in accordance with HRS 174C-31.
 - Encourage use of reclaimed water in redevelopment projects.
 - Require the use of low-impact development standards for any significant new construction or redevelopment in order to hold stormwater on-site instead of discharging it into storm drains or stream channels.

- Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.

4.3 WASTEWATER TREATMENT

East Honolulu is divided into two wastewater service areas:

- The western portion of the region, from Kāhala to Niu Valley, is part of the East Māmala Bay service area. Wastewater from this service area is pumped to the Sand Island Wastewater Treatment Plant (WWTP) via the Ala Moana wastewater pump station.
- From Kuli'ou'ou eastward, sewage is pumped to the privately operated East Honolulu Wastewater Treatment Plant.

4.3.1 SAND ISLAND WASTEWATER TREATMENT PLANT

The Sand Island WWTP had an original design capacity of 82 mgd average flow. In 2000, expansion projects were begun that will increase the daily average plant capacity from 82 mgd to 90 mgd and will increase wet weather capacity from 210 mgd to 270 mgd. Some components of the collection system, including sewer lines and pump stations, are at or close to 100 percent capacity. Between 2016 and 2040, the Department of Environmental Services (ENV) projects that nearly all of the increase in wastewater flows at the Sand Island WWTP will be from the Sand Island sewer shed.

Wastewater flow generated in East Honolulu, specifically from the Kāhala-Niu Valley sewer shed, is only a very small portion of the total flow to Sand Island and is projected to increase by less than 3 percent between 1995 and 2020. Therefore, the projected increase from East Honolulu flows will have a negligible impact on capacity demand at the Sand Island WWTP. In order to meet future demand throughout the area served by the Sand Island WWTP, the **East Māmala Bay Final Wastewater Facilities Plan** (1993) recommends a combination of increasing capacity and reducing flows via water conservation and rehabilitation projects.

During resurfacing of Kalanianaʻole Highway, a temporary emergency sewer line was placed above ground within the median. This temporary line has been replaced with a new permanent underground line.

4.3.2 EAST HONOLULU WASTEWATER TREATMENT PLANT

The privately owned East Honolulu WWTP opened in 1965 and is located on the mauka side of Kalanianaʻole Highway near Sandy Beach. The State Public Utilities Commission requires that the plant accept wastewater from public or private sources in the service area.

The plant primarily collects wastewater from homes in the Hawaiʻi Kai (Maunaloa), Kuliʻouʻou, Paikō, and Portlock communities. Some wastewater is also received from commercial users around Koko Marina. The plant serves about 37,000 people, or 74 percent of East Honolulu's 2010 population.

The East Honolulu WWTP is a partial-tertiary treatment facility. The plant's design capacity is 5.2 mgd with average flows at approximately 4.5 mgd. The plant processes about 80 gallons per capita per day and removes up to 97 percent of biological oxygen demand effluents. Pipes along Lunalilo Home Road have been relined and the treated effluent is discharged via a 36-inch outfall, 1,400 feet off Sandy Beach at depths between 29 and 45 feet. The receiving waters are classified as "Class A" (generally dry, open coastal water) and "Class II" (marine bottom type) by the State Department of Health (DOH). Biosolids from the plant are dried and taken to the Waimānalo Gulch landfill.

Flows from Kuliʻouʻou Valley are pumped via the Kuliʻouʻou Wastewater Pump Station (WWPS) to the Hawaiʻi Kai system under an existing agreement between the City and East Honolulu Community Services, the private company that owns and operates the Hawaiʻi Kai system and the East Honolulu WWTP. The average daily flow from the Kuliʻouʻou WWPS is about 0.50 mgd and is not projected to increase over the next 25 years. An engineering study prepared by ENV in 1999 recommended that the current

system for disposal of Kuli'ou'ou sewage flows should continue with the wastewater pumped to the Hawai'i Kai disposal system. Some tributary collection pipes have been rehabilitated. A primary objective is to prevent wastewater spills and provide adequate collection and transmission capacity to accommodate projected high rainfall/peak flow conditions.

Under the State of Hawai'i's rules and guidelines for wastewater systems and the treatment and use of reclaimed water, recycled water from the wastewater facility can be used for irrigation purposes. A 2 mgd filtration and disinfection facility has been built to produce tertiary treated R-1 rated recycled water, which can be used without restriction for irrigation purposes. The State authorized the Hawai'i Kai Golf Course to use this recycled water from the East Honolulu WWTP for irrigation. However, recycled water is not currently being used for golf course irrigation due to its high salinity, but this problem may be mitigated in the future, thereby enabling the use of recycled water.

4.3.3 CESSPOOLS

In addition to the majority of homes that are connected to the two sewer systems, there are many homes in East Honolulu which are served by cesspools or septic tanks with leaching fields. Many locations that host cesspools in East Honolulu feature critically narrow depths to groundwater and/or are located within 200 feet of a shoreline.

Cesspools do not treat sewage effluent and inject raw sewage into groundwater, which has the potential to spread disease and contaminate recreational waters. The DOH has identified limited vertical and horizontal distances to water as being one of the main factors that increase the potential of contamination. This is because unsaturated soil provides the primary method of filtering cesspool effluent. Further, as sea level continues to rise, this method of effluent filtration will be progressively hindered as vertical and horizontal distances to water decrease or are lost altogether.

State rules implemented in 2015 incentivize the upgrade of cesspools to sewer or septic systems. However, in areas that feature narrow depths to groundwater, septic tanks are known to buoy, which causes structural damage to the septic system and mixing of effluent with surrounding waters.

4.3.4 GENERAL POLICIES

The following general policies apply to wastewater treatment in East Honolulu:

- Connect all wastewater produced by urban uses in East Honolulu to a publicly regulated or municipal sewer service system.
- Implement, where feasible, water recycling as a water conservation measure.
- Provide buffer zones and landscape elements between the East Honolulu WWTP and adjacent residential designated areas in order to mitigate possible visual, noise, and odor impacts.
- Connect homes to one of the two existing sewer systems. Support conversion efforts and upgrades to individual wastewater systems where connections are not feasible.

4.3.5 PLANNING GUIDELINES

- **Water Recycling** – Encourage or require, as feasible and appropriate, the use of recycled water from the East Honolulu WWTP as a source for irrigating golf courses and other uses compatible with the Board of Water Supply’s rules and guidelines for the treatment and use of recycled water.
- **Private Operation of the East Honolulu WWTP** – Unless there is a compelling reason and a mutually satisfactory agreement between the City and the private operator to incorporate this treatment plant within the municipal wastewater treatment system, keep the East Honolulu WWTP under private operation and under the regulatory supervision of the State Public Utilities Commission and the State Department of Health.
- **Buffer Zones and Landscape Elements** – Provide adequate horizontal separations and landscape elements (e.g. berms and windrows) between the East Honolulu WWTP and adjacent residential designated areas. Site-specific studies should be conducted to determine the width of the buffer zone and specific types of landscaping elements to use.

- **Water Quality** – Reduce groundwater contamination that may be exacerbated by climate change and sea level rise through cesspool conversion and wastewater system improvements in East Honolulu.

4.4 ELECTRICAL AND COMMUNICATIONS SYSTEMS

Hawaiian Electric Company forecasts that increased demand will create a need for additional island wide power generation capacity by 2020. Growth policies in the **General Plan** direct significant residential growth to the Primary Urban Center DP, 'Ewa DP, and Central O'ahu Sustainable Communities Plan Areas. East Honolulu is designated as an urban fringe area and is projected to have limited future population growth. As such, East Honolulu will not be a major source of island wide future power demand.

In 2014 Hawai'i became the first state in the nation to commit to having a 100 percent renewable portfolio standard by the year 2045. Part of this goal will be achieved by reducing electric energy consumption statewide by 4,300 gigawatt-hours by 2030. Petroleum use accounts for two-thirds of the state's overall energy usage. Strategies shall focus on redevelopment projects that increase residential densities in and around town centers which will help minimize automobile use and thereby support people who choose to walk, bike, and use public transit.

Antennas have been around as long as we have had radio and television services. Antennas associated with communication purposes have grown tremendously, especially since the U.S. introduction of mobile communication devices in the early 1980s. While the telecommunications industry has provided more convenient communication capabilities for individuals, it has also increased public agencies' ability to provide faster and more efficient response to those in need, particularly on an emergency basis.

While the benefits of the telecommunications industry cannot be disputed, communities have opposed the antennas due to aesthetic impacts, particularly on public views and on the neighborhood character. Their visibility has increased, especially where antennas are mounted on free-standing towers.

The public has also raised concerns about the environmental effects of electromagnetic field exposure associated with radio transmissions, as evidenced by the presence of antennas. However, the Federal Communications Commission (FCC) is responsible for evaluating the human environmental effects of radio frequency (RF) emissions from FCC-regulated transmitters. The federal guidelines specifically preclude local decisions affecting environmental effects of radio frequency emissions, assuming that the provider is in compliance with the Commission's RF rules.

4.4.1 GENERAL POLICIES

The following general policies pertain to electrical and communications systems:

- Design system elements such as sub-stations and transmission lines to avoid or mitigate any potential adverse impacts on scenic and natural resource values.
- Encourage co-location of antennas; towers should host the facilities of more than one service provider to minimize their proliferation and reduce visual impacts.
- Mount antennas onto existing buildings or structures so that public scenic views and open spaces will not be negatively affected. However, except for the occupant's personal use, antennas on single-family dwelling roofs in residential districts are not appropriate.
- Use stealth technology (i.e. towers disguised as trees), especially on free-standing antenna towers to blend in with surroundings.
- Relocation of electrical and other overhead utility lines underground wherever feasible.
 - The design in undergrounding utilities must account for the potential adverse impacts of sea level rise impacting increases in the elevation of the water table and other groundwater inundation.

4.4.2 PLANNING GUIDELINES

- **Facility Routing and Siting Analysis** – If any new or relocated substations or transmission lines are necessary, site such routes or facilities to avoid or mitigate potential adverse impacts on scenic and natural resources. (Although these facilities are not shown on the Public Facilities Map, their routes and sites are reviewed and permitted by administrative agencies of the City.) Utility lines should be located underground wherever feasible.

4.5 SOLID WASTE HANDLING AND DISPOSAL

Solid waste collection, transport and disposal operations on the island are provided by the City Department of Environmental Services, Refuse Collection and Disposal Division (primarily single-family curbside pickup) and private haulers (primarily commercial and multi-family pickup). In addition, individuals can haul their own trash to one of six convenience centers around O‘ahu. The collected refuse is ultimately disposed of either in a waste-to-energy incineration facility or sanitary landfill. Incineration, accounting for approximately 50 percent of the island’s waste disposal, is done at the H-POWER plant, located in ‘Ewa. The City has instituted recycling and other waste diversion programs in an effort to extend the useful life of this landfill.

The City is in the process of determining the site of a new landfill to supplement or replace the Waimānalo Gulch Sanitary Landfill in ‘Ewa, O‘ahu's only landfill for municipal solid waste. A Landfill Site Advisory Committee identified and ranked 11 potential landfill sites in 2012, including Upland Hawai‘i Kai, ranked 10th. Since the publication of the 2012 report, the Upland Hawai‘i Kai area was purchased to be used for preservation and protection in contribution to the Kaiwi Scenic Shoreline.

East Honolulu has no convenience centers where residents may dispose of large bulky items, although curbside pickup of bulk items is available. The Ke‘ehi Transfer Station will accept household rubbish and yard waste. For East Honolulu residents, the closest facilities for the disposal of bulky items are at Kapa‘a and the Waimānalo Convenience Center. There are no plans to locate a convenience center, another transfer station, or

a landfill operation in East Honolulu. There is currently a recycling service station that accepts HI-5 beverage containers and other non-HI-5 material near the Hawai'i Kai Park and Ride.

4.5.1 GENERAL POLICIES

The following general policy applies to solid waste handling and disposal in East Honolulu:

- Promote East Honolulu's role in the City's long-term efforts to establish more efficient waste diversion and collection systems as waste management and technological innovations occur. However, the region is not expected to contribute significantly to future increases in O'ahu's solid waste management demands and the only site in East Honolulu deemed suitable for the processing or disposal of solid waste on an island wide scale has been purchased for the purpose of preservation.

4.5.2 PLANNING GUIDELINES

Planning guidelines related to solid waste handling and disposal are as follows:

- **Recycling Programs and Facilities** – Promote the recycling of waste materials by providing expanded collection facilities and services, and public outreach and education programs.
- **Efficient Solid Waste Collection** – Expand the use of automated refuse collection in residential areas to ensure provision of adequate solid waste collection. Have residents pay their fair share of all costs needed to ensure provision of adequate solid waste collection facilities.

4.6 DRAINAGE SYSTEMS

The streams that drain the valleys of East Honolulu include Wai'alaie Iki Stream, Wiliwilinui Stream, Wailupe Stream, Niu Stream, and Kuli'ou'ou Stream. These streams begin in the Ko'olau Range and discharge into Maunalua Bay. The drainage basins are

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long and narrow and range from 0.3 to 3.2 square miles in area. The upper reaches of the basins are very steep, while the lower reaches are almost flat.

Several drainage ways have been prone to flooding during more intense rainstorms. Niu Valley, Kuli'ou'ou Valley, and Haha'ione Valley, in particular, experienced severe flooding during the New Year's Eve flood of 1987. Heavy rainfall at the head of the valleys, combined with falling rocks and debris, overwhelmed the capacities of the concrete-lined stream channels. Flooding has been exacerbated by residents dumping items into drainageways as well as overgrown vegetation. Along the Niu and Haha'ione drainage ways, debris-clogged bridges and culverts contributed significantly to the flooding problems.

A federal reconnaissance study found that the Wailupe Stream faces similar drainage problems. According to the study, the Wailupe drainage basin's existing flood control system is unable to accommodate debris flows. Furthermore, the existing stream channel is incapable of handling clear water flood discharges greater than about a 20-year recurrence interval. Among the preliminary improvement alternatives under consideration are channeling 8,900 feet of Wailupe Stream from the mouth to the existing boulder basin, enlarging the existing boulder basin, and constructing a new debris basin in Kulu'i Gulch.

In 2003, the U.S. Senate appropriated \$300,000 for a Wailupe Stream Flood Control Study to be undertaken by the Army Corps of Engineers. In 2004, the State House of Representatives approved \$200,000 for flood control Preconstruction Engineering and Design for Wailupe Stream. In 2005, the U.S. House of Representatives approved \$400,000 to support a study into reducing the size of the Wailupe Stream flood plain. The Congressional Appropriations Committee recommended \$860,000 in 2006 for investigative planning of flood problems related to Wailupe Valley Stream.

In the area between Kamehame Ridge and the Hawai'i Kai Golf Course, a 40-foot-wide concrete channel alters the natural drainage pattern. Water collected from this area is carried along the drainage way that passes under Kalaniana'ole Highway and into Ka'ili'ili Inlet.

4.6.1 GENERAL POLICIES

General policies pertaining to East Honolulu's drainage system are as follows:

- Complete the proposed study of local flooding and drainage problems as soon as possible. The study should include the potential impacts to drainage systems from climate change and sea level rise.
- Include a phased plan and implementation program for drainage system improvements.
- Promote drainage system design that emphasizes control and minimization of non-point source pollution.
- Keep drainage ways clear of debris to avoid the flooding problems.
- Join with Federal, State, and City agencies and local landowners and stakeholder organizations to create a Watershed Partnership to effectively manage the East Honolulu ahupua'a to retain stormwater and keep sediment and pollutants from entering streams and being transported to the ocean.
- Improve downstream water quality, particularly in sources leading to Maunalua Bay, through the restoration of channelized streams and wetlands, the installation of upland detention basins, implementation of low-impact development standards, and the encouragement of planting and maintenance of vegetation along drainage ways. Where possible, drainage ways should also provide passive recreation benefits.
- Identify repetitive loss areas from flooding and implement greater restrictions to rebuilding in these areas.

4.6.2 PLANNING GUIDELINES

Guidelines to direct the maintenance and improvement of East Honolulu's drainage systems include:

- **Debris Basins** – Conduct maintenance of boulder and debris basins at least twice a year and after major storms to prevent the blocking of downstream channels during major storm events.

- **Recreational Areas** – Integrate planned improvements to the drainage system into the regional open space network by emphasizing the creation of passive recreational areas, and recreational access for pedestrians and bicycles without jeopardizing public safety.
- **Drainage Improvements** – Design and execute drainage improvements in a manner which protects natural resource and aesthetic values of the stream to the greatest extent possible, consistent with the guidelines expressed in **Section 3.1.2.4**.
- **Drainage Management** – Keep drainage corridors clear of debris to avoid the flooding problems that have occurred in the past.

4.7 SCHOOL FACILITIES

Public schools in East Honolulu are part of the Department of Education’s (DOE) Honolulu District. There are four public elementary schools in East Honolulu, one intermediate school (Niu Valley Intermediate), and two high schools (Kalani High School and Kaiser High School). 2015-2016 enrollment figures for these schools show that they are operating under capacity (see **Table 4-1**). Wailupe Valley Elementary School has closed while enrollment at other elementary schools in East Honolulu has remained constant or declined. For this reason, the DOE does not have plans for new school construction in East Honolulu. Additional demand generated by future residential developments can be absorbed by the existing facilities. If necessary, school boundaries could be adjusted to allocate additional demand to schools that have the most available capacity.

