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

October 1, 2021 2021/ED-14(ST)

Ms. Mary Alice Evans, Director
Environmental Review Program
Office of Planning and Sustainable Development
State of Hawaii
235 South Beretania Street, Room 702
Honolulu, Hawaii 96813-2437

Dear Ms. Evans:

| | |
|---|---|
| SUBJECT: | Chapter 343, Hawaii Revised Statutes<br>Draft Environmental Assessment (DEA) |
| Project: | Robert M. Wheatley and Sue J. Lee Residence |
| Applicants: | Robert M. Wheatley and Sue J. Lee |
| Landowner: | CASLA LLC |
| Agent: | Environmental Risk Analysis, LLC (Russell Okoji) |
| Location: | 4 Lumahai Street - Maunalua |
| Tax Map Key: | 3-9-013: 032 |
| Request: | Special Management Area Use Permit<br>Chapter 25, Revised Ordinances of Honolulu |

With this letter, the Department of Planning and Permitting hereby transmits the DEA and anticipated finding of no significant impact for the construction of a new two-story single-family residence on the above-referenced parcel in the Honolulu District, on the island of Oahu, for publication in the next edition of "*The Environmental Notice*."

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

Should you have any questions, please contact Steve Tagawa, of our staff, at 768-8024, or by email at stagawa@honolulu.gov.

Very truly yours,

Alex D. Beatty

Dean Uchida
Director

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

**Project Name:** Wheatley Residence

**Applicable Law:** Chapter 25, Revised Ordinances of Honolulu

**Type of Document:** Draft Environmental Assessment

**Island:** Oahu

**District:** Honolulu (Judicial District)

**TMK:** (1) 3-1-013: 032

**Permits Required:** Special Management Area (SMA) Use Permit, grading, building, National Pollutant Discharge Elimination System, Underground Injection Control permits.

**Applicant or Proposing Agency:** Mr. Robert M. Wheatley and Ms. Sue J. Lee

**Approving Agency or Accepting Authority:** Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813
Steve Tagawa
(808)768-8024
stagawa@honolulu.gov

**Consultant:** Environmental Risk Analysis LLC (Russell Okoji)
905-A Makahiki Way,
Honolulu, Hawaii 96826
(808) 425-0968
russellokoji@enviroriskhawaii.com

**Status:** *Anticipated Finding of No Significant Impact*

**Project Summary:** The demolition of an existing single-family residence located at 4 Lumahai Street in East Honolulu and the construction of a new 4,725 square-foot, two-story modular residence and a 569-square-foot garage on a 21,639-square-foot cliff-side shoreline parcel in the SMA. The irregularly shaped rocky parcel slopes steeply downward from the street, with an elevation that ranges from 141 to 30 feet above mean sea level. The site is adjacent to the 10-foot-wide public shoreline access to the “Spitting Caves” which are located immediately below the site. The lower 3,500-square-foot portion of the parcel is designated as a public access easement and the lowest 1,466-square-foot portion of the parcel has been surveyed as lost to erosion.

The construction of the new dwelling requires approval of a SMA Use Permit from the Honolulu City Council.

# DRAFT
# ENVIRONMENTAL ASSESSMENT

**4 Lumahai Street**
**Honolulu, Hawaii 96825**
**Tax Map Key 3-9-013:32**

**Applicant:**
Mr. Robert M Wheatley
Ms. Sue J. Lee

**Approving Agency:**
City and County of Honolulu
Department of Planning and Permitting

August 2021

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# DRAFT
# ENVIRONMENTAL ASSESSMENT

**4 Lumahai Street**
**Honolulu, Hawaii 96825**
**Tax Map Key 3-9-013:32**


**Prepared by:**
Environmental Risk Analysis LLC
905A Makahiki Way
Honolulu, Hawaii 96826


**Prepared for:**
Mr. Robert M. Wheatley
Ms. Sue J. Lee
4 Lumahai Street
Honolulu, Hawaii 96825

**Applicant:**
Mr. Robert M. Wheatley
Ms. Sue J. Lee

**Approving Agency:**
City and County of Honolulu
Department of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

August 2021

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# *Table of Contents*

## List of Figures



## List of Tables

**Appendices**

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# *Acronyms and Abbreviations*

| | |
|---|---|
| BMPs | Best Management Practices |
| BWS | Board of Water Supply |
| CDP | Census Designated Place |
| Census | U.S. Census Bureau |
| CFR | Code of Federal Regulations |
| $Cl^-$ | chloride |
| dBA | decibels |
| EA | Environmental Assessment |
| EAL | Environmental Action Level |
| EPA | Environmental Protection Agency |
| FEMA | Federal Emergency Response Agency |
| FIRM | Flood Insurance Rate Map |
| FONSI | Finding of No Significant Impact |
| HAR | Hawaii Administrative Rules |
| HICRIS | Hawaii Cultural Resource Information System |
| HDOH | Hawaii State Department of Health |
| HDOT | Hawaii Department of Transportation |
| HEER | Hazard Evaluation and Emergency Response |
| HFD | Honolulu Fire Department |
| HPD | Honolulu Police Department |
| HRS | Hawaii Revised Statutes |
| LUCs | Land Use Commission |
| LUO | Land Use Ordinance |
| mg/l | milligrams per liter |
| NAAQS | National Ambient Air Quality Standards |
| NPDES | National Pollutant Discharge Elimination System |
| PM2.5 | particulate matter at 2.5 microns or less |
| ROH | Revised Ordinances of Honolulu |
| SEL | sound exposure levels |
| SHPD | Hawaii State Historic Preservation |
| TMK | tax map key |
| UH | University of Hawaii at Manoa |
| UIC | Underground Injection Control |
| USDA | United States Department of Agriculture |
| USFWS | United Stateds Fish and Wildlife Service |
| USGS | United States Geological Survey |

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**Executive Summary**

This Environmental Assessment (EA) was conducted to assess potential environmental impacts associated with the demolition of an existing structure and construction of two 2-story single family residences on property known as Tax Map Key (TMK) 3-9-013:32 in Honolulu, Hawaii on the island of Oahu. The EA was prepared to identify, document and address potential environmental impacts associated with the Proposed Action. The EA examines two alternatives, the Proposed Action, and the No Action Alternative.

- Alternative I – No Action Alternative
- Alternative II –The Proposed Action – demolition of an existing residence and construction of a two (2)-story single family residence.

The following potentially impacted environments were evaluated in this EA:

- Topography and Geology
- Soils
- Natural Hazard
- Flora and Fauna
- Water Resources
- Climate and Air Quality
- Noise
- Solid Wastes
- Land Use Considerations and Zoning
- Archaeological and Cultural Considerations
- Circulation and Traffic
- Social Factors and Community Identity
- Economic Considerations
- Recreational and Public Facilities
- Visual and Aesthetic Resources
- Infrastructure Systems and Utilities

<u>Findings</u>

- A Finding of No Significant Impact (FONSI) is anticipated based on the environmental and societal factors considered under the Proposed Action and the No-Action Alternative.

- While potential impacts to Soil, Air Quality, Noise and Circulation and Traffic are possible during construction, implementing best management practices (BMPs) would reduce these impacts to less than significant levels.

- Beneficial impacts to Land Use Considerations and Zoning are anticipated as the structure would prolong the lifespan of the single-family residence at the property and the new structure would be built in accordance with current building codes with shoreline protection and flood inundation in mind.

- Under Alternative I, the No Action Alternative, Land Use Considerations and Zoning would incur a negative impact as full use of the land will not be realized and condition of the structure at the Site would continue to degrade. Additional negative impacts are anticipated to Social Factors and Community Identity under Alternative I.

# *SECTION 1* INTRODUCTION AND SUMMARY

## 1.1 Scope and Authority

This EA has been prepared pursuant to Chapter 343, Hawaii Revised Statutes (HRS) and associated Title 11, Chapter 200 Hawaii Administrative Rules (HAR). The intent of the document is to ensure that systematic consideration is given to the environmental consequences of the Proposed Action. The Proposed Action is the demolition of and construction of a new two (2)-story single family residence in Honolulu, Hawaii (Figure 1). A Chapter 343, HRS EA is required because the project is located on a shoreline parcel and is subject to Chapter 205A, Coastal Zone Management regulations.

## 1.2 Project Information

| | |
|---|---|
| Project Name: | Lumahai Residence<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 |
| Applicant: | Mr. Robert M. Wheatley<br>Ms. Sue J. Lee<br>4 Lumahai Street<br>Honolulu, Hawaii 96825 |
| Agent: | Environmental Risk Analysis, LLC<br>905A Makahiki Way<br>Honolulu, Hawaii 96826<br>Contact: Russell Okoji<br>(808) 425-0968 |
| Approving Agency: | City and County of Honolulu<br>Department of Planning and Permitting<br>650 South King Street<br>Honolulu, Hawaii 96813 |
| Project Location: | 4 Lumahai Street<br>Honolulu, Hawaii 96825 |
| Tax Map Key No.: | 3-9-013:32 (Figure 2) |
| Total Affected Area: | 0.4968-acre parcel |
| Existing Land Use: | Portions of the property are developed as residential, other portions are undeveloped. |
| State Land Use Classification: | Urban |

| | |
|---|---|
| State Special District: | N/A |
| Land Use Ordinance Zoning: | Residential (R-10) |
| Land Use Ordinance Special District: | Special Management Area |
| Flood Zone: | Flood Insurance Rate Map Zone D / VE |
| Land Owner: | Calsa LLC |


| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE: Site Location Map<br>FIGURE NUMBER: 1 |

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|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE:<br>TMK Map<br>FIGURE NUMBER:<br>2 |

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# *SECTION 2* PROJECT DESCRIPTION

## 2.1 Project Description

This EA has been prepared to satisfy the requirements of HRS Chapter 343. The purpose of the Proposed Action (i.e., demolition of existing structure and construction of single family housing) is to construct a 2-story single family residence.

The proposed development site (TMK 3-9-013:32) encompasses approximately 0.50 acres of land situated in Hawaii Kai on the southeast side of the Island of Oahu. Currently, this location is zoned residential. Mr. Wheatley and Ms. Lee are proposing to demolish an existing structure (Figure 3) on the property and construct a new single family residence (Figures 4 - 7). The objective of this project is to better utilize the land, provide housing which has been carefuly designed to withstand potential flood inundation by the 1% Annual Chance Flood and rising sea levels, and protect the shoreline.

## 2.2 Construction Time Frame and Estimated Project Construction Costs

The proposed project would be conducted in two phases. The first phase will be the demolition of the existing single-family residence, site walls, stairs, foundation and associated utilities. The subsequent phase will be construction of the single family residence. The construction includes renovation of existing two (2) car garage and reuse of existing structure and foundation system. Two additional surface parking spaces will be included in front of the garage. Construction of a new modular, two (2) story, single-family residence comprised of a main kitchen, living and dining room, four bedrooms and baths, laundry and mechanical room. The project also includes a new pool, shared exterior lanais and minor landscape upgrades.

The construction period is estimated to be from 2021 through 2023. The total budget for these improvement activities is estimated at $1 million dollars. All funding for the project will be through private sources.

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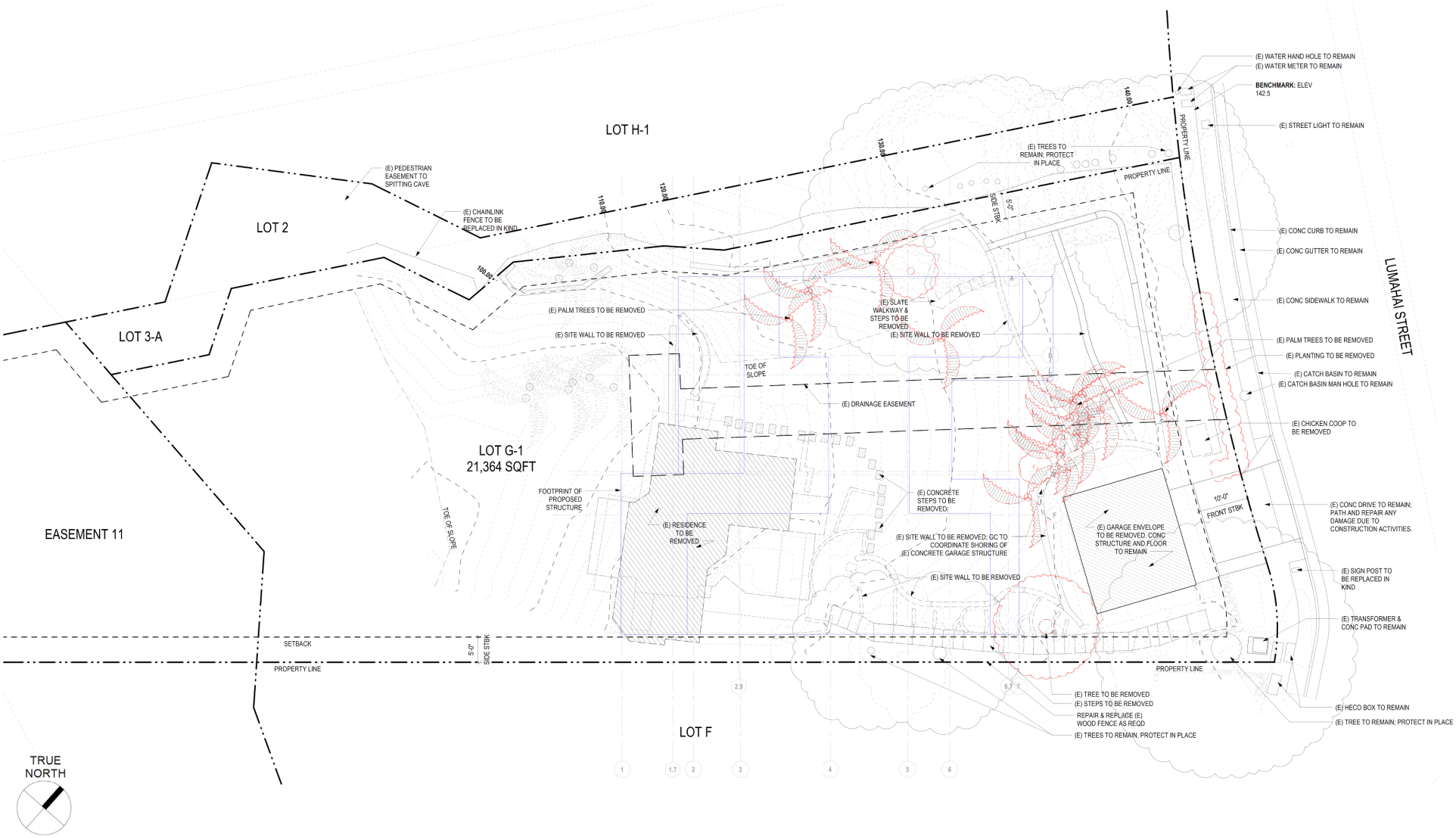


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|---|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE: Existing Conditions | FIGURE NUMBER: 3 |

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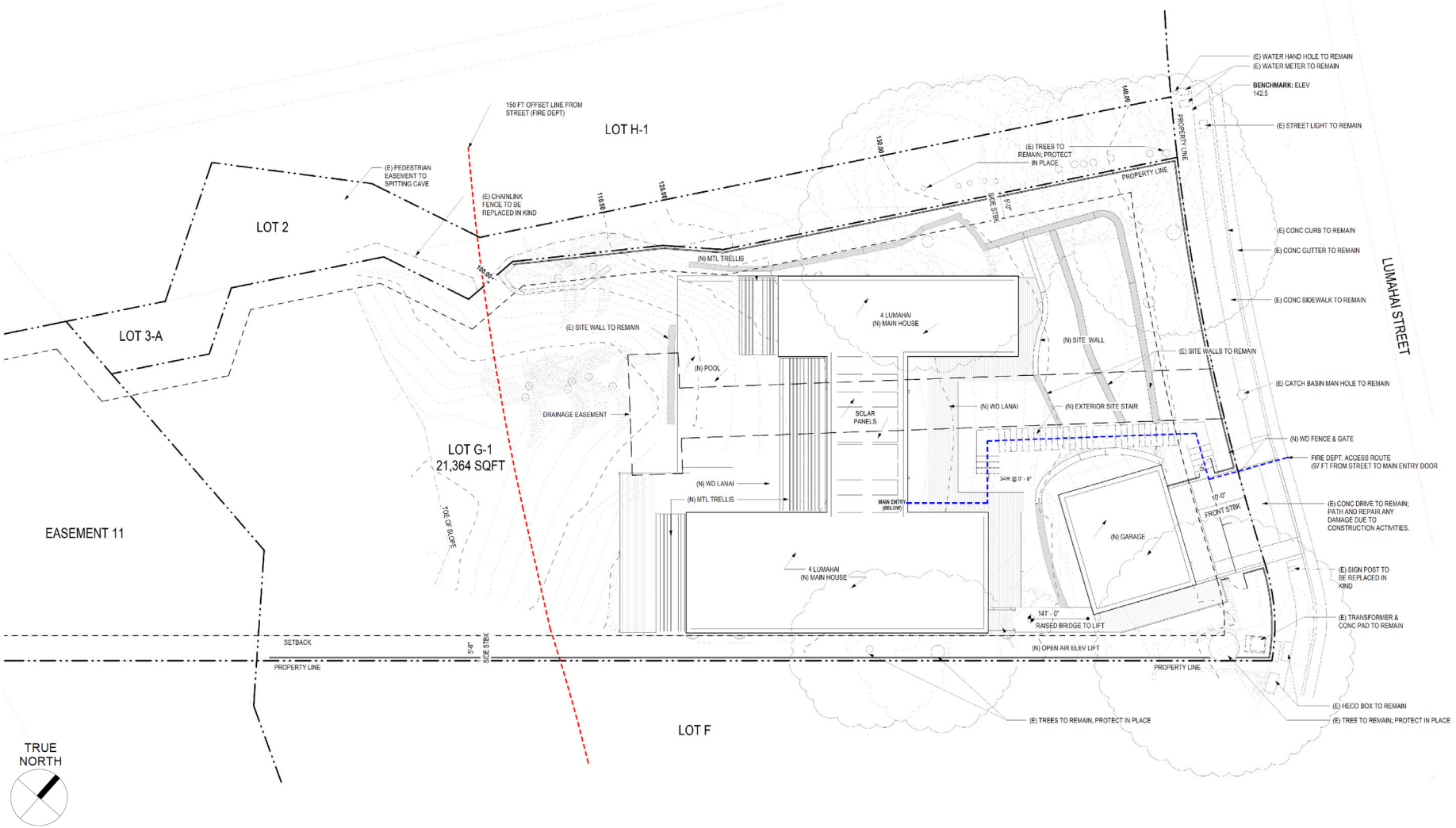


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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE: Alternative II Site Plan | FIGURE NUMBER: 4 |

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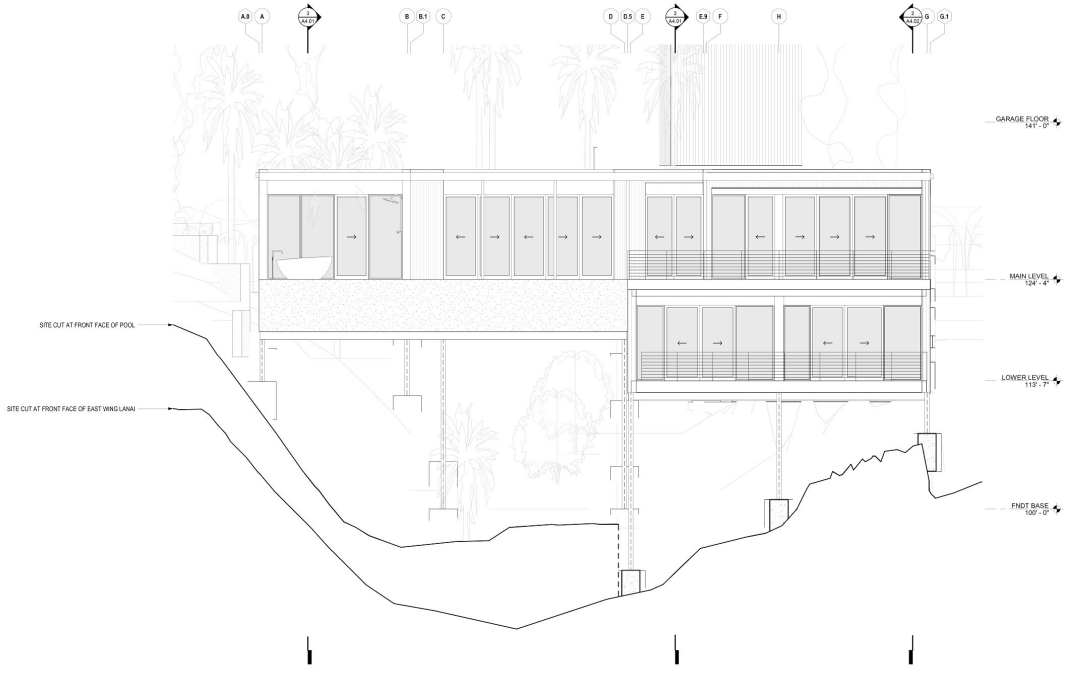
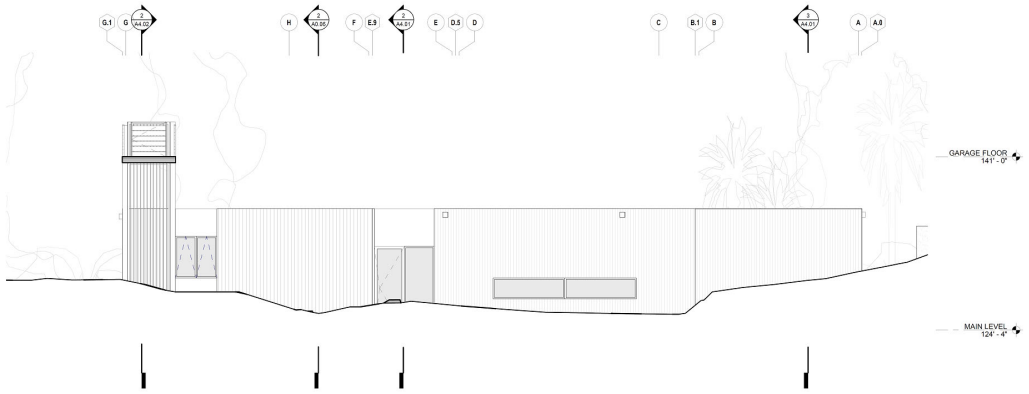



2 SOUTH BUILDING ELEVATION




1 NORTH BUILDING ELEVATION

*Not to Scale

| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE:<br>Alternative II Elevations<br>North and South |
| | | FIGURE NUMBER:<br>5 |

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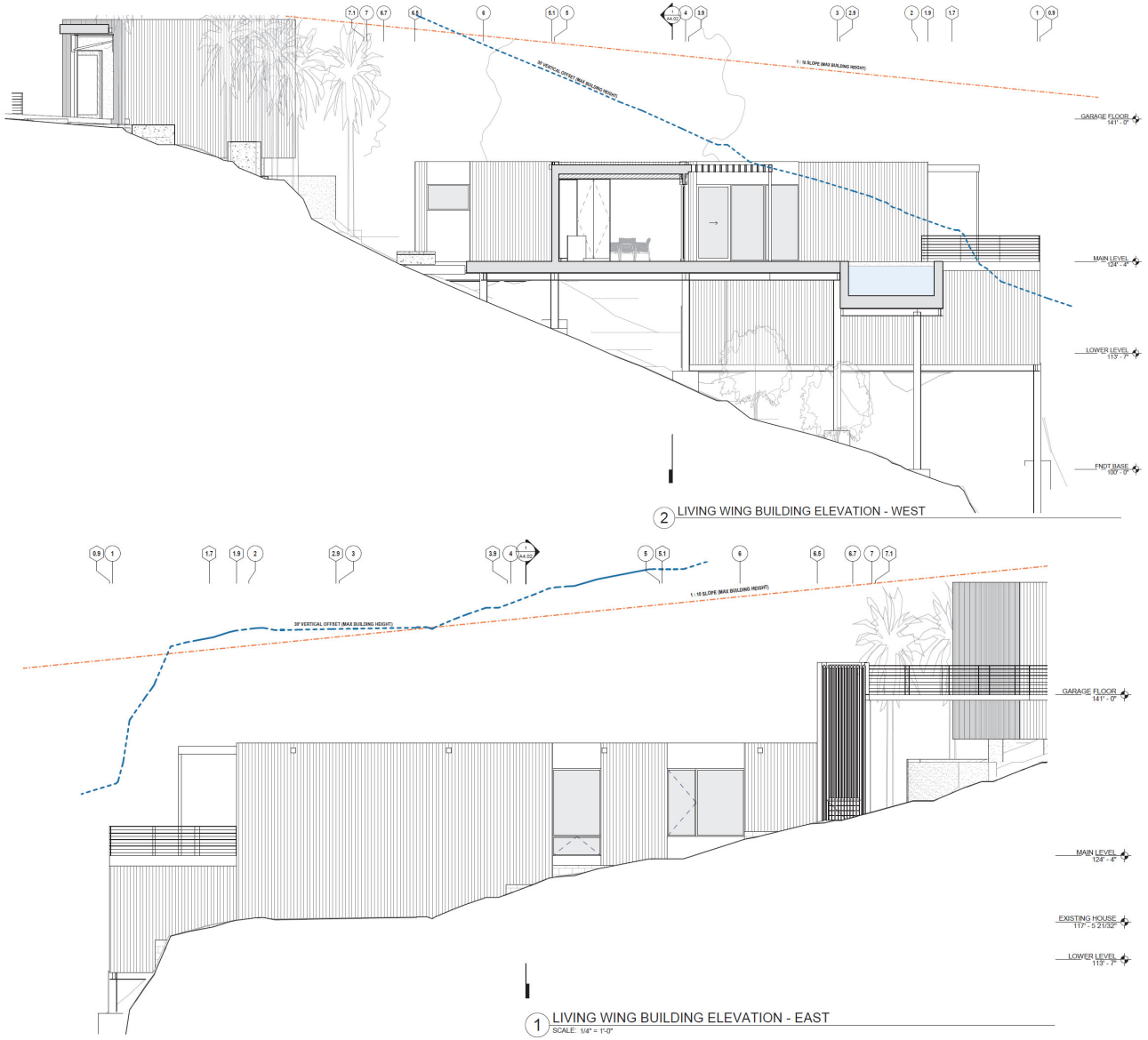