Although new public school construction is not anticipated for East Honolulu, new demand will still create associated expenses. At some schools, such as Koko Head Elementary, excess space is utilized for DOE offices. Reclaiming this space for classroom use would involve renovation expenses in addition to expenses related to relocating the DOE office personnel to other facilities.

Table 4-1: Public School Enrollment, 2018-2019

| Facility | Enrollment | Capacity (2017) |
|---------------------|-------------------|------------------------|
| Elementary | | |
| ‘Āina Haina | 465 | 664 |
| Haha‘ione | 523 | 448 |
| Koko Head | 281 | 442 |
| Kamilo Iki | 385 | 404 |
| Intermediate | | |
| Niu Valley | 858 | 682 |
| High School | | |
| Kalani | 1,422 | 1,015 |
| Kaiser | 1,161 | 1,057 |
| Total | 5,095 | 4,712 |

Source: DOE, Facilities Development Branch (2019)

While the demand for classroom space has been declining in some sections of East Honolulu, needs could change significantly, even with a relatively slow rate of population growth if there is a future shift in household characteristics as younger adults with school-age children replace or move in with elderly residents in single family dwellings. To make more efficient use of these facilities, as well as DOE fiscal resources, some of the unneeded classroom space could be converted for temporary use as administrative office space for DOE personnel. This largely reflects a strategy that DOE has already adopted. The DOE can collect school impact fees from new residential development to mitigate expenses related to a change of facilities.

There are also several independent schools in East Honolulu, listed in **Table 4-2**, which are either religious-affiliated or based on a particular educational philosophy. While such schools will probably continue their presence in East Honolulu, they are not expected to increase significantly in number or size. Holy Trinity School and Koko Head Prep and Technical Academy have closed. The scale and location of existing campuses are generally compatible with the residential character of the region.

Table 4-2: Private School Enrollment, 2019-2020

| Facility | pre-K | K-8 | 9-12 |
|---|--------------|------------|-------------|
| Holy Nativity School | - | 135 | - |
| Honolulu Waldorf School | 39 | 92 | 4 |
| Star of the Sea Early Learning Center and Elementary School | 190 | 159 | - |
| Subtotal | 229 | 386 | 4 |
| Grand Total | 619 | | |

Source: DPP Phone survey in October 2019 to the respective schools.

4.7.1 GENERAL POLICIES

General policies relating to school facilities are listed below:

- Approve new residential developments only after the DOE provides assurance that adequate school facilities, either at existing schools or at new school sites, will be available when the development is completed.
- Encourage more efficient use of DOE facilities with year-round scheduling.
- Require developers to comply with DOE school impact fee requirements and pay their fair share of all costs needed to ensure provision of adequate school facilities for the children living in their developments.

4.7.2 PLANNING GUIDELINES

The following guidelines should be followed in planning and operating schools in East Honolulu.

- **Adaptive Reuse** – Encourage the DOE to continue its strategy of converting unneeded classroom space to temporary use as administrative office space for its personnel. This would make more efficient use of these facilities, while maintaining classroom space if there is a future shift

in household characteristics as younger adults with school-age children replace, or move in with, elderly residents in single-family dwellings.

- **Shared Facilities** – Encourage the Department of Parks and Recreation to coordinate with the DOE on the development and use of athletic facilities such as playgrounds, play fields and courts, swimming pools, and gymnasiums where the joint use of such facilities would maximize use and reduce duplication of function without compromising the schools’ athletic programs (see also **Section 3.3.3**). The DOE should coordinate structural design of school buildings with the Hawai’i Emergency Management Agency and the Department of Emergency Management so that these facilities may also be used as public hurricane shelters capable to minimally withstand winds from a Category 3 hurricane.
- **New Facilities** – Apply the guidelines for institutions in **Section 3.6.3** if a new public or private school campus or a significant increase in enrollment capacity at one of the existing campuses is proposed.

4.8 CIVIC AND PUBLIC SAFETY FACILITIES

The City and County of Honolulu operates 10 Satellite City Halls island wide. These facilities offer many basic services for residents, including bus pass sales, bicycle and auto registration, and driver’s license renewals. A Satellite City Hall to serve East Honolulu was established in the Hawai’i Kai Corporate Plaza in 2002.

The Honolulu Police Department (HPD) services East Honolulu out of the Main station on Beretania Street. Police protection for East Honolulu is provided largely through regular police patrols as required and is not directly related to the proximity of a police station. A new substation will not necessarily translate into an increased level of police presence or a more rapid response to calls; therefore, no new substation is recommended.

The Honolulu Fire Department (HFD) operates fire stations in Hawai’i Kai (Maunalua) and Wailupe. The Hawai’i Kai station is equipped with five-person engine and ladder trucks and a rescue boat. The Wailupe station also has a five-person engine. In addition, the Kaimukī station also serves parts of the Kāhala area. HFD has no

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immediate plans to establish any additional new stations in East Honolulu. As land use changes occur through development or redevelopment of older areas, as the demographic profile of the region changes, and as aquatic recreational activities increase, the facilities and staff needed by the HFD to serve East Honolulu may warrant reassessment.

Ambulance service, staffed by the City's Emergency Medical Services Division, is currently provided from each of the fire stations. As regional recreational activities along this eastern corridor of O'ahu increase, emergency medical services may need to be re-evaluated.

There are 12 emergency shelters and refuge centers located in East Honolulu which double as public buildings and parks when an evacuation is not in effect. East Honolulu residents are encouraged to shelter in place unless they are located within an evacuation zone, in an area that does not feel safe, or as otherwise instructed. Many emergency shelters are not rated to withstand the effects of intense windstorms and hurricanes and require upgrades. Public refuges also are not rated to withstand the effects of storms as they are merely designated areas setup to gather people temporarily displaced by an emergency situation.

Climate change and sea level rise are two threats to existing infrastructure which can cause disruption in a variety of services. Sea level rise can bring increased storm surges and consequent coastal erosion. Thus the impact of sea level rise will be felt well above the new mean sea level. It is prudent to analyze the possible impact of sea level rise and design projects and buildings that account for risk of sea level rise and its associated threats over their lifespan.

4.8.1 GENERAL POLICIES

The following general policy pertains to public safety facilities:

- Provide adequate staffing and facilities to ensure effective and efficient delivery of basic governmental services and protection of public safety. Analyze the possible impact of sea level rise for new public and private

projects in shoreline and low-lying areas and require, where appropriate and feasible, measures to reduce vulnerability and increase resiliency.

- Identify critical public and private infrastructure and important cultural and natural resources vulnerable to historic coastal hazards and impacts of climate change, and, working with local landowners, stakeholders, and State and Federal agencies, begin the work of protecting, adapting, or relocating the highest priority projects.
- Coordination between community organizations, businesses, residents, homeowners, and City, State and Federal agencies determine how to:
 - Mitigate the anticipated threats from sea level rise,
 - Plan for future infrastructure improvements, and
 - Maintain existing connections, especially along Kalanianaʻole Highway where future flooding is anticipated to occur.
- The DPR coordinates with the DOE on the development and use of athletic facilities such as playgrounds, play fields and courts, swimming pools, and gymnasiums where the joint use of such facilities would maximize use and reduce duplication of function without compromising the schools' athletic programs (see also **Section 3.3.3**).
- Provide funding to support the structural design of school buildings, such as the cafeteria, gym, or music rooms, so that these facilities may also be used as public hurricane shelters capable of withstanding Category 3 hurricanes.
- Supplement the public emergency shelters by identifying private structures that could be used as public shelters, like churches, meeting the Federal Emergency Management Agency (FEMA) standards.
- Ensure accessibility for senior populations to public shelters, or to prioritize the restoration of services to where seniors and other vulnerable populations are sheltering-in-place.
- Develop a Community Resilience Hub in East Honolulu that will serve critical roles during and immediately following an emergency as well as enhance social resilience ahead of a disaster.

4.8.2 PLANNING GUIDELINES

These guidelines are intended to carry out the above public safety policies:

- **Staffing capacity** – Approve new development only if adequate staffing and facilities for fire, ambulance and police protection will be provided. If the development of any new substation is warranted, potentially near an entry to Hawai'i Kai (Maunaloa), there is a preference that it be co-located with other emergency medical and transportation services.
- **Community Resilience Hub** – Establish and operate a center in East Honolulu in accordance with the recommendations of the **O'ahu Resilience Strategy**. In addition to post-disaster response and recovery operations, the centers will provide year-round community services.

5. IMPLEMENTATION

Implementation of this **Plan** will be accomplished by:

- Limiting residential and non-residential development to areas within the Community Growth Boundary to support the vision for East Honolulu, and protect agricultural and preservation lands in East Honolulu;
- Initiating zoning map and development code amendments to achieve consistency with the **Plan**'s vision, and provide the means to implement the general policies and guidelines;
- Guiding public investment in infrastructure through functional plans that support the vision and policies of the **Plan**;
- Recommending approval, approval with modifications, or denial of developments seeking zoning, boundary and/or other development approvals based on how well they support the vision and policies of the **Plan**;
- Implementing the **Plan** priorities through the Public Infrastructure Map and the City's annual budget process;
- Evaluating progress in fulfilling the vision of the **Plan** every two years and presenting the results of the evaluation in the Biennial Report;
- Developing a network of Community Resilience Hubs; and
- Conducting a review of the vision, general policies, guidelines, and Capital Improvement Program (CIP) priority investments of the **Plan** every ten years and recommending revisions as necessary.

5.1 PUBLIC FACILITY INVESTMENT PRIORITIES

The vision for East Honolulu requires the cooperation of both public and private agencies in planning, financing, and improving infrastructure. The City must take an active role in planning infrastructure improvements, such as land acquisition and site improvements for parks in the Kaiwi coast, increase public access to the shoreline and mountain areas, provide for pedestrian, bicycle, and other transportation options, as well as improvements to wastewater and stormwater management systems.

5.2 DEVELOPMENT PRIORITIES

Projects to receive priority in the approval process are those which:

- Involve land acquisition and improvements for public projects that are consistent with the **Plan** vision, general policies, and planning guidelines;
- Respect the intent and purposes of the agriculture uses as described in **Section 2.2.1** and delineated in this **Plan**;
- Have adequate required infrastructure in place before or upon completion of the project;
- Analyze the possible impact of sea level rise for new public and private projects near shoreline and low-lying areas and incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise and coastal hazards;
- Involve applications for zoning and other regulatory approvals that are consistent with the **Plan** vision, general policies, and planning guidelines;
- Are located on vacant usable parcels and are consistent with the vision of this **Plan** as illustrated on **Map A-2: Urban Land Use**.

5.3 SPECIAL AREA PLANS

Special Area Plans provide more detailed policies and guidelines than the Sustainable Communities Plan for areas requiring particular attention. The form and content of Special Area Plans depend on what characteristics and issues need to be addressed in greater detail in planning and guiding development or use within the Special Area.

Special Area Plans can be used to guide land use development and infrastructure investment in Special Districts, Redevelopment Districts or Resource Areas. Plans for Special Districts would provide guidance for development and infrastructure investment in areas with distinct historic or design character or significant public views. Plans for Redevelopment Districts would provide strategies for the revitalization or redevelopment

of an area. Plans for Resource Areas would provide resource management strategies for areas with particular natural or cultural resource values.

While there are no existing or proposed Special Area Plans within the **Plan** area, the State Department of Land and Natural Resources published a Master Plan for the 354-acre Kaiwi Scenic Shoreline. These parks, shown in light green on **Map A-3: Public Facilities in Appendix A**, will be designated as a Resource Area, given their rich recreational, educational and scenic resources.

The formation of a community-based redevelopment district would assist in preparing East Honolulu's infrastructure for the anticipated impacts of sea level rise and disasters and pay for implementing services and infrastructure similar to the way the Waikiki Business Improvement District formulates plans specific for the residents, visitors, and businesses in Waikiki. A community-based redevelopment district would develop special area plans to: direct development prior to and after a disaster, mitigate future adaptation costs and damages anticipated from climate change and disasters, and provide a mechanism for payment for needed services and infrastructure.

5.4 FUNCTIONAL PLANNING

Functional planning is the process through which various City agencies determine needs, assign priorities, phase projects, and propose project financing to further implement the vision articulated in the **Plan**. This process may take a variety of forms, depending upon the missions of the various agencies involved, as well as upon requirements imposed from outside the City structure, such as federal requirements for wastewater management planning. Typically, functional planning occurs as a continuous or iterative activity within each agency.

Through the functional planning process, City agencies responsible for providing, developing and maintaining infrastructure and public facilities, or for providing City services, review existing functional planning documents and programs. As a result of these reviews, the agencies then update, if required, existing plans or prepare new long-range functional planning documents that address facilities and service system needs. Updates of functional planning documents are also conducted to assure that

agency plans will serve to further implement the **Plan**, as well as to provide adequate opportunity for coordination of plans and programs among the various agencies.

Agencies with functional planning responsibilities (and representative plans) include:

- Board of Water Supply (**East Honolulu Watershed Management Plan** and **O'ahu Water Management Plan**)
- Department of Budget and Fiscal Services (**Consolidated Plan for Housing and Community Development Needs**)
- Department of Community Services
- Department of Design and Construction
- Department of Environmental Services (**Solid Waste Management Plan and East Maunaloa Bay Facilities Plan**)
- Department of Parks and Recreation
- Department of Planning and Permitting
- Department of Transportation Services
- Honolulu Authority for Rapid Transportation
- Honolulu Emergency Services Department
- Honolulu Fire Department
- Honolulu Police Department
- O'ahu Metropolitan Planning Organization (**ORTP**)

The number and types of functional planning documents will vary from agency to agency, as will the emphases and contents of those documents. A typical agency may develop a set of core documents such as:

- A resource-constrained long-range capital improvement program with priorities. A "resource-constrained" program is one that identifies the fiscal resources that can be reasonably expected to be available to finance the improvements.
- A long-range financing plan, with identification of necessary new revenue measures or opportunities.

- A development schedule with priorities for areas designated for earliest development.
- Service and facility design standards, including level of service guidelines for determining infrastructure adequacy.

Other documents may also be developed as part of an agency's functional planning activities, such as master plans for provision of services to a specific region of the island. In some cases, functional planning activities will be undertaken in cooperation with agencies outside the City structure, such as the transportation planning activities that are conducted in association with the O'ahu Metropolitan Planning Organization (OMPO).

Functional planning is intended to be a proactive public involvement process that provides public access to information about infrastructure and public facility needs assessments, alternatives evaluations, and financing. Outreach activities should involve Neighborhood Boards, community organizations, landowners, and others who may be significantly affected by the public facilities and infrastructure projects or programs to be developed to further implement the policies of the **Plan**.

The functional planning process should be characterized by opportunities for early and continuing involvement, timely public notice, public access to information used in the evaluation of priorities, and the opportunity to suggest alternatives and to express preferences. The functional planning process provides the technical background for CIP and public policy proposals that are subject to review and approval by the City Council.

5.5 REVIEW OF ZONING AND OTHER DEVELOPMENT APPLICATIONS

A primary way in which the vision of the **Plan** will guide land use will be through the review of applications for zone changes and other development approvals. Approval for all development projects should be based on the extent to which the project supports,

conforms to and carries out the purposes of the respective policies and guidelines of the **Plan**.

Projects involving significant zone changes will require an Environmental Assessment (EA) or Environmental Impact Statement (EIS), which must include a Project Master Plan when 25 acres or more are involved. This is submitted to the Department of Planning and Permitting (DPP) for review and acceptance prior to initiation of the first zone change application for the project.

Zone change applications for zoning to permit urban uses on parcels outside the Community Growth Boundary or on parcels identified as part of the Open Space Network and zoned as Preservation Areas or Agriculture Areas, and indicated on **Map A-1: Open Space**, are not likely to be supported by the Director since development of such areas is not consistent with the Plan's vision and policies to retain these areas in non-urban uses.

A project will be considered to involve a significant zone change if:

- The application involves a zone change of 25 acres or more to any zoning district or combination of zoning districts, excluding Preservation and Agricultural zoning districts; or
- The project is more than 10 acres and involves a change from one zoning district to a Residential or Country zoning district; or
- The project is more than 5 acres and involves a change from one zoning district to an Apartment, Resort, Commercial, Industrial, or Mixed Use zoning district; or
- The project would have major social, environmental, or policy impacts, or cumulative impacts due to a series of applications in the same area.

The Director of the DPP will determine, based on review of the EA, whether an EIS (prepared in compliance with procedures for Chapter 343, Hawai'i Revised Statutes) will be required or whether a Finding of No Significant Impact (FONSI) should be issued.

In applying for a zone change, the applicant must either:

- Receive a determination from the Director of the DPP that the project does not involve a significant zone change, or
- Submit an EA or EIS with the zone change application.

Before an application for a significant zone change can be accepted for processing by the DPP, the Applicant must either:

- Receive a FONSI from the Director of the DPP for a Final EA, or
- Receive an acceptance of a Final EIS for the project from the Director of the DPP.

All EA/EIS required for a significant zone change should include a Project Master Plan. The scope of the EA/EIS must cover, at a minimum, the specific development associated with a particular zone change application, but at the option of the applicant, may cover subsequent phases of a larger project.

Zone change applications for a project already assessed under the National Environmental Policy Act, Hawai'i Revised Statutes Chapter 343, Revised Ordinances of Honolulu Chapter 25 (Shoreline Management), or a preceding zone change application, will not require a new EA when the Director of the DPP determines that the desired zoning and land use generally conform to that described in the existing EA/EIS provided it meets the visions of the **Plan**.