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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE:<br>Alternative II Elevations<br>Living Wing East and West | FIGURE NUMBER:<br>6 |

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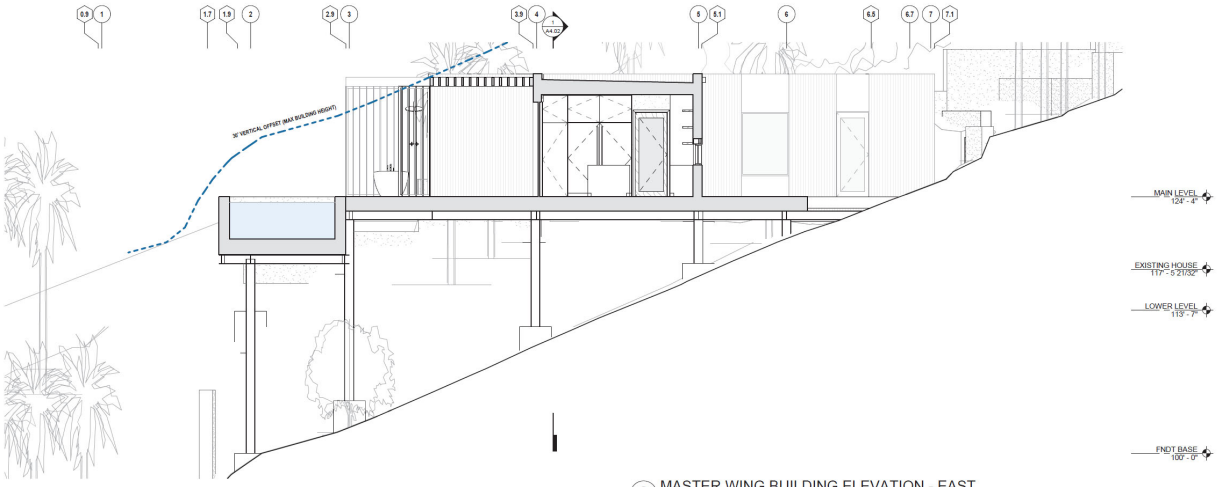
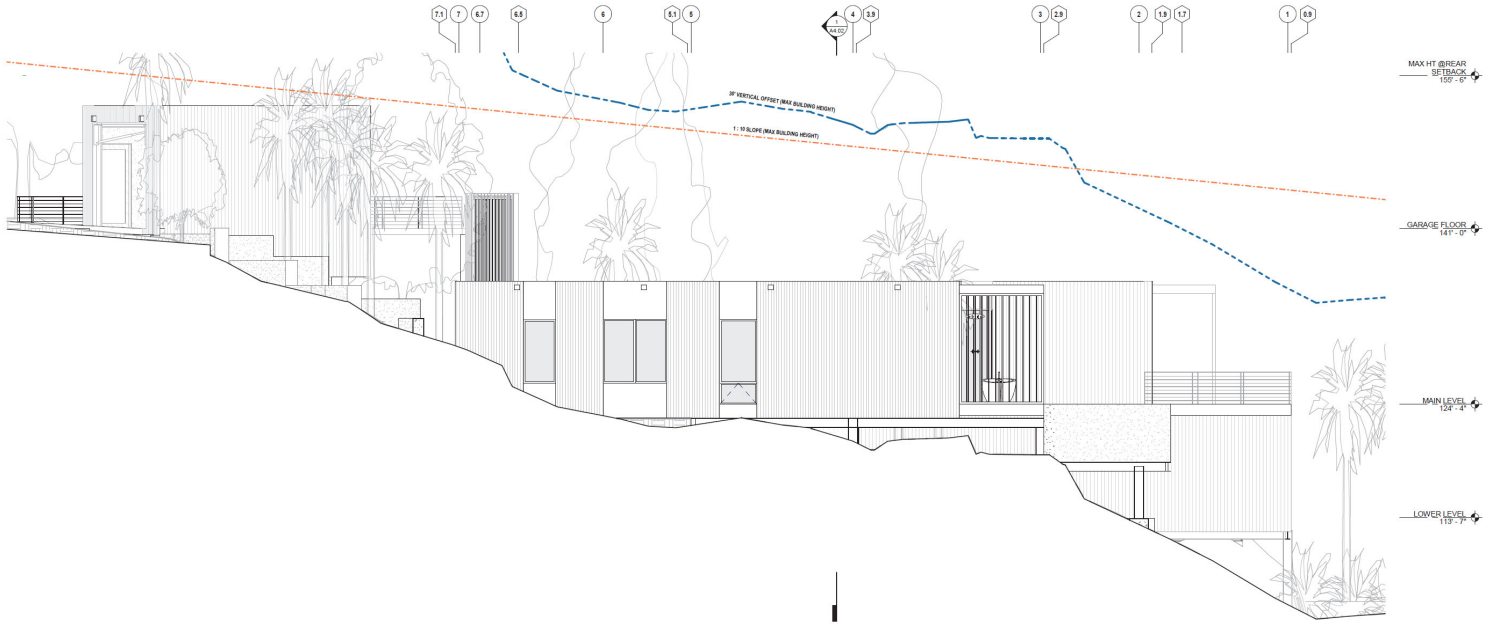



2 MASTER WING BUILDING ELEVATION - EAST




1 MASTER WING BUILDING ELEVATION - WEST

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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE:<br>Alternative II Elevations<br>Master Wing East and West<br><br>FIGURE NUMBER:<br>7 |

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# *SECTION 3* ALTERNATIVES INCLUDING THE PROPOSED ACTION

This section details the alternatives that were analyzed in the EA. Under HAR, Title 11, Department of Health, Chapter 200 Environmental Impact Statement Rules, Section 11-200-17(f), all alternatives considered for the proposed project should be evaluated. These alternatives may possibly enhance environmental quality or avoid, reduce, or minimize some or all of the adverse environmental effects, costs, and risks.

## 3.1 Alternative I: No Action Alternative

Under the No Action alternative, the Site would be kept as is with no changes or alterations.

## 3.2 Alternative II: The Proposed Action

The Proposed Action is the demolition of an existing single family residence and the construction of a two (2)-story single family home (Figures 4 through 7).

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# *SECTION 4* AFFECTED ENVIRONMENT

This section discusses the current status of the potentially affected environments should the Proposed Action be implemented. Affected environments include important natural and cultural sources and systems. Environmental consequences are provided in Section 5.

## 4.1 Physical Environment

### 4.1.1 Topography and Geology

According to the United States Geological Survey (USGS), Honolulu, Hawaii, 7.5-minute topographic quadrangle map, the subject property elevation ranges from approximately 30 to 90 feet above mean sea level. The Site is currently developed with a two-story single family dwelling, detached garage, and vegetation surrounding the parcel. None of the vegetation on the Site and surrounding property appeared to be distressed.

### 4.1.2 Soils

The United States Department of Agriculture (USDA) Soil Conservation Service classifies the soil within the Site as Koko silt loam (KsC) on the northern portion of the Site and rock outcrop (rRO) on the shoreline portion of the Site. Koko silt loam is classified as well drained with medium runoff, prime for farmland if irrigated, with slopes ranging from 6 to 12 percent. Koko silt loam parent material is volcanic ash. Koko silt loam belongs to hydrologic soil group C. The typical soil profile is silt loam between 0 and 16 inches below ground, clay loam from 16 to 48 inches, and paragravel from 48 to 60 inches. Depth to water table is greater than 80 inches.

Rock outcrop is classified as not prime farmland, with slopes can range from 5 to 99 percent. Rock outcrop is lithic bedrock with no soil profile or hydrolic soil group classification (USDA, 2021).

A geotechnical investigation was performed for the Site in which the subsurface condition at the site was explored by drilling 1 test boring to the depths of 10.0 feet below grade and excavating 2 test pits to depths of 1.0 to 4.0 feet below existing grade. In general, the borings disclosed the site to be underlain by elastic silt and silty gravel layers followed by dense to very dense volcanic tuff at a depth ranging from 0.5 to 3.0 feet below grade.

### 4.1.3 Natural Hazard

The Federal Emergency Management Agency (FEMA) flood insurance rate map (FIRM Map No. 15003C0393G, effective January 19, 2011) portrays the Site within Flood Zone D and VE, Base Flood Elevations determined (Figure 8). Flood Zone D is defined as Undetermined Flood Hazard. Flood Zone AE is defined as 100 Year Flood, Coastal, Wave Action, Base Elevation determined (EL 44). The Site is depicted as a Special Flood Hazard Area Subject to Inundation by the 1% Annual Chance Flood. A portion of the property is considered a coastal high hazard area as defined in Chapter 21A, Revised Ordinances of Honolulu (ROH) (Flood Zone VE and V).

The Site is located in a tsunami evacuation zone. The City and County of Honolulu, Evacuation Zone Map is presented in Appendix A, Exhibit 3 and Figure 9. The National Hurricane Storm Surge Maps indicate portions of the coastal area along the Project site may be subject to flooding inundation of less than three feet above ground level during a Category 1 hurricane event.

The construction area is not anticipated to be impacted by waves, storm surges, high tide or shoreline erosion. According to the Hawaii Sea Level Rise Viewer, mapping of the project site shows no portions of the Site susceptible to sea level rise at 0.5 feet (www.hawaiisealevelriseviewer.com), Appendix A, Exhibit 3.

4.1.4 Flora and Fauna

The site has been developed and landscaped.

A data inquiry for records of listed threatened or endangered species for the parcel was sent to the United States Fish and Wildlife Service. The US Fish and Wildlife Service (USFWS, 2021) revealed there are six (6) federally listed species in the vicinity of the project area:

Mammals

- the Hawaiian hoary bat (*Lasiurus cinereus semotus*)

Birds

- the band-rumped storm-petrel Hawai‘i DPS (*Oceanodroma castro*)
- the Hawaiian petrel (*Pterodroma sandwichensis*)
- the Newell’s shearwater (*Puffinus auricularis newelli*)
- the wedge-tailed shearwater (*Ardenna pacificus*)
- the white tern (*Gygis alba*)

Mitigation and avoidance measures have been recommended by US Fish and Wildlife Service and presented in Section 5.

4.1.5 Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory, Wetlands Mapper (USFWS, 2021) identified the Pacific Ocean to the south of the property as an Estuarine and Marine Wetland (M2RSN) close to the shoreline, and an Estuarine and Marine Deepwater (M1UBL) further offshore. The Wetlands Mapper figure is presented as Figure 10 and in Appendix A, Exhibit 14.

4.1.6 Water Resources

Groundwater

The Site overlies the Waialae aquifer system of the Honolulu aquifer sector. The aquifer system is comprised of an upper and lower aquifer. The upper aquifer is described as a basal (freshwater in contact with seawater), unconfined (where water table is upper surface of saturated aquifer), sedimentary (nonvolcanic lithology) aquifer. It is classified as a potentially used, neither ecologically important, nor a drinking water source, with high salinity (5,000 – 15,000 milligrams per liter [mg/l] chloride [Cl-]. It is considered replaceable and highly vulnerable to contamination (Mink and Lau, 1990).

The lower aquifer is described as a basal (freshwater in contact with seawater), confined (aquifer bounded by impermeable or poorly permeable formations, and top of saturated aquifer is below groundwater surface), flank (horizontally extensive lavas) aquifer. It is classified as a potentially used, fresh drinking water source (< 250 mg/l Cl-, irreplaceable, with a low vulnerability to contamination (Mink and Lau, 1990).

There is one (1) USGS wells within a 1-mile radius of the Site (USGS, 2021). Additionally, one (1) water well was identified in the State Database Well Information within a 1-mile radius of the subject property (UH, 2021). The Site is down-gradient of the Underground Injection Control (UIC) line (Figure 11) as such; the underlying aquifer is not considered a drinking water source and permit limitations governing the use of these waters are less stringent than for drinking water aquifers.

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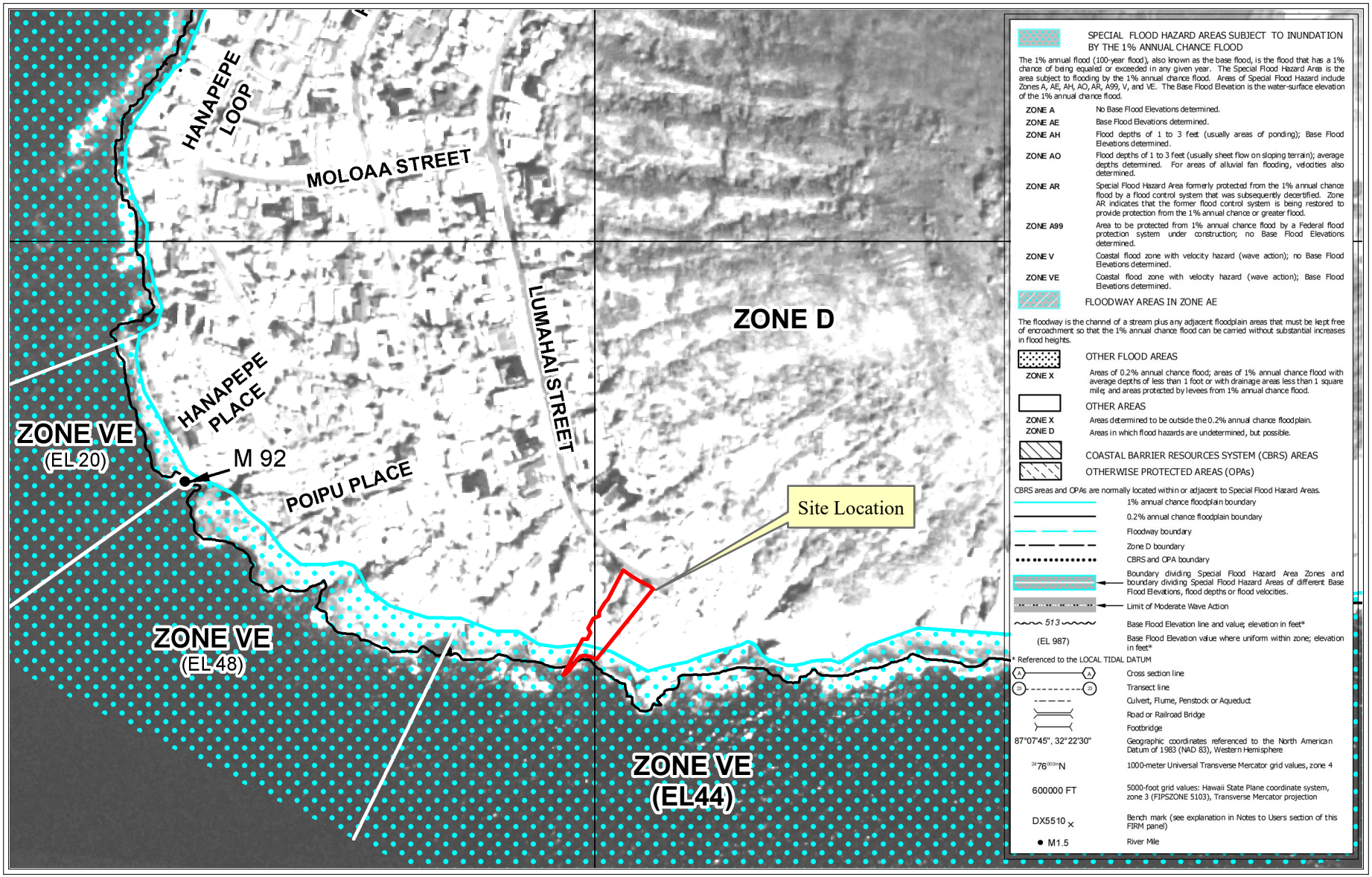


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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE: Flood Insurance Rate Map<br>FIGURE NUMBER: 8 |

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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE: Tsunami Inundation Zone Map<br>FIGURE NUMBER: 9 |

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| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | FIGURE TITLE:<br>Wetlands Map | |
| | | FIGURE NUMBER:<br>10 | |

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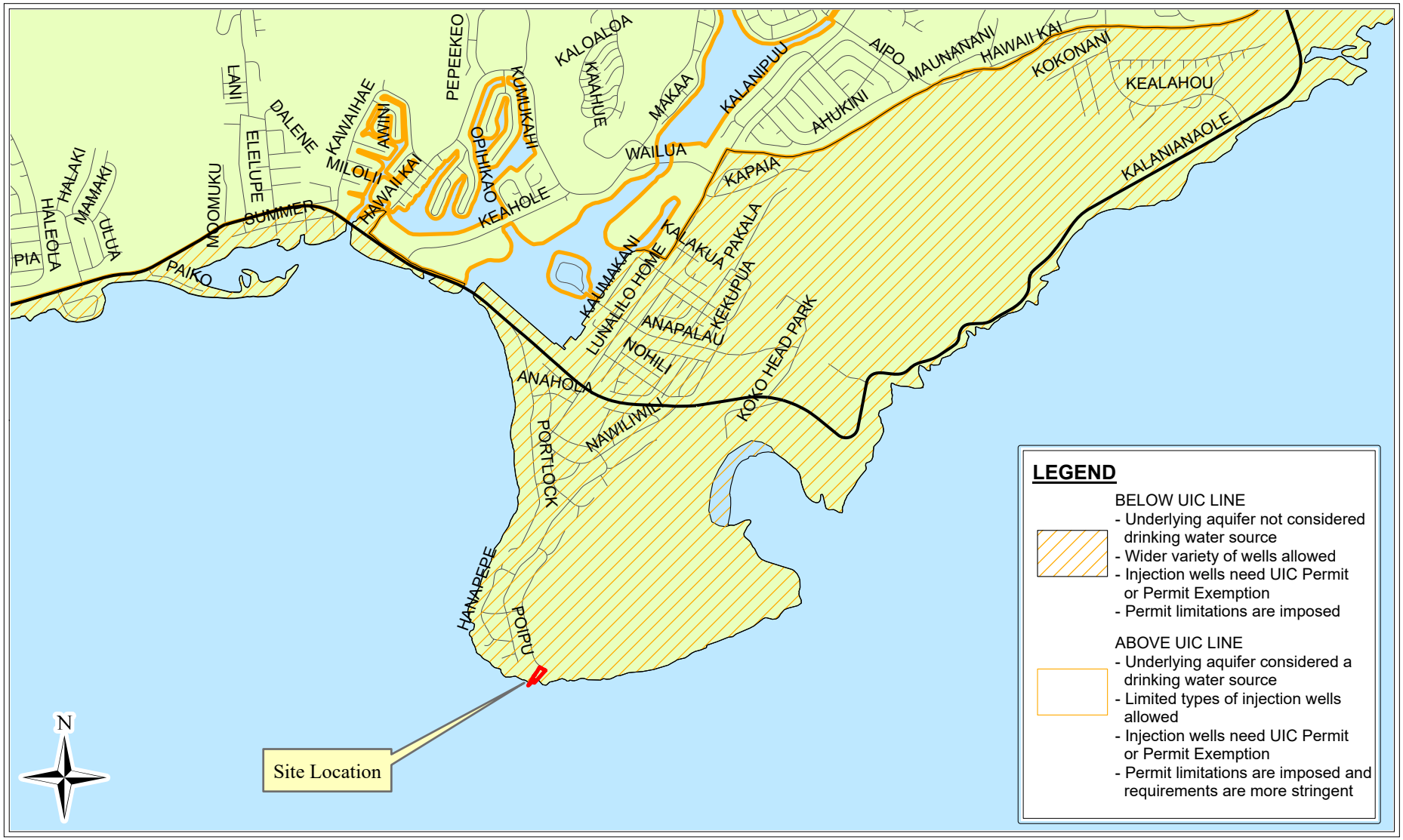


0 0.5 1 2 3 Miles

Environmental Risk Analysis

PROJECT NAME:

Environmental Assessment
4 Lumahai Street
Honolulu, Hawaii 96825
Tax Map Key 3-9-013:32

FIGURE TITLE:

Underground Injection Control Map

FIGURE NUMBER:

11

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Studies have shown anticipated sea level rise could affect the boundary between saltwater and freshwater causing freshwater to be lifted. The result is a rise in the groundwater table. Low elevation coastal planes and shallow groundwater tables are prevalent in Hawaii. The rise in the groundwater level could affect drinking water by turning wells that were previously freshwater into brackish or saline. Groundwater at the Site is in contact with seawater. The aquifer supporting the Site could experience impacts from sea level rise.

Surface Water

USFWS National Wetland Inventory, Wetlands Mapper (USFWS, 2021) identified the Pacific Ocean to the south of the property. No other surface water bodies were identified within the vicinity of the Site.

### 4.1.7 Climate and Air Quality

The climate in east Honolulu is characterized with temperatures averaging from the low 70s to the mid 80s. There is moderate humidity and easterly trade winds. The average annual rainfall is approximately 30 inches per year.

Air quality in the vicinity is most affected by proximity to ocean. The Hawaii State Department of Health (HDOH) maintains air monitoring locations throughout the state. In 2017 the State of Hawaii was in attainment of all National Ambient Air Quality Standards (NAAQS) (HDOH Annual Summary 2017 Air Quality Data). There are no air monitoring stations located in the vicinity of the Site. Air monitoring stations are located in areas of commercial, industrial, and transportation activities where the greatest impacts to air quality may be observed.

### 4.1.8 Noise

Noise impacts from construction-related activities are regulated under the HAR, HDOH, Title 11, Chapter 46, Community Noise Control. The project area is a residential zone, and as such falls into District Class A under the HDOH regulations, with a maximum day (7:00 a.m. to 10:00 p.m.) and night (10:00 p.m. to 7:00 a.m.) sound level threshold of 55 decibels (dBA). District Class A also covers areas zoned as military and federal preservation land, conservation, open space and public space. Table 1 lists sound exposure levels (SELs) associated with typical equipment, in varying operating modes.

Table 1: Typical Equipment Sound Levels

| **Equipment** | **Sound Level (in dBA) Under Indicated Operational Mode** | | |
|---|---|---|---|
| | **Idle Power** | **Full Power** | **Moving Under Load** |
| Dozer | 63 | 74 | 81 |
| Dump Truck | 70 | 71 | 74 |
| Excavator | 62 | 66 | 72 |
| Forklift | 63 | 69 | 91 |
| Front-end Loader | 60 | 62 | 68 |
| Grader | 63 | 68 | 78 |

| | | | |
|---|---|---|---|
| Sweeper | 64 | 76 | 85 |
| Tractor-Trailer | 67 | 78 | 77 |

4.1.9 Solid Waste

Solid municipal waste on the island of Oahu is incinerated at the H-POWER waste-to-energy facility located in Campbell Industrial Park. According to the City and County of Honolulu, Department of Environmental Services website, Opala.org, Oahu recycling rates are above the national average and Honolulu ranks among the top cities in the country in landfill diversion. The H-POWER facility reduces the volume of waste entering the landfill by 70%. The remaining ash is deposited at the Waimanalo Gulch Sanitary Landfill. Construction and demolition wastes are handled separately and are disposed of at PVT Landfill.

4.1.10 Hazardous Waste

A query of Hawaii Department of Health, Hazard Evaluation and Emergency Response (HEER) Office, iHEER database was performed to obtain information about state environmental release listings. One site was listed within a 1-mile radius of the Site.

- Koko Head Elementary School Building Exterior Soils (Approximately 1-mile away)
    - This site is listed due to a survey currently being conducted of all elementary schools on Oahu. The exterior soils around buildings at all elementary schools on Oahu is being investigated for metals and pesticides. Only preliminary results were available through HDOH Records at this time. No exceedances of the HDOH Environmental Action Levels (EALs) were reported for Koko Head Elementary School.

No sites in the vicinity of the subject Site were identified which would pose and environmental threat to the subject Site.

## 4.2 Social Environment

4.2.1 Land Use Considerations and Zoning

The City and County of Honolulu Site Land Use Ordinance Zoning Designation is Residential (R-10). The Site is not located in a Special District. The Site is located in a Special Management Area, as it sits on the shoreline.

4.2.2 Archaeological and Cultural Considerations

There are no archaeological resources noted in the Hawaii Cultural Resource Information System (HICRIS) site for the subject property. The Hanauma Bay State Park is located to the northeast of the Site. A spatial search of the property did not result in any resources.

### 4.2.3 Circulation and Traffic

The Site is only accessible from Lumahai Street by way of Poipu Drive. The immediate area surrounding the Site consists of other single family homes, therefore, traffic is light to moderate. Kalanianaole Highway is the only means to and from the area. Kalanianaole Highway (State Highway 72) is contraflowed westbound between West Halemaumau Street to Ainakoa Avenue Route 88A (start of Interstate H-1) in the mornings between 5:00 am and 8:00 am.

The nearest bus stop is located at the intersection of Lunalilo Home Road and Kalanianaole Highway located approximately 1-mile to the north of the Site.

### 4.2.4 Social Factors and Community Identity

The Site is located less than a mile from a golf course, small shops, grocery stores, a farmers market, a coffee shop and restaurants. There are also schools and parks within five miles.

According to the U.S. Census Bureau the population in East Honlulu Census Designated Place (CDP) was approximately 50,922 people (Census, 2020). There are approximately 16,560 households with an average of 2.86 people per household (Census, 2015-2019).

### 4.2.5 Economic Considerations

According to the U.S. Census Bureau (Census, 2020) the median household income in East Honolulu CDP is $133,165 in 2019 dollars, compared to the $85,857 median household income for all of Honolulu County and $81,275 for Hawaii.

### 4.2.6 Recreational and Public Facilities

Recreational activities in the area mainly consist of outdoor activities such as boating, swimming, surfing, scuba diving, snorkeling, dolphin and whale watching, hiking and camping, golfing, and fishing.

A number of recreational areas and facilities are located throughout the island of Oahu, consisting of beach parks, golf courses, district and neighborhood parks, and community centers. Koko Kai Beach Mini Park, Kawaikui Beach Park, Mauna Lua Bay Beach Park, Kuliouou Beach Park, and Wawamalu Beach Park are in close proximity to the Site located along the coast on the Pacific Ocean. Hanauma Bay Nature Preseve is located in close proximity to the Site. There are also a many state parks and hiking trails including Hanauma Bay Ridge Hike, Koko Crater Railway Hike, Kuliouou Ridge Trail, Koko Crater Arch Trail, and Makapu Point Lighthouse Trail.