5.5.1 ADEQUATE FACILITIES REQUIREMENT

All projects requesting zone changes shall be reviewed to determine if adequate public facilities and infrastructure will be available to meet the needs created as a result of the development. Level of Service Guidelines to define adequate public facilities and infrastructure requirements will be established during the Capital Improvement Program.

In order to guide development and growth in an orderly manner as required by the City's **General Plan**, zoning and other development approvals for new developments should be approved only if the responsible City and State agencies indicate that adequate public facilities and utilities will be available at the time of occupancy or if conditions the functional agency indicates are necessary to assure adequacy are otherwise sufficiently addressed.

The Department of Planning and Permitting, as part of its report on the consistency of a project with the **Plan** vision, general policies and guidelines, will review and summarize any individual agency's findings regarding public facilities and utilities adequacy which are raised as part of the EA/EIS process. The Department of Planning and Permitting will address these findings and any additional agency comments submitted as part of the agency review of the zone change application and recommend conditions that the Council may consider for inclusion that should be included in any Unilateral Agreement or Development Agreement to ensure adequacy of facilities.

5.6 TEN-YEAR SUSTAINABLE COMMUNITIES PLAN REVIEW

The Department of Planning and Permitting should begin a comprehensive review of the **Plan** ten years after adoption and should report its findings and recommended revisions to the Planning Commission and the City Council. It is intended the Community Growth Boundary will remain fixed through the 2040 planning horizon.

In the Ten-Year review, the **Plan** will be evaluated to determine if the regional vision, general policies, guidelines and implementing actions are still appropriate.

5.6.1 DEVELOPMENT PLAN COMMON PROVISIONS AND EXISTING LAND USE APPROVALS

This **Plan** will go into effect upon adoption by ordinance. At that time, the revised **Plan** will become a self-contained document. Land use approvals granted under existing zoning, Unilateral Agreements, and approved Urban Design Plans will remain in force and guide zoning decisions unless requests for amendments are submitted. At that

time, the request will be reviewed against the vision and policies of the **Plan**. Otherwise, development can proceed in accordance with existing zoning, Unilateral Agreements, and approved Urban Design Plans.

Projects will be evaluated against how well they fulfill the vision of this amended **Plan** and how closely they meet the policies and guidelines established to implement that vision.

5.6.2 RELATION TO GENERAL PLAN POPULATION GUIDELINES

As required by Section 6-1508 of the **City Charter**, the **Plan** implements the **General Plan** population distribution policies of the proposed **General Plan** (Population Objective C) as follows:

- **Policy 4:** Total population in the **East Honolulu Sustainable Communities Plan** area will account for approximately 5 percent of O'ahu's total population in 2040. This relatively small share of the island wide population is consistent with Population Objective C, Policy 1 and Policy 2, which is to facilitate the full development of the Primary Urban Center and direct development toward 'Ewa and Central O'ahu regions.
- East Honolulu's projected share of island wide population in 2040 implements Population Objective C, Policy 3, which is to manage physical growth and development in the urban-fringe and rural areas so that an undesirable spreading of development is prevented and that the suburban and country character of these outlying areas can be maintained.

The **General Plan** population distribution policies will continue to be used as a guide to direct the pattern of growth and development in the **Plan** area. Assessments of this performance will be reported in both the **Annual Report on the Status of Land use on O'ahu** and in the Ten-Year Review of the **Plan**.

5.6.3 REVIEW AND REVISION OF DEVELOPMENT CODES

Current regulatory codes and standards should be reviewed and revised, as necessary, to maintain their consistency and effectiveness as standards to guide attainment of the objectives and policies envisioned for all Development Plan and Sustainable Communities Plan areas.

At the time such reviews are conducted, the following regulatory codes and standards may warrant further review and revision to ensure achievement of the vision for the East Honolulu region, as identified in this **Plan**, as well as consistency with the **Plan**:

- **Land Use Ordinance** – (Department of Planning and Permitting, pursuant to Chapter 21, Revised Ordinances of Honolulu). Zoning code standards and the zoning map for East Honolulu may need to be revised to further implement the policies and guidelines in the **Plan**.
- **Subdivision Rules and Regulations** – (Department of Planning and Permitting, pursuant to Chapter 22, Revised Ordinances of Honolulu). Public right-of-way standards used for subdivision and consolidation of land need to be updated to reflect transportation policies and guidelines in the **Plan**.
- **Traffic Standard Manual** – (Department of Transportation Services, July 1976, revised April 1979). Standards which are applied to local and most collector/connector streets need to be revised to reflect transportation policies and guidelines in the **Plan**.
- **State Highways Division Procedures Manual** – (State Department of Transportation, Vol. 8, Chapter 5, Section 4) These State highway standards need to be reviewed to identify provisions which may conflict with the transportation policies and guidelines in the **Plan**.
- **Complete Streets Design Manual** – (Department of Transportation Services, September 2016) These State and City standards summarize design treatments and application for streets and intersections and identify what areas need to be improved to implement the transportation policies and guidelines in the **Plan**.

- **Standard Details for Public Works Construction** – (Honolulu Department of Public Works with Kaua‘i, Maui, and Hawai‘i County Departments of Public Works, September 1984) Engineering standards for the dedication of public works construction need to be revised to reflect policies and guidelines in the **Plan**.
- **Storm Drainage Standards** – (Rules Relating to Water Quality of the Administrative Rules, Title 20, Chapter 3, and Department of Planning and Permitting Storm Drainage Standards, August 2017) Standards to incorporate grassed swales, detention and retention basins, and streamside vegetation need to be created to further implement the policies and guidelines for open space in the **Plan**.
- **Park Dedication Rules and Regulations** – (Department of Land Utilization, pursuant to Chapter 22, Article 7, Revised Ordinances of Honolulu) Regulations need to be reviewed to determine if passive drainage systems which are designed for recreation use should count toward park dedication requirements, especially in cases where the area would exceed the amount of land that would be required under current rules and regulations.
- **Wastewater System Design Standards** – (Department of Environmental Services, Volumes I: July 2017, and Department of Wastewater Management, Volume II: 1984; Department of Environmental Services, Wastewater System Standard Details: July 2017; pursuant to Chapter 14, Revised Ordinances of Honolulu) These standards and ordinances may require review to further implement policies and guidelines in the **Plan**.

In June 2006 the Department of Planning and Permitting initiated a study, the **Development Plans Implementation Program**, to comprehensively review the rules, regulations and development standards of the City and State that directly affect land development. The purposes of this study were to:

- Review the pertinent sections of the City’s Development Plan and Sustainable Communities Plan (DP/SCP) policies and guidelines that imply regulatory change to rules or regulations affecting land development and how they relate to the DP/SCP visions.

- Identify the specific elements of the rules and regulations that may require change in order to enable implementation of the various DP/SCP policies and guidelines.
- Prepare recommendations for revisions to specific rules, regulations and development standards that will support DP/SCP implementation.
- For DP/SCP policies and guidelines that are not addressed by existing City and State rules, regulations or development standards, make recommendations for the type of regulatory mechanisms that could address these discrepancies.
- Identify alternative regulatory approaches used by other comparable municipalities.
- Prepare regulatory alternatives and an approach to facilitate a transition from existing regulations to new or revised regulations.

The DPP has been updating the 2006 study with a new **Streamlining the DP/SCP Update Process** that will be finalized in 2020. Recommendations from that study may not be detailed in this **Plan** but will help to implement some of the findings and recommendations. Recommendations of that study will be incorporated in future **Plan** updates.

Revision and updating of the implementation tools was previously a part of the 1999 **Plan**, as well as several other DPs/SCPs. This revision and updating will now take place within the study noted above and, when enacted, will provide an improved regulatory framework to support the plans in fulfilling their respective vision.

5.7 IMPLEMENTATION MATRIX

This section provides a summary of the **Plan**'s policies and guidelines from Chapters 3 and 4 to help understand how the **Plan** will be implemented.

This implementation matrix presents the policies and guidelines as generalized and consolidated statements, and is not meant to be used as a complete summary of the

vision, policies, and guidelines to be found in the body of the **Plan**. Chapter 2 should be consulted for the specific language of the vision elements. Chapters 3 and 4 should be consulted for the specific language of each policy or guideline.

The focus of the matrix is on showing how the vision, policies, and guidelines in the **Plan** relate to existing Federal, State, and City and County programs, who has responsibility for those programs, and what the agency's role is in implementing the **Plan**.

For each policy and guideline statement, the matrix identifies:

- The regulatory code or program for effecting implementation,
- Agencies with responsibility for implementation, and
- The role of each agency.

Implementation of the policies and guidelines will depend on each agency's priorities and availability of resources.

The DPP is either a regulator or an implementer for many **Plan** components, while simultaneously acting as the advocate for implementation of all the **Plan** vision elements and policies.

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Key to Abbreviations

| Programs | Agencies | Roles |
|---|--|--|
| <ul style="list-style-type: none"> • AHF: Affordable Housing Fund Program • BC: Building Code, Ch. 16, Revised Ordinances of Honolulu (ROH) • BID: Business Improvement District, Ch. 34, ROH • CDBG: Community Development Block Grant, HUD • CFD: Community Facilities Districts, Ch. 34, ROH • CIP: Capital Improvement Program (State or City) • Conserv. Dist.: State Conservation District, Ch. 205, HRS • Conserv Plan: Soil and Water Conservation District Conservation Plan • CRMP: City Resource Management Program • CZM: Coastal Zone Management, Ch. 205A, HRS • Drain MP: Drainage Master Plan • EA/EIS: Environmental Assessment / Environmental Impact Statement, Ch. 343, HRS • ESA: Endangered Species Act • Flood Plan: Hawai'i General Flood Control Plan, DLNR • HOME: Home Investment Partnerships Act Program, HUD • Hist. Pres.: Historic Preservation, Ch. 6E, HRS • INRMP: Integrated Natural Resource Master Plan • LID: Low Impact Development Standards • LUO: Land Use Ordinance, Ch. 21, ROH • MBTA: Migratory Bird Treaty Act • NHTF: National Housing Trust Fund • NPDES: National Pollutant Discharge Elimination System • Ops: City Operating Budget • ORTP: O'ahu Regional Transportation Plan | <ul style="list-style-type: none"> • BFS: Department of Budget and Fiscal Services • BWS: Board of Water Supply • CWB: Clean Water Branch, DOH • CWRM: State Commission on Water Resource Management • BID Assoc.: Business Improvement district Association • DCS: Department of Community Services • DDC: Department of Design and Construction • DEM: Department of Emergency Management • DES: Department of Enterprise Services • DFM: Department of Facility Maintenance • DLM: Department of Land Management • DLNR: Department of Land and Natural Resources • DOA: State Department of Agriculture • DOD: U. S. Department of Defense • DOE: State Department of Education • DOH: State Department of Health • DOT: State Department of Transportation • DPP: Department of Planning and Permitting • DPR: Department of Parks and Recreation • DTS: Department of Transportation Services • ENV: Department of Environmental Services • EPA: Environmental Protection Agency • HECO: Hawaiian Electric Company • HFD: Honolulu Fire Department | <ul style="list-style-type: none"> • Implementer: Manages programs and projects to implement policies and guidelines • Advocate: Analyzes policies, programs, and projects. Issues recommendations to decision makers based on how well the policies, programs, and projects implement the Plan • Regulator: Reviews permit applications and activities and issues permits, notices, violations, and penalties based on adopted regulations, rules, and standards |

| Programs | Agencies | Roles |
|---|---|-------|
| <ul style="list-style-type: none"> • OWMP: O'ahu Water Management Plan • Park MP: Park Master Plan • Ped. Plan: O'ahu Pedestrian Plan • Proj. Review: Project Review • PRU: Plan Review Use • PUC: Public Utilities Commission, Ch. 269, HRS • ROH: Revised Ordinances of Honolulu • Sewer CP: Sewer Connection Permit • Shore Stbk: Shoreline Setback, Ch. 23, ROH • SLUBDA: State Land Use District Boundary Amendment • SMA: Special Management Area, Ch. 25, ROH • SRTS: Safe Routes to School • SWQ: Storm Water Quality • State Parks: DLNR State Parks, Division of Forestry and Wildlife Camping Permits • State Trails: DLNR Nā Ala Hele State Trails and Access Program • SUB: Subdivision • SUP: Special Use Permit • SWIMP: Solid Waste Integrated Management Plan • TIP: Transportation Improvement Plan • State Water: State Water Code, Ch. 174C, HRS • Water MP: Water Master Plan • Water PTP: Watershed Partnerships Program • WPFPA: Watershed Protection and Flood Prevention Act • WUP: Water Use Permit/Well Permit, CWRM • WQP: State Water Quality Plan • WQ Rules: Water Quality Rules • ZC: Zone Change | <ul style="list-style-type: none"> • HHFDC: Hawai'i Housing Finance Development Corporation • HI-EMA: Hawai'i Emergency Management Agency • HPHA: Hawai'i Public Housing Authority • HUD: U. S. Department of Housing and Urban Development • LUC: State Land Use Commission • NGO: Non-Governmental Organization • NOAA: National Oceanic and Atmospheric Administration • NRCS: U. S. Department of Agriculture Natural Resources Conservation Service • OCCSR: Office of Climate Change, Sustainability, and Resiliency • OHA: Office of Hawaiian Affairs • OMPO: O'ahu Metropolitan Planning Organization • OP: State Office of Planning • PUC: State Public Utilities Commission • SHPD: State Historic Preservation Division, DLNR • SOEST: School of Ocean and Earth Science and Technology, UH • SLC: Sea Level Center, UH • SWCD: Soil and Water Conservation District • UH: University of Hawai'i • USACE: U. S. Army Corps of Engineers • USFS: United States Forest Service • USFWS: U. S. Fish and Wildlife Services | |

| Policies and Guidelines | Programs | Agencies | Roles |
|---|-----------------------------|-------------------------------|--------------------------|
| SEC. 3.1 OPEN SPACE PRESERVATION AND DEVELOPMENT | | | |
| Provide both passive and active open space to meet demand. Prevent development of areas susceptible to natural hazards such as soil movement, rock falls, coastal erosion, and sea level rise. | SLUDBA | LUC | Regulator |
| | ZC LUO BC | DPP | Regulator |
| | Cons. Dist. | DLNR | Regulator Implementer |
| 3.1.2.1 Mountain Areas | | | |
| Make access to mountain areas readily available, including parking areas, while balancing trail demands and alleviating congestion through additional trails, particularly in Mariners Ridge, Niu Valley, and Kamilo Nui Valley. | State Trails State Parks | DLNR | Implementer Advocate |
| | Subdivision | DPP | Regulator |
| Encourage the ownership or transfer and maintenance of public access easements to trailheads to conservation groups or the State DLNR. | State Trails | DLNR NGOs | Implementer Advocate |
| Create a City Resource Management Program (CRMP) to address the demands from outdoor recreational activities and the associated stresses to the natural and built environment. | CRMP | DPR DLM | Implementer |
| Re-establish and restore native Hawaiian plant, animal, and invertebrate species and habitats in open space areas. Protect and identify endangered species, their habitats, and other important ecological zones from threats such as fire, weeds, feral animals, and human activity. Control the number and range of feral animals and other alien species. Plan utility corridors and other uses to avoid disturbances to areas with high concentrations of native species. | ESA/MBTA Project Review | DLNR USFWS USACE PUC | Implementer Regulator |

| 3.1.2.2 Shoreline Areas | | | |
|---|---------------------------------|----------------------------------|--------------------------------------|
| Maintain Makai view channels along Kalaniana'ole Highway between Wai'ala'e and Makapu'u. | CZM | OP | Regulator |
| | SMA LUO | DPP | Regulator |
| | Scenic Byways | DOT | Implementer |
| <p>Avoid obstructions to access such as walls and landscaping. Landowners along the shoreline maintain any vegetation so as to not encroach into the public right-of-way, particularly as the shoreline erodes pushing the right-of-way inland. Increase minimum setbacks for structures near the shoreline and implement other management strategies to account for anticipated impacts from climate change and coastal erosion.</p> <p>Improve, protect, and maintain lateral shoreline access along reaches of the beach from Maunalua Bay to Wai'ala'e Beach Park with consideration given to the anticipated impacts from sea level rise and coastal erosion.</p> <p>Encourage citizen reporting of shoreline access issues to the DLNR Office of Conservation and Coastal Lands. Conserve and enhance a natural, dynamic shoreline wherever possible.</p> | LUO SMA Shore Setback | DPP | Regulator Implementer |
| | Conserv. Dist. | DLNR | Implementer Advocate |
| | CZM | OP | Regulator |
| | Scenic Byways | DOT | Advocate Implementer |
| Pursue opportunities to secure additional pedestrian rights-of-way from the nearest street or highway to the shoreline in sections that have high recreational value, but no similar public access within at least a quarter-mile. | Ops | DDC | Implementer |
| | Parks MP | DPR | Advocate |
| Recognize and codify mauka-makai shoreline access into the ROH. | ROH | DPR | Advocate |
| Analyze the potential impact of sea level rise for new public and private projects in shoreline areas and low-lying areas. If it is likely that sea level rise will increase the risk of flooding during the lifespan of the project, incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise. Incorporate assessments of all hazards into the land development application process. | EA/EIS Project Review CZM | DDC DFM DPP OCCSR OP | Implementer Regulator Advocate |

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| <p>Identify critical public and private infrastructure subject to sea level rise exposure and to mitigate these impacts through elevation, relocation, or other adaptation measures.</p> <p>Consider forming a community-based redevelopment district, similar to a business improvement district, that would protect, adapt, and relocate residential and commercial structures, public facilities, and natural and cultural resources from impacts from sea level rise and coastal erosion.</p> | SOEST | UH | Advocate |
| | CZM | OP | Regulator |
| | | OCCSR | Implementer Advocate |
| | Redev. Dist. (CFD, TIP, BIPD, etc.) | BID Assoc. DDC DFM | Implementer Regulator Advocate |
| <p>Use the most current versions of the City Climate Change Commission's <u>Sea Level Rise Guidance, Climate Change Brief</u>, and the State of Hawai'i <u>Sea Level Rise Vulnerability and Adaptation Report</u> and associated Viewer for managing assets, reviewing permitting requests, and assessing project proposals. Map repetitive loss areas, develop short and long-term resiliency and recovery plans, and develop and implement a “build back better and smarter” strategy to mitigate future damage costs.</p> | Resiliency and Recovery Plans | OCCSR DPP | Implementer Regulator Advocate |
| <p>Develop design and construction standards that mitigate and adapt to the impacts of climate change and sea level rise.</p> | BC Project Review | DPP | Regulator Implementer |
| <p>Implement the recommendations of the <u>O'ahu Resilience Strategy</u>, particularly the development of a community resilience hub in East Honolulu, increase coordination with neighborhood emergency preparedness groups, and create a liaison between City agencies and NGOs.</p> | Disaster Plans | OCCSR NGOs Various | Implementer Advocate |
| <p>Clean up contaminated areas, particularly properties adjacent or directly upland of a stream channel.</p> | CIP | DFM DDC DOH-CWB | Advocate Implementer |

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| <p>Retain stormwater, sediment, and toxic pollutant runoff through the installation of linear landscaping features and permeable pavement along roadways and highways. Incorporate landscaped pathways and bikeways along stream channels and drainage corridors where appropriate and feasible. Increase ground absorption and reduce the amount of permeable surfaces.</p> <p>Implement low-impact development standards to capture stormwater, sediment, and toxic pollutant runoff on-site and reduce pollutant loads into downstream water bodies. Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.</p> | CWRM Conserv. Dist. | DLNR | Implementer |
| | NPDES | DOH-CWB | Regulator Implementer |
| | LUO BC | DPP | Regulator Implementer |
| | Bike Plans | DTS | Advocate |
| | Ops CIP | DFM DDC BWS | Implementer |
| Incorporate potential natural drainage improvements in park and preservation lands. | CIP Park MP | DPR DFM DDC | Implementer Advocate |
| 3.1.2.5 Natural Resources and Preserves | | | |
| Implement management programs in areas where intense human activity threatens the sustainability of the resources. | Monitoring Visitor Limits Admin. Fees | DLNR DPR NGOs | Implementer Advocate |
| Conduct a biological study to determine if Rim Island 2 is eligible for declaration as a recognized endangered species habitat. | Bio Study | NGOs USFWS | Advocate Implementer |
| Implement the findings and recommendations from the <u>Kamilo Nui – Mariner’s Cove Firewise Hazard Assessment</u> . | Hazard Assessment Conserv. Dist. | NGOs USFS DLNR | Advocate Implementer |

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| 3.1.2.6 Marina | | | |
| Improve facilities in support of boating. Encourage Best Management Practices (BMPs) for marina uses to mitigate degradation of water quality to both the marina and Maunalua Bay. | Conserv. Dist. | DLNR | Regulator |
| | BMPs | USACE | Implementer |
| | Grading Permits NPDES | DPP DOH | Regulator |
| Maintain or improve views across the marina, especially from Kalaniana'ole Highway and other major roadways. Install and maintain landscaping, where appropriate, to screen areas of the marina not intended for public views and to intercept stormwater, sediment, and toxic pollutant runoff from entering into marina waters. | Scenic Byways | DOT | Implementer |
| Improve pedestrian access to and along the marina's edge by way of a path for pedestrians and bikes. Construct a pedestrian bridge between the Hawai'i Kai Towne Center and the Hawai'i Kai Shopping Center. | CIP | DTS | Implementer |
| SEC. 3.2 ISLAND-BASED PARKS AND RECREATIONAL AREAS | | | |
| Maintain and enhance, to the extent possible, existing island-based parks by utilizing land area that has not been fully developed for recreation use. | Park MP | DPR | Implementer Advocate |
| Expand access to existing park lands by improving neighborhood linkages along shared paths for pedestrians and bicyclists. | Park MP | DPR | Implementer |
| | Bike Plan | DTS | Advocate |
| | CIP | DDC | Implementer |
| 3.2.3.1 Passive or Nature Parks | | | |
| Maintain and facilitate access to the area's important fishing resources. | Conserv. Dist. | DLNR | Regulator Implementer |

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| Provide educational and passive recreation opportunities to preserve the Kaiwi coast. | Conserv. Dist. | DLNR | Regulator Implementer |
| | Byway Plan | NGOs DTS DOT | Implmenter Advocate |
| | Park MP | DPR | Implementer |
| Expand Sandy Beach Park to include Golf Course 5 and 6 properties, thereby increasing East Honolulu's active recreation areas. | Park MP | DPR | Implementer |
| Minimize adverse lighting impacts on aquatic life and avifauna, as well as adverse aesthetic impacts, particularly from stationary point lookouts and along significant view planes. | CIP | DOT DDC | Implementer |
| | LUO | DPP | Regulator |
| Develop new walking/hiking trails within Koko Crater Botanical Garden for better viewing of plant collections, but prohibit access to/from trails or paths outside the garden leading from/to the garden. With community input, explore the possibility of reinstating the shared use of the Koko Crater Botanical Gardens and the Koko Crater Stables through a shared use agreement that includes a plan for well-marked horseback-riding trails and the prompt cleaning of horse droppings by stable employees. Continue to develop Koko Crater Botanical Garden as a conservation site of global importance for rare and endangered species from Hawai'i and other tropical dryland areas. | Park MP | DPR | Implementer |
| | Ops | DES | Implementer |
| Protect fragile natural resources, such as Hanauma Bay Nature Preserve, from overuse through continued management and control of visitor numbers and impacts such as walking on the reef and sunscreen pollution. | Park MP Conserv. Dist. Bio Study | DPR DLNR NGOs | Implementer Advocate |

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| Develop Wāwāmalu Beach as a nature park with the addition of demarcated parking and installation of barriers to protect natural dunes, native vegetation, beach rock, and beach. | Park MP | DPR DTS DDC | Implementer |
| Use non-potable water for irrigation of large landscaped areas in compliance with the BWS Rules and Regulations. If non-potable water is either unavailable or infeasible, a report of the investigation should be coordinated and submitted to the Board of Water Supply prior to considering the use of potable water. | CIP Park MP | DPR BWS | Implementer |
| 3.2.3.2 Active Recreation Areas | | | |
| Locate areas designed for sporting events that attract high numbers of people along major collector streets or accesses that are separated as much as possible from residential areas and wildlife habitats. Locate bus stops and loading areas at principal entries and adjacent to convenient pedestrian accesses to main activity areas within the park. Provide amenities and service facilities to accommodate “tailgate” picnics in parking areas for sporting events, including shading canopy trees within the parking lot as well as nearby picnic tables and outdoor grills. | Park MP | DPR | Implementer |
| | CIP Ops | DPP DDC | Implementer |
| Minimize the visibility of perimeter fencing along major collector streets, large recreation buildings or structures, lighting, parking lots and other utilitarian elements through plantings or other appropriate visual screens adjacent to residential areas and major roadways, particularly to soften the view of the park from above at the roadside vista point along Kalanianaʻole Highway. | Park MP | DPR | Implementer |
| | LUO | DPP | Regulator |
| Reduce light pollution by minimizing the number of lighting facilities installed and ensuring that lights are shielded and pointed downward. | LUO CIP | DPP DDC | Regulator Implementer |
| Public recreation facilities should be available to users of all skill levels and incomes, particularly Koko Crater Stables. | Park MP | DPR DES | Implementer |

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| 3.2.3.3 Golf Courses | | | |
| Optimize the function of golf courses as passive drainage ways, maximizing their potential to retain or detain stormwater runoff. | LUO | DPP | Implementer |
| Provide view amenities for adjacent urban areas, especially from well-used public rights-of-way, parks and vista points. Use screening, landscaping, setbacks, and modifications to the course layout, where feasible, rather than fencing or solid barriers. | SUP LUO | DPP | Implementer |
| Provide and maintain safe access through these golf courses, as necessary, for regional continuity of pedestrian and bicycle systems. | Bike Plans | DTS | Advocate Implementer |
| Use of non-potable water for irrigation of large landscaped areas in accordance with the BWS Rules and Regulations. If non-potable water is either unavailable or infeasible, a report of the investigation should be coordinated and submitted to the BWS prior to considering the use of potable water. | Rules and Regulations | BWS | Regulator Implementer |
| SEC. 3.3 COMMUNITY-BASED PARKS | | | |
| Modify recreation facilities in existing parks to respond to changing demographic profiles or recreational needs. | CIP | DPR DDC | Implementer |
| Co-locate parks with elementary or intermediate schools. Coordinate design, development and use of athletic, recreation, meeting, and parking facilities with DOE where efficient and effective. | Park MP CIP | DPR DDC DOE | Implementer |
| Incorporate and develop the Job Corps Center site for active recreational facilities. | Park MP CIP | DPR | Implementer |

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| Design and site structural improvements and landscaping in community-based parks to create or add to the aesthetic value of these open space elements. Blend park boundaries through the transition of park space to paths or greenways. | Park MP CIP | DPR DDC | Implementer |
| Improve neighborhood linkages for non-motorized transportation modes. | Bike Plans Ped. Plan | DTS DPR DDC | Implementer Advocate |
| Develop additional trails and bike paths to balance trail demands across East Honolulu and alleviate potential overuse at existing trails. | State Trails Conserv. Dist. | DLNR | Implementer |
| | Park MP CRMP | DPR DLM | Implementer |
| SEC. 3.4 HISTORIC AND CULTURAL RESOURCES | | | |
| Emphasize physical references to East Honolulu's history and cultural roots. Preserve significant historic features from earlier periods. Retain significant vistas whenever possible. | ZC LUO Project Review | DPP | Regulator |
| | Hist. Pres. | SHPD OHA | Regulator Implementer |

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| Determine the appropriate preservation methods on a site-by-site basis in consultation with the State Historic Preservation Officer and cultural practitioner. Require preservation in-situ only for those features for which the State Historic Preservation Officer has recommended such treatment. Recommend in-situ preservation and appropriate protection measures for sites that have high preservation value because of their good condition or unique features. | Hist. Pres. | SHPD OHA Cultural Practitioners | Regulator Implementer Advocate |
| Determine the degree of access that would best promote the preservation of the historic, cultural and educational value of the site in consultation with the State Historic Preservation Officer, Hawaiian cultural organizations, and the landowner, recognizing that economic use is sometimes the only feasible way to preserve a site. | LUO | DPP | Advocate Regulator |
| | Hist. Pres. | SHPD | Implementer |
| Protect existing visual landmarks and support the creation of new, culturally appropriate landmarks. | CIP | DDC DFM | Implementer |
| SEC. 3.5 RESIDENTIAL USE | | | |
| Establish design guidelines to minimize long-term adverse impacts of new infill development on surrounding neighborhoods; encourage use of sloped roof forms with wide overhangs; enhance the boundaries of existing neighborhoods through the use of landscaping, natural features, building form and siting; focus neighborhood activity on the local street, common pedestrian rights-of-way, or recreation areas; and encourage energy efficient features, such as solar panels, and design, such as window recesses, overhangs, and orientation of openings to allow natural shade and cross-ventilation. | LUO BC | DPP NGOs (e.g. AIA) | Regulator Implementer Advocate |
| | Complete Streets | DTS DDC DFM DPP | Implementer |
| | Ped. Plan | DTS DOT | Implementer |

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| Encourage bus, pedestrian, and bicycle travel, particularly to reach neighborhood destinations such as schools, parks, and convenience stores. Recognize the need for accessible design and safe travel conditions for elderly and/or disabled people. Implement traffic calming measures on residential neighborhood streets and add street trees to provide shading for sidewalks and bus stops. Modify residential neighborhood street design, where appropriate and feasible, to provide greater emphasis on safe, accessible, convenient and comfortable pedestrian routes, bus stops, bike routes, and landscaping, even if this requires somewhat slower travel speeds, less direct routes and fewer on-street parking spaces for automobiles. Revise City street standards, subdivision regulations, and use of traffic calming measures to support these policies and the policies identified in the Complete Streets Design Manual. Implement the policies and guidelines in the <u>O‘ahu Bike Plan</u> , <u>Bike Plan Hawai‘i</u> , the <u>O‘ahu Pedestrian Plan</u> , and the <u>Statewide Pedestrian Master Plan</u> . | Age Friendly Action Plan | NGOs UH Various | Advocate |
| | Bike Plan | DTS DOT | Implementer |
| | Ops | DDC DTS | Implementer |
| Allow designated affordable housing projects up to 40 units per acre if designed in a manner compatible with the character of the surrounding residential community. | LUO | DPP | Regulator |
| Improve management and enforcement of regulations relating to the operation of transient vacation units (TVUs) in residential neighborhoods. | LUO | DPP | Regulator |
| Provide housing opportunities for a variety of living accommodations which are affordable to low and moderate-income, gap group, and other elderly households such as multi-generation households, ‘ohana units, home expansions, group homes, assisted living units, and continuing care retirement communities such as the Kāhala Nui assisted living units and the Hawai‘i Kai retirement community. | AHF CDBG HOME Section 8 LUO | HPHA HHFDC HUD DPP | Regulator Implementer Advocate |
| | Storm Drainage WQ Rules LUO | DPP DFM OCCSR | Regulator Advocate |

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| Implement LID practices as properties are redeveloped to encourage the capture of stormwater, sediment, and toxic pollutant runoff on-site and reduce pollutant loads into downstream water bodies. Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams. | NPDES Water PTP | DOH-CWB | Regulator Advocate |
| Allow designated affordable housing projects up to 40 units per acre if designed in a manner compatible with the character of the surrounding residential community | LUO | DPP | Regulator |
| 3.5.3.2 Special Needs Housing and Senior Housing | | | |
| Locate special needs housing within close proximity to transit services and commercial centers. Apply the seven principles of Universal Design to redevelopment projects to support the seniors who wish to age-in-place. Accommodate an allowable building density of 10 to 40 units per acre, not including beds in skilled nursing facilities. | ZC LUO CDBG | DPP | Implementer |
| Utilize building and roof form, orientation, location of entries, landscape screening, and height to maintain compatibility with the existing residential uses and scale. | LUO | DPP | Regulator |
| Encourage the development of medical care facilities, including, but not limited to, facilities that provide palliative and hospice care. | | DOH | Regulator Implementer |
| | LUO | DPP | Implementer |
| | | NGO | Advocate |
| Adhere to the key principles of Complete Streets: safety, consistency of design, context sensitive solutions, energy efficiency, accessibility and mobility for all, health, use and comfort of all users, and green infrastructure. | LUO Setbacks | DPP | Regulator Implementer |
| | Bike Plans Ped. Plan | DTS DDC | Implementer |

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| Create an inclusive and accessible urban or suburban environment that encourages active and healthy aging, specifically age-in-place principles and the Universal Design Standards that address or include the following: equitable, flexibility, simple and intuitive, perception information, tolerance for error, low physical effort, and size and space. | BC | DOT DPP | |
| | Park Plan | DPR | Implementer |
| | | NGOs | Advocate |
| SEC. 3.6 NON-RESIDENTIAL DEVELOPMENT | | | |
| Allow low-rise multi-family residential use above the first floor in B-1 and B-2 zoned districts. | LUO | DPP | Implementer Advocate |
| Prohibit new or expanded land areas for resorts and institutional campuses including major new schools, hospitals, or similar institutions. | LUO ZC | DPP | Implementer |
| Incorporate site design and facilities to promote pedestrian and bicycle access to Neighborhood Commercial Centers and transit access to the Regional Town Center. | Project Review Complete Streets Bike Plan Ped. Plan | DPP DTS DDC Various | Advocate Implementer |
| Maintain consistency between the building mass of a commercial center and its urban and natural setting. | Project Review LUO | DPP | Implementer |
| Include at least one pedestrian access way from the public sidewalk or other off-site pedestrian pathway to the entrance of establishments in the commercial center that does not require crossing a traffic lane or parking lot aisle or driveway. Improve efficiencies in traffic and parking conditions by redesigning or re-siting parking lots, driveways, and walkways and by providing shuttle services between components of the Regional Town Center. | Project Review LUO Complete Streets Ped. Plan | DPP DTS DDC Various | Advocate Implementer |
| Strive to have Neighborhood Commercial Centers reflect a residential architectural character. | Project Review LUO | DPP | Implementer |