### 4.2.7 Visual and Aesthetic Resources

East Honolulu does afford beautiful views, however the subject property is not specifically identified in any county or State plans or studies as containing scenic vistas or view planes.

### 4.2.8 Infrastructure Systems and Utilities

Drinking water and wastewater utility services is supplied by the Board of Water Supply (BWS). Drinking water supply is from the Aina Koa Well II, Halawa Shaft, Kaimuki Pump Station Low Service, Kalihi Shaft, Punanani Wells, and Wilder Wells. Sewer services are managed by the Department of Environment al Services. Electricity service is supplied by Hawaiian Electric Company. Gas service is supplied by Hawaii Gas. Telephone, cable, and internet can be provided by Spectrum or Hawaiian Telcom, as well as satellite service providers.

The Honolulu Fire Department (HFD) has 43 engine companies throughout the island of Oahu. The closest fire station is the Fire Station 34 Hawaii Kai. It is located at 515 Lunalilo Home Rd, approximately 2-miles from the Site. The next nearest station is Fire Station 23 Wailupe, located at 5046 Kalaniana‘ole Hwy, approximately 5 miles from the Site.

The Honolulu Police Department (HPD) is headquartered in Honolulu. The Site is located in District 7 which encompasses about 40 square miles in East Honolulu, from Punahou Street to Makapuu Point. The District 7 administrative office is located at 801 South Beretania St., and the criminal investigations office is located at 4087 Diamond Head Road.

The closest hospital to the Site is Straub Medical Center, located at 888 S. King Street, approximately 12 miles from the project site. Straub Medical Center provides emergency, medical, dental, diagnostic, and therapeutic health services. Other ugent care and medical clinics are located in close proximity to the Site including Straub Medical Center - Hawaii Kai Clinic, located at 7192 Kalanianaole Hwy #A200, and Queen's Island Urgent Care - Hawaii Kai located at 377 Keahole St Suite E-108.

In regards to schools which service the Site, the Site is located within the Department of Education’s Honolulu District, Farrington-Kaiser-Kalani Complex Area. Koko Head, Haihaione, and Kamiloiki Elementary Schools service the area, with Koko Head Elementary assigned to the project Site. Niu Valley Middle School and Kaiser High School would service the Site. Koko Head Elementary School reported 285 students in its 2019-2020 academic year roster. Niu Valley Middle School reported 1,351 students in its 2019-2020 academic year roster. Kaiser High School reported 1,351 students in its 2019-2020 academic year roster. In addition, there are three (3) pre-schools in the Hawaii Kai area. KCAA Kuapa Preschool, Kinder Kids International Preschool, and Happy Keiki Preschool are located approximately 3-miles from the Site. These schools offer education for ages 1 through 5 years old.

University of Hawaii at Manoa (UH) is located 1.5 miles from the Site. The campus offers on-site and distance learning classes and programs. Other colleges and universities are located Oahu.

# *SECTION 5* ENVIRONMENTAL CONSEQUENCES AND PROPOSED MITIGATION MEASURES

Potential impacts of Alternative I: No Action and Alternative II: Proposed Action are described in this section of the report. Impacts are evaluated on whether they constitute a "significant effect" on a particular environmental setting. Impacts are described as having No Impact, Significant Adverse Impact or Beneficial Impact depending on the outcome to the environment. The terms impact and effect are used synonymously in this EA. Impacts may apply to the full range of natural, aesthetic, historic, cultural and economic resources. The following subsections define key terms used throughout Section 5.

Significance Criteria

A "significant effect" is defined by HRS Chapter 343 as "the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic welfare, social welfare, or cultural practices of the community and State."

Beneficial Versus Adverse

Impacts from the Proposed Action may also have beneficial or adverse effects to the environment. Beneficial impacts are those that have favorable outcomes and add value to the environment. Adverse impacts are those that produce detrimental effects and cause harm to the environment.

Cumulative Impacts

Cumulative impacts are two or more individual effects which, when considered together, compound or increase the overall impact. Cumulative impacts can arise from the individual effects of a single action or from the combined effects of past, present, or future actions. Thus, cumulative impacts can result from individually minor but collectively significant actions taken over a period of time. The cumulative impacts of implementing the Proposed Action along with past and reasonably foreseeable future projects proposed were assessed based upon available information. Cumulative impacts are discussed in Section 5.3.

Mitigative Measures

Mitigative measures are defined as measures taken to avoid, reduce and compensate for adverse impacts to a resource. Mitigative measures are identified and discussed for each alternative, where relevant. In this EA, mitigative measures are provided to reduce adverse impacts when levels of impact are more than minor and to ensure levels of impact are not significant. Only those mitigative measures that are practicable have been identified.

## 5.1 Physical Environment

### 5.1.1 Topography and Geology

Alternative I

No significant adverse impacts to the topography or geology are expected to result from Alternative I. The Site would remain the same as there would be no construction.

Alternative II

No significant adverse impacts to the topography or geology are expected to result from Alternative II. As the Site is previously disturbed, no significant changes to the topography are necessary for construction. Construction and operational activities would follow existing topography.

### 5.1.2 Soils

Alternative I

No significant adverse impacts are anticipated for Alternative I. Site conditions would remain the same.

Alternative II

Alternative II could have a potential significant adverse impact to soils as a result of construction activities (i.e., clearing, grubbing, excavation and trenching) that disturb the earth and soils. A geotechnical investigation was performed for the property which concluded that relatively shallow footings that bear on firm on-site soils, properly compacted fill or the underlying volcanic tuff may be used to support the proposed structures. The Site soils were deemed suitable as support for the Proposed Action.

Additional footings will be required as a part of construction. Exposed soils are susceptible to erosion during periods of heavy rain or wind, however the Site location is generally arid for most of the year. Short-term adverse impacts would be minimized to less than significant or avoided by implementing temporary erosion control measures during construction activities.

### 5.1.3 Natural Hazard

Alternative I

No significant adverse impacts to natural hazard vulnerability would result from Alternative I as the Site will not change.

Alternative II

No significant adverse impacts to natural hazard vulnerability would result from Alternative II. The project area is noted with a base flood elevation of 44 feet above mean sea level and is classified within Flood Zone D and VE. The Site is depicted as a Special Flood Hazard Area Subject to Inundation by the 1% Annual Chance Flood. In addition, the Site is located in a Tsunami Evacuation Zone. Construction design has taken in to account the Flood Zone/tsunami/sea level rise concerns and has included design elements to prevent adverse impacts to the project, such as placement of the structure as far from the shoreline as possible.

5.1.4 Flora and Fauna

Alternative I

No significant adverse impacts to flora/fauna are anticipated due to Alternative I as the site would remain undeveloped.

Alternative II

No significant adverse impacts to flora and fauna are anticipated due to Alternative II. No threatened or endangered species are known to exist in the project area. An inquiry with the USFWS (USFWS, 2021) revealed there are six (6) federally listed species in the vicinity of the project area. The USFWS recommendations to avoid or minimize project impacts to listed species are provided below:

*Hawaiian hoary bat (Lasiurus cinereus semotus)*

The Hawaiian hoary bat roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

To avoid and minimize impacts to the endangered Hawaiian hoary bat, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).
- Do not use barbed wire for fencing.

*Hawaiian Seabirds*

The following mitigation measures are applicable to:

- the band-rumped storm-petrel Hawai‘i DPS (*Oceanodroma castro*)
- the Hawaiian petrel (*Pterodroma sandwichensis*)

- the Newell's shearwater (*Puffinus auricularis newelli*)
- the white tern (*Gygis alba*)

Newell's shearwaters are found in the highest densities on Kauaʻi with lower densities on all of the other islands, except Lānaʻi. Hawaiian Petrel populations are greatest on Maui, Lānaʻi, and Kauaʻi with lower densities on Hawaiʻi and Molokai. Band-rumped storm-petrels are found in low densities throughout the islands. All islands may experience overflight at night.

For all projects, Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

To avoid and minimize potential project impacts to Hawaiian seabirds, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 through December 15.

*Wedge-tailed shearwater (Ardenna pacificus)*

Unlike other Hawaiian seabird species, wedge-tailed shearwaters nest in littoral vegetation along coastlines. Nesting adults, eggs, and chicks are particularly susceptible to impacts from human disturbance and predators.

To avoid and minimize potential project impacts to wedge-tailed shearwaters, the USFWS recommend that projects incorporate the following applicable measures into the project description:

- Conduct surveys throughout the project area during the species' breeding season (March through November) to determine the presence and location of nesting areas.
- If wedge-tailed shearwaters nest within a proposed project area and construction would cause ground disturbance, time project construction to occur outside of the breeding season (March through November).
- If outdoor lighting is used, use light shields that are completely opaque, appropriately sized, and positioned so that the bulb is only visible from below and the light from the shielded source cannot be seen from the beach.

- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.

### 5.1.5 Wetlands

Alternative I

No significant adverse impacts to wetlands are anticipated due to Alternative I as the Site would remain undeveloped.

Alternative II

No significant adverse impacts are anticipated under Alternative II. Alternative II, the Proposed Action, would not result in loss or destruction of existing wetland resources with the use of appropriate Best Management Practices (BMPs).

### 5.1.6 Water Resources

Alternative I

No significant adverse impacts to groundwater or surface water would result under Alternative I, the no action alternative. Site conditions would remain the same.

Alternative II

No significant adverse impacts are anticipated to groundwater resources assuming implementation of Alternative II, the Proposed Action. Hazardous substances that could adversely affect groundwater are not likely to be introduced or released into the soil given the proposed use of the Site as a residential structure. No significant impact to surface water near the Site is anticipated because of construction or operations associated with Alternative II as there are no streams or surface water bodies at the Site.

Potable water use and wastewater generated by the proposed project would not impact current services as the project would replace an existing single family home.

The Site is not located on a sole source aquifer. No significant impact to surface water near the Site is anticipated as a result of construction or operations associated with Alternative II with the use of BMPs. There are no designated wild and scenic rivers in the State of Hawaii.

A National Pollutant Discharge Elimination System (NPDES) permit, if required, would be obtained for discharges of wastewater, to include stormwater runoff, prior to construction or operations. Any discharges would comply with the NPDES permit and State Water Quality Standards (HAR Chapter 11-55, and HAR Chapter 11-54 respectively).

### 5.1.7 Climate and Air Quality

Alternative I

Alternative I would not have a significant adverse impact to air quality as the existing conditions would remain unchanged.

Alternative II

Under Alternative II, potentially significant adverse impacts to air quality from earth moving and excavation activities during construction activities (i.e., fugitive dust emissions) are anticipated. Temporary increases in traffic during the construction phase of Alternative II are also anticipated to increase emissions from combustion as well as increase fugitive dust. Adequate dust control measures, in compliance with Section 11-60.1-33, "Fugitive Dust", of HAR will be implemented during all phases of construction. Use of BMPs (i.e., watering of roads and trenches during project activities, use of a dust screen which surrounds the project area) would reduce any impacts to less than significant. Once project construction is complete, impacts to air quality would not be significant.

### 5.1.8 Noise

Alternative I

No significant adverse impacts to noise are expected to occur under Alternative I. Site conditions would remain unchanged.

Alternative II

Under Alternative II, potentially significant adverse impacts to noise environment from heavy equipment use during construction activities are anticipated. The potential significant adverse impacts will be reduced to elss than significant by abiding by the HDOH Administrative Rules, Title 11, Chapter 46, "Community Noise Control" regulations and CFR 24 CFR Subpart B - Noise Abatement and Control for the duration of the project. Construction activities at the Site may increase noise levels, however these activities will be limited to daylight hours. If noise levels exceed allowable levels, then a noise permit will be obtained.

Once the project is completed, no significant increases in noise are anticipated. Noise levels would not be anticipated to increase as the proposed action replaces an existing residential home. No industrial processes or activities that would contribute to a significant adverse impact to the noise environment are planned under Alternative II.

### 5.1.9 Solid Waste

Alternative I

No significant adverse impacts to solid waste are expected to occur under Alternative I. Site conditions would remain unchanged.

Alternative II

Construction activities at the Site will increase solid waste and construction wastes. Waste generated by site preparation will primarily consist of demolition of one structure, vegetation, rocks, and debris from clearing, grubbing, and grading. These wastes will be minimized by proper planning of building materials and recycling efforts. A solid waste management plan will be coordinated with the City and County's Solid Waste Division for the disposal of onsite and construction-related waste material.

Once the project is completed, solid waste generation is not anticipated to increased over the current conditions. If there is a slight population change due to increased land use, H-POWER will have adequate capacity to accommodate waste generate from the proposed project. This increase in waste generation would not contribute to a significant adverse impact under Alternative II. In addition, the proposed project will support programs that encourage waste reduction, recycling, and other green/environmentally friendly practice

### 5.1.10 Hazardous Waste

Alternative I

No significant adverse impacts to are expected to occur under Alternative I. Site conditions would remain unchanged.

Alternative II

Construction activities at the Site has the potential to temporarily increase use of potential hazardous wastes. Use of chemicals at the Site would increase during construction such as fueling for heavy equipment and construction materials (e.g. paints, stains). These wastes can be minimized by pre-construction proper planning. Existing potentially hazardous wastes would be removed during construction activities. Demolition waste would be characterized for hazardous characteristics and properly disposed.

Once the project is completed, household hazardous waste (e.g., batteries, paints, cleaners, etc.) generation will not be increased over the current conditions. As there would be no additional waste generation from current conditions, Alternative II would not contribute to a significant adverse impact to the hazardous waste environment.

## 5.2 Social Environment

### 5.2.1 Land Use Considerations and Zoning

Alternative I

No significant adverse impacts to are expected to occur under Alternative I. Site conditions would remain unchanged.

Alternative II

Alternative II would have a beneficial impact on land use and zoning. The proposed action would modernize and increase the lifespan of the property for residential use.

### 5.2.2 Archaeological and Cultural Considerations

Alternative I

No significant adverse impacts are associated with the No Action Alternative as no change to the current infrastructure would occur.

Alternative II

Alternative II would involve ground disturbing activities that may adversely impact historical and archaeological resources. However, these impacts are considered unlikely as the Site is previously disturbed and developed. The area surrounding the Site has no history of archeological resources according to a query of the State Historic Preservation District, Hawaii Cultural Resource Information System (HICRIS).

If human osteological remains or a potential archaeological site are uncovered during construction activities, mitigation measures will be implemented. Specifically, site work will cease and the Hawaii State Historic Preservation (SHPD) would be contacted in compliance with Chapter 6E of the HRS. These mitigation measures will ensure no loss or destruction of historic and archaeological resources, avoid adverse impacts to potential sites, and ensure compliance with State laws and regulations. Implementation of mitigation measures would reduce any potential impacts associated with Alternative II to less than significant.

### 5.2.3 Circulation and Traffic

Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain the same.

Alternative II

No significant adverse impacts are anticipated under Alternative II. During construction activities, access and traffic are anticipated to increase compared to normal Site operations. If access and traffic are impacted as a result of renovation activities, minimizing impact on traffic and access to less than significant levels can be accomplished by the following:

1) Mobilizing and de-mobilizing construction vehicles and equipment during non-peak traffic hours.
2) Use of temporary traffic control devices, such as signage, barricades, and cones, in accordance with City and County traffic standards; and
3) If necessary, utilize off-duty police to manage traffic.

The State of Hawaii Department of Transportation (HDOT) was requested to provide pre-consultation comments relating to the construction of the new structure. HDOH has jurisdiction over Kalanianaole Highway (State Route 72) located approximately 1.5 miles from the Site. HDOT does not anticipate any significant adverse impacts to state roadways due to implementation of the proposed action.

After construction, there would be no significant adverse impact to the traffic as the proposed action would replace an existing residential property. Minimal, if any, increase in traffic would be anticipated due to the operation of the new structure at the property.

5.2.4 Social Factors and Community Identity

Alternative I

Alternative I would have no impact to the social and community identity. Site conditions would remain unchanged.

Alternative II

Construction of a new residential structure is expected to have a beneficial impact on the social and community identity of the area. The proposed project will add provide construction employment for the local community. The proposed project would also rehabilitate aging housing and increase the lifespan of the intended use of the Site for residential purposes.

5.2.5 Economic Considerations

Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain unchanged.

Alternative II

No adverse impacts to the economy in the vicinity of the Site are anticipated as a result under Alternative II. The proposed project will result in short-term economic benefits for the construction industry and may help support small businesses in the area.

5.2.6 Recreational and Public Facilities

Alternative I

No significant impacts are anticipated under Alternative I. Site conditions would remain unchanged.

Alternative II

Alternative II is expected to have no significant adverse impact on the recreational and public facilities on the island. There are many beach parks, hiking trails, and other recreational facilities in the area. Minimal, if any, population increase would not have a significant impact to the recreational and public facilities.

5.2.7 Visual and Aesthetic Resources

Alternative I

There would be no significant adverse impact on the visual resources and aesthetics in or around the project area anticipated with Alternative I as this alternative shall not bring about any changes in the existing conditions.

Alternative II

No significant adverse impacts to visual resources are expected under Alternative II. Construction of the new residential structure will not significantly impact the view of adjacent houses. The Proposed development at the Site is not identified as a scenic vista or view plane nor will it affect identified scenic vistas or view planes. The proposed action will not affect scenic corridors and coastal scenic and open space resources. The design of the new structure majority sits below street level and occupies largely the same footprint as the existing structure.

5.2.8 Infrastructure Systems and Utilities

Alternative I

No significant adverse impacts are anticipated under Alternative I. Site conditions would remain unchanged.

Alternative II

Alternative II is expected to have little impact on the infrastructure and utilities in and around the project area. Water, sewer, electricity and gas services are expected to be supplied by the same service providers used within the area.

The BWS, HFD, and HPD were requested to provide pre-consultation comments relating to the construction of the new structure at the Site. BWS indicated that the existing water system is adequate to accommodate the proposed development. BWS noted that all developments are required to utilize water conservation measures such as use of nonpotable water for irrigation such as rain catchment systems, drout tolerant plants, xeriscape landscaping, efficient irrigation systems, and use of ultra-low flow ater fixtures and toilets. Waste diversion will be implemented during the proposed project construction and operation. The proposed project plans to recycle/reuse (mulch for ground cover, repurpose materials when appropriate, etc.).

HFD commented that the design should incorporate the structure should not be located more than 150 feet from fire department access roads. Water supply for the purposes of fire protection shall be provided. Civil drawings will be submitted for fire department approval to ensure that all fire codes are met prior to construction.

HPD reviewed the information and did not have concerns or comments regarding implementation of the proposed action.

No impacts to educational facilities are anticipated.

### 5.3 Cumulative Impact

Cumulative effects are not anticipated as a result of implementing Alternatives I or II. The actions themselves do not involve a commitment to larger actions. The alternatives will likely not result in substantial secondary impacts, such as population changes or effects on public facilities. Alternative I will effect no change to the project area. Alternative II involves the demolition of an existing structure and construction of a two (2)-story single family residence. Population changes or effects on public facilities would be minimal. The change in population and demand for public facilities would be readily met by existing infrastructure.

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# *SECTION 6* RELATIONSHIP TO PLANS, POLICIES, AND CONTROLS

The purpose of Section 6 is to identify plans and policies that may be applicable to this project and summarize the relationship of the plans and policies to project actions. Additionally, the intent is to revisit these plans and policies to qualify any significant effects from actions proposed in this EA.

## 6.1 State and County Land Use Plans and Policies

### 6.1.1 State Land Use

Chapter 205, Hawaii Revised Statutes, relating to the Land Use Commission (LUC), establishes four (4) major land use districts in which all lands in the state are placed. These districts are designated as Urban, Rural, Agricultural, and Conservation. The parcel proposed for development is located in an Urban district.

### 6.1.2 City and County Zoning

Land Use Ordinance

The City and County of Honolulu, Department of Planning and Permitting, indicates the Site Land Use Ordinance Zoning Designation is Residential (R-10). Land Use Ordinance (LUO), Chapter 21, ROH lists Dwellings, detached, one-family as a permitted use in a R-10 Zoning District.

Flood Hazard Areas Ordinance

The City and County of Honolulu has created the Flood Hazard Areas Ordinance to regulate construction in areas of flood hazard and/or tsunami inundation. These regulations are necessary for partification in the federal flood insurance program, which provides federal financial assistance. The proposed project will include design elements to conform with the General Development Standards and additional requirements for properties designated as Zone VE.

Sec. 21A-1.6 General development standards.
Structures within the special flood hazard areas shall conform to the following:

- (a) Be designed and adequately anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads, including effects from buoyancy caused by the base flood.
- (b) Constructed of flood-resistant materials.
- (c) Constructed by methods and practices that minimize flood damage.
- (d) Constructed with electrical, heating, ventilation, plumbing, air conditioning, and other service facilities that are designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.
- (e) Provided with adequate drainage to minimize damage in accordance with the storm drainage standards of the department.
- (f) For new or replacement potable water system and facilities, be designed to minimize or eliminate infiltration of flood waters into the systems.

- (g) For new or replacement sanitary sewer system and waste disposal system, be designed, located and constructed so as to minimize impairment to them or contamination from them during and subsequent to flooding by the base flood.

The Site is not located in a Special District, but is located in a Special Management Area, due to the parcel's proximity to the shoreline.

6.1.3 Coastal Zone Management, Chapter 205A

Chapter 205A, HRS, also known as the Coastal Zone Management Program, is a long-range comprehensive plan that serves as a guide for the future long-range development of the State to protect recreational, historic, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, beach and coastal dunes, marine and coastal resources as well as manage development and stimulate public participation. The proposed project is in accordance with the following goals of the Coastal Zone Management Program:

- Protect valuable coastal ecosystems, including reefs, beaches, and coastal dunes, from disruption and minimize adverse impacts on all coastal ecosystems.
- Reduce hazard to life and property from coastal hazards.

Senate Bill 2060: Relating to Coastal Zone Management was revised in 2020 to include residential and commercial development for parcels that are impacted by waves, storm surges, high tied, or shorelines erosion, which had not been included previously.

6.1.4 Shoreline Setback Ordinance, Chapter 23

The Shoreline Setback Ordinance was designed to protect and preserve the natural shoreline, especially sandy beaches; to protect and preserve public pedestrian access laterally along the shoreline and to the sea; and to protect and preserve open space along the shoreline. It is also a secondary policy of the city to reduce hazards to property from coastal floods. The Shoreline Setback Ordinance works in conjunction with Coastal Zone Management, Chapter 205A.

A Shoreline Certification will be obtained as part of the permitting process for this project. The proposed structure will not be building within the 40-foot shoreline setback. BMPs would prevent any runoff or other construction debris from migrating off-site. This project is not seeking a variance from the shoreline setback.

6.1.5 East Honolulu Sustainable Communities Plan

The City and County of Honolulu General Plan (1992, amended in 2002) "sets forth the long-range objectives and policies for the general welfare and, together with the regional development plans, provides a direction and framework to guide the programs and activities of the City and County of Honolulu." The General Plan evaluated the population, economic activity, natural environment, housing, transportation and utilities, energy, physical development and urban design, public safety, health and education, culture and recreation, and government operations and fiscal management. The General Plan was followed by the Development Plans and Sustainable

Community Plans which addressed 8 areas of Oahu: Primary Urban Center, Central Oahu, Ewa, Waianae, North Shore, Koolauloa, Koolaupoko, and East Honolulu.

The proposed project is in accordance with the following the East Honolulu Sustainable Communities Plan goals, objectives, and policies:

3.5 RESIDENTIAL USES

- Contain the spread of development by increasing housing capacity in East Honolulu through infill development. This will occur through development and expansions of existing homes.
- Effective residential lot design standards that limit building height, coverage, paving, and removal of landscaping are implemented through the LUO.
- 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.
- Encourage new structures to be designed to withstand the anticipated impacts of sea level rise over the building's lifespan.

## 6.2 Necessary Permits and Approvals

The following approvals may be required for the implementation of the project. All approvals will be obtained in accordance with approving agency guidelines.

6.2.1 State of Hawaii

(a) Chapter 343, HRS, environmental review
(b) Department of Health
    - Chapter 46, HAR – noise permit, as required
    - Chapter 11-23, HAR – Underground Injection Control permit for the use of drainage injection wells to handle discharges of storm water runoff.
    - Chapter 11-55, HAR – National Pollutant Discharge Elimination System (NPDES) permit for construction stormwater discharges.
(c) Chapter 6E, HRS, State Historic Preservation Division, as required
(d) Shoreline Certification Survey

6.2.2 City and County of Honolulu

(a) Special Management Area – Major Permit.
(b) Building Permits for infrastructure improvements.
(c) Grading Permits for earthwork activities associated with infrastructure improvements.

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# *SECTION 7* FINDINGS AND REASONS SUPPORTING AGENCY DETERMINATION

In accordance with the provisions set forth in Chapter 343, HRS, this EA has preliminarily determined that the project will not have significant adverse impacts on the environment. As such, a Finding of No Significant Impact (FONSI) has been determined for the Proposed Action. Anticipated impacts will be temporary and will not adversely impact the environmental quality of the area.

A review of the "Significance Criteria" used as a basis for the above determination is presented below. An action is determined to have a significant impact on the environment if it meets any one of the thirteen (13) criteria.

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

Alternative II would not cause loss or destruction of any natural or cultural resources. The Site has been previously disturbed and constructed upon. Surrounding areas are also developed with residential properties.

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

Alternative II will not curtail the range of beneficial uses of the environment. In fact, the implementation of the Proposed Action would increase beneficial uses of the Site by providing updated housing, increasing the usable lifespan of the Site.

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

Alternative II will be in conformance with the Chapter 344, HRS, State Environmental Policy, to enhance the quality of life. The Proposed Action will provide updated housing and improved Site conditions for the protection of the surrounding environment. This is in compliance with the residential zoning status.

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

Alternative II would have beneficial effects to the economic and social welfare of the community and State. The construction phase of the proposed alternatives would create jobs, and the families who occupy the development will generate income for local businesses. There would be no change in Site activities as it will remain residential. Any potential impacts following implementation of the project would be similar to those prior to the proposed project.

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

Alternative II will not have significant effects on public health. The Proposed Action would provide safe and sanitary housing within a suitable living environment, which would ensure a better standard of living.

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

Alternative II will likely not result in substantial secondary impacts, such as population changes or effects on public facilities. The Proposed Action involves the construction of a two (2)-story single family residence. Population changes or effects on public facilities would be minimal. The change in population and demand for public facilities would be readily met by existing infrastructure.

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

Alternative II is not likely to result in a substantial degradation of environmental quality. Assessment of impacts associated with the Proposed Action have been minimal.

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

Cumulative effects are not anticipated as a result of implementing Alternative II. The Proposed Action does not involve a commitment to larger actions. Much of the land near the Site is previously developed and minimal additional construction projects are anticipated. It is not anticipated that there will be cumulative effects that will have an impact to the environment.

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

Alternative II is not anticipated to have substantial effects on rare, threatened, or endangered species, or any critical habitat. USFWS identified six (6) federally listed species in the vicinity of the project area. Mitigation measures will be employed as to avoid or minimize any impacts to rare, threatened, or endangered species during and post-construction. There is little potential for encountering such resources as there are no rare, threatened, or endangered species or critical habitats at the Site.

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

No significant impacts on the area's long-term air or ambient noise environments are anticipated to result from Alternative II. During the construction phase of the proposed project, these parameters will be monitored. Any exceedances in local, state, or federal rules or regulations will be mitigated to minimize their effects to the area. Water quality impacts are not anticipated and do not require mitigation measures.

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

The Site is located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater, or coastal waters. BMPs would keep an construction runoff/debris from migrating off-site.

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

Alternative II will not affect the visual aesthetics of the areas identified in the county or state plans and studies. The proposed structure replaces an existing structure and not extending significantly laterally or vertically from existing conditions. Coastal view planes will not be impacted by the proposed action.

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

Alternative II would not require substantial energy consumption. The change in population and demand for energy would be minimal and readily met by existing infrastructure. In addition, energy efficient appliances will be incorporated into the project design.

In summary, the proposed project will provide an additional long term residence in East Honolulu. Based on the foregoing analysis, the proposed action is not anticipated to result in any significant adverse impacts. Accordingly, the proposed action is anticipated to be a Finding of No Significant Impact (FONSI).

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## *SECTION 8* REFERENCES


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# *SECTION 9* AGENCIES AND ORGANIZATIONS CONSULTED

The following agencies and organizations were contacted during the pre-consultation period. Pre-consultation, comment letters and response letters have been reproduced and included in Appendix A, Exhibit 17.

**Federal Agencies**

Department of Agrriculture, Natural Resources Conservation Service

Department of the Army, US Army Corps of Engineers

Department of Commerce, National Marine Fisheries Service

Department of Homeland Security, US Coast Guard

Department of the Interior, Fish and Wildlife Service*

Department of the Interior, Geological Survey - PIWS

Department of the Interior, National Parks Service

Department of the Navy, Pacific Division

Environmental Protection Agency, Region IX Pacific Islands

Department of Transportation, Federal Aviation Administration

Department of Transportation, Federal Highways Administration

Department of Transportation, Federal Transit Administration

**State Agencies**

Department of Accounting and General Services (DAGS)*

Department of Agriculture

Department of Business Economic Development & Tourism (DBEDT)

DBEDT, State Office of Planning

DBEDT, Strategic Industries Division

Department of Defense, Emergency Management/Civil Defense

Department of Hawaiian Home Lands

DOH, Environmental Health Administration

DOH, Solid and Hazardous Waste Branch*

DOH, Wastewater Branch*

Department of Education

Department of Land & Natural Resources

DLNR SHPD

Department of Transportation*

Office of Hawaiian Affairs

University of Hawaii, Environmental Center

University of Hawaii, Marine Program

University of Hawaii, Capital Improvement

University of Hawaii, Water Resources Research Center

**County Agencies**

Board of Water Supply*

City and County of Honolulu Fire Department*

City and County of Honolulu Police Department*

City and County of Honolulu Department of Design and Construction*

City and County of Honolulu Department of Environmental Services

City and County of Honolulu Department of Facility Maintenance*

City and County of Honolulu Department of Community Services*

City and County of Honolulu Department of Parks and Recreation

City and County of Honolulu Department of Planning and Permitting

City and County of Honolulu Department of Transportation Services

*Indicates a comment letter was received prior to completion of the Draft EA document.

# APPENDIX A

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Exhibit 1: Airport Hazards

There are no airports or airfields in the vicinity of the subject site.

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| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE: Airports and Airfields<br>EXHIBIT NUMBER: 1 |

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Exhibit 2: Coastal Barrier Resources

The site is not located within a coastal zone as noted by the Coastal Barrier Mapper

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| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE: Coastal Barrier Resources<br>EXHIBIT NUMBER: 2 |

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Exhibit 3: Flood Insurance

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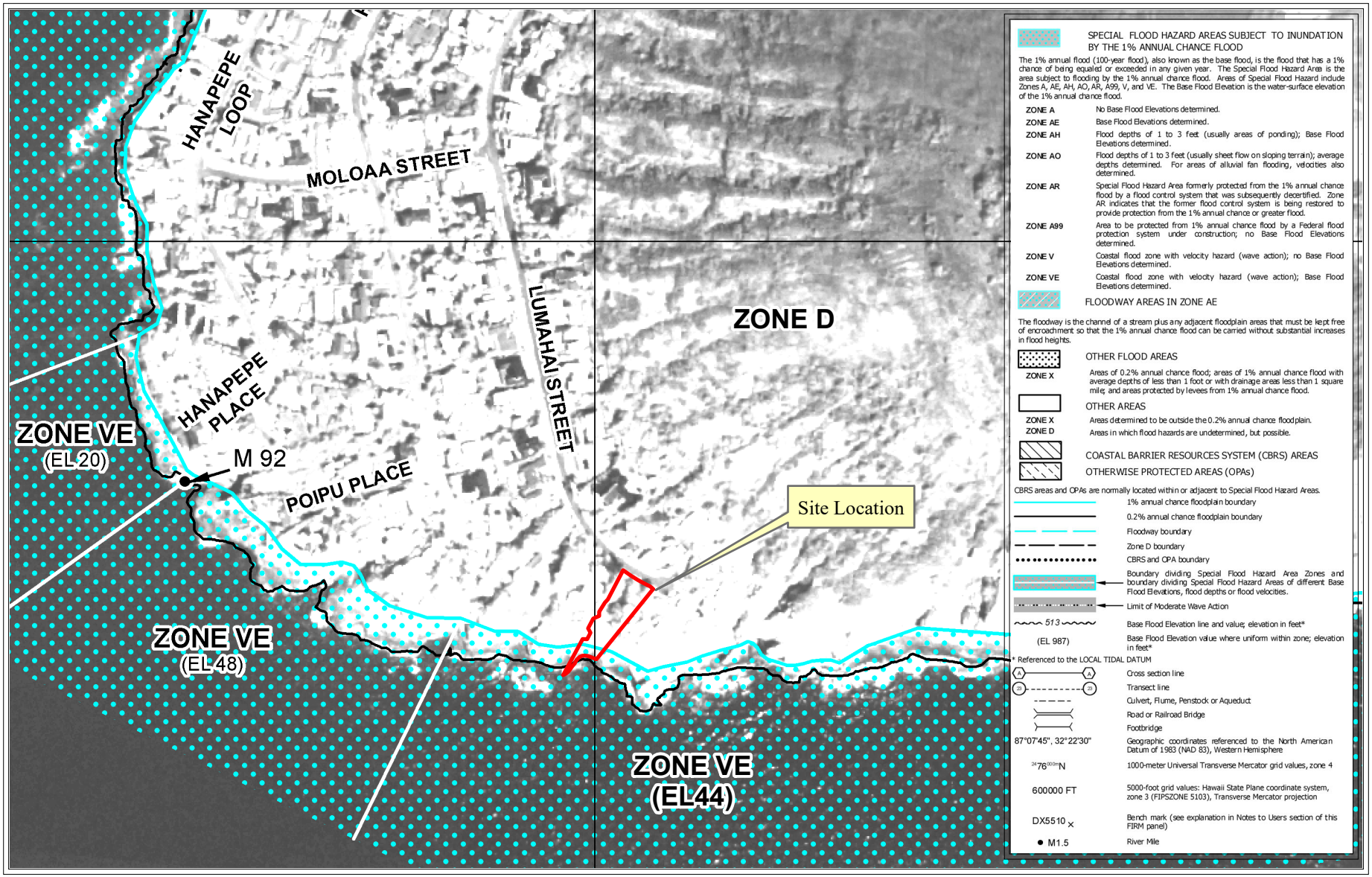


Environmental Risk Analysis

PROJECT NAME:
Environmental Assessment
4 Lumahai Street
Honolulu, Hawaii 96825
Tax Map Key 3-9-013:32

EXHIBIT TITLE: Flood Insurance Rate Map

EXHIBIT NUMBER: 3

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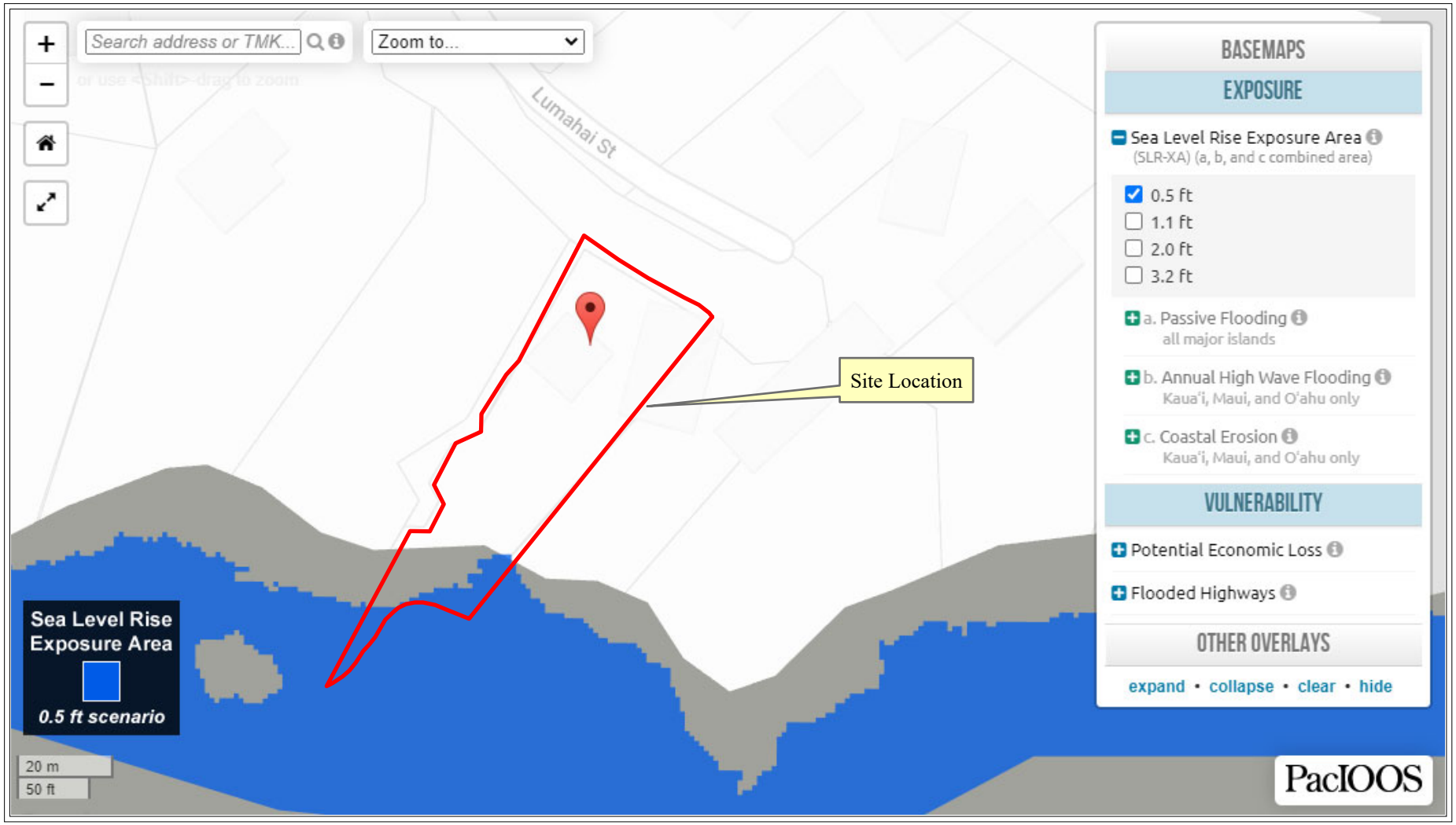


Source: State of Hawaii Sea Level Rise Viewer

| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE: Sea Level Rise Map<br>EXHIBIT NUMBER: 3 |

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| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE: Tsunami Inundation Zone Map<br>EXHIBIT NUMBER:<br>3 |

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Exhibit 4: Clean Air

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# State of Hawaii
# Annual Summary
# 2017
# Air Quality Data

**Bruce S. Anderson, Ph.D.**
Director of Health

**David Y. Ige**
Governor of Hawaii

State of Hawaii
Department of Health
March 2020

# 2017
# Hawaii Air Quality Data

## Contents

# List of Tables

# List of Figures

# 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 ($PM_{10}$ 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 Surveillance and Analysis 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 2017, for the most part, the state maintained 14 air monitoring stations on 4 islands. Most commercial, industrial, and transportation activities and their associated air quality effects occur on Oahu, where 4 of

the stations are located. The monitoring stations on Maui are mainly to measure the air quality impacts from 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 14 monitoring stations during calendar year 2017. 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 2017 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 are affecting communities on the island of Hawaii on a daily basis, the Department of Health has a website dedicated to displaying short term $SO_2$ data from stations located on the island. It provides near real-time 15-minute $SO_2$ 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 2015 and 2016 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
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Phone: (808)586-4200
Fax: (808)586-4359

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

| | |
|---|---|
| *98th Percentile Value* | 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. |
| *99th Percentile Value* | The maximum daily 1-hour $SO_2$ value in the year below which 99% of all values fall. |
| *Ambient Air* | The general outdoor atmosphere, external to buildings, to which the general public has access. |
| *Ambient Air Quality Standard* | 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. |
| *Carbon Monoxide* | 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. |
| *CFR* | 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. |
| *Collocated* | 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. |
| *Criteria Pollutants* | 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 $PM_{2.5}$). |
| *EPA* | The U. S. Environmental Protection Agency; established to protect human health and the natural environment. |

| | |
|---|---|
| *Hydrogen Sulfide* | Hydrogen sulfide ($H_2S$) 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. |
| *Micron* | One micron is one millionth of a meter or approximately 1/25,000 of an inch. |
| *$\mu g/m^3$* | Micrograms per cubic meter. This is the measurement of air quality expressed as mass per unit volume. |
| *NAAQS* | 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. |
| *NCore* | 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. |
| *Nitrogen Dioxide* | 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. |
| *Ozone* | 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. |
| *Particulate Matter* | 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. |

| | |
|---|---|
| *$PM_{10}$* | 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. |
| *$PM_{2.5}$* | 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. |
| *ppm* | Parts per million is one particle in 1,000,000 other particles. It is approximately one drop in 13 gallons. |
| *SLAMS* | State and Local Air Monitoring Stations. The Clean Air Act requires that every state establish a network of air monitoring stations for criteria pollutants. |
| *SPM* | 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. |
| *Sulfur Dioxide* | 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 major source of sulfur dioxide emissions is from the eruption of Kilauea Volcano on the Big Island. |
| *Vog* | 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<br>8-hour | 9 ppm<br>4.4 ppm | 35 ppm<br>9 ppm | None |
| **Nitrogen Dioxide ($NO_2$)** | 1-hour<br>Annual | ---<br>0.04 ppm | 0.100 ppm<br>0.053 ppm | ---<br>0.053 ppm |
| **$PM_{10}$** | 24-hour<br>Annual [c] | 150 µg/$m^3$<br>50 µg/$m^3$ | 150 µg/$m^3$<br>--- | ---<br>--- |
| **$PM_{2.5}$** | 24-hour<br>Annual | --- | 35 µg/$m^3$<br>12 µg/$m^3$ | 35 µg/$m^3$<br>15 µg/$m^3$ |
| **Ozone ($O_3$)** | 8-hour | 0.08 ppm | 0.070 ppm | 0.070 ppm |
| **Sulfur Dioxide ($SO_2$)** | 1-hour<br>3-hour<br>24-hour<br>Annual | ---<br>0.5 ppm<br>0.14 ppm<br>0.03 ppm | 0.075 ppm<br>---<br>---<br>--- | ---<br>0.5 ppm<br>---<br>--- |
| **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 $PM_{10}$ 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.

**$NO_2$ 1-hour:** The 3-year average of the 98$^{th}$ percentile daily maximum 1-hour averages must not exceed the standard.

**$NO_2$ Annual:** Average of all 1-hour values in the year may not exceed the level of the standard.

**$PM_{10}$ 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 98$^{th}$ 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.

**$SO_2$ 1-hour:** The 3-year average of the 99$^{th}$ percentile daily maximum 1-hour averages must not exceed the standard.

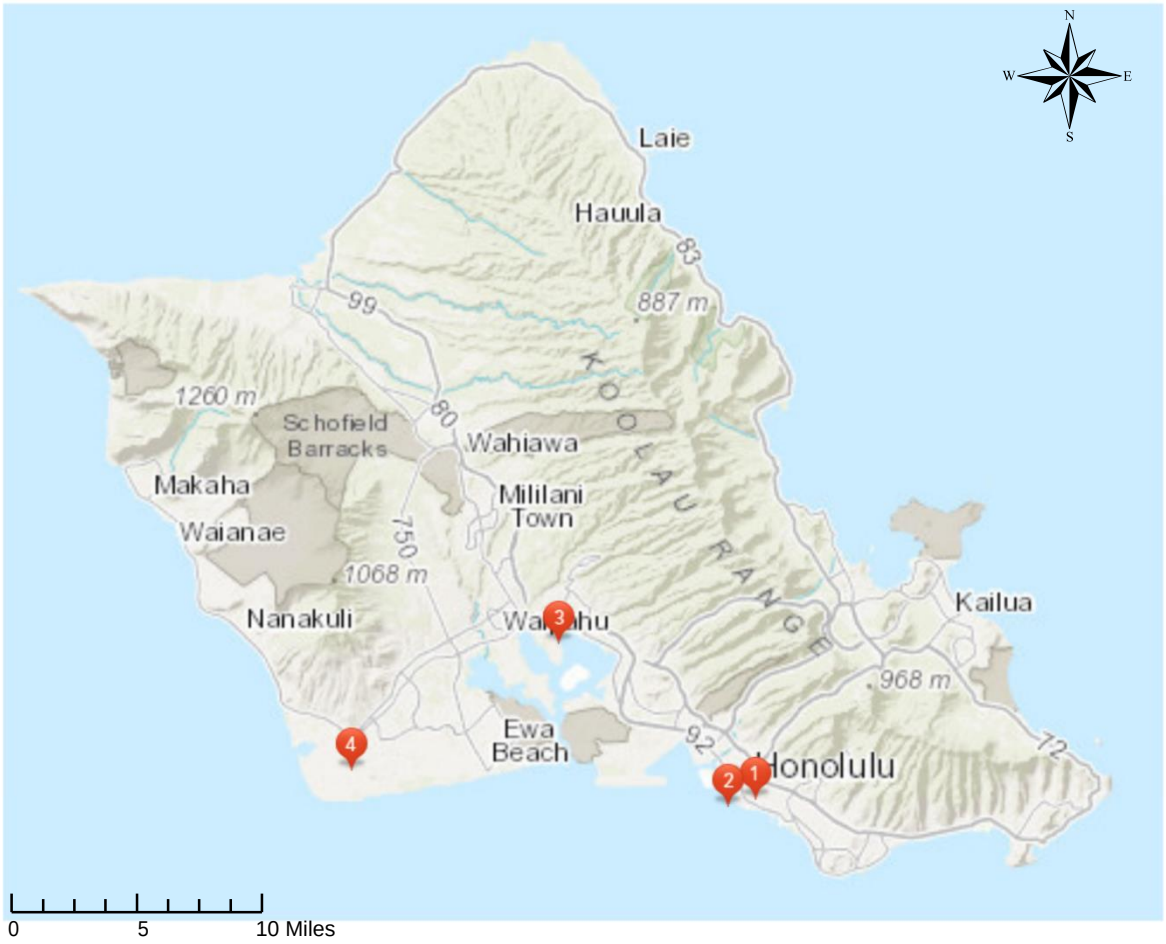
**$SO_2$ 3-hour:** Not be exceeded more than once per year.

**$SO_2$ 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 | 2052 Lauwiliwili St. | CO, $SO_2$, $NO_2$ |
| | Kapolei NCore | 2052 Lauwiliwili St. | CO $_{trace}$, $SO_{2\ trace}$, $NO/NO_y$, Pb, $O_3$, $PM_{2.5}$, $PM_{2.5}$ speciation, $PM_{10}$, $PM_{10-2.5}$, WS/WD |

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 4th 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 Waiau power plant and near the Pearl Harbor Naval Complex.

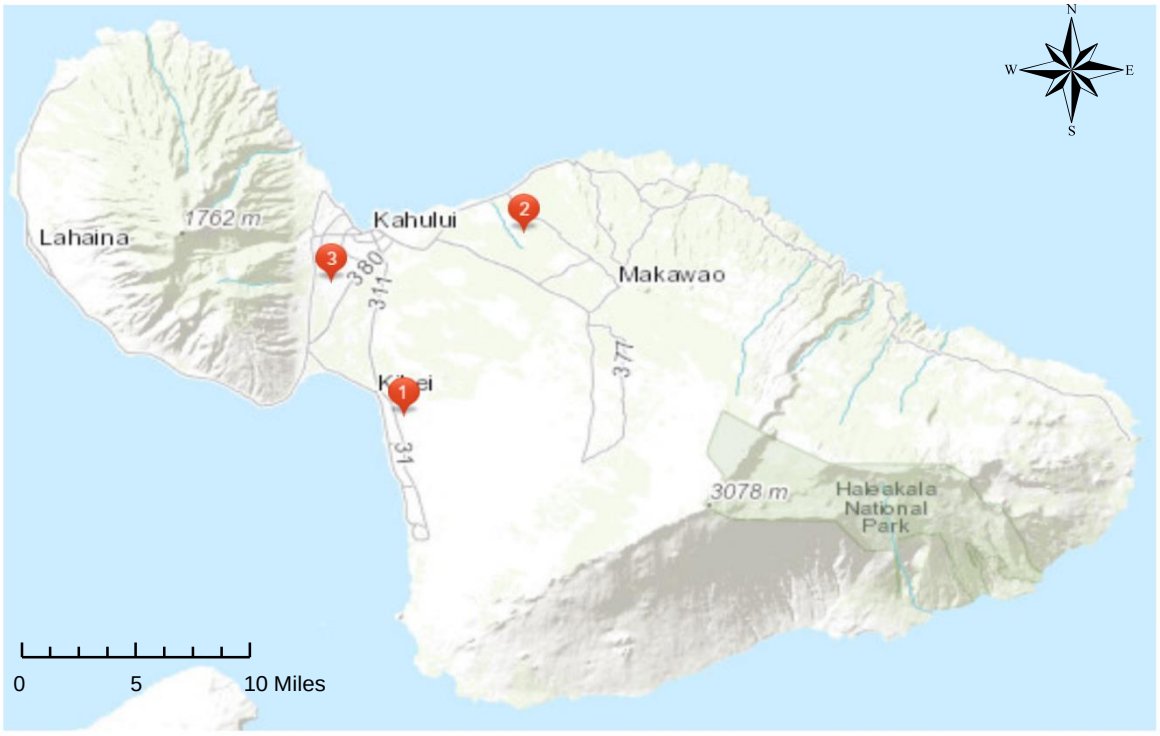
## Sand Island (SI)

| | |
|---|---|
| **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.

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




| Station | Name | Location | Pollutants Monitored |
|---|---|---|---|
| 1 | Kihei | Hale Piilani Park | $PM_{2.5}$ |
| 2 | Paia | TMK (2)-2-5-005-05 | $PM_{2.5}$ |
| 3 | 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:**

Located in a residential community park, next to agricultural land.

## Paia (PI)

| | |
|---|---|
| **Location:** | TMK (2)-2-5-005-05, Paia |
| **Latitude:** | 20.902031 |
| **Longitude:** | -156.370344 |
| **Altitude:** | 80.8 m |
| **Parameters:** | $PM_{2.5}$ |
| **Established:** | March 2014 |

**Brief Description:**

Located within a fenced area that contains a County of Maui water supply tank. The area is surrounded by residential and agricultural land with unharvested sugar cane fields north of the monitor (Station closed on March 31, 2017).