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| Allow the Regional Town Center to reflect a more varied urban architectural character. | Project Review LUO | DPP | Implementer |
| Create a Regional Town Center in the Hawai'i Kai Marina area by strengthening the relationship between the existing commercial uses, increasing the mix of uses, and providing more convenient access. | Project Review LUO | DPP | Advocate Implementer |
| Parking areas should include a landscape screen of trees and hedges in setbacks with shade trees throughout the parking lot for aesthetics and stormwater retention. Place parking and service areas behind buildings or visually screen from streets and residential areas. | LUO | DPP | Regulator |
| Use only low-level or indirect lighting, appropriately shielded and pointed downward, which meets safety and security requirements in parking lots. | Project Review LUO | DPP | Implementer Regulator |
| Ensure compatibility between the type, size, design, placement, and color of signage and the context of adjacent facilities and uses. Avoid blank facades on portions of buildings visible from a street or the Hawai'i Kai Marina by using texture, articulation, color, and fenestration to create visual interest. | LUO ZC | DPP | Implementer Regulator |
| Designate land around Kalama Village Center for residential or mixed-use (residential, and commercial/office). | ZC | DPP | Regulator |
| Incorporate resource conservation measures in new development. Require the use of low-impact development standards for any significant new construction or redevelopment in order to hold stormwater on-site instead of discharging it into storm drains or stream channels. Provide incentives for owners to develop rain gardens, permeable parking lots and driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams. | LID LUO ZC WQ Rules | DPP OCCSR | Implementer Regulator Advocate |
| | NPDES | DOH-CWB | Regulator |
| Strengthen the relationship between the existing commercial uses in the Hawai'i Kai Marina area. | Project Review LUO | DPP | Regulator Advocate |

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| Increase the mix of uses and types of services and activities in the commercial zone. Offer a greater diversity of uses including apartment uses, public uses, and indoor small to medium-sized “service-industrial” establishments in the Hawai‘i Kai Towne Center. Enhance the Koko Marina Shopping Center as a recreation/entertainment oriented commercial complex with the addition of more services for ocean recreation, restaurants, and similar attractions. Reorient Hawai‘i Kai Towne Center as a focus of activity by diversifying uses such as apartment, public, and indoor small to medium sized service industrial uses. Convert some additional ground or second floor space to retail or other commercial uses if there is a demand for additional office space. | ZC LUO | DPP | Regulator Implementer Advocate |
| Provide more convenient transportation access for alternative modes of transportation including improved pedestrian amenities and connections. | CIP | DTS | Implementer |
| | Project Review LUO Subdivision | DPP | Advocate |
| Allow low-rise, multi-family residential use as a permitted accessory use above the first floor in the B-1 Neighborhood Business District and the B-2 Community Business District. | LUO ZC | DPP | Advocate Implementer |
| Building heights should generally not exceed 60 feet for Institutional use and 70 feet for Resort use. Height setback transitions should be provided from street frontages, the shoreline, and adjacent residential areas. Signage should be non-illuminated or indirectly illuminated. High intensity lighting should be appropriately shielded downward to minimize impact on adjoining or affected uses and wildlife. | LUO Project Review | DPP | Regulator |
| Account for the projected impacts of climate change and sea level rise over the length of the building’s lifespan. | SMA Shoreline Setback LUO | DPP OCCSR | Implementer Advocate |

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| <p>Implement low-impact development, particularly in areas that may have large impervious surfaces.</p> <p>Provide incentives for owners to develop rain gardens, permeable parking lots and driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams.</p> | LUO | DPP OCCSR | Regulator Implementer Advocate |
| | CZM | OP | Regulator Implementer |
| SEC. 4.1 TRANSPORTATION SYSTEMS | | | |
| <p>Implement the <u>Statewide Pedestrian Master Plan</u>, the <u>Honolulu Complete Streets Design Manual</u>, the <u>Bike Plan Hawai'i</u>, the <u>O'ahu Bike Plan</u>, the <u>O'ahu Pedestrian Plan</u>, and the <u>Honolulu Age-Friendly City Action Plan</u>.</p> | Various Plans | See plans | See Plans |
| | Project Review | DTS DPP | Regulator Implementer |
| | ORTP TIP | OMPO | Implementer |
| <p>Provide improved services and facilities for express buses, such as more frequent and more comfortable vehicles. Expand and improve park-and-ride facilities, including possible relocation and provision of compatible accessory uses.</p> | CIP Ops LUO | DTS DDC DPP | Implementer Regulator |
| <p>Promote ridesharing and vanpooling.</p> | Ops | DTS | Implementer |
| <p>Increase person-carrying capacity on Kalaniana'ole Highway for commuter travel without expanding automobile rights-of-way by constructing facilities to increase safety and comfort for alternative modes of travel.</p> <p>Decrease the use of single-occupant, or even zero-occupant, automobile trips during commute times by: converting regular automobile lanes into additional HOV lanes during regular or rush hour times, and/or increasing the vehicle occupancy requirement of the use of the HOV lane.</p> | CIP Ops | DTS DOT DDC | Implementer Regulator |

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| Ensure street furniture is comfortable and does not impede sidewalk movement. See the <u>Complete Streets Design Manual</u> . | Ped. Plan | DTS DDC | Regulator Implementer |
| Preserve and enhance existing crosswalks. Install additional crosswalks, especially near open spaces, parks, shopping centers, and other public gathering places. | Ped. Plan | DTS DDC | Implementer |
| Roadway design, particularly along Kalaniana'ole Highway in the vicinity of Kuli'ou'ou, should take into account the anticipated impacts of sea level rise to ensure safe and efficient access between neighborhoods is maintained. | CIP Ops | DOT OCCSR | Implementer Advocate |
| Modify rights-of-way design in selected areas, particularly along designated bike lanes and routes, principal pedestrian routes and street crossings, and near bus stops. | CIP Ops | DTS DOT DDC | Implementer |
| Implement lane restriping during repaving projects. | CIP Ops | DOT DTS DDC | Implementer |
| Change travel way widths or curb radii, pavement texture, introduce appropriate signage, and provide generous landscaping for safety, aesthetics, and stormwater retention. Design on-street and off-street parking facilities more efficiently to encourage joint use of parking in ways that ensure public safety and better manage stormwater, sediment, and toxic pollutant runoff with improved BMPs. Include more landscaping along roadways to improve aesthetics, to manage stormwater, sediment, and toxic pollutant runoff, and to filter oils and sediment from the roadway improving downstream water quality. | Project Review | DPP | Regulator |
| | NPDES WQ Rules | DOH-CWB | Regulator |
| | CIP Ops | DOT DTS DDC | Implementer |

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| Provide more convenient pedestrian paths within commercial centers, transit stops, parks, beaches, schools, senior living facilities, and other high-activity areas to encourage people to walk short distances for multi-purpose trips instead of moving the vehicle to another parking facility. Ensure street furniture is comfortable and does not impede sidewalk movement. Support the Safe Routes to School program and projects to improve pedestrian and bicycle links around schools. | LUO SRTS CIP Ops Complete Streets | DPP DOT DTS DDC | Regulator Implementer Advocate |
| Reduce light pollution's adverse impact on wildlife and human health and its unnecessary consumption of energy by using, where sensible, fully shielded lighting fixtures using lower wattage. | LUO | DPP DDC DOT | Regulator Implementer |
| Discourage the use of gated communities and encourage existing gated communities to improve adjacent streetscape and disguise the public-private boundary. | LUO Project Review Subdivision | DPP | Advocate Implementer |
| Implement traffic calming measures in appropriate residential areas to reduce average motor vehicle speeds and make vehicular routes less direct. | CIP Complete Streets Ops | DOT DTS DDC DPP | Implementer |
| Complete the roadway between Hawai'i Kai Drive in the Kamilo Nui Valley area. | TIP CIP | OMPO DTS DPP | Implementer |

| SEC. 4.2 WATER ALLOCATION AND SYSTEM DEVELOPMENT | | | |
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| Integrate management of all potable and non-potable water sources, including groundwater, stream water, stormwater, and effluent, following State and City legislative mandates. | WUP OWMP | CWRM BWS | Regulator Advocate |
| Adopt and implement water conservation and stormwater management practices, in the design of redevelopment projects and the modification of existing uses, including landscaped areas. Have the BWS certify that adequate potable and non-potable water is available in order for a new residential or commercial development to be approved. Encourage the use of low flush toilets, flow constrictors, and other water conserving devices in commercial and residential redevelopments. Encourage the use of indigenous, drought-tolerant plant material and drip irrigation systems in landscaped areas and promote stormwater retention and infiltration. Encourage timely leak repair for distribution systems. Provide incentives for owners of existing homes to develop rain gardens, permeable driveways, and other strategies that hold stormwater on-site instead of discharging it into storm drains or streams. Require the use of Low-Impact Development standards for any significant new construction or redevelopment in order to hold stormwater on-site instead of discharging it into storm drains or stream channels. | LID NPDES WQ Rules | DPP DFM DOH-CWB | Implementer Advocate |
| | Water PTP | NGOs | Advocate |
| | Project Review | BWS ENV | Regulator Implementer |
| | BC | DPP | Regulator |
| Encourage the use of tertiary-treated recycled water for the irrigation of golf courses and other landscaped areas where this would not adversely affect potable groundwater supply. | WQP | DOH | Regulator |
| | Project Review | BWS ENV | Implementer |
| Research and prepare for the potential impacts of sea level rise on ground water aquifers and water supply infrastructure. | | BWS OCCSR OP DDC | Implementer |

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| Expand use of reclaimed water in State and County Facilities in accordance with HRS 174C-31. Encourage use of reclaimed water in redevelopment projects. | CIP BC LUO | DDC DPP | Implementer Regulator |
| SEC. 4.3 WASTEWATER TREATMENT | | | |
| Connect all wastewater produced by urban uses to a publicly regulated or municipal sewer service system. | Sewer CP CIP LUO | ENV DDC DPP | Regulator Implementer |
| Keep the East Honolulu WWTP under private operation and regulatory supervision of the State PUC and the State DOH. | PUC | PUC DOH | Regulator |
| Implement, where feasible, water recycling as a water conservation measure. Use recycled water from the East Honolulu WWTP as a source for irrigating golf courses and other uses compatible with the Board of Water Supply's rules and guidelines for the treatment and use of recycled water. | WQ Plan | DOH | Regulator |
| | Project Review | BWS | Implementer |
| Provide buffer zones and landscape elements between the East Honolulu WWTP and adjacent residential designated areas in order to mitigate possible visual, noise, and odor impacts. | WP WQ Plan | DOH | Regulator |
| | Ops CIP | ENV | Implementer |
| | Clean Air Noise Regs. | | |
| Connect homes to one of the two existing sewer systems. Support conversion efforts and upgrades to individual wastewater systems where connections are not feasible. | Wastewater | DOH | Implementer Regulator |

| SEC. 4.4 ELECTRIC POWER DEVELOPMENT | | | |
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| Design system elements such as sub-stations and transmission lines to avoid or mitigate any potential adverse impacts on scenic and natural resource values and the potential impacts of sea level rise and associated impacts of the rising water table and groundwater inundation. | CIP LUO Conserv. Dist. | HECO DPP DLNR OCCSR | Implementer Regulator |
| SEC. 4.5 SOLID WASTE HANDLING AND DISPOSAL | | | |
| Provide expanded collection facilities and services including automated refuse collection in residential areas. | Ops | ENV | Implementer |
| Establish public outreach and education programs. | SWIMP | ENV | Implementer |
| Have residents pay their fair share of all costs needed to ensure provision of adequate solid waste collection facilities. | | | |
| SEC. 4.6 DRAINAGE SYSTEMS | | | |
| Complete the proposed study of local flooding and drainage problems as soon as possible. | Flooding Study Water PTP | NGOs DLNR | Advocate Implementer |
| Include a phased plan and implementation program for drainage system improvements. Promote drainage system design that emphasizes control and minimization of non-point source pollution. | Ops | DFM | Implementer |
| | NPDES | DOH-CWB | Implementer |
| Restore channelized streams and wetlands. | CIP Ops | DDC DFM | Implementer |
| Install upland detention basins in upper valleys above urbanized areas and properly maintain them in order to prevent the blocking of downstream channels during major storm events. Keep drainage ways clear of debris to avoid the flooding problems that have occurred in the past. | CIP Ops | DDC DFM DLNR | Implementer |

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| Implement Low-Impact Development (LID) standards. | Project Review Subdivision | DPP | Implementer Regulator |
| Encourage planting and maintenance of vegetation along drainage ways. | LUO Project Review | DPP OCCSR DFM | Regulator Implementer |
| Improve and protect natural resources and aesthetic values of the stream. | | DLNR | Advocate |
| Identify repetitive loss areas from flooding and implement greater restrictions to rebuilding in these areas. | Flood Plan | OCCSR DEM | Implementer Advocate |
| Integrate planned improvements to the drainage system into the regional open space network by emphasizing the creation of passive recreational areas, and recreational access for pedestrians and bicycles without jeopardizing public safety. | Project Review | DDC DPP | Implementer Regulator |
| | Bike Plan | DTS DOT | Implementer Advocate |
| | Park MP Project Review | DPR | Implementer Regulator |
| SEC. 4.7 SCHOOL FACILITIES | | | |
| Approve new residential developments only after the DOE provides assurance that adequate school facilities will be available when the development is completed. | Project Review | DPP DOE | Implementer |
| Require developers to comply with DOE school impact fee requirements and pay their fair share of all costs needed to ensure provision of adequate school facilities for the children living in their developments. | Impact Fees | DOE | Implementer |
| | LUO ZC BC | DPP | Regulator Implementer |

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| Encourage DPR and DOE to coordinate joint development and use of athletic facilities such as playgrounds, play fields and courts, swimming pools, and gymnasiums to maximize use and reduce duplication of function without compromising school athletic programs. | Park MP | DPR | Implementer |
| | Ops | DOE | Implementer |
| Encourage the DOE to make more efficient use of their facilities with year-round scheduling. | Ops | DOE | Implementer |
| Design school buildings and coordinate with the Department of Emergency Management so that these facilities may also be used as public shelters capable of withstanding Category 3 hurricanes. | CIP | DOE DEM HI-EMA | Implementer |
| SEC. 4.8 CIVIC AND PUBLIC SAFETY FACILITIES | | | |
| Approve new development only if adequate staffing and facilities for fire, ambulance and police protection will be provided. If the development of any new substation is warranted, potentially near an entry to Hawai'i Kai (Maunalua), co-locate it with other emergency medical and transportation services. | CIP Ops Project Review Subdivision | DEM HFD HPD EMS DPP | Implementer |
| Ensure accessibility for senior populations to public shelters, or to prioritize the restoration of services to where seniors and other vulnerable populations are sheltering-in-place. | Disaster Plan | DEM NGOs | Implementer Advocate |
| Develop a Community Resilience Hub in East Honolulu that will serve critical roles during and immediately following an emergency as well as enhance social resilience ahead of a disaster. | Disaster Plan Ops | OCCSR DEM DPR DLM | Implementer Advocate |

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| <p>Analyze the possible impact of sea level rise for new public and private projects in shoreline areas and low-lying areas and require measures to reduce vulnerability and increase resiliency. Identify critical public and private infrastructure and important cultural and natural resources vulnerable to historic coastal hazards and impacts of climate change, and, working with local landowners, stakeholders, and State and Federal agencies, begin the work of protecting, adapting, or relocating the highest priority projects.</p> | <p>Disaster Plan LUO SMA Hist. Pres. Ops</p> | <p>DPP DDC DEM DLM DLNR DOT ENV DTS DOE PUC HFD HPD EMS OCCSR</p> | <p>Implementer Advocate</p> |
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APPENDIX A: CONCEPTUAL MAPS

This appendix includes the three primary conceptual maps used to illustrate the vision for East Honolulu’s future development. The maps include:

| | | <u>PAGE</u> |
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| • | Map A-1: Open Space | A-13 |
| • | Map A-2: Urban Land Use | A-15 |
| • | Map A-3: Public Facilities | A-17 |

These maps illustrate the long-range vision of the future of the **Plan** area and the major land use, open space, and public facility policies that are articulated in the **Plan**. In using these maps, the reader should keep in mind that:

1. These maps are general and conceptual, and are not intended to be used to determine specific land use boundaries. Such boundaries are to be determined during the review of specific land use or public facilities investment decisions, and their exact locations are to be guided by the vision and policies of this **Plan**.
2. These maps illustrate the Plan's vision, policies and guidelines that are presented in Chapters 2, 3, and 4. These policy statements and guidelines are considered the most important elements of the **Plan**.

The maps are considered illustrations of the policies and guidelines. However, the text should be consulted to determine the appropriate application of the **Plan** vision, policies, and guidelines for any specific project or location. In cases of disagreement, the text should prevail over the map depiction.

A brief explanation of the terms used in each of these maps follows.

GLOSSARY OF TERMS

Descriptions of elements common to each of the three maps are presented in the following section.

Descriptions of elements specific to each map (**A-1: Open Space**, **A-2: Urban Land Use**, and **A-3: Public Facilities**) are presented in separate sections for each map, which follow the section on Common Elements.

COMMON ELEMENTS

Agriculture Areas

Agricultural lands, previously lands within the Agricultural Boundary, are established to protect the region's agricultural lands for their economic and open space values. The primary use of all lands within Agriculture areas are agriculture or directly supportive of the agriculture industry.

Two areas in Hawai'i Kai (Maunaloa) are identified as agricultural lands and located outside the Community Growth Boundary to recognize active agricultural lots seeking a continuation of their use (i.e., the farm lot subdivisions in Kamilo Nui Valley and those adjacent to Kaiser High School). In addition, undeveloped areas in Kamilo Nui Valley which are adjacent to existing agricultural uses are placed within the Agriculture area. Preventing the encroachment of suburban residential development within and surrounding the existing subdivisions supports active use of these lots for agricultural purposes.