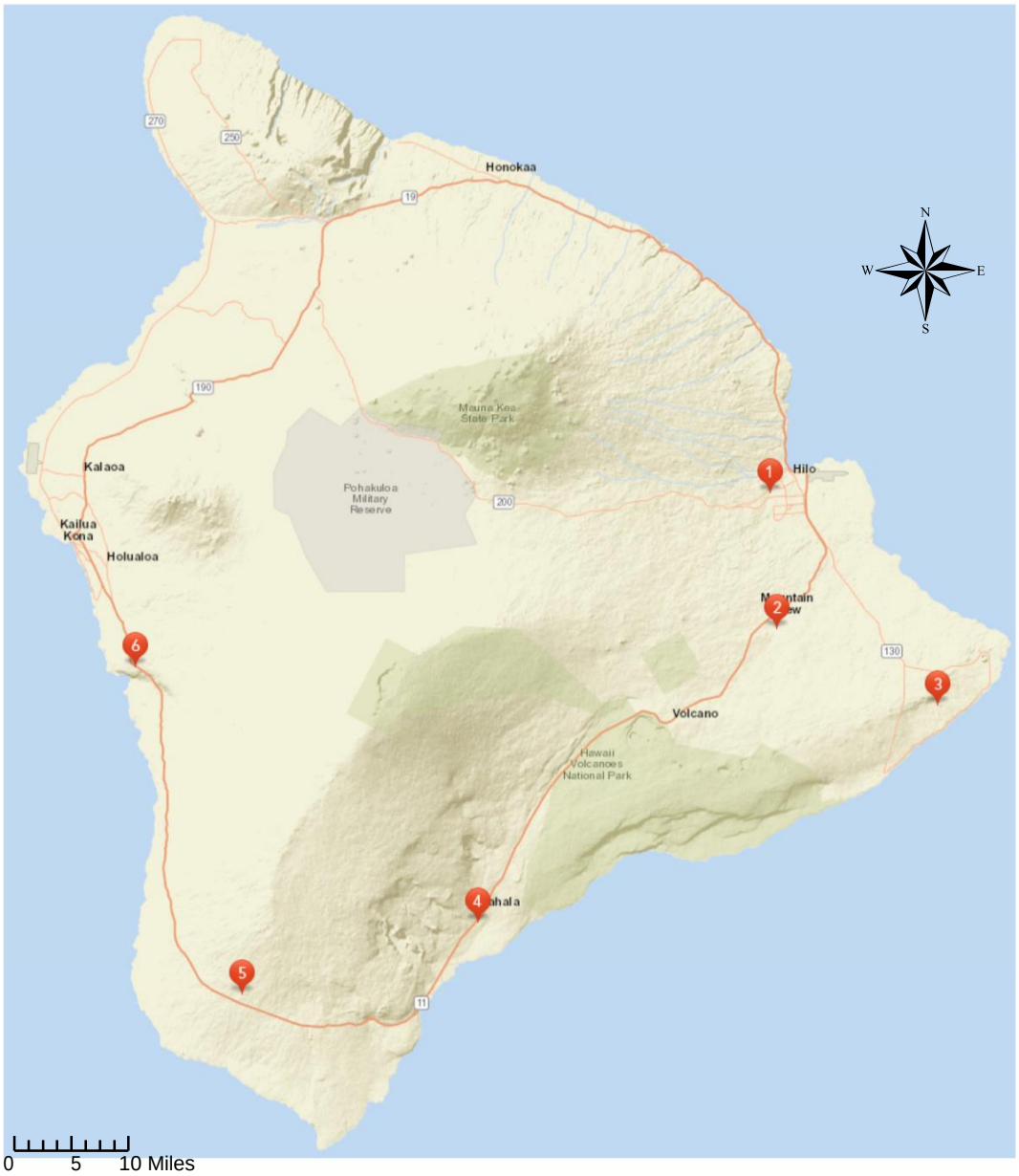
## Kahului (KL)

| | |
|---|---|
| **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:**

Located within a fenced area off of Mauilani Parkway, TMK 2-3-8-007-153. The area is surrounded primarily by residential land.

## 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 | Mountain View | 18-1235 Volcano Rd. | $SO_2$, $PM_{2.5}$ |
| 3 | Puna E | TMK (3)-1-3-28-37 (Leilani) | $H_2S$, $SO_2$ |
| 4 | Pahala | 96-3150 Pikake St. | $SO_2$, $PM_{2.5}$ |
| 5 | Ocean View | 92-6091 Orchid Mauka Circ. | $SO_2$, $PM_{2.5}$ |
| 6 | Kona | 81-1043 Konawaena School Rd. | $SO_2$, $PM_{2.5}$ |

## Hilo (HL)

| | |
|---|---|
| **Location:** | 1099 Waianuenue 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. | |

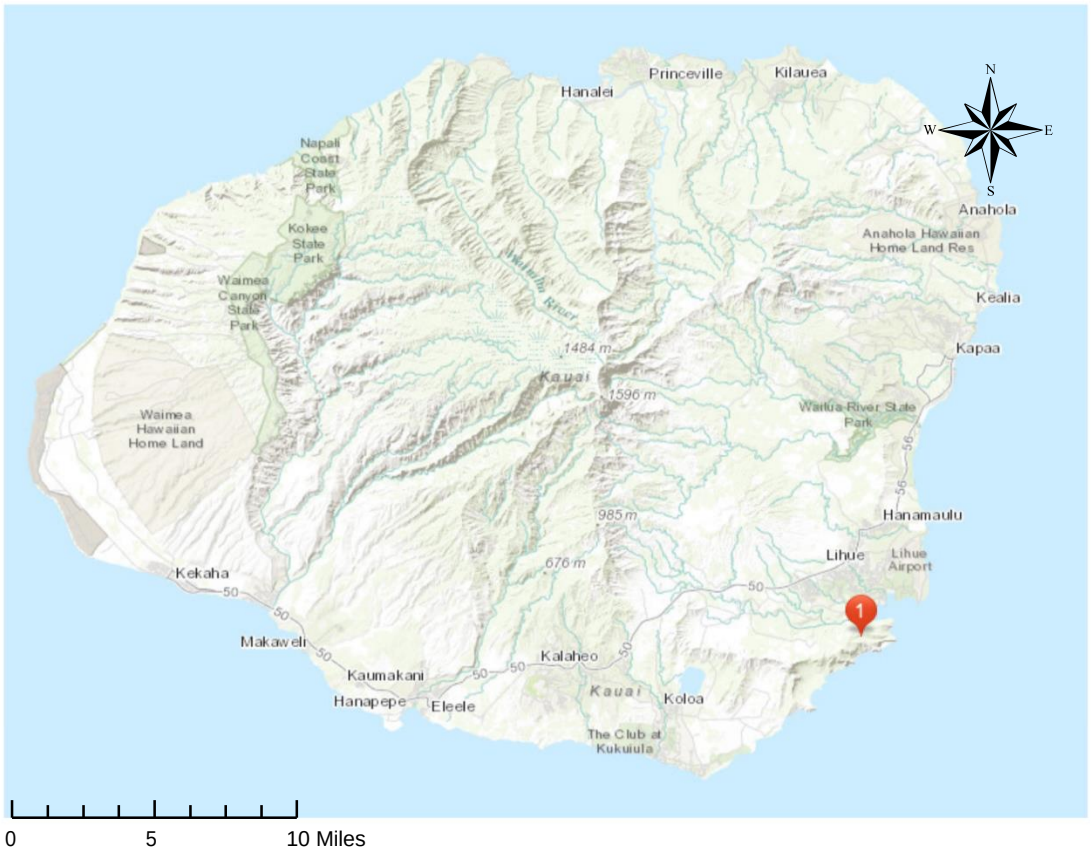
## Ocean View (OV)

| | |
|---|---|
| **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. | |

| Puna E (PE) | | |
|---|---|---|
|  | **Location:** | 13-763 Leilani Ave., Pahoa |
| | **Latitude:** | 19.46399 |
| | **Longitude:** | -154.89871 |
| | **Altitude:** | 207.9 m |
| | **Parameters:** | $SO_2$, $H_2S$ |
| | **Established:** | March 1991 |
| | **Brief Description:** | |
| | Located in the Leilani Estates residential subdivision, this station monitors for emissions from the geothermal energy facility approximately 1 mile to the northeast. The station also monitored for $SO_2$ emissions from the volcano during southwesterly wind conditions, until January 25, 2017, when $SO_2$ monitoring was discontinued. | |

## 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**

| | Pollutants Monitored and Station Type | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **SITE** | **$PM_{10}$** | **$PM_{2.5}$** | **CO** | **$O_3$** | **$SO_2$** | **$NO_2$** | **$H_2S$** | **Lead** | **MONITORING OBJECTIVE** | **LOCATION SETTING** |
| **OAHU** | | | | | | | | | | |
| Honolulu | S | S | S | - | S | - | - | - | Population Exposure | Urban and Center City |
| Kapolei [1] | S | S,C | S | S | S | S | - | S,C | Population Exposure | Suburban |
| Pearl City | S | S | - | - | - | - | - | - | Population Exposure | Urban and Center City |
| Sand Island | - | S | - | S | - | - | - | - | Maximum Concentration ($O_3$)<br>Transport ($PM_{2.5}$) | Urban and Center City |
| **MAUI** | | | | | | | | | | |
| Kihei | - | S | - | - | - | - | - | - | Source Impact (agricultural burning) | Suburban |
| Paia [2] | - | SPM | - | - | - | - | - | - | Source Impact (agricultural burning) | Neighborhood |
| Kahului | | SPM | - | - | - | - | - | - | Source Impact (agricultural burning) | Neighborhood |
| **HAWAII** | | | | | | | | | | |
| Hilo | - | SPM | - | - | S | - | - | - | Population Exposure | Suburban |
| Kona | - | SPM | - | - | S | - | - | - | Population Exposure ($SO_2$)/<br>Maximum concentration ($PM_{2.5}$) | Suburban |
| Mountain View | - | SPM | - | - | SPM | - | - | - | Source Impact | Suburban |
| Ocean View | - | SPM | - | - | SPM | - | - | - | Welfare Impact ($SO_2$)/<br>Source Impact ($PM_{2.5}$) | Rural |
| Pahala | - | SPM | - | - | SPM | - | - | - | Maximum concentration ($SO_2$)/<br>Source Impact ($PM_{2.5}$) | Rural |
| Puna E | - | - | - | - | SPM [3] | - | SPM | - | Source Impact (geothermal and volcano) | Suburban |
| **KAUAI** | | | | | | | | | | |
| Niumalu | - | 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]Paia was discontinued March 31, 2017.
[3]Monitoring for $SO_2$ was discontinued January 25, 2017.

# 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 | $H_2S$ Continuous Pulsed Fluorescence Ambient Air Analyzer | Lead 1 in 6 Days Total Suspended Particulate Monitor |
|---|---|---|---|---|---|---|---|---|---|
| **OAHU** | | | | | | | | | |
| Honolulu | ■ | | ■ | ■ | ■ | | | | |
| Kapolei | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ |
| Pearl City | ■ | | ■ | | | | | | |
| Sand Island | | | ■ | | | ■ | | | |
| **MAUI** | | | | | | | | | |
| Kihei | | | ■ | | | | | | |
| Paia | | | ■ | | | | | | |
| Kahului | | | ■ | | | | | | |
| **HAWAII** | | | | | | | | | |
| Hilo | | | ■ | | ■ | | | | |
| Kona | | | ■ | | ■ | | | | |
| Mt. View | | | ■ | | ■ | | | | |
| Ocean View | | | ■ | | ■ | | | | |
| Pahala | | | ■ | | ■ | | | | |
| Puna E | | | | | ■ | | | ■ | |
| **KAUAI** | | | | | | | | | |
| Niumalu | | | ■ | | ■ | | ■ | | |

# Section 4
# 2017 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 Surveillance and Analysis Section to ensure that the reported data is of good quality and meets all quality control and assurance requirements.

The monitoring stations in communities near the volcano record higher levels of $SO_2$ and $PM_{2.5}$, with regular exceedances of the NAAQS for $SO_2$ and occasional exceedances of the NAAQS for $PM_{2.5}$. The EPA considers the volcano a natural, uncontrollable event and therefore the state is requesting exclusion of these NAAQS exceedances from attainment/non-attainment determination.

Excluding the exceedances due to the volcano, in 2017 the State of Hawaii was in attainment of all NAAQS.

**Explanation of Summary Tables 4-1 through 4-18:**

- 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 $H_2S$ standard (there is no federal $H_2S$ 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 $98^{th}$ percentile concentrations are provided and for $O_3$, the $4^{th}$ 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 4-19 through 4-29:**

- 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. 2017 Summary of the 24-Hour $PM_{10}$ Averages

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 150 µg/m$^3$ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | | | | | | | | | | | | | | | | | | |
| Honolulu | 31 | 29 | 11.8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 345 | 94.5 |
| Kapolei | 39 | 36 | 13.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 352 | 96.4 |
| Pearl City | 39 | 38 | 15.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 350 | 95.9 |



## Table 4-2. Attainment Determination of the 24-Hour $PM_{10}$ NAAQS

| Station | Exceedances in 2015 | Exceedances in 2016 | Exceedances in 2017 | 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.<br>**In 2017, Hawaii was in attainment with the 24-hour $PM_{10}$ NAAQS.** | | | | |

## Table 4-3. 2017 Summary of the 24-Hour $PM_{2.5}$ Averages: SLAMS Stations

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 35 µg/m³ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 98th % | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | | | | | | | | | | | | | | | | | | |
| Honolulu | 16.0 | 9.8 | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 355 | 97.3 |
| Kapolei | 15.5 | 9.6 | 4.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 312 | 85.5 |
| Pearl City | 18.2 | 14.1 | 4.4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 358 | 98.1 |
| Sand Island | 16.1 | 10.0 | 3.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 354 | 97.0 |
| **MAUI** | | | | | | | | | | | | | | | | | | |
| Kihei | 29.1 | 11.3 | 4.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 349 | 95.6 |

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

| Station | 2015 98th value | 2016 98th value | 2017 98th value | 3-Year Average | Sites in violation of the NAAQS |
|---|---|---|---|---|---|
| Honolulu | 10 | 11 | 10 | 10 | 0 |
| Kapolei | 14 | 11[1] | 10[1] | 12 | 0 |
| Pearl City | 11 | 12 | 14 | 12 | 0 |
| Sand Island | 12 | 13 | 10 | 12 | 0 |
| Kihei | 13 | 12 | 11 | 12 | 0 |
| Attainment: The 3-year average of the 98th percentile values must be less than or equal to 35 µg/m³. **In 2017, Hawaii was in attainment with the 24-hour $PM_{2.5}$ NAAQS.** | | | | | |

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

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

| Station | 2015 Ann. Avg. | 2016 Ann. Avg. | 2017 Ann. Avg. | 3-Year Average | Sites in violation of the NAAQS |
|---|---|---|---|---|---|
| Honolulu | 3.7 | 2.1 | 3.0 | 2.9 | 0 |
| Kapolei | 4.1 | 4.0[1] | 4.3[1] | 4.1 | 0 |
| Pearl City | 5.2 | 2.6 | 4.4 | 4.1 | 0 |
| Sand Island | 5.4 | 4.0 | 3.0 | 4.1 | 0 |
| Kihei | 4.7 | 3.7 | 4.1 | 4.2 | 0 |
| Attainment: The 3-year average of annual mean values must be less than 15 µg/m³. **In 2017, Hawaii was in attainment with the annual $PM_{2.5}$ NAAQS.** | | | | | |

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

## Table 4-6. 2017 Summary of the 24-Hour $PM_{2.5}$ Averages: SPM Stations

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 35 µg/m³ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 98th% | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **HAWAII** | | | | | | | | | | | | | | | | | | |
| Hilo | 34.1 | 23.4 | 9.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 357 | 97.8 |
| Kona | 26.9 | 23.8 | 9.3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 339 | 92.9 |
| Mt. View[1] | 15.2 | 10.9 | 2.5 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 253 | 69.3 |
| Ocean View | 25.5 | 23.5 | 10.9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 358 | 98.1 |
| Pahala | 21.1 | 13.9 | 5.1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 355 | 97.3 |
| **KAUAI** | | | | | | | | | | | | | | | | | | |
| Niumalu | 13.2 | 9.0 | 2.6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 350 | 95.9 |
| **MAUI** | | | | | | | | | | | | | | | | | | |
| Kahului | 13.4 | 9.9 | 4.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 322 | 88.2 |
| Paia[2] | 14.2 | 13.8 | 4.6 | 0 | 0 | 0 | - | - | - | - | - | - | - | - | - | 90 | 90 | 100.0 |

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 stations on Maui were established to monitor emissions from agricultural burning.

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.
[2]Paia was closed March 31, 2017.

## Table 4-7. 2017 Summary of the 8-Hour $O_3$ Averages

| | Maximum | | | Annual Mean | No. of Daily Maximum 8-Hour Averages Greater than 0.070 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | 4th High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | | | | | | | | | | | | | | | | | | | |
| Sand Island | 0.050 | 0.050 | 0.049 | 0.029 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 8080 | 92.3 |
| Kapolei | 0.052 | 0.051 | 0.049 | 0.030 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 7435 | 84.9 |

## Table 4-8. Attainment Determination of the 8-Hour $O_3$ NAAQS

| Station | 2015 4th highest | 2016 4th highest | 2017 4th highest | 3-Year Average | Site in violation of the NAAQS |
|---|---|---|---|---|---|
| Sand Island | 0.049 | 0.048 | 0.049 | 0.049 | 0 |
| Kapolei | 0.049 | 0.048 | 0.049 | 0.049 | 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 2017, Hawaii was in attainment with the 8-hour $O_3$ NAAQS.** | | | | | |

## Table 4-9. 2017 Summary of the 1-Hour and Annual $NO_2$ Averages

| | Maximum 1-hr | | Annual Mean | No. of Daily Maximum 1-Hour Averages Greater than 0.100 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 98th% | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS stations** | | | | | | | | | | | | | | | | | |
| Kapolei | 0.041 | 0.033 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8250 | 94.2 |
| **KAUAI** | **SPM Station** | | | | | | | | | | | | | | | | | |
| Niumalu[1] | 0.038 | 0.031 | 0.002 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 5979 | 68.3[1] |
| Attainment of the annual $NO_2$ NAAQS: The annual mean shall not exceed 0.053 ppm. **In 2017, Hawaii was in attainment with the annual $NO_2$ NAAQS.** | | | | | | | | | | | | | | | | | | |

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

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

| Station | 2015 98th value | 2016 98th value | 2017 98th value | 3-Year Average | Site in violation of the NAAQS |
|---|---|---|---|---|---|
| Kapolei | 0.022 | 0.029 | 0.033 | 0.028 | 0 |
| Attainment: The 3-year average of the 98th percentile values must be less than or equal to 0.100 ppm. **In 2017, Hawaii was in attainment with the 1-hour $NO_2$ NAAQS.** | | | | | |

## 4-11. 2017 Summary of the 1-Hour $SO_2$ Averages

| | Maximum | | Annual Mean | No. of 1-hour Averages Greater than 0.075 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 99th% | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS Stations** | | | | | | | | | | | | | | | | | |
| Honolulu | 0.008 | 0.004 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8066 | 92.1 |
| Kapolei | 0.012 | 0.008 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8234 | 94.0 |
| **HAWAII** | **SPM Stations (see NOTE)** | | | | | | | | | | | | | | | | | |
| Hilo | 0.668 | 0.359 | 0.005 | 6 | 3 | 2 | 2 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 8760 | 8068 | 92.1 |
| Kona | 0.146 | 0.041 | 0.004 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8580 | 97.9 |
| Mt. View[1] | 0.503 | 0.269 | 0.003 | 0 | 0 | 4 | 3 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 3 | 8760 | 7252 | 82.8 |
| Ocean View | 0.739 | 0.480 | 0.016 | 13 | 11 | 14 | 14 | 17 | 7 | 8 | 6 | 7 | 5 | 9 | 12 | 8760 | 8556 | 97.7 |
| Pahala | 0.858 | 0.674 | 0.035 | 25 | 22 | 15 | 15 | 23 | 20 | 23 | 19 | 17 | 15 | 17 | 18 | 8760 | 8416 | 96.1 |
| Puna E[2] | 0.012 | 0.012 | 0.003 | 0 | - | - | - | - | - | - | - | - | - | - | - | 600 | 586 | 97.7 |
| **KAUAI** | **SPM Station** | | | | | | | | | | | | | | | | | |
| Niumalu | 0.003 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8164 | 93.2 |

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 2017, Hawaii was in attainment with the 1-hour $SO_2$ NAAQS (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 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.
[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-12. Attainment Determination of the 1-Hour $SO_2$ NAAQS: SLAMS Stations

| | 2015 99th value | 2016 99th value | 2017 99th value | 3-Year Average | Violation of the NAAQS |
|---|---|---|---|---|---|
| **OAHU SLAMS stations** | | | | | N= NO<br>Y= YES |
| Honolulu | 0.010 | 0.007 | 0.004 | 0.007 | N |
| Kapolei | 0.013 | 0.008 | 0.008 | 0.010 | N |
| **HAWAII SPM stations (SEE note)** | | | | | |
| Hilo | 0.236 | 0.313 | 0.359 | 0.303 | Y |
| Kona | 0.031 | 0.044[1] | 0.041 | 0.039 | N |
| Mt. View | 0.276 | 0.251[1] | 0.269 | 0.265 | Y |
| Ocean View | 0.382 | 0.532 | 0.480 | 0.465 | Y |
| Pahala | 0.496 | 0.558 | 0.674 | 0.576 | Y |
| Puna E[2] | 0.015 | 0.041 | 0.012[2] | 0.023 | N |
| **KAUAI SPM station** | | | | | |
| Niumalu | 0.014 | 0.008[1] | 0.002 | 0.008 | N |

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 2017, Hawaii was in attainment with the 1-hour $SO_2$ NAAQS (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 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.

[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-13. 2017 Summary of the 3-Hour $SO_2$ Averages

| | Maximum | | Annual Mean | No. of 3-hour Averages Greater than 0.5 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS stations** | | | | | | | | | | | | | | | | | |
| Honolulu | 0.004 | 0.004 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2633 | 90.2 |
| Kapolei | 0.006 | 0.006 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2667 | 91.3 |
| **HAWAII** | **SPM stations (see NOTE)** | | | | | | | | | | | | | | | | | |
| Hilo | 0.565 | 0.322 | 0.005 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2616 | 89.6 |
| Kona | 0.091 | 0.074 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2749 | 94.1 |
| Mt. View[1] | 0.329 | 0.174 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2318 | 79.4 |
| Ocean View | 0.563 | 0.367 | 0.016 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2741 | 93.9 |
| Pahala | 0.594 | 0.483 | 0.035 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2713 | 92.9 |
| Puna E[2] | 0.008 | 0.007 | 0.003 | 0 | - | - | - | - | - | - | - | - | - | - | - | 200 | 186 | 93.0 |
| **KAUAI** | **SPM station** | | | | | | | | | | | | | | | | | |
| Niumalu | 0.003 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2920 | 2678 | 91.7 |

Attainment: 3-hour values not to exceed 0.5 ppm more than once per year.
**In 2017, Hawaii was in attainment with the 3-hour $SO_2$ NAAQS (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 3-hour NAAQS from attainment determinations.

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.
[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-14. 2017 Summary of the 24-Hour and Annual $SO_2$ Averages

| | Maximum | | Annual Mean | No. of 24-hour Averages Greater than 0.140 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS Stations** | | | | | | | | | | | | | | | | | |
| Honolulu | 0.002 | 0.002 | 0.000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 339 | 92.9 |
| Kapolei | 0.003 | 0.003 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 353 | 96.7 |
| **HAWAII** | **SPM Stations (see NOTE)** | | | | | | | | | | | | | | | | | |
| Hilo | 0.110 | 0.095 | 0.005 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 357 | 97.8 |
| Kona | 0.029 | 0.015 | 0.004 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 365 | 100.0 |
| Mt. View[1] | 0.080 | 0.053 | 0.003 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 306 | 83.8 |
| Ocean View | 0.136 | 0.101 | 0.016 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 365 | 100.0 |
| Pahala | 0.153 | 0.141 | 0.035 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 360 | 98.6 |
| Puna E[2] | 0.006 | 0.004 | 0.003 | 0 | - | - | - | - | - | - | - | - | - | - | - | 25 | 25 | 100.0 |
| **KAUAI** | **SPM Station** | | | | | | | | | | | | | | | | | |
| Niumalu | 0.002 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 365 | 338 | 92.6 |

Attainment: 24-hour values not to exceed 0.14 ppm more than once per year.
**In 2017, Hawaii was in attainment of the state 24-hour $SO_2$ 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 2017, Hawaii was in attainment of the state annual $SO_2$ 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.
[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-15. 2017 Summary of the 1-Hour CO Averages

| | Maximum | | Annual Mean | No. of 1-hour Averages Greater than 35 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS stations** | | | | | | | | | | | | | | | | | |
| Honolulu | 1.4 | 1.3 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8156 | 93.1 |
| Kapolei | 1.7 | 1.7 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8760 | 8207 | 93.7 |

Attainment: 1-hour values not to exceed 35 ppm more than once per year.
**In 2017, Hawaii was in attainment with the 1-hour CO NAAQS.**

## Table 4-16. 2017 Summary of the 8-Hour CO Averages

| | Maximum | | Annual Mean | No. of 8-hour Averages Greater than 9 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **OAHU** | **SLAMS stations** | | | | | | | | | | | | | | | | | |
| Honolulu | 0.9 | 0.9 | 0.5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 7858 | 89.8 |
| Kapolei | 1.1 | 1.0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8755 | 7968 | 91.0 |

Attainment: 8-hour values not to exceed 9 ppm more than once per year.
**In 2017, Hawaii was in attainment with the 8-hour CO NAAQS.**

## Table 4-17. 2017 Summary of the 1-Hour $H_2S$ Averages (State Standard)

| | Maximum | | Annual Mean | No. of 1-hour Averages Greater than 0.025 ppm | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Possible Periods | Valid Periods | Percent Recovery |
| **HAWAII** | | | | | | | | | | | | | | | | | | |
| Puna E | 0.002 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8264 | 8760 | 94.3 |

Attainment of the state standard: 1-hour values not to exceed 0.025 ppm.
**In 2017, Hawaii was in attainment of the state 1-hour $H_2S$ standard.**

## Table 4-18. 2017 Summary of the Rolling 3-Month Lead Averages

| | Maximum | | Annual Mean | No. of 3-Month Averages Greater than 0.15 µg/m$^3$ | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Rolling 3-Month period ending in the month of | | | | | | | | | | | | Possible Periods | Valid Periods | Percent Recovery |
| | 1st High | 2nd High | All Hours | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | |
| **HAWAII** | | | | | | | | | | | | | | | | | | |
| Kapolei | 0.036 | 0.002 | 0.001 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 61 | 57 | 93.4 |
| Attainment: Maximum 3-month average concentration for a 3-year period must be less than or equal to 0.15 µg/m$^3$. Note: Sampling for lead conducted 1 in 6 days. Sampling began 1/1/2012. | | | | | | | | | | | | | | | | | | |

## Table 4-19. 2017 Monthly Maximum of 24-Hour $PM_{10}$ Values (µg/m$^3$)

The month with the highest value in the year is highlighted *The state and federal 24-hr $PM_{10}$ standard is 150 µg/m$^3$*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Honolulu | 31 | 29 | 21 | 23 | 18 | 18 | 19 | 17 | 18 | 18 | 16 | 26 |
| Kapolei | 39 | 36 | 22 | 22 | 20 | 20 | 18 | 18 | 17 | 19 | 24 | 27 |
| Pearl City | 39 | 34 | 26 | 26 | 22 | 20 | 21 | 18 | 20 | 24 | 23 | 27 |

## Table 4-20. 2017 Monthly Maximum of 24-Hour $PM_{2.5}$ Values ($\mu g/m^3$)

The month with the highest value in the year is highlighted *The federal 24-hr $PM_{2.5}$ standard is 35 $\mu g/m^3$*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SLAMS Stations** | | | | | | | | | | | | |
| Honolulu | 10.2 | 16.0 | 15.7 | 9.0 | 6.1 | 5.1 | 4.6 | 4.9 | 3.8 | 14.4 | 10.7 | 8.9 |
| Kapolei[1] | 5.2 | 11.0 | 15.5 | 9.5 | 6.6 | 6.0 | 5.5 | 5.7 | 6.9 | 13.7 | 12.9 | 9.6 |
| Pearl City | 15.6 | 16.2 | 18.2 | 8.9 | 6.5 | 5.0 | 5.2 | 6.0 | 8.2 | 14.3 | 16.1 | 13.4 |
| Sand Island | 11.2 | 14.9 | 16.1 | 6.7 | 4.8 | 3.6 | 4.4 | 5.6 | 6.1 | 13.8 | 9.7 | 7.7 |
| Kihei | 26.2 | 15.8 | 12.1 | 7.1 | 9.0 | 29.1 | 10.1 | 5.1 | 6.4 | 10.9 | 11.3 | 10.1 |
| **SPM Stations** | | | | | | | | | | | | |
| Niumalu (cruise ships) | 13.2 | 9.3 | 10.2 | 7.7 | 6.8 | 6.3 | 11.2 | 6.9 | 3.0 | 5.9 | 7.1 | 11.1 |
| Hilo (volcano) | 25.0 | 34.1 | 25.5 | 24.1 | 20.1 | 21.4 | 12.2 | 8.7 | 8.2 | 14.3 | 10.1 | 14.5 |
| Kahului[1] | 3.7 | 13.4 | 6.5 | 8.0 | 8.1 | 7.2 | 8.5 | 9.7 | 8.5 | 11.2 | 13.0 | 10.0 |
| Kona (volcano) | 26.9 | 26.2 | 20.0 | 22.2 | 16.2 | 12.2 | 8.3 | 10.5 | 10.2 | 10.1 | 11.8 | 13.1 |
| Mt. View (volcano)[1] | - | - | 4.7 | 11.1 | 6.6 | 6.2 | 5.7 | 1.9 | 5.3 | 13.0 | 11.5 | 15.2 |
| Ocean View (volcano) | 25.5 | 24.7 | 23.5 | 21.3 | 7.6 | 12.2 | 14.7 | 15.7 | 19.4 | 18.6 | 17.8 | 15.5 |
| Pahala (volcano) | 21.1 | 15.5 | 13.9 | 12.3 | 7.5 | 7.6 | 11.6 | 7.5 | 10.6 | 7.5 | 13.2 | 15.3 |
| Paia (cane burning)[2] | 13.8 | 14.2 | 13.5 | - | - | - | - | - | - | - | - | - |

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

[2]Paia was discontinued March 31, 2017.

## Table 4-21. 2017 Monthly Maximum of 1-Hour $NO_2$ Values (ppm)

The month with the highest value in the year is highlighted *The federal 1-hour standard for $NO_2$ is 0.100 ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kapolei | 0.041 | 0.038 | 0.028 | 0.027 | 0.032 | 0.017 | 0.014 | 0.017 | 0.024 | 0.030 | 0.026 | 0.030 |
| Niumalu[1] | 0.032 | 0.032 | - | 0.020 | 0.029 | 0.016 | 0.016 | 0.014 | 0.020 | 0.002 | 0.035 | 0.038 |

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

## Table 4-22. 2017 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 9ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Honolulu | 1.4 | 1.0 | 1.1 | 0.9 | 1.1 | 0.5 | 0.6 | 0.8 | 1.0 | 1.0 | 1.0 | 0.9 |
| Kapolei | 0.7 | 0.7 | 0.7 | 0.4 | 0.1 | 0.5 | 0.6 | 0.7 | 0.6 | 0.8 | 0.7 | 1.7 |



## Table 4-23. 2017 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 | 0.9 | 0.7 | 0.8 | 0.8 | 0.9 | 0.4 | 0.6 | 0.7 | 0.7 | 0.7 | 0.6 | 0.6 |
| Kapolei | 0.5 | 0.4 | 0.4 | 0.3 | -1.0 | 0.4 | 0.5 | 0.5 | 0.5 | 0.6 | 0.5 | 1.1 |

## 4-24. 2017 Monthly Maximum of 8-Hour $O_3$ Values (ppm)

The month with the highest value in the year is highlighted *The federal 8-hr $O_3$ standard is 0.070 ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sand Island | 0.047 | 0.050 | 0.042 | 0.050 | 0.044 | 0.037 | 0.029 | 0.030 | 0.034 | 0.045 | 0.046 | 0.046 |
| Kapolei NCore | 0.049 | 0.052 | 0.048 | 0.052 | 0.045 | 0.034 | 0.030 | 0.029 | 0.033 | 0.041 | 0.044 | 0.046 |

## Table 4-25. 2017 Monthly Maximum of 1-Hour $SO_2$ Values (ppm)

The month with the highest value in the year is highlighted *The federal 1-hr $SO_2$ standard is 0.075 ppm (75 ppb)*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SLAMS Stations** | | | | | | | | | | | | |
| Honolulu | 0.004 | 0.003 | 0.006 | 0.002 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.004 | 0.008 | 0.002 |
| Kapolei | 0.004 | 0.010 | 0.004 | 0.006 | 0.007 | 0.002 | 0.003 | 0.003 | 0.012 | 0.005 | 0.008 | 0.006 |
| **SPM Stations (see NOTE)** | | | | | | | | | | | | |
| Niumalu (cruise ships) | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 |
| Hilo (volcano) | 0.667 | 0.435 | 0.356 | 0.359 | 0.082 | 0.023 | 0.040 | 0.082 | 0.098 | 0.281 | 0.049 | 0.131 |
| Kona (volcano) | 0.146 | 0.041 | 0.015 | 0.026 | 0.014 | 0.017 | 0.021 | 0.018 | 0.029 | 0.024 | 0.048 | 0.033 |
| Mt. View (volcano)[1] | - | 0.041 | 0.464 | 0.503 | 0.304 | 0.002 | 0.012 | 0.028 | 0.060 | 0.190 | 0.057 | 0.126 |
| Ocean View (volcano) | 0.394 | 0.739 | 0.424 | 0.364 | 0.260 | 0.281 | 0.262 | 0.202 | 0.247 | 0.573 | 0.170 | 0.316 |
| Pahala (volcano) | 0.827 | 0.581 | 0.589 | 0.858 | 0.340 | 0.337 | 0.379 | 0.333 | 0.515 | 0.444 | 0.674 | 0.39 |
| Puna E (volcano)[2] | 0.0115 | - | - | - | - | - | - | - | - | - | - | - |

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 1-hour NAAQS from attainment determinations.

[1]Does not meet summary criteria, <75% data recovery in one or more quarters.

[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-26. 2017 Monthly Maximum of 3-Hour $SO_2$ Values (ppm)

The month with the highest value in the year is highlighted *The state and federal 3-hr $SO_2$ standard is 0.5 ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SLAMS Stations** | | | | | | | | | | | | |
| Honolulu | 0.003 | 0.002 | 0.004 | 0.001 | 0.001 | 0.001 | 0.000 | 0.001 | 0.001 | 0.003 | 0.004 | 0.002 |
| Kapolei | 0.003 | 0.005 | 0.003 | 0.005 | 0.003 | 0.002 | 0.002 | 0.003 | 0.006 | 0.004 | 0.006 | 0.004 |
| **SPM Stations (see NOTE)** | | | | | | | | | | | | |
| Niumalu (cruise ships) | 0.003 | 0.002 | 0.002 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 |
| Hilo (volcano) | 0.565 | 0.242 | 0.244 | 0.185 | 0.053 | 0.005 | 0.023 | 0.051 | 0.068 | 0.161 | 0.036 | 0.063 |
| Kona (volcano) | 0.091 | 0.026 | 0.012 | 0.022 | 0.011 | 0.014 | 0.018 | 0.015 | 0.022 | 0.022 | 0.040 | 0.031 |
| Mt. View (volcano)[1] | - | 0.030 | 0.329 | 0.174 | 0.127 | 0.001 | 0.007 | 0.008 | 0.042 | 0.107 | 0.034 | 0.092 |
| Ocean View (volcano) | 0.313 | 0.563 | 0.349 | 0.192 | 0.167 | 0.140 | 0.181 | 0.134 | 0.187 | 0.319 | 0.082 | 0.226 |
| Pahala (volcano) | 0.594 | 0.430 | 0.425 | 0.483 | 0.243 | 0.232 | 0.313 | 0.257 | 0.229 | 0.303 | 0.408 | 0.208 |
| Puna E (volcano)[2] | 0.008 | - | - | - | - | - | - | - | - | - | - | - |

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of $SO_2$ 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]Does not meet summary criteria, <75% data recovery in one or more quarters.

[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-27. 2017 Monthly Maximum of 24-Hour $SO_2$ Values (ppm)

The month with the highest value in the year is highlighted *The state 24-hr $SO_2$ standard is 0.14 ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SLAMS Stations** | | | | | | | | | | | | |
| Honolulu | 0.002 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 | 0.001 |
| Kapolei | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 | 0.003 | 0.003 | 0.002 | 0.001 |
| **SPM Stations (see NOTE)** | | | | | | | | | | | | |
| Niumalu (cruise ships) | 0.002 | 0.002 | 0.002 | 0.002 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.001 |
| Hilo (volcano) | 0.110 | 0.095 | 0.047 | 0.0477 | 0.011 | 0.004 | 0.008 | 0.014 | 0.020 | 0.032 | 0.009 | 0.020 |
| Kona (volcano) | 0.029 | 0.009 | 0.006 | 0.008 | 0.004 | 0.006 | 0.005 | 0.007 | 0.007 | 0.009 | 0.015 | 0.013 |
| Mt. View (volcano)[1] | - | 0.005 | 0.080 | 0.053 | 0.021 | 0.001 | 0.002 | 0.004 | 0.012 | 0.026 | 0.011 | 0.032 |
| Ocean View (volcano) | 0.096 | 0.136 | 0.101 | 0.051 | 0.040 | 0.043 | 0.0349 | 0.047 | 0.046 | 0.046 | 0.023 | 0.063 |
| Pahala (volcano) | 0.141 | 0.102 | 0.099 | 0.153 | 0.060 | 0.060 | 0.118 | 0.076 | 0.097 | 0.100 | 0.125 | 0.078 |
| Puna E (volcano)[2] | 0.006 | - | - | - | - | - | - | - | - | - | - | - |

NOTE: The SPM stations on Hawaii Island were established to monitor ambient air concentrations of $SO_2$ 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]Does not meet summary criteria, <75% data recovery in one or more quarters.

[2]$SO_2$ monitoring for Puna E was discontinued January 25, 2017.

## Table 4-28. 2017 Monthly Maximum of 1-Hour $H_2S$ Values (ppm)

The month with the highest value in the year is highlighted *The state 1-hour $H_2S$ standard is .025 ppm*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Puna E | 0.002 | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 | 0.002 | 0.001 | 0.002 | 0.002 | 0.002 |

## Table 4-29. 2017 Monthly Maximum of Rolling 3-Month Lead Values (µg/m$^3$)

The month with the highest value in the year is highlighted *The federal rolling 3-month lead standard is 0.15 µg/m$^3$*

| Station | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kapolei NCore (1 in 6 days) | 0.036 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.000 | 0.002 | 0.001 | 0.000 | 0.000 |

# Section 5
# 2017 $PM_{2.5}$ 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 | 1st High (µg/m³) | 2nd High (µg/m³) | Annual Mean (µg/m³) | No. of Samples | Percent Recovery |
|---|---|---|---|---|---|
| **CARBON** | | | | | |
| Organic Carbon | 0.773 | 0.745 | 0.2332 | 101 | 83 |
| Elemental Carbon | 0.332 | 0.244 | 0.0559 | 101 | 83 |
| **METALS** | | | | | |
| Aluminum | 0.102 | 0.080 | 0.0100 | 107 | 88 |
| Antimony | 0.046 | 0.040 | 0.0049 | 107 | 88 |
| Arsenic | 0.007 | 0.007 | 0.0006 | 107 | 88 |
| Barium | 0.088 | 0.077 | 0.0056 | 107 | 88 |
| Bromine | 0.007 | 0.007 | 0.0018 | 107 | 88 |
| Cadmium | 0.022 | 0.019 | 0.0008 | 107 | 88 |
| Calcium | 0.281 | 0.131 | 0.0493 | 107 | 88 |
| Cerium | 0.102 | 0.083 | 0.0099 | 107 | 88 |
| Cesium | 0.052 | 0.049 | 0.0035 | 107 | 88 |
| Chlorine | 1.756 | 1.724 | 0.5291 | 107 | 88 |
| Chromium | 0.057 | 0.019 | 0.0017 | 107 | 88 |
| Cobalt | 0.003 | 0.003 | 0.0000 | 107 | 88 |
| Copper | 0.009 | 0.008 | 0.0027 | 107 | 88 |
| Indium | 0.024 | 0.022 | -0.0004 | 107 | 88 |
| Iron | 0.185 | 0.107 | 0.0288 | 107 | 88 |
| Lead | 0.021 | 0.019 | 0.0010 | 107 | 88 |
| Magnesium | 0.215 | 0.199 | 0.0393 | 107 | 88 |
| Manganese | 0.004 | 0.004 | 0.0002 | 107 | 88 |
| Nickel | 0.021 | 0.019 | 0.0045 | 107 | 88 |
| Phosphorus | 0.005 | 0.004 | 0.0003 | 107 | 88 |
| Potassium | 0.205 | 0071 | 0.0342 | 107 | 88 |
| Rubidium | 0.009 | 0.009 | 0.0001 | 107 | 88 |
| Selenium | 0.007 | 0.006 | 0.0003 | 107 | 88 |
| Silicon | 0.159 | 0.141 | 0.0370 | 107 | 88 |
| Silver | 0.026 | 0.021 | 0.0016 | 107 | 88 |
| Sodium | 1.300 | 1.135 | 0.3884 | 107 | 88 |
| Strontium | 0.008 | 0.007 | 0.0010 | 107 | 88 |
| Sulfur | 2.848 | 2.344 | 0.3246 | 107 | 88 |
| Tin | 0.068 | 0.039 | 0.0043 | 107 | 88 |
| Titanium | 0.009 | 0.009 | 0.0025 | 107 | 88 |
| Vanadium | 0.024 | 0.019 | 0.0041 | 107 | 88 |
| Zinc | 0.011 | 0.006 | 0.0016 | 107 | 88 |
| Zirconium | 0.031 | 0.030 | 0.0013 | 107 | 88 |

Table 5-1 Continued

| Parameter | 1st High (µg/m3) | 2nd High (µg/m3) | Annual Mean (µg/m3) | No. of Samples | Percent Recovery |
|---|---|---|---|---|---|
| **IONS** | | | | | |
| Ammonium Ion | 1.50 | 1.25 | 0.087 | 107 | 88 |
| Potassium Ion | 0.08 | 0.05 | 0.012 | 107 | 88 |
| Sodium Ion | 1.89 | 1.40 | 0.397 | 107 | 88 |
| Total Nitrate | 0.36 | 0.34 | 0.133 | 107 | 88 |
| Sulfate | 7.94 | 7.24 | 0.943 | 107 | 88 |

**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 $PM_{10}$, $PM_{2.5}$, $SO_2$, $NO_2$, $O_3$, and CO from 2013 to 2017 at all SLAMS stations monitoring for those pollutants.

Figures 6-1 and 6-2 are graphs of the $PM_{10}$ 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 $98^{th}$ percentile value at each station, which is depicted in Figure 6-4.

Figures 6-5 and 6-6 are graphs of the $SO_2$ annual and maximum 24-hour averages.

Figure 6-7 and 6-8 shows the annual and maximum 1-hour averages of $NO_2$ 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 1, 2016). 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. $PM_{10}$ Annual Average: 2013-2017**