Community Growth Boundary

The Community Growth Boundary (CGB), previously the Urban Community Boundary in the 1999 **Plan**, defines and contains the intended extent of developed or "built-up" areas of East Honolulu's urban fringe communities.

The purpose of the Community Growth Boundary is to:

- Guide future development, redevelopment, and resource management within existing zoning designations or future zoning designations;
- Provide adequate lands for facilities or other groupings of built uses needed to support established communities; and
- Protect lands outside this boundary for agriculture and other resources and open space values.

Areas within this boundary are generally characterized by extensive tracts of residential or commercial development clearly distinguishable from undeveloped or more “natural” portions of a region’s environment.

Within the **Plan** area, the Community Growth Boundary is generally coterminous with the State Urban District boundary but excludes the following areas of the State Urban District:

- ‘Āina Haina Nature Preserve;
- Areas committed to agricultural use by long-term leases (i.e., the farm lot subdivisions in Kamilo Nui Valley and adjacent to Kaiser High School);
- Undeveloped areas in Kamilo Nui Valley which are adjacent to existing agricultural uses but zoned as preservation;
- Large tracts of undeveloped lands at higher elevations that are prominently visible from the coastal highway or other public areas and are desirable natural scenic features;
- Mauka lands along the Kaiwi coast are zoned as preservation and located outside of the Community Growth Boundary to protect open space;
- Significant undeveloped Urban District land areas identified as suspect areas for land movement by the U.S. Geological Survey;
- Keawāwa Marsh and Wetlands; and
- Small inconsistencies as shown in **Exhibit 2-1**.

There have been no State Land Use District boundary amendments in East Honolulu since the publication of the 1999 **Plan**. There are, however, areas where the Community Growth Boundary has been expanded to reflect zone changes made prior to the publication of the 1999 **Plan** which were not incorporated into the 1999 Appendix Maps. The two changes include the expansion of Niu Valley, which has not been fully developed, and the Leolani development near Kamilo Nui Valley, which was completed shortly after the publication of the 1999 **Plan**. The Community Growth Boundary has also contracted to exclude and preserve Keawāwa Marsh and Wetlands.

Golf Courses

The locations of the three existing privately owned golf courses are shown on the maps because of their recreational value and visual contribution to the open space landscape. There are no proposed golf courses.

Highways, Arterials, and Major Collector Streets

The maps show the locations of existing highways, arterials, and major collector streets. No new highways, arterials, or major collector streets are proposed at this time.

Parks

The maps show locations of existing public parks and recreational facilities, including regional parks, district parks, shoreline parks, nature parks, and the Kaiwi Scenic Shoreline area. Smaller community-based parks, including community parks, neighborhood parks, and mini-parks are not shown.

Preservation Areas

Preservation lands, previously lands within the Preservation Boundary, include those lands not valued primarily for agriculture, but which form an important part of a region's open space fabric. Such lands possess natural, cultural, or scenic resource values, and include important wildlife habitat, archaeological and historic sites, cultural sites, cemeteries, significant landforms or landscapes over which significant views are available, or development-related hazard areas.

The Preservation area includes undeveloped lands that:

- Are necessary for the protection of watersheds, water resources and water supplies;
- Are necessary for the conservation, preservation and enhancement of sites with scenic, historic, archaeological or ecological significance;
- Are necessary for providing and preserving park lands, wilderness and beach reserves, and for conserving natural ecosystems of endemic plants, fish and wildlife, for forestry, and other activities related to these uses;
- Are located at an elevation below the maximum inland line of the zone of wave action, and marine waters, fishponds, and tide pools unless otherwise designated;
- Are generally characterized by topography, soils, climate or other related environmental factors that may not be normally adaptable or presently needed for urban or agriculture use;
- Have general slopes of 20 percent or more which provide for open space amenities and/or scenic values;
- Are susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective attention by the State or Federal government, and lands necessary to the protection of the health, safety and welfare of the public by reason of soil instability, rock fall hazards or the land's susceptibility to landslides and/or inundation by tsunami and flooding;
- Are used for natural, state, or city parks outside the Community Growth Boundary; or
- Are suitable for growing commercial timber, grazing, hunting, and recreation uses, including facilities accessory to such uses when said facilities are compatible with the natural and physical environment.

Preservation areas exclude such features, sites, or areas located within the Community Growth Boundary or Agriculture areas.

Urban Areas

The maps show areas which have been developed or are planned for development for residential or commercial uses. Except when otherwise provided for, uses within the urban areas include residential and low-density apartment, medium-density apartment, neighborhood commercial center, regional town center, and resort uses. Changes to the urban areas from the 1999 **Plan** include the previously mentioned changes to the Community Growth Boundary in Niu Valley, the Leolani Development, and Keawāwa Marsh and Wetlands, as well as the construction of units in the Koko Villa neighborhood outside the entrance of Koko Crater Botanical Garden. The Koko Villas development was interpreted to be within the Community Growth Boundary. The ambiguity to the distinction between urban and preservation areas for Koko Villas is a reminder that these maps are only intended to be illustrations and where there are contradictions between the map and the text, or with other entitlements such as zoning, other regulatory tools will take precedent.

OPEN SPACE MAP

This map is intended to illustrate the region's major open space patterns and resources as outlined in **Chapter 3**. It highlights major open space elements and resources, including agricultural and preservation lands, major recreational parks and golf courses, the Hawai'i Kai Marina, important panoramic views, natural stream corridors and drainage ways, and important boundaries.

This map also indicates the general locations of community and neighborhood parks, public access points along the shoreline, and major trails providing mountain access.

Landscaped Boulevard/Greenway

Major arterials and major collector streets with landscaping, potentially including a landscaped median strip, landscaped sidewalk, and/or bikeways.

Natural Drainage Ways/Gulches

Drainage ways and stream channels convey water as flood plains but also serve as open space resources. These areas are protected from development, disturbance, or

channelization, except where absolutely necessary to protect existing urban development from flooding.

Panoramic Views

Points or corridors within the public right-of-way where views and scenic resources are highly valued with minimal obstruction. See **Exhibit 2-2** for areas that are identified as prominent land features, in addition to views of the shoreline and ocean, which many of these views are oriented to.

Trails

Unsanctioned maintained trails have been removed from the map with the exception of the Mariners Ridge Trail. Mariners Ridge Trail and Koko Crater are two trails that are not maintained by the City or State, but remain on the map as both were identified in the 1999 **Plan** as trails offering unique and spectacular scenic resources. The Koko Head Trail was added to the map because of its contribution as a unique and spectacular scenic resource, being an access point to Nono‘ula and ‘Ihi‘ihilauākea Preserves, and being located on City-owned property as part of the Koko Head Regional Park.

URBAN LAND USE MAP

The Urban Land Use map illustrates the vision for the foreseeable future for East Honolulu’s land uses within the Community Growth Boundary. This map illustrates the desired long-range land use pattern for East Honolulu which should result from implementation of the **Plan**’s vision and policies. The map includes the following terms:

Residential and Low-Density Apartment

These uses are depicted as a single yellow tone. “Residential” generally refers to single-family detached and attached houses or townhouses with individual exterior entries. “Low-density apartment” generally refers to low-density, low-rise multi-family residences, including townhouses, stacked flats and apartment buildings. Dwelling units in these buildings may share a common exterior entry. “Residential” housing types will generally be found in the residential zoning districts, and “low-density apartment” housing types will generally be found in the apartment zoning districts.

Medium-Density Apartment

These uses are depicted as a brown-orange tone. “Medium-density apartment” generally refers to mid- to high-rise multi-family residential projects. In East Honolulu, this designation will be applied only to areas developed consistent with this pattern as of the effective date of the **Plan**. The map is reflective zoning within the A-2 Medium-Density Apartment District.

Neighborhood Commercial Center

These centers are depicted with red dots, and generally represent clusters of commercial establishments intended for neighborhood service. Uses typically include grocery and sundry stores and other services and shops catering to common household- or neighborhood-level convenience items.

Regional Town Center

The Regional Town Center for East Honolulu is comprised of the three commercial centers adjoining Hawai'i Kai Marina: Hawai'i Kai Shopping Center, Hawai'i Kai Towne Center, and Koko Marina Shopping Center. These centers are depicted as red shapes.

Resort

The region's only resort use, the Kāhala Hotel and Resort, is depicted as a pink shape.

Elementary School

Elementary schools have been added to the map to demonstrate the multi-purpose uses they may contain including secondary uses as recreational facilities or emergency shelters. Existing elementary schools include 'Āina Haina, Haha'ione, Koko Head, and Kamilo Iki Elementary Schools.

High School

Existing high schools include Kalani High School and Kaiser High School.

Intermediate School

The only existing intermediate/middle school is Niu Valley Intermediate School.

Marina

The map depicts the Hawai'i Kai Marina as a series of connected light blue shapes indicating waterways and is not intended to be limited to the main docks.

Wastewater Treatment Plant

The existing wastewater treatment plant is located on the mauka side of Kalaniana'ole Highway in proximity to Sandy Beach Park.

PUBLIC FACILITIES MAP

The Public Facilities Map illustrates major existing and future public facilities and major privately owned facilities, including the golf course at the Wai'alaie Country Club. Its purpose is to display the locations for some of the public resources or assets available within the region.

The Public Facilities Map and corresponding text, as they appear in this **Plan**, are not meant to be amended between revisions of the **Plan** and should not be confused with amendments to the Public Infrastructure Map (PIM), which are used as part of the approval of projects in the CIP budget process.

Major public facilities which are to be funded through the City's CIP and budget appropriation are shown on the PIM. The PIM is not part of the **Plan** and is adopted and amended by resolution. Projects which are not listed in the **Plan** or are not shown on its maps can still be added to the Public Infrastructure Map by Council resolution if the Council finds them to be consistent with the vision and policies of the **Plan**.

Terms that appear on the Public Facilities Map include the following:

Bike Lane

A bike lane provides an exclusive space for bicyclists in the roadway through the use of lines and symbols. Bike lanes are for one-way travel and are normally provided in both directions on two-way streets, and on one side of a one-way street. When roadway width is limited and the road is sloped, a bike lane may be provided in only the uphill direction. This is referred to as a climbing lane.

Buffered Bike Lane

A buffered bike lane is created by painting a flush buffer zone between a bike lane and the adjacent travel lane. While buffers are typically used between bike lanes and motor vehicle travel lanes to increase bicyclists' comfort, they may also be provided between bike lanes and parking lanes to discourage bicyclists from riding too close to parked vehicles.

Elementary School

Elementary schools have been added to the map to demonstrate the multi-purpose uses they may contain including secondary uses as recreational facilities or emergency shelters. Existing elementary schools include 'Āina Haina, Haha'ione, Koko Head, and Kamilo Iki Elementary Schools.

High Occupancy Vehicle Lane

An exclusive lane on a roadway reserved for transit and vehicles with more than one occupant, and which is developed to improve transit speed and to provide incentives for commuters to opt for mass transit or carpooling. The only HOV lane is a coned contra flow lane heading toward town along Kālaniana'ōle Highway during morning rush hour.

High School

Existing high schools include Kalani High School and Kaiser High School.

Intermediate School

The only existing intermediate/middle school is Niu Valley Intermediate School.

Marina

The map depicts the Hawai'i Kai Marina as a series of connected light blue shapes indicating waterways and is not intended to be limited to the main docks.

Park & Ride

Special parking lots where commuters park their cars and continue their commute by mass transit.

Protected Bike Lane

A protected bike lane (also known as a separated bike lane or cycletrack) is an exclusive bikeway facility that combines the user experience of a shared use path with the on-street infrastructure of a conventional bike lane. Protected bike lanes are physically separated from motor vehicle traffic and distinct from the sidewalk.

Shared Roadway

A shared roadway is a bikeway where bicyclists and motor vehicles are expected to share the same travel lane. Shared roadways are denoted by pavement marking (sharrows) and/or signage. They are typically used in locations with low traffic speeds and volumes or as a temporary solution on constrained higher-traffic streets.

Shared Use Path

A shared use path is a two-way facility that is physically separated from motor vehicle traffic and used by bicyclists, pedestrians, and other non-motorized users. Shared use paths are often located in an independent alignment, such as a greenbelt or abandoned railroad right-of-way, and are used for recreation, leisure, and commuting.

Shoulder Bikeway

A shoulder bikeway is typically reserved for rural road cross-sections. Paved shoulders provide a range of benefits: they reduce motor vehicle crashes; reduce long-term

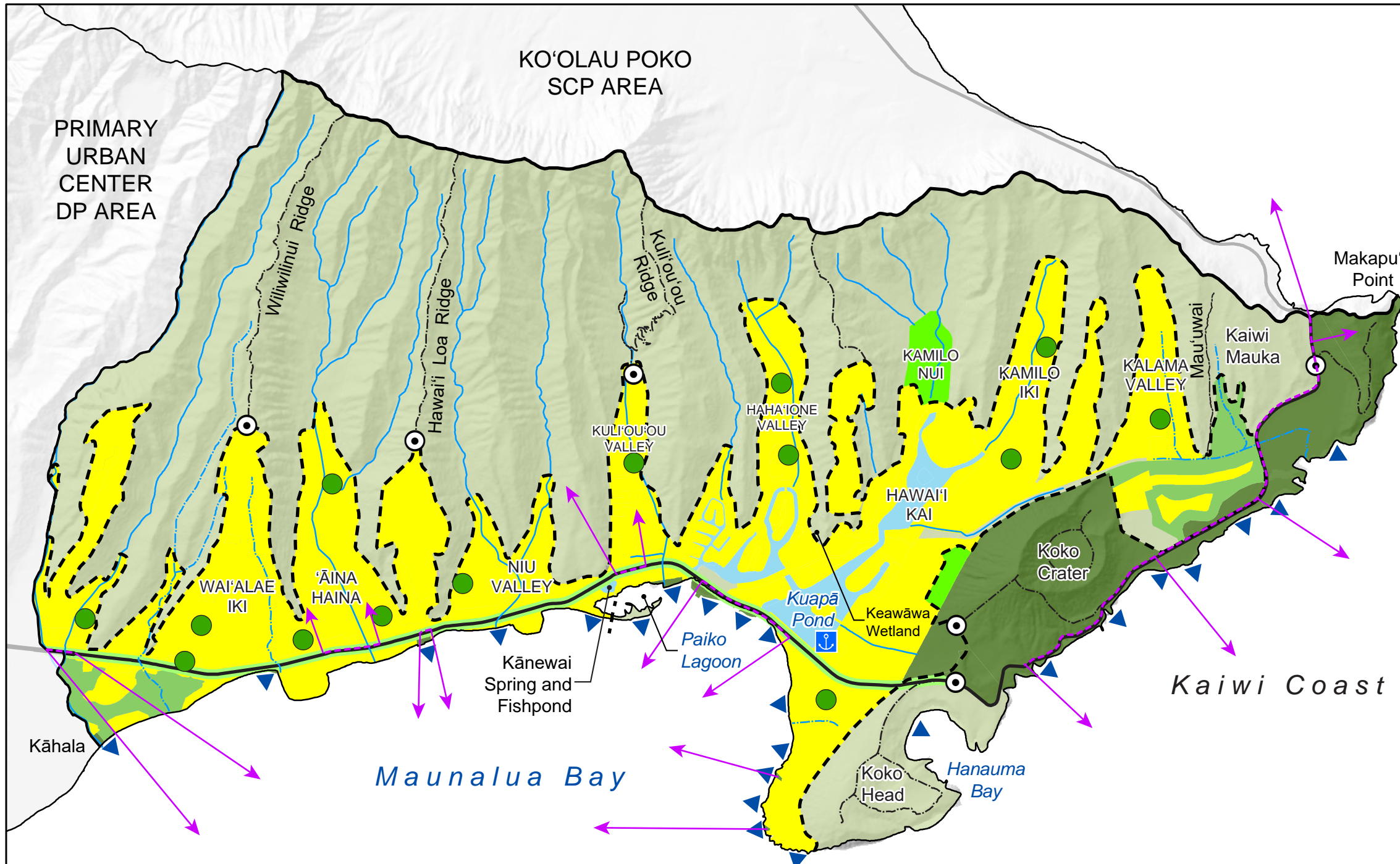
roadway maintenance; ease short-term maintenance, such as debris clearing; and provide space for bicyclists and pedestrians.

Wastewater Treatment Plant

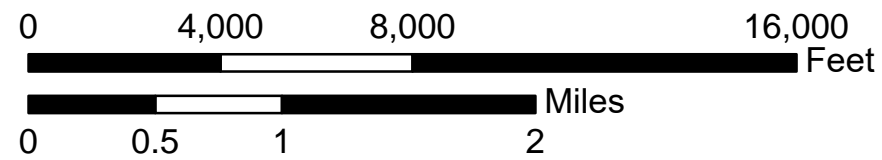
The existing wastewater treatment plant is located on the mauka side of Kalaniana'ole Highway in proximity to Sandy Beach Park.

EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN

Map A-1: Open Space



- Marina
- Shoreline Access
- Community and Neighborhood Parks
- Mountain Access and Views from Trails
- Panoramic View
- Perennial Stream
- Non-Perennial Stream
- Community Growth Boundary
- Landscaped Boulevard / Greenway
- Highway
- Urban Areas
- Agriculture Areas
- Golf Course
- Regional, District, and Beach Parks
- Preservation Areas

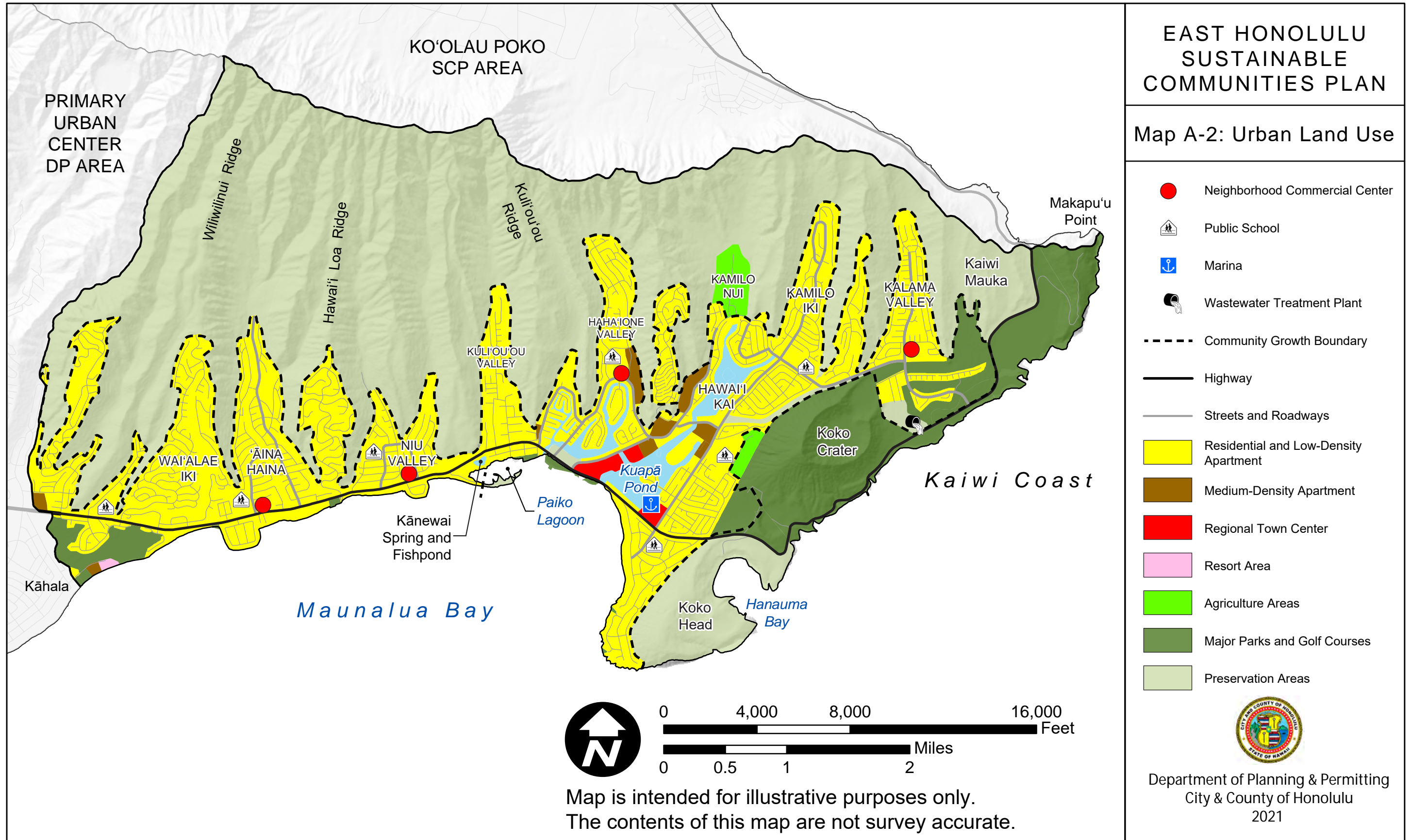


Map is intended for illustrative purposes only.
The contents of this map are not survey accurate.

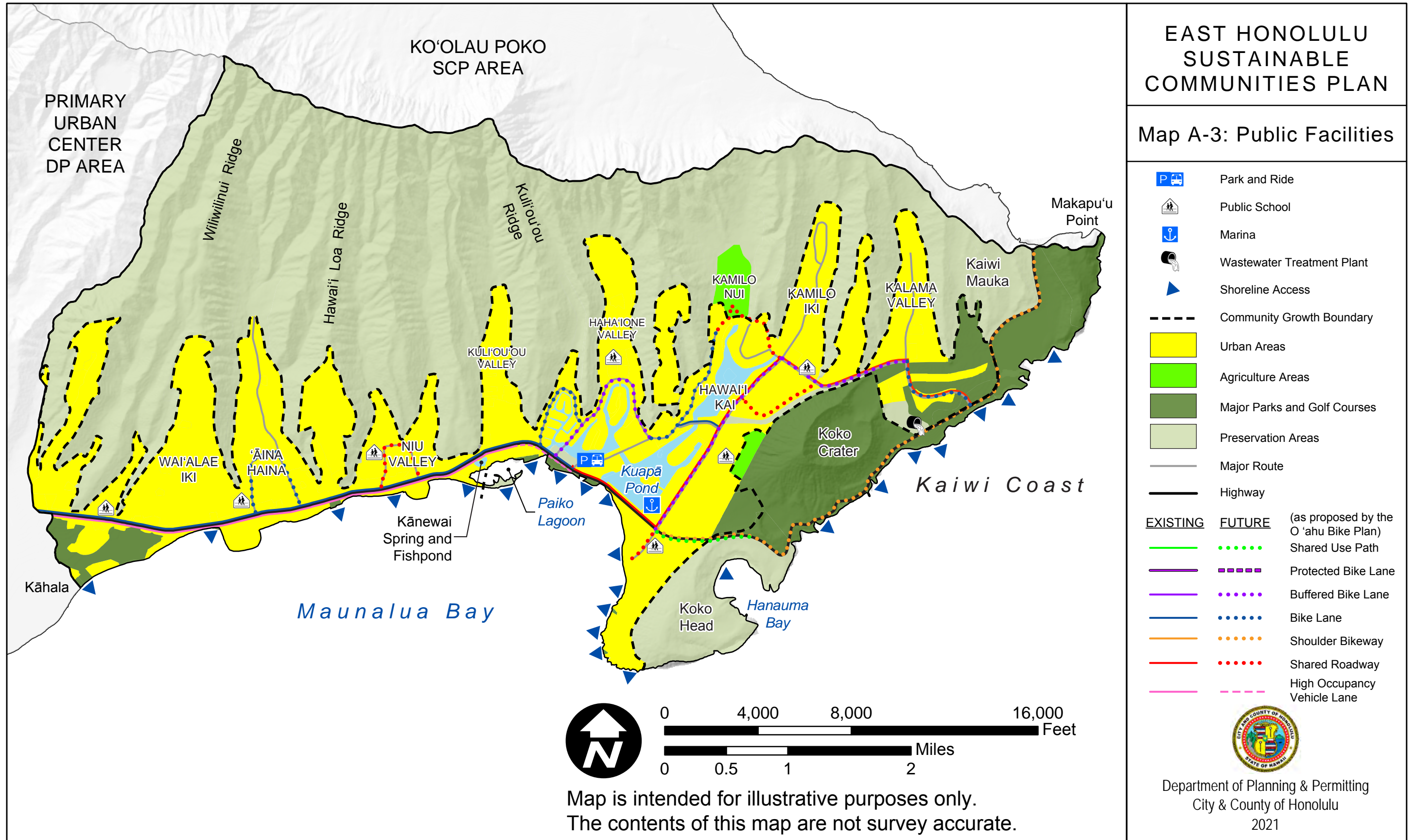


Department of Planning & Permitting
City & County of Honolulu
2021

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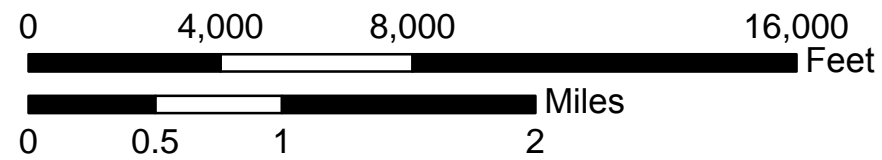
EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN

Map A-3: Public Facilities

- Park and Ride
 - Public School
 - Marina
 - Wastewater Treatment Plant
 - Shoreline Access
 - Community Growth Boundary
 - Urban Areas
 - Agriculture Areas
 - Major Parks and Golf Courses
 - Preservation Areas
 - Major Route
 - Highway
- | EXISTING | FUTURE | (as proposed by the O'ahu Bike Plan) |
|----------|--------|--------------------------------------|
| | | Shared Use Path |
| | | Protected Bike Lane |
| | | Buffered Bike Lane |
| | | Bike Lane |
| | | Shoulder Bikeway |
| | | Shared Roadway |
| | | High Occupancy Vehicle Lane |



Department of Planning & Permitting
City & County of Honolulu
2021



Map is intended for illustrative purposes only.
The contents of this map are not survey accurate.

21-11
CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII
CERTIFICATE

ORDINANCE 21-11

BILL 88 (2020), CD2

Introduced: 10/29/20 By: ANN KOBAYASHI - BY REQUEST Committee: ZONING AND PLANNING (ZP)

Title: TO ADOPT THE REVISED EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN FOR THE CITY AND COUNTY OF HONOLULU.

Voting Legend: * = Aye w/Reservations

| | | |
|----------|---------|---|
| 10/29/20 | INTRO | Introduced. |
| 11/05/20 | CCL | Passed first reading. 9 AYES: ELEFANTE, FUKUNAGA, KOBAYASHI, MANAHAN, MENOR, PINE, TEXEIRA, TSUNEYOSHI, WATERS |
| 01/02/21 | | NOTE: Councilmembers Cordero, Kia'aina, Say, Tulba and Tupola took office on Saturday, January 2, 2021. CC-3(21) Waters – Standing Committee assignments. CC-4(21) Waters - Re-referral of Bills, Resolutions and communications. |
| 02/04/21 | ZP | Reported out for passage on second reading and scheduling of a public hearing as amended in CD1 form. CR-43(21) 4 AYES: CORDERO, ELEFANTE, KIA'AINA, SAY |
| 02/05/21 | PUBLISH | Public hearing notice published in the Honolulu Star-Advertiser. |
| 02/17/21 | CCL/PH | Committee report adopted. Bill passed second reading as amended, public hearing closed and referred to committee. 8 AYES: CORDERO, ELEFANTE, FUKUNAGA, KIA'AINA, SAY, TULBA, TUPOLA, WATERS 1 ABSENT: TSUNEYOSHI |
| 02/24/21 | PUBLISH | Second reading notice published in the Honolulu Star-Advertiser. |
| 03/24/21 | ZP | Reported out for passage on third reading as amended in CD2 form. CR-105(21) 4 AYES: CORDERO, ELEFANTE, KIA'AINA, SAY |
| 04/14/21 | CCL | Committee report adopted and Bill passed third reading as amended. Findings of fact adopted. 9 AYES: CORDERO, ELEFANTE, FUKUNAGA, KIA'AINA, SAY, TSUNEYOSHI, TULBA, TUPOLA, WATERS |

I hereby certify that the above is a true record of action by the Council of the City and County of Honolulu on this BILL.



GLEN I. TAKAHASHI, CITY CLERK



TOMMY WATERS, CHAIR AND PRESIDING OFFICER

CITY COUNCIL OF THE CITY AND COUNTY OF HONOLULU

STATE OF HAWAII

| | | |
|---------------------------|---|---------------------|
| ADOPTION |) | |
| |) | |
| OF THE |) | DEVELOPMENT PLAN |
| |) | |
| EAST HONOLULU SUSTAINABLE |) | ADOPTION |
| |) | |
| COMMUNITIES PLAN |) | BILL 88 (2020), CD2 |
| |) | |
| |) | |
| |) | |

FINDINGS OF FACT

The Council of the City and County of Honolulu ("Council"), having considered a proposal to repeal the existing Sustainable Communities Plan for East Honolulu, Article 4, Chapter 24, Revised Ordinances of Honolulu 1990 ("ROH"), and to adopt in its place a new Article 4, Chapter 24, the East Honolulu Sustainable Communities Plan ("Plan"), hereby makes, concurrent with its adoption of Bill 88 (2020), CD2, on third reading and in accordance with the requirements of Section 6-1512.2 of the Revised Charter of the City and County of Honolulu 1973 (Amended 2017 Edition) ("Charter"), the following Findings of Fact:

FINDINGS

1. The purpose of the proposal is to repeal the existing Sustainable Communities Plan for East Honolulu, ROH Chapter 24, Article 5, and to adopt in its place the East Honolulu Sustainable Communities Plan.
2. This proposal was processed by the Director of Planning and Permitting in a report dated September 10, 2020, and transmitted to the Planning Commission ("Commission") on September 10, 2020.
3. In accordance with Charter Sections 6-1512.1 and 6-1512.3, the Commission held a public hearing on September 30, 2020, and at that same meeting, unanimously voted to recommend approval of the proposed Plan, with recommendations to make certain amendments to the Plan. In a letter dated October 27, 2020, the Commission transmitted its findings and recommendation for approval, subject to the Commission's recommended amendments, through the Mayor to the Council.

4. On October 29, 2020, the Council received the Commission's transmission, and on November 5, 2020, the Council passed Bill 88 (2020) entitled "A BILL FOR AN ORDINANCE TO ADOPT THE REVISED EAST HONOLULU SUSTAINABLE COMMUNITIES PLAN FOR THE CITY AND COUNTY OF HONOLULU," on first reading.
5. On February 4, 2021, the Council's Committee on Zoning and Planning accepted public testimony on Bill 88 (2020) and recommended that Bill 88 (2020) be amended to a CD1 form to make technical changes to the bill, and technical and substantive changes to the attached Plan, as proposed in Council Communication 40 (2021) and Council Communication 47 (2021), and be reported out for passage on second reading and scheduled for a public hearing.
6. On February 17, 2021, the Council held a public hearing on the proposal as required by Charter Section 6-1512.2 and, at that same meeting, passed Bill 88 (2020), CD1, on second reading.
7. On March 24, 2021, the Council's Committee on Zoning and Planning accepted public testimony on Bill 88 (2020), CD1, and recommended that Bill 88 (2020), CD1, be amended to a CD2 form to make technical and substantive changes to the attached Plan, as proposed in Council Communication 130 (2021), and be reported out for passage on third reading, and that the Findings of Fact consistent therewith be adopted as the findings of the Council.

CONCLUSION

Based on the foregoing findings, and having considered the recommendations of the Director of Planning and Permitting and the Planning Commission, the Council finds that the adoption of the East Honolulu Sustainable Communities Plan is consistent with the objectives and policies of the General Plan and complies in form and content with the applicable requirements of the Charter.

By


BRANDON ELEFANTE, Chair
Committee on Zoning and Planning

ADOPTED ON APR 14 2021

APPENDIX F

Compilation of Comments from External Sources

DAVID Y. IGE
GOVERNOR OF HAWAII



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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 22, 2021

LD 0994

Masa Fujioka & Associates
98-021 Kamehameha Highway, Suite 337
Aiea, HI 96701-4908

Via email: kdillon@masafujioka.com

Dear Sirs:

**SUBJECT: Environmental Assessment Pre-Assessment Comment Request
Demolition of Old and Construction of New Single-Family Residence
1 Lumahai Street, Honolulu, Island of Oahu, Hawaii
TMK: (1) 3-9-013:030**

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

Attached are comments received from our Engineering Division. Should you have any questions, please feel free to contact Barbara Lee via email at barbara.j.lee@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments

Cc: Central Files



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 13, 2021

LD0994

FROM:

MEMORANDUM

TO:

DLNR Agencies:

X Div. of Aquatic Resources (via email: kendall.l.tucker@hawaii.gov)

 Div. of Boating & Ocean Recreation

X **Engineering Division** (via email: DLNR.Engr@hawaii.gov)

X Div. of Forestry & Wildlife (via email: rubyrosa.t.terrago@hawaii.gov)

 Div. of State Parks

X Commission on Water Resource Management (via email: DLNR.CWRM@hawaii.gov)

X Office of Conservation & Coastal Lands (via email: sharleen.k.kuba@hawaii.gov)

X Land Division – Oahu District (via email: barry.w.cheung@hawaii.gov)

Russell Tsuji

TO:

FROM:

Russell Y. Tsuji, Land Administrator

SUBJECT:

**Environmental Assessment Pre-Assessment Comment Request
Demolition of Old and Construction of New Single-Family Residence**

LOCATION:

1 Lumahai Street, Honolulu, Island of Oahu, Hawaii

TMK: (1) 3-9-013:030

APPLICANT:

Masa Fujioka & Associates

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the extended internal deadline of **September 21, 2021** to barbara.j.lee@hawaii.gov at the Land Division.

If no response is received by the above due date, we will assume your agency has no comments at this time. Should you have any questions about this request, please contact Barbara Lee at barbara.j.lee@hawaii.gov. Thank you.

BRIEF COMMENTS:

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

Signed:

Print Name:

Carty S. Chang, Chief Engineer

Division:

Engineering Division

Date:

Sep 16, 2021

Attachments

Cc: Central Files

**DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION**

LD/Russell Y. Tsuji

**Ref: Environmental Assessment Pre-Assessment Comment Request
Demolition of Old and Construction of New Single-Family Residence
Location: 1 Lumahai Street, Honolulu, Island of Oahu, Hawaii
TMK(s): (1) 3-9-013:030
Applicant: Masa Fujioka & Associates**

COMMENTS

The rules and regulations of the National Flood Insurance Program (NFIP), Title 44 of the Code of Federal Regulations (44CFR), are in effect when development falls within a Special Flood Hazard Area (high-risk areas). Be advised that 44CFR, Chapter 1, Subchapter B, Part 60 reflects the minimum standards as set forth by the NFIP. Local community flood ordinances may stipulate higher standards that can be more restrictive and would take precedence over the minimum NFIP standards.