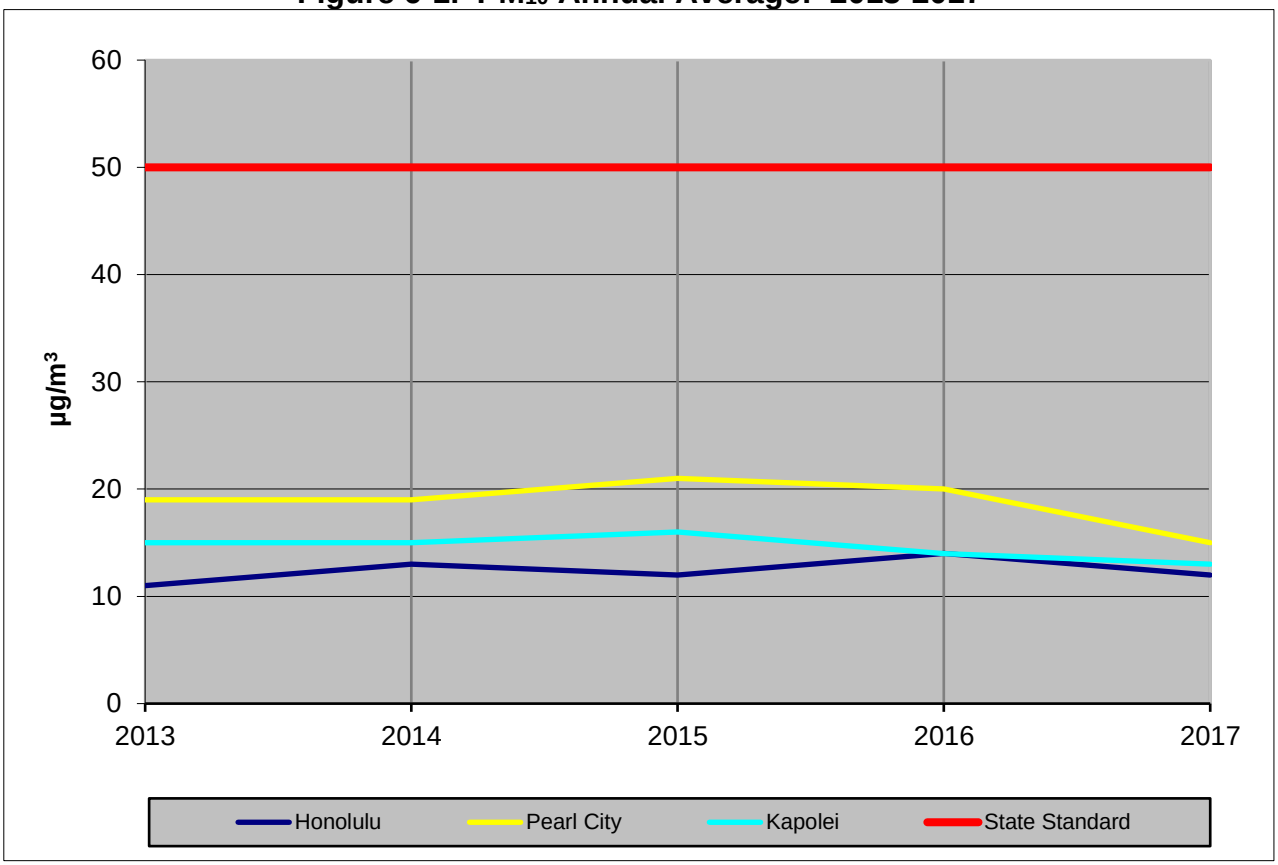



**Figure 6-2. $PM_{10}$ Maximum 24-Hour Average: 2013-2017**

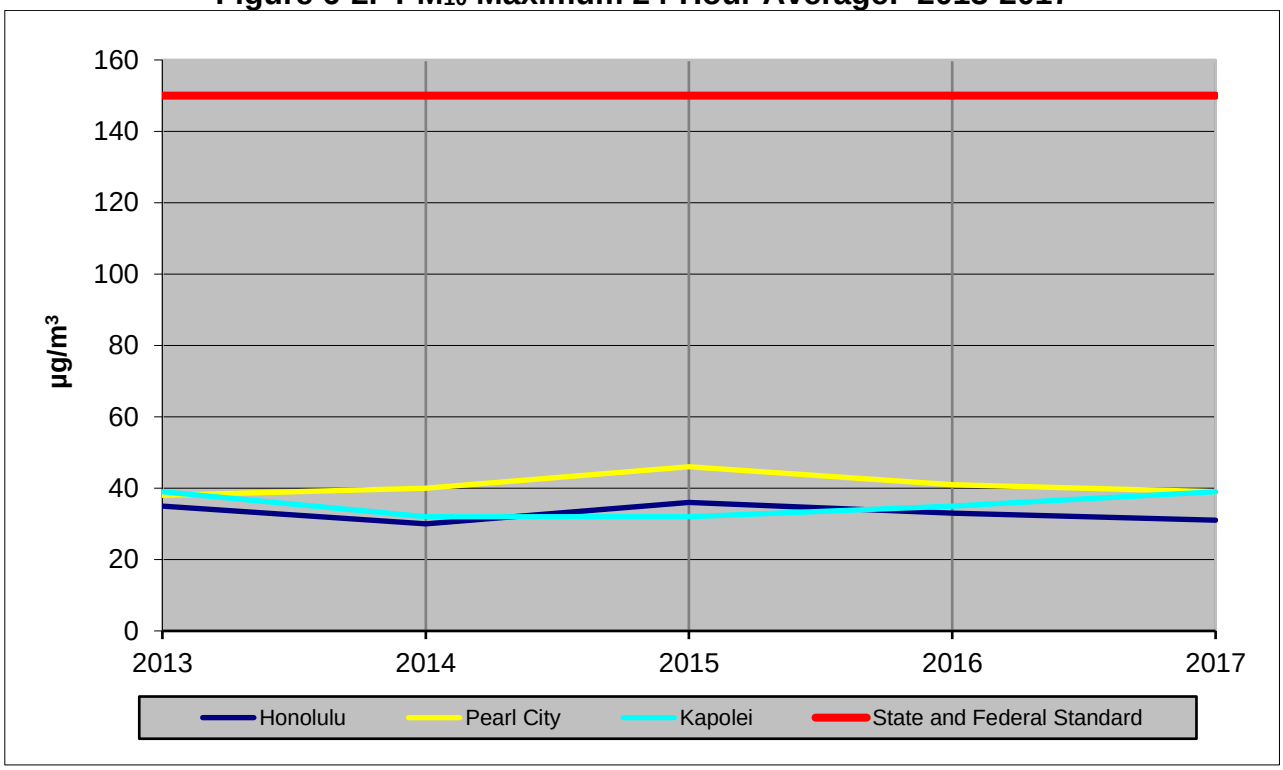


**Figure 6-3. $PM_{2.5}$ Annual Average: 2013-2017**

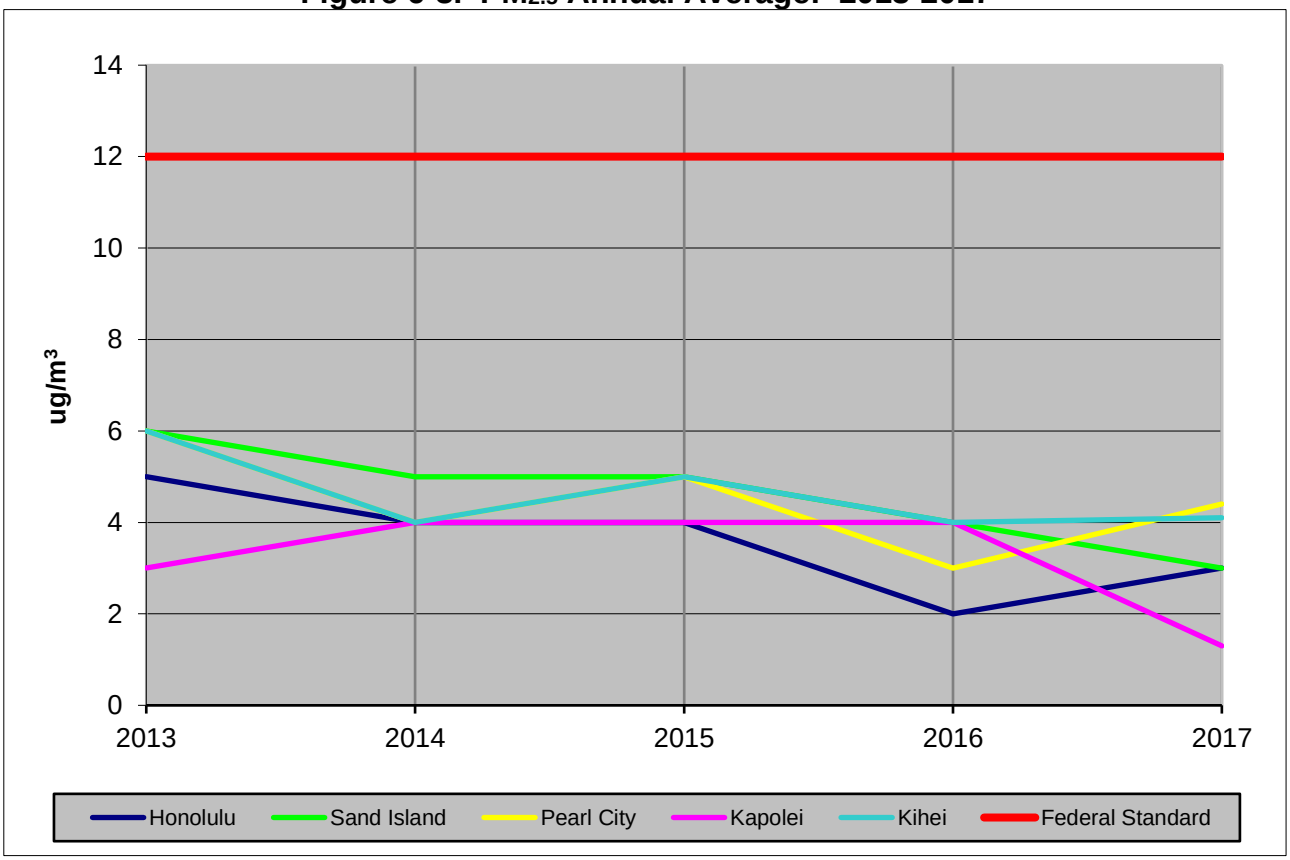



**Figure 6-4. $PM_{2.5}$ 98$^{th}$ Percentile 24-Hour Average: 2013-2017**

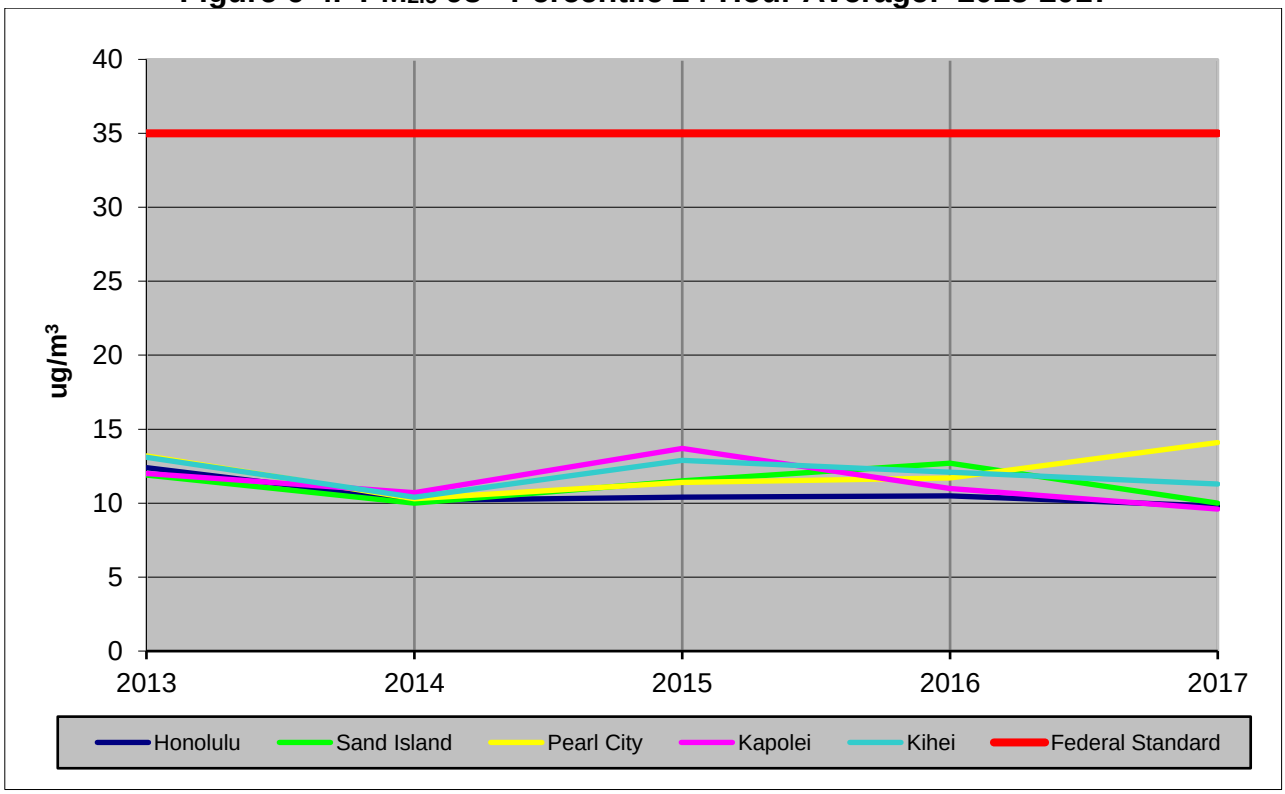


**Figure 6-5. $SO_2$ Annual Average: 2013-2017**

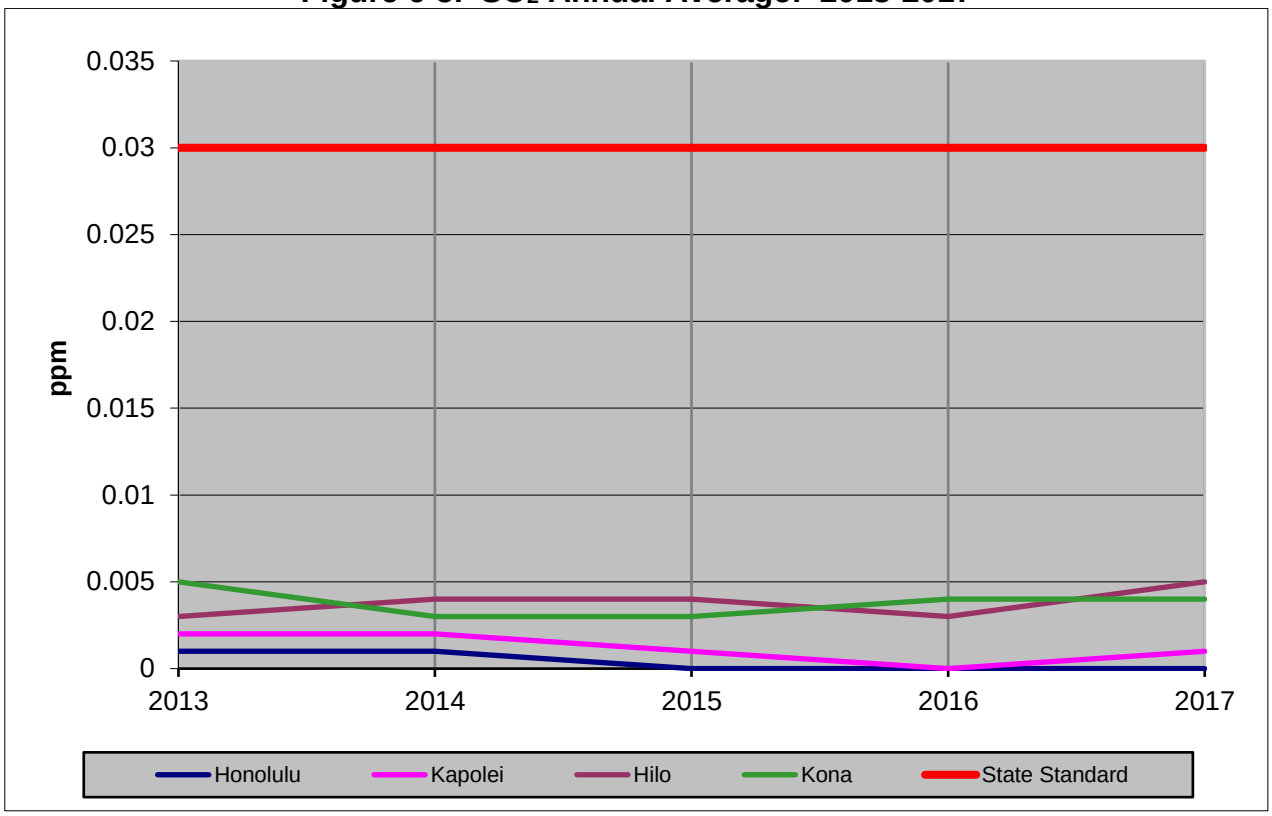



**Figure 6-6. $SO_2$ Maximum 24-Hour Average: 2013-2017**

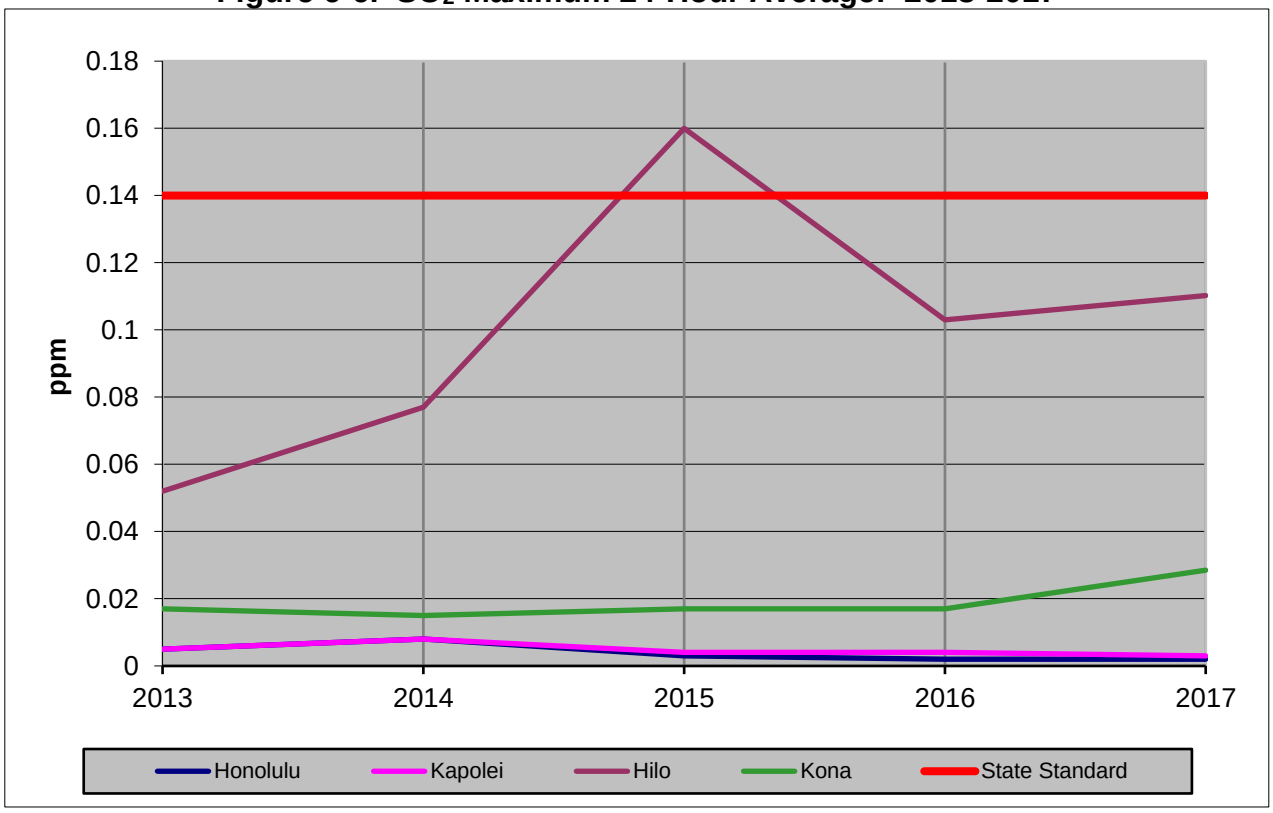


**Figure 6-7. $NO_2$ Annual Average: 2013-2017**

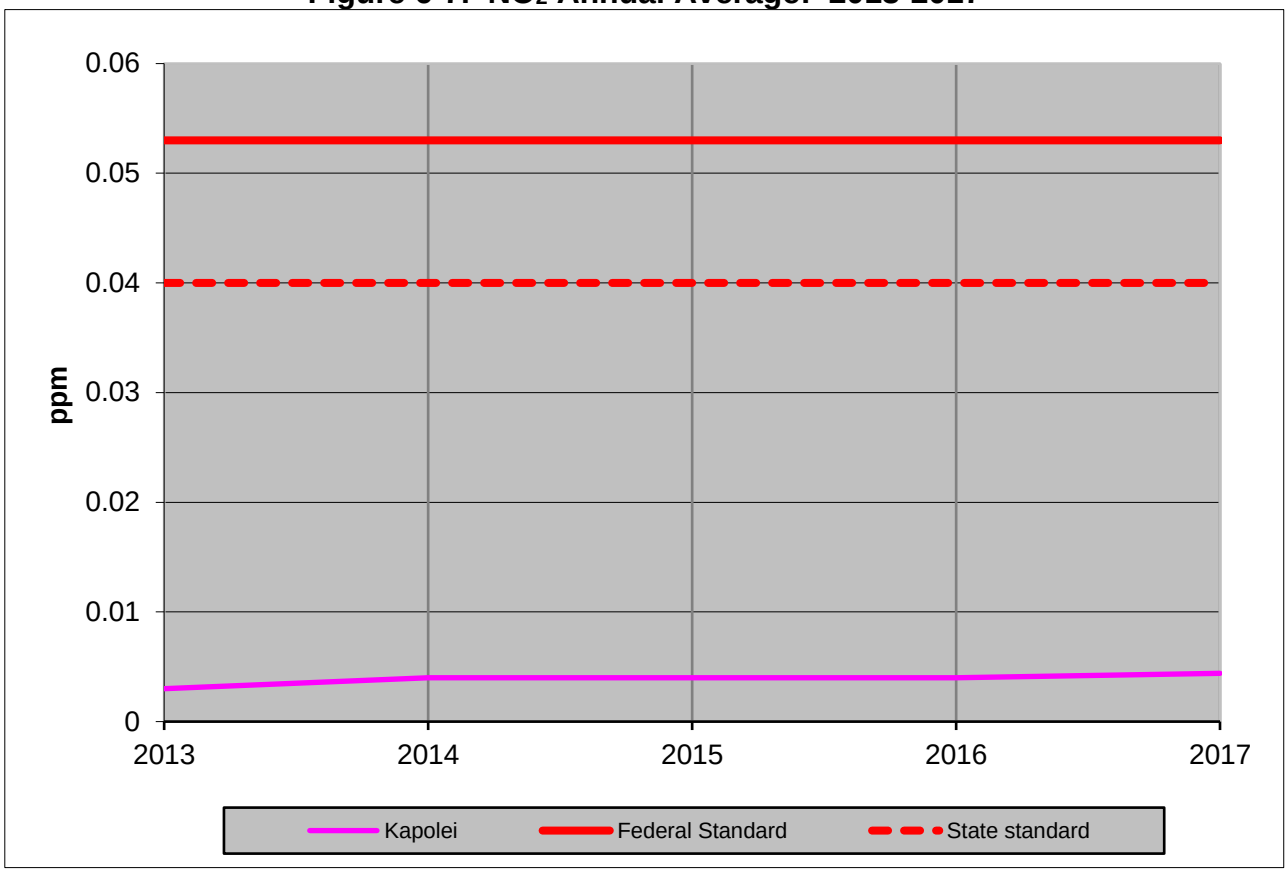



**Figure 6-8. $NO_2$ Maximum 1-Hour Average: 2013-2017**

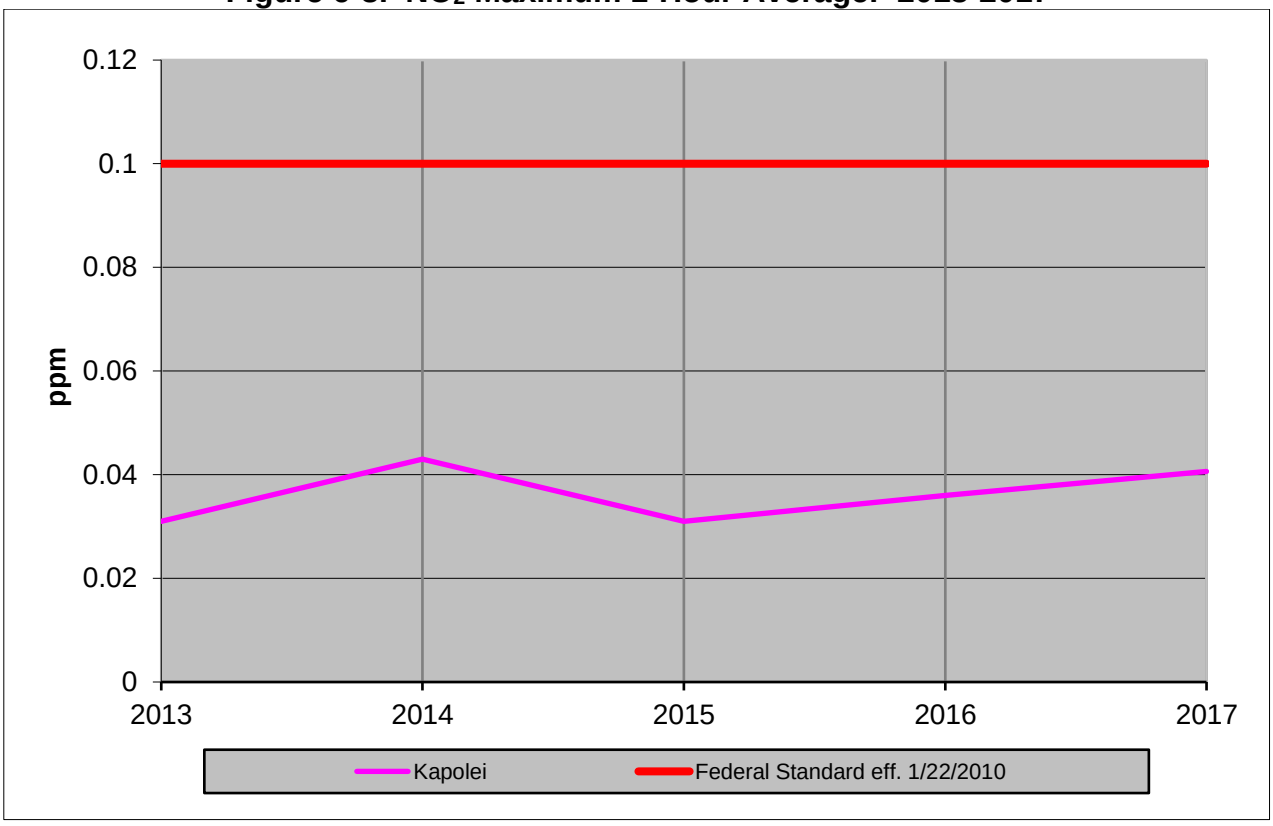


**Figure 6-9. $O_3$ Fourth Highest Daily Maximum 8-Hour Average: 2013-2017**

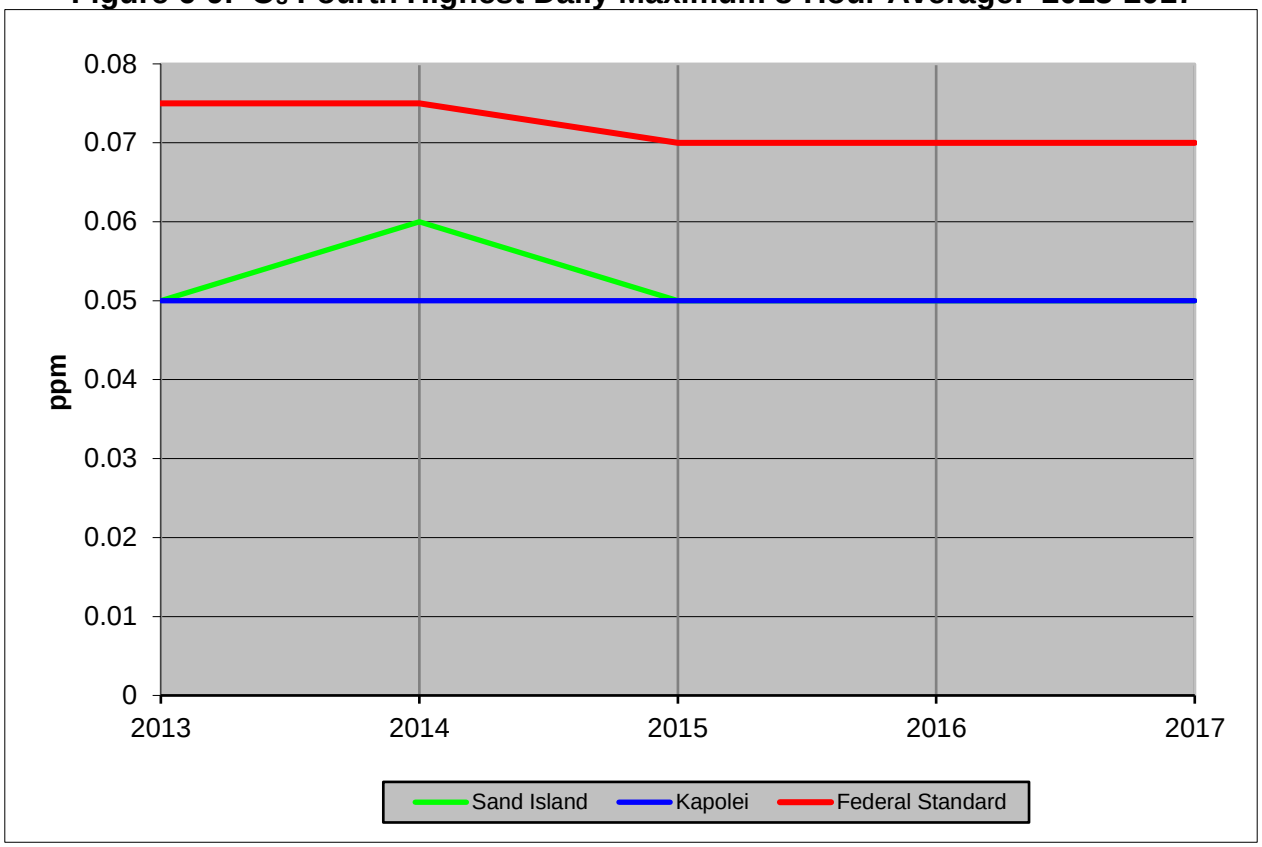



**Figure 6-10. CO Maximum 1-Hour Average: 2013-2017**

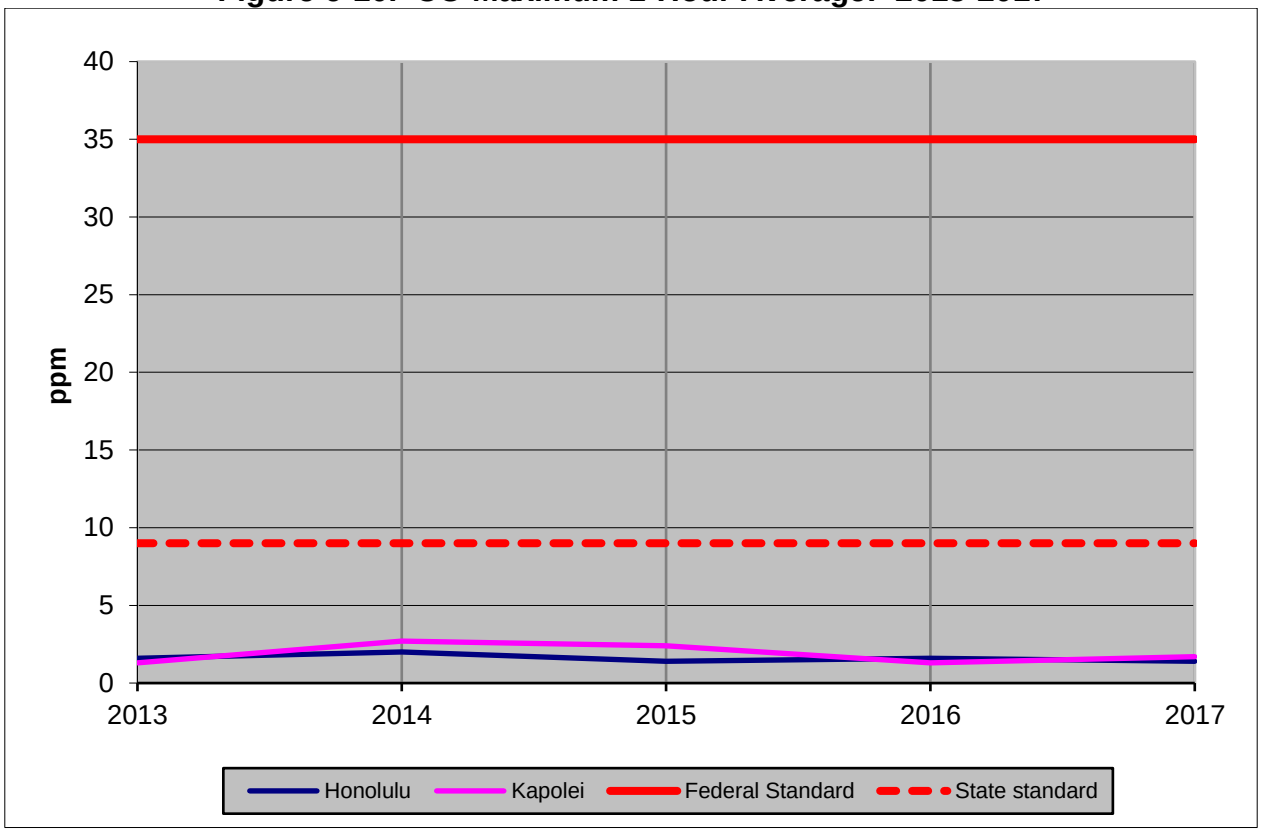


**Figure 6-11. CO Maximum 8-Hour Average: 2013-2017**

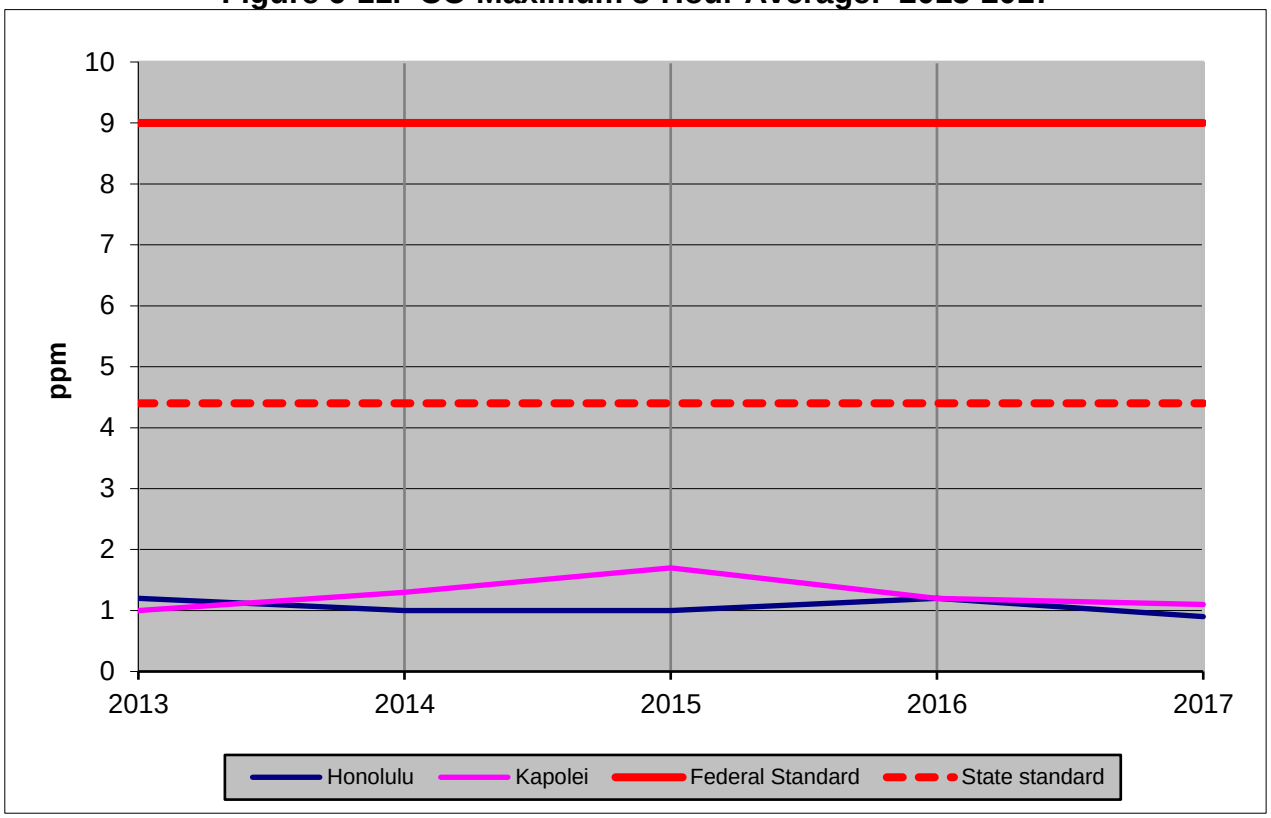


Exhibit 5: Coastal Zone Management

Please see Exhibit 3 - Tsunami Evacuation Zone Map and EA text discussing Coastal Zone Management.