The owner of the project property and/or their representative is responsible to research the Flood Hazard Zone designation for the project. Flood zones subject to NFIP requirements are identified on FEMA's Flood Insurance Rate Maps (FIRM). The official FIRMs can be accessed through FEMA's Map Service Center (msc.fema.gov). Our Flood Hazard Assessment Tool (FHAT) (<http://gis.hawaiiinfip.org/FHAT>) could also be used to research flood hazard information.

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

- Oahu: City and County of Honolulu, Department of Planning and Permitting (808) 768-8098.
- Hawaii Island: County of Hawaii, Department of Public Works (808) 961-8327.
- Maui/Molokai/Lanai County of Maui, Department of Planning (808) 270-7139.
- Kauai: County of Kauai, Department of Public Works (808) 241-4849.

Signed: 
CARTY S. CHANG, CHIEF ENGINEER

Date: Sep 16, 2021

LD 0994

RECEIVED
LAND DIVISION
2021 SEP -2 AM 11:30



**MASA FUJIOKA
& ASSOCIATES**

August 30, 2021

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII
State of Hawaii
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813
dlnr@hawaii.gov

Attention: Department of Land and Natural Resources

Subject: Environmental Assessment (EA) Preassessment Comment Request
1 Lumahai Street TMK (1) 3-9-013:030
Honolulu, Hawaii 96825

Masa Fujioka & Associates (MFA) is preparing a draft Environmental Assessment (EA) for a proposed project on a shoreline lot within the designated special management area (SMA). As required under Chapter 343, Hawaii Revised Statutes (HRS), MFA is requesting any preassessment comments that you may have regarding the proposed project.

The proposed project includes demolition of an existing residential foundation, and construction of a new two-story, single-family residence and a swimming pool at the above referenced, project location, at the end of a cul-de-sac on Lumahai Street, in the Portlock community of the Hawaii Kai area of Honolulu, Hawaii. No zoning changes or variances are anticipated, and the new residence will not significantly increase the built footprint beyond the previously demolished residence or exceed 10% of the lot area. Additionally, no construction is anticipated within the shoreline area. The property shoreline is not designated as a Marine Life Conservation District or as a Marine Protected Area.

Please provide any comments that you may have related to the proposed project by September 15, 2021, for inclusion in the draft EA. *On DLNR request, review deadline extended by one week, per K. Dillon.*

Thank you for your assistance with the Draft EA. Please do not hesitate to contact MFA if you have any questions proposed project.

Respectfully submitted,

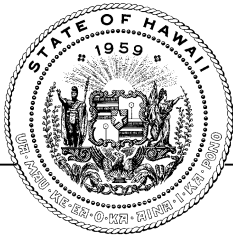
MASA FUJIOKA AND ASSOCIATES

Kevin Dillon, REP
Project Manager

ENVIRONMENTAL • GEOTECHNICAL • HYDROGEOLOGICAL CONSULTANTS

98-021 KAMEHAMEHA HIGHWAY, SUITE 337 • AIEA, HAWAII 96701-4908

PHONE: (808) 484-5366 • FAX: (808) 484-0007



**STATE OF HAWAII
OFFICE OF PLANNING
& SUSTAINABLE DEVELOPMENT**

DAVID Y. IGE
GOVERNOR

MARY ALICE EVANS
DIRECTOR

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

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

DTS 202109101515LI

Coastal Zone
Management
Program

September 14, 2021

Environmental
Review Program

Mr. Kevin Dillon
Masa Fujioka and Associates
98-021 Kamehameha Highway, Suite 337
Aiea, HI 96701

Land Use
Commission

Land Use Division

Dear Mr. Dillon:

Special Plans
Branch

Subject: Environmental Assessment Preassessment Comment Request for a
Proposed Single-Family Residence Project, 1 Lumahai Street, Honolulu,
Oahu; Tax Map Key: (1) 3-9-013: 030

State Transit-
Oriented
Development

The Office of Planning and Sustainable Development (OPSD) is in receipt of your Environmental Assessment (EA) pre-consultation request, dated August 30, 2021, for the proposed single-family residence project on a shoreline parcel at the end of a cul-de-sac on Lumahai Street, Honolulu, Oahu.

Statewide
Geographic
Information System

Statewide
Sustainability
Program

According to the pre-consultation request, the proposed project is to demolish an existing residential foundation, and construct a new two-story, single-family residence with a swimming pool. No construction is anticipated within the shoreline area.

The OPSD has reviewed the subject pre-consultation request and has the following comments to offer:

1. The EA should provide a regional location map of the subject property on the Island of Oahu, with the project site in relation to the county designated special management area (SMA) under the Hawaii Coastal Zone Management (CZM) Law, Hawaii Revised Statutes (HRS) Chapter 205A.
2. The EA should discuss the trigger(s) of preparation of an EA under HRS Chapter 343 and/or county SMA Ordinance if the proposed project is required to obtain a SMA use permit.
3. The Hawaii CZM Law, HRS Chapter 205A, requires all state and county agencies to enforce the CZM objectives and policies. The subject EA should include an assessment with mitigation measures if needed, as to how the proposed project conforms to each of the CZM objectives and supporting policies set forth in HRS § 205A-2, as amended.

4. If the subject EA will serve as a supporting document for the SMA Use Permit application, the OPSD recommends that the EA specifically discuss the compliance with the requirements of SMA use under Revised Ordinances of Honolulu (ROH) Chapter 25, and shoreline setbacks under ROH Chapter 23, for the proposed residence project by consulting with the Department of Planning and Permitting, City and County of Honolulu. Please note that shoreline hardening structures, including seawalls and revetments, are prohibited at sites with beaches pursuant to HRS § 205A-2(c)(9)(B) and HRS § 205A-46(a)(9), as amended, enacted by Act 16, Session Laws of Hawaii 2020.
5. Sea level rise increases the risk of flooding, storm surges, and coastal erosion. To assess any potential impacts of sea level rise on the proposed development area, the OP suggests the EA refer to the findings of the Hawaii Sea Level Rise Vulnerability and Adaptation Report 2017, accepted by the Hawai'i Climate Change Mitigation and Adaptation Commission. The Report, and Hawaii Sea Level Rise Viewer at <https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/> particularly identifies a 3.2-foot sea level rise exposure area across the main Hawaiian Islands, including Oahu, which may occur in the mid to latter half of the 21st century. The EA should provide a map of 3.2-foot sea level rise exposure area in relation to the property area, and consider site-specific mitigation measures, including setbacks from the shoreline during the life of the proposed structures, to respond to the potential impacts of 3.2-foot sea level rise on the proposed development.
6. The OPSD has developed guidance documents on stormwater runoff strategies, which offer techniques to prevent land-based pollutants and sediment from potentially affecting water resources. The OPSD recommends that the subject EA consider the following stormwater assessment guidance to mitigate stormwater runoff impacts:
 - Stormwater Impact Assessments can be used to identify and analyze information on hydrology, sensitivity of coastal and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area.
https://files.hawaii.gov/dbedt/op/czm/initiative/stomwater_imapct/final_stormwater_impact_assessments_guidance.pdf
 - Low Impact Development - A Practitioner's Guide covers a range of structural best management practices for stormwater control management, onsite infiltration techniques, and water reuse methods that minimize negative environmental impacts. http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf

Mr. Kevin Dillon
September 14, 2021
Page 3

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

Sincerely,

A handwritten signature in black ink that reads "Mary Alice Evans". The signature is written in a cursive, slightly informal style.

Mary Alice Evans
Director



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawai'i 96850

In Reply Refer To:
01EPIF00-2021-TA-0468

September 10, 2021

Mr. Kevin Dillon
Masa Fujioka and Associates
98-021 Kamehameha Highway, Suite 337
'Aiea, Hawai'i 96701-4908

Subject: Technical Assistance on the Environmental Assessment Preassessment for 1
Lumhai Street, Hawai'i Kai, O'ahu

Dear Mr. Dillon:

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

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

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website <https://www.fws.gov/pacificislands/articles.cfm?id=149489558>. You can find out if your project occurs in or near designated critical habitat here: <https://ecos.fws.gov/ipac/>.

INTERIOR REGION 9
COLUMBIA-PACIFIC NORTHWEST

IDAHO, MONTANA*, OREGON*, WASHINGTON
*PARTIAL

INTERIOR REGION 12
PACIFIC ISLANDS

AMERICAN SĀMOA, GUAM, HAWAI'I, NORTHERN
MARIANA ISLANDS

Under section 7 of the ESA, it is the Federal agency's (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a "may affect, likely to adversely affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect" on federally listed species and/or critical habitat do not require additional coordination or consultation.

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

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

Sincerely,

Acting Island Team Manager
Pacific Islands Fish and Wildlife Office

Enclosures (2)

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

Enclosure 1. Federal Status of Animal Species

| <u>Scientific Name</u> | <u>Common Name / Hawaiian Name</u> | <u>Federal Status</u> | <u>May Occur In Project Area</u> |
|---|--|---------------------------|--|
| Mammals | | | |
| <i>Lasiurus cinereus semotus</i> | Hawaiian hoary bat/‘ōpe‘ape‘a | E | <input checked="" type="checkbox"/> |
| Reptiles | | | |
| <i>Chelonia mydas</i> | green sea turtle/honu - Central North Pacific distinct population segment (DPS) | T | <input type="checkbox"/> |
| <i>Eretmochelys imbricata</i> | hawksbill sea turtle/ honu ‘ea or ‘ea | E | <input type="checkbox"/> |
| Birds | | | |
| <i>Anas wyvilliana</i> | Hawaiian duck/koloa | E | <input type="checkbox"/> |
| <i>Branta sandvicensis</i> | Hawaiian goose/nēnē | T | <input type="checkbox"/> |
| <i>Fulica alai</i> | Hawaiian coot/‘alae ke‘oke‘o | E | <input type="checkbox"/> |
| <i>Gallinula galeata sandvicensis</i> | Hawaiian gallinule/‘alae ‘ula | E | <input type="checkbox"/> |
| <i>Himantopus mexicanus knudseni</i> | Hawaiian stilt/ae‘o | E | <input type="checkbox"/> |
| <i>Oceanodroma castro</i> | band-rumped storm-petrel Hawai‘i DPS/‘akē‘akē | E | <input type="checkbox"/> |
| <i>Pterodroma sandwichensis</i> | Hawaiian petrel/‘ua‘u | E | <input checked="" type="checkbox"/> |
| <i>Puffinus auricularis newelli</i> | Newell’s shearwater/‘a‘o | T | <input checked="" type="checkbox"/> |
| <i>Ardenna pacificus</i> | wedge-tailed shearwater/‘ua‘u kani | MBTA | <input checked="" type="checkbox"/> |
| <i>Buteo solitarius</i> | Hawaiian hawk/‘io | MBTA | <input type="checkbox"/> |
| <i>Gygis alba</i> | white tern/manu-o-kū | MBTA | <input checked="" type="checkbox"/> |
| Insects | | | |
| <i>Manduca blackburni</i> | Blackburn’s sphinx moth | E | <input type="checkbox"/> |
| <i>Megalagrion pacificum</i> | Pacific Hawaiian damselfly | E | <input type="checkbox"/> |
| <i>Megalagrion xanthomelas</i> | orangeblack Hawaiian damselfly | E | <input type="checkbox"/> |
| <i>Megalagrion nigrohamatum nigrolineatum</i> | blackline Hawaiian damselfly | E | <input type="checkbox"/> |

Enclosure 2. Federal Status of Plant Species

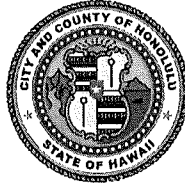
| Plants | | | | |
|--|--|----------------------------------|---|---|
| <u>Scientific Name</u> | <u>Common Name or Hawaiian Name</u> | <u>Federal Status</u> | <u>Locations</u> | <u>May Occur In Project Area</u> |
| <i>Abutilon menziesii</i> | ko'oloa'ula | E | O, L, M, H | <input type="checkbox"/> |
| <i>Achyranthes splendens</i> var. <i>rotundata</i> | 'ewa hinahina | E | O | <input type="checkbox"/> |
| <i>Bonamia menziesii</i> | no common name | E | K, O, L, M, H | <input type="checkbox"/> |
| <i>Canavalia pubescens</i> | 'āwikiwiki | E | Ni, K, L, M | <input type="checkbox"/> |
| <i>Colubrina oppositifolia</i> | kauila | E | O, M, H | <input type="checkbox"/> |
| <i>Cyperus trachysanthos</i> | pu'uka'a | E | K, O | <input type="checkbox"/> |
| <i>Gouania hillebrandii</i> | no common name | E | Mo, M | <input type="checkbox"/> |
| <i>Hibiscus brackenridgei</i> | ma'o hau hele | E | O, Mo, L, M, H | <input type="checkbox"/> |
| <i>Ischaemum byrone</i> | Hilo ischaemum | E | K, O, Mo, M, H | <input type="checkbox"/> |
| <i>Isodendrion pyrifolium</i> | wahine noho kula | E | O, H | <input type="checkbox"/> |
| <i>Marsilea villosa</i> | 'ihi'ihii | E | Ni, O, Mo | <input checked="" type="checkbox"/> |
| <i>Mezoneuron kavaiense</i> | uhiuhi | E | O, H | <input type="checkbox"/> |
| <i>Nothoctrum breviflorum</i> | 'aiea | E | H | <input type="checkbox"/> |
| <i>Panicum fauriei</i> var. <i>carteri</i> | Carter's panicgrass | E | Molokini Islet (O), Mo | <input type="checkbox"/> |
| <i>Panicum niuhauense</i> | lau'ehu | E | K | <input type="checkbox"/> |
| <i>Peucedanum sandwicense</i> | makou | E | K, O, Mo, M | <input type="checkbox"/> |
| <i>Pleomele (Chrysodracon)</i> <i>hawaiiensis</i> | halapepe | E | H | <input type="checkbox"/> |
| <i>Portulaca sclerocarpa</i> | 'ihi | E | L, H | <input type="checkbox"/> |
| <i>Portulaca villosa</i> | 'ihi | E | Le, Ka, Ni, O, Mo, M, L, H, Nihoa | <input type="checkbox"/> |
| <i>Pritchardia affinis</i> (<i>maideniana</i>) | loulu | E | H | <input type="checkbox"/> |
| <i>Pseudognaphalium</i> <i>sandwicense</i> var. <i>molokaiense</i> | 'ena'ena | E | Mo, M | <input type="checkbox"/> |
| <i>Scaevola coriacea</i> | dwarf naupaka | E | Mo, M | <input type="checkbox"/> |
| <i>Schenkia (Centaurium)</i> <i>sebaeoides</i> | 'āwiwi | E | K, O, Mo, L, M | <input type="checkbox"/> |
| <i>Sesbania tomentosa</i> | 'ōhai | E | Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa | <input type="checkbox"/> |
| <i>Tetramolopium rockii</i> | no common name | T | Mo | <input type="checkbox"/> |
| <i>Vigna o-wahuensis</i> | no common name | E | Mo, M, L, H, Ka | <input type="checkbox"/> |

Location key: O=O'ahu, K=Kaua'i, M=Maui, H=island of Hawai'i, L=Lāna'i, Mo=Moloka'i, Ka=Kaho'olawe, Ni=Ni'ihau, Le=Lehua

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

RICK BLANGIARDI
MAYOR



ALEX KOZLOV, P.E.
DIRECTOR

HAKU MILLES, P.E.
DEPUTY DIRECTOR

September 15, 2021

Mr. Kevin Dillon, REP
Project Manager
MASA FUJIOKA AND ASSOCIATES
98-021 Kamehameha Highway, Suite 337
Aiea, Hawaii 96701-4908

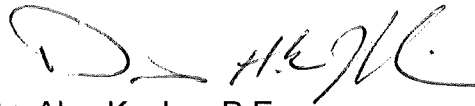
Dear Mr. Dillon,

Subject: Environmental Assessment (EA) Pre-assessment Comment
Request
1 Lumahai Street, Honolulu, Hawaii 96825
TMK (1) 3-9-013:030

Thank you for the opportunity to review and comment. The Department of Design and Construction has no comments to offer at this time.

Should you have any further questions, please contact me at 768-8480.

Sincerely,


P.E. Alex Kozlov, P.E.
Director

AK:krm (861460)



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

In reply, please refer to:
EMD/CWB

05023PDCL.18

May 10, 2018

MEMORANDUM

SUBJECT: Clean Water Branch Standard Project Comments

TO: Agencies and Project Owners

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

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 11-54 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.

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) is required if your project/activity:
 - a. Requires a federal permit, license, certificate, approval, registration, or statutory exemption; and
 - b. May result in a discharge into State waters. 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 State waters 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 Army Corp of Engineers, Regulatory Branch regarding their permitting requirements.

To request a Section 401 WQC, you must complete and submit the Section 401 WQC application. This application is available on the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epermit/>.

Please see HAR, Chapter 11-54 for the State's Water Quality Standards and for more information on the Section 401 WQC. HAR, Chapter 11-54 is 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, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation 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.