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Exhibit 6: Contamination and Toxic Substances

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Source: State of Hawaii Department of Health, Hazard Evaluation and Emergency Reponse Office, iHEER Database Viewer

| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE:<br>Contamination and Toxic Substances<br><br>EXHIBIT NUMBER:<br>6 |

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Exhibit 7: Endangered Species

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U.S. Fish & Wildlife Service

# Pacific Islands Fish and Wildlife Office

*Working with you to conserve the natural resources of Hawai'i and the Pacific Islands*

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# Animal Avoidance and Minimization Measures

*The following measures are recommended to avoid or minimize project impacts to threatened and endangered animals - including bats, birds, turtles, and invertebrates - in Hawai'i and the Pacific Islands.*

## Scroll down or click for avoidance and minimization measures when encountering:

---

# Endangered Hawaiian hoary bat - ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*) ()

## Habitat:

The ʻōpeʻapeʻa roosts in both exotic and native woody vegetation across all islands and will leave young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away. Additionally, Hawaiian hoary bats forage for insects from as low as 3 feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing.

## Avoidance and Minimization:

To avoid and minimize impacts to the endangered ʻōpeʻapeʻa we recommend you incorporate the following applicable measures into your project plan:

*-Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).*

*-Do not use barbed wire for fencing.*

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# Hawaiian Seabirds ()

Endangered Hawaiian petrel - ʻUaʻu (*Pterodroma sandwichensis*)
Threatened Newell's shearwater - Aʻo (*Puffinus auricularis newelli*)
Endangered Band-rumped storm-petrel - Akēʻakē (*Oceanodroma castro*)
Migratory White terns or Manu O Kū (*Gygis alba*)
Migratory Wedge-tailed shearwater - ʻUaʻu kani (*Ardenna pacificus*)

## Habitat:

**Newell's shearwaters** are found in the highest densities on Kauaʻi with lower densities on all of the other islands, except Lānaʻi. **Hawaiian Petrel** populations are greatest on Maui, Lānaʻi, and Kauaʻi with lower densities on Hawaiʻi and Molokai. **Band-rumped storm-petrels** are found in low densities throughout the islands. All islands may experience overflight at night.

For all projects, Hawaiian seabirds may traverse the project area at night during the breeding, nesting and fledging seasons (March 1 to December 15). Outdoor lighting could result in seabird disorientation, fallout, and injury or mortality. Seabirds are attracted to lights and after circling the lights they may become exhausted and collide with nearby wires, buildings, or other structures or they may land on the

ground. Downed seabirds are subject to increased mortality due to collision with automobiles, starvation, and predation by dogs, cats, and other predators. Young birds (fledglings) traversing the project area between September 15 and December 15, in their first flights from their mountain nests to the sea, are particularly vulnerable.

## Avoidance and Minimization:

To avoid and minimize potential project impacts to seabirds we recommend you incorporate the following applicable measures into your project plan:

*-Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.*

*-Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*

*-Avoid nighttime construction during the seabird fledging period, September 15 through December 15.*

**If your project includes a tower or antennae, then the following recommendations should be included in the plan.**

Listed seabirds have been documented colliding with communication towers, particularly in areas of high seabird passage rate. In general, self-supporting monopoles are the least likely to result in collisions, whereas lattice towers, particularly those that rely on guy-wires, have a much higher collision risk.

**To avoid and minimize the likelihood that tower collisions will result in take of listed seabirds we recommend you incorporate the following applicable measures into your project plan:**

*-The profile of the tower should be as small as possible, minimizing the extent of the tower that protrudes above the surrounding vegetation layer, and avoid the use of guywires.*

*-If the top of the tower must be lit to comply with Federal Aviation Administration regulations, use a flashing red light versus a steady-beam red or white light.*

*-If possible, co-locate with existing towers or facilities.*

**If your project occurs near a known seabird colony, please include the following measures:**

Seabirds have been known to collide with fences, powerlines and other structures near colonies.To avoid and minimize the likelihood of collision we recommend you incorporate the following applicable measures into your project plan:

*-Where fences extend above vegetation, integrate three strands of polytape into the fence to increase visibility.*

*-For powerlines, guywires and other cables, minimize exposure above vegetation height and vertical profile.*

**If your project occurs in an area of high-passage rate of seabirds, we recommend further coordination with our office to address specific project details and potential seabird interactions.**

# Wedge-tailed shearwater -‘Ua‘u kani (*Ardenna pacificus*) ()

## Habitat:

Unlike other Hawaiian seabird species, wedge-tailed shearwaters nest in littoral vegetation along coastlines. Nesting adults, eggs, and chicks are particularly susceptible to impacts from human disturbance and predators.

## Avoidance and Minimization:

To avoid and minimize potential project impacts to wedge-tailed shearwaters we recommend you incorporate the following applicable measures into your project plan:

*- Conduct surveys throughout the project area during the species' breeding season (March through November) to determine the presence and location of nesting areas.*

*- If wedge-tailed shearwaters nest within a proposed project area and construction would cause ground disturbance, time project construction to occur outside of the breeding season (March through November).*

*- If outdoor lighting is used, use light shields that are completely opaque, appropriately sized, and positioned so that the bulb is only visible from below and the light from the shielded source cannot be seen from the beach.*

*- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human activity is not occurring in the lighted area.*

# White terns or Manu O Kū (*Gygis alba*) ()

## Habitat:

White terns often nest in urban parks and residential areas from Hawai'i Kai to Hickam Air Force Base on the island of O'ahu. This species is listed by the State of Hawai'i as endangered on O'ahu. White terns breed during all months of the year, but the core breeding season is January through June, with a major peak in March. White terns do not build nests, instead they lay a single egg directly on a ledge, tree branch, or other suitable location. The egg will hatch after approximately 35 days, after which it takes 45 days for the chick to be mature enough to leave the tree on its own. Signs that white terns are present include accumulation of white feathers or white droppings underneath the tree.

## Avoidance and Minimization:

To avoid and minimize potential project impacts to white terns we recommend you incorporate the following applicable measures into your project plan:

*- If tree trimming is part of your project, please examine all trees slated to be cut to determine if there are white terns nesting in them, especially during the white tern breeding season (January thru June).*

*- Do not trim branches or remove trees with nesting white terns.*

*-Do not disturb a nesting tree or branch for at least 80 days from when the egg is laid.*

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# Hawaiian goose, Nēnē (*Branta sandvicensis*) ()

## Habitiat:

Nēnē are predominately found on the islands of Hawai'i , Maui, Molokai, and Kaua'i, with a small population on O'ahu. They may be observed in a variety of habitats, but prefer open areas, such as pastures, golf courses, wetlands, natural grasslands and shrublands, and lava flows. Threats to the species include introduced mammalian and avian predators, wind facilities, and vehicle strikes.

## Avoidance and Minimization:

To avoid and minimize potential project impacts to nēnē we recommend you incorporate the following applicable measures into your project plan:

*- Do not approach, feed, or disturb nēnē.*

*- If nēnē are observed loafing or foraging within the project area during the breeding season (September through April), halt work and have a biologist familiar with the nesting behavior of nēnē survey for nests in and around the project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).*

*- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 150 feet of proposed work, or a previously undiscovered nest is found within said radius after work begins.*

*- In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.*

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# Hawaiian waterbirds ()

Hawaiian stilt, Ae‘o *(Himantopus mexicanus knudseni)*
Hawaiian coot, ‘Alea kea *(Fulica alai)*
Hawaiian common gallinule, ‘Alea ‘ula *(Gallinula galeata sandvicensis)*
Hawaiian duck, Koloa *(Anas wyvilliana)*

## Habitat:

Listed Hawaiian waterbirds are found in fresh and brackish-water marshes and natural or man-made ponds. **Hawaiian stilts** may also be found wherever ephemeral or persistent standing water may occur. Threats to these species include non-native predators, habitat loss, and habitat degradation. **Hawaiian ducks** are also subject to threats from hybridization with introduced mallards. While the **Hawaiian stilt**, **Hawaiian coot**, and **Hawaiian duck** may be found on all islands, the **Hawaiian common gallinule** is restricted to Kaua‘i and O‘ahu.

If your project will create, either purposefully or inadvertently, any kind of temporary or permanent standing water, including excavation or grading for construction or roadwork, then it may attract Hawaiian waterbirds to the site. In particular, the **Hawaiian stilt** is known to nest in sub-optimal locations (e.g. any ponding water), if water is present. Hawaiian waterbirds attracted to sub-optimal habitat may suffer adverse impacts, such as predation and reduced reproductive success, and thus the project may create an attractive nuisance.

## Avoidance and Minimization:

To avoid and minimize potential project impacts to Hawaiian waterbirds we recommend you incorporate the following applicable measures into your project plan:

*- In areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site or nearby.*

*- If water resources are located within or adjacent to the project site, incorporate the applicable best management practices (BMPs) regarding work in aquatic environments into the project design.*

*- Have a biological monitor that is familiar with the species’ biology conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Repeat surveys again within 3 days of project initiation and after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).*

**If a nest or active brood is found:**

*- Contact the Service within 24 hours for further guidance.*

*- Establish and maintain a 100-foot buffer around all active nests and/or broods until the chicks/ducklings have fledged. Do not conduct potentially disruptive activities or habitat alteration within this buffer.*

*- Have a biological monitor that is familiar with the species' biology present on the project site during all construction or earth moving activities until the chicks/ducklings fledge to ensure that Hawaiian waterbirds and nests are not adversely impacted.*

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# Endangered Hawaiian forest birds ()

OAHU: O‘ahu elepaio, *Chasiempis ibidis*; ‘I‘iwi, *Drepanis coccinea*;
KAUAI: Puaiohi, *Myadestes palmeri*; ‘Akikiki, *Oreomystis bairdi*; ‘Akeke‘e, *Loxops caeruleirostris*; ‘I‘iwi, *Drepanis coccinea*
Hawai‘i : ‘Akiapōlā‘au, *Hemignathus wilsonsi*; Hawai‘i creeper, *Loxops mana*; Hawai‘i ‘akepa, *Loxops coccineus*; Palila, *Loxioides bailleui;* ‘I‘iwi, *Drepanis coccinea*
MAUI: Maui parrotbill, *Pseudonestor xanthophrys*; ‘Akohekohe, *Palmeria dolei*; ‘I‘iwi, *Drepanis coccinea*
MOLOKAI: ‘I‘iwi, *Drepanis coccinea*

## Habitiat:

Hawaiian forest birds' current ranges are predominately restricted to montane forests (above 3,500 feet in elevation) due to habitat loss and threats at lower elevations. Hawaiian forest bird habitat has been lost due to development, agriculture, grazing, wildfire, and spread of invasive habitat-altering species. Forest birds are also affected by mosquito-borne diseases. Mosquitoes are not native to Hawai‘i . Their chance of occurrence increases in areas where ungulate presence results in small pools of standing water. Actions such as road construction and development increase human access and result in increased wildfire and invasive species threats. Grazing results in reductions in woody vegetation and increased grass cover, which reduces forest habitat quality and results in increased wildfire risk on the landscape.

## Avoidance and Minimization:

Avoid conducting activities within forest bird habitat that:

*- Promote the spread or survival of invasive species.*

*- Increase mosquito populations or stagnant water habitat.*

*- Increase wildfire threat to montane forest habitats.*

*- Remove tree cover during the peak breeding season between January 1 and June 30.*

Avoid using playback calls or recordings during bird surveys.

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# Hawaiian hawk - ‘Io (*Buteo solitarius*) ()

## Habitiat:

The ‘io is known to occur across a broad range of forest habitats throughout the Island of Hawai‘i . Loud, irregular and unpredictable activities, such as using heavy equipment or building a structure, near an endangered ‘io nest may cause nest abandonment and failure. Harassment of ‘io nesting sites can alter feeding and breeding patterns or result in nest or chick abandonment. Nest disturbance can also increase exposure of chicks and juveniles to inclement weather or predators.

## Avoidance and Minimization:

To avoid and minimize impacts to ‘io we recommend you incorporate the following applicable measures into your project plan:

*- If work must be conducted during the March 1 through September 30 ‘io breeding season, have a biologist familiar with the species conduct a nest search of the project footprint and surrounding areas immediately prior to the start of construction activities.*

*- Pre-disturbance surveys for ‘io are only valid for 14 days. If disturbance for the specific location does not occur within 14 days of the survey, conduct another survey.*

*- No clearing of vegetation or construction activities should occur within 1,600 feet of any active ‘io nest during the breeding season until the young have fledged.*

*- Regardless of the time of year, no trimming or cutting trees containing a ‘io nest is allowed, as nests may be re-used during consecutive breeding seasons.*

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# Blackburn’s sphinx moth (*Manduca blackburni*) ()

## Habitiat:

The Blackburn’s sphinx moth is known from the islands of Hawai‘i , Maui, Lāna‘i, and Kahoolawe, and may be in the vicinity of any proposed project on these islands if host plants are present. Adult moths feed on nectar from native plants, including beach morning glory (*Ipomoea pes-caprae*), ‘ilie‘e (*Plumbago zeylanica*), and maiapilo (*Capparis sandwichiana*); while larvae feed upon non-native tree tobacco (*Nicotiana glauca*) and native aiea (*Nothocestrum* sp.). Moth eggs and larvae are most commonly found feeding on the leaves of native aiea and non-native tree tobacco.  To pupate, the larvae burrow into the soil and can remain in a state of torpor for a year or more before emerging from the soil. Soil disturbance can result in death of the pupae.

## Avoidance and Minimization:

We offer the following survey recommendations to assess whether the Blackburn’s sphinx moth is within the project area:

*- A biologist familiar with the species should survey areas of proposed activities for Blackburn’s sphinx moth and its larval host plants prior to work initiation.*

*- Surveys should be conducted during the wettest portion of the year (usually November-April or several weeks after a significant rain) and within 4-6 weeks prior to construction.*

*- Surveys should include searches for eggs, larvae, and signs of larval feeding (chewed stems, frass, or leaf damage).*

*- If moths or the native aiea or tree tobacco over 3 feet tall are found during the survey, please contact the Service for additional guidance to avoid take.*

If no Blackburn's sphinx moth, aiea, or tree tobacco are found during pre-construction surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site. Tree tobacco can grow greater than 3 feet tall in approximately 6 weeks. If it grows over 3 feet, the plants may become a host plant for Blackburn's sphinx moth.

**We therefore recommend that you:**

*- Remove any tree tobacco less than 3 feet tall.*

*- Monitor the site every 4-6 weeks for new tree tobacco growth before, during and after the proposed ground-disturbing activity.*

*- Monitoring for tree tobacco can be completed by any staff, such as groundskeeper or regular maintenance crew, provided with picture placards of tree tobacco at different life stages.*

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# Sea Turtles ()

Endangered Hawksbill sea turtle *(Eretmochelys imbricata)*
Green sea turtles *(Chelonia mydas):* threatened in Hawaii and Johnston Atoll, endangered in Mariana Archipelago, American Samoa, and Palmyra, Kingman, Howland, Baker, Wake and Jarvis National Wildlife Refuges

## Habitat:

The Service consults on sea turtles and their use of terrestrial habitats (beaches where nesting and/or basking is known to occur), whereas the National Marine Fisheries Service (NMFS) consults on sea turtles and their use of off-shore and open ocean habitats. We recommend that you consult with NMFS regarding the potential impacts from the proposed project to sea turtles in off-shore and open ocean habitats.

Green sea turtles may nest on any sandy beach area in the Pacific Islands. Hawksbill sea turtles exhibit a wide tolerance for nesting substrate (ranging from sandy beach to crushed coral) with nests typically placed under vegetation. Both species exhibit strong nesting site fidelity. Nesting for the Central North Pacific DPS occurs on beaches from May through September, peaking in June and July, with hatchlings emerging through November and December. In the Marianas, nesting may occur anytime throughout the year, with a peak between April and September. In American Samoa, the nesting and hatching season runs from October to March.

Construction on, or in the vicinity of, beaches can result in sand and sediment compaction, sea turtle nest destruction, beach erosion, contaminant and nutrient runoff, and an increase in direct and ambient light pollution which may disorient hatchlings or deter nesting females. Off-road vehicle traffic may result in direct impacts to sea turtles and nests, and also contributes to habitat degradation through erosion and compaction.

Projects that alter the natural beach profile, such as nourishment and hardening, including the placement of seawalls, jetties, sandbags, and other structures, are known to reduce the suitability of on-shore habitat for sea turtles. These types of projects often result in sand compaction, erosion, and additional sedimentation in nearshore habitats, resulting in adverse effects to the ecological community and future sea turtle nests. The hardening of a shoreline increases the potential for erosion in adjacent areas, resulting in subsequent requests to install stabilization structures or conduct beach nourishment in adjacent areas. Given projected sea level rise estimates, the likelihood of increase in storm surge intensity, and other factors associated with climate change, we anticipate that beach erosion will continue and likely increase.

Where possible, projects should consider alternatives that avoid the modification or hardening of coastlines. Beach nourishment or beach hardening projects should evaluate the long-term effect to sea turtle nesting habitat and consider the cumulative effects.

## Avoidance and Minimization:

To avoid and minimize project impacts to sea turtles and their nests we recommend you incorporate the following applicable measures into your project plan:

*- No vehicle use on or modification of the beach/dune environment during the sea turtle nesting or hatching season (May to December for Hawai'i ; throughout the year in the Marianas; October to March for American Samoa).*

*- Do not remove native dune vegetation.*

*- Incorporate applicable BMPs regarding Work in Aquatic Environments (see separate document) into the project design.*

*- Have a biologist familiar with sea turtles conduct a visual survey of the project site to ensure no basking sea turtles are present.*

**If a basking sea turtle is found within the project area, cease all mechanical or construction activities within 100 feet until the animal voluntarily leaves the area.**

*- Cease all activities between the basking turtle and the ocean.*

*- Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.*

*- Do not stockpile project-related materials in the intertidal zone, reef flats, or stream channels.*

Optimal sea turtle nesting habitat is a dark beach, free of barriers that restrict sea turtle movement. Nesting turtles may be deterred from approaching or laying successful nests on lighted or disturbed beaches. They may become disoriented by artificial lighting, leading to exhaustion and placement of a nest in an inappropriate location (such as at or below the high tide line). Hatchlings that emerge from nests may also be disoriented by artificial lighting. Inland areas visible from the beach should be sufficiently dark to allow for successful navigation to the ocean.

**To avoid and minimize project impacts to sea turtles from lighting we recommend incorporating the following applicable measures into your project plan:**

*- Avoid nighttime work during the nesting and hatching season (May to December for Hawai'i ; throughout the year in the Marianas; October to March for American Samoa).*

*- Minimize the use of lighting and shield all project-related lights so the light is not visible from any beach.*

*- If lights can't be fully shielded or if headlights must be used, fully enclose the light source with light filtering tape or filters.*

*- Incorporate design measures into the construction or operation of buildings adjacent to the beach to reduce ambient outdoor lighting such as tinting or using automatic window shades for exterior windows that face the beach; reducing the height of exterior lighting to below 3 feet and pointed downward or away from the beach; and minimize light intensity to the lowest level feasible and, when possible, include timers and motion sensors.*

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# Kaua‘i cave wolf spider (*Adelocosa anops*) and Kaua‘i cave amphipod (*Spelaeorchestia koloana*) ()

## Habitat:

These species are restricted to subterranean mesocavern (cracks, voids, spaces, caves) bearing rock with above ground soil deposits of less than 12 inches within the Kōloa District of the island of Kaua‘i. Mesocaverns that provide appropriate food sources (woody debris, plant roots penetrating the mesocavern) and conditions approaching 100 percent relative humidity levels are likely to contain these unique animals. All known areas likely to contain these animals have been designated critical habitat for these species.

One of the primary threats to these two species is their mesocavern (underground spaces, caves, cracks, crevices) habitat being exposed to drying conditions, most typically from increased airflow created by breaking through the mesocaverns.

## Avoidance and Minimization:

If your project occurs in the vicinity of the habitat for these species, we recommendations including the following measures in your project plan:

**Survey Recommendations:**

*- Survey project area for depth of soil deposits and the presence of caves. Any areas with soil deposits greater than 12 inches are not likely to provide appropriate habitat or have the species present.*

*- Contact the Service and do not disturb the vegetation or soil in areas with soil deposits less than 12 inches or if a cave is found.*

**Enhance cave invertebrate habitat if possible:**

*- Outplant native plants like maiapilo (Capparis sandwichiana) so roots eventually provide a food source and irrigate the surface.*

*- Control established ecosystem-altering non-native invasive plant species around all caves.*

*- Enhance habitat by sealing currently non-occupied caves with temporary air blocks – to increase relative humidity by restricting air flow through cave entrances.*

*- Design permanent air blocks (e.g., walls) and develop plans to replace temporary air blocks.*

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# Picture-wing flies ()

## Habitat:

Picture-wing flies live in montane forest habitat and are restricted to single islands. See the table below for locations of protected picture-wing flies. Larvae of each species are dependent on a single or a few related plant species. Picture-wing flies are threatened by destruction of habitat from non-native ungulates and invasive weeds, and also directly threatened by a variety of introduced invertebrates, including yellow jackets and several ant species.

## Avoidance and Minimization:

To avoid and minimize project impacts to picture-wing flies we recommend incorporating the following applicable measures into your project plan:

*- Avoid clearing forest vegetation within 200 feet of a site potentially occupied by endangered Drosophila.*

*- Restrict construction equipment to existing roads and trails.*

*- If the site is potentially occupied by endangered Drosophila based on location and presence of host plants, consult the Service since permits are required to conduct surveys.*

*- Pesticide use may require a larger buffer distance and the Service should be consulted.*

**General *Drosophila* species Information (check critical habitat layers for specific locations):**

| Species | Island | Habitat | Host plant(s) |
|---|---|---|---|
| *D. aglaia:* | O‘ahu | Mesic forest | Urera glabra |
| *D. differens* | Molokai | Wet forest | Clermontia spp. |
| *D. digressa* | Hawai‘i | Mesic to wet forest | Charpentiera spp., Pisonia spp. |
| *D. hemipeza* | O‘ahu | Mesic forest | Cyanea spp., Lobelia spp., and Urera kaalae |
| *D. heteroneura* | Hawai‘i | Mesic to wet forest | Cheirodendron spp., Clermontia spp., Delissea spp. |
| *D. montgomeryi* | O‘ahu | Mesic forest | Urera kaalae |
| *D. mulli* | Hawai‘i | Wet forest | Pritchardia beccariana |
| *D. musaphilia* | Kaua‘i | Mesic forest | Acacia koa |
| *D. neoclavisetae* | Maui | Wet forest | Cyanea spp. |
| *D. obatai* | O‘ahu | Dry to mesic forest | Chrysodracon spp. |
| *D. ochrobasis* | Hawai‘i | Mesic to wet forest | Clermontia spp., Marattia spp., Myrsine spp. |
| *D. sharpi* | Kaua‘i | Wet forest | Cheirodendron spp, Polyscias spp. |
| *D. substenoptera* | O‘ahu | Wet forest | Cheirodendron spp, Polyscias spp. |
| *D. tarphytrichia* | O‘ahu | Mesic forest | Charpentiera spp. |

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# Hawaiian yellow-faced bees ()

## Habitat:

Yellow-faced bees are found from the coast to montane ecosystems in Hawai‘i . Coastal populations of yellow-faced bees occur in habitat along rocky shorelines with *Scaevola taccada* (naupaka) and *Heliotropium foertherianum* (tree heliotrope) with either landscaped vegetation, alien kiawe (*Prosopis pallida*), or bare rock inland. Bees are restricted to an extremely narrow corridor, typically 10–20 meters wide, and do not occur on sandy beaches or inland, or on landscaped native plants on hotel grounds. Documented nectar plants include naupaka, *Sida fallax* (ilima), *Chamaesyce* spp. (akoko), *Argemone glauca* (pua kala), *Myoporum sandwicense* (naio), and tree heliotrope.

*H. kuakea* has only been found at two sites in lowland mesic forest of the Wai‘anae Mountains. Little is known about its habitat needs and distribution within its range.

*H. mana* is restricted to a few populations in a narrow band of native mesic koa forest around 1,400 feet in elevation in the Ko‘olau Mountains. Limited information suggests that it has a possible close association with *Santalum freycinetianum*.

Threats to yellow-faced bees include habitat destruction and modification from land use change, nonnative plants, ungulates, and fire, along with predation by nonnative ants and wasps.

Surveys for yellow-faced bees require a permit as identification of yellow-faced bees includes trapping, capturing, and holding. If the project has the potential for yellow-faced bee occurrence, consult with the Service.

## Avoidance and Minimization:

To avoid and minimize project impacts to yellow-faced bees and their nests, we recommend you incorporate the following applicable measures into your project plan:

*If an action will occur in or adjacent to known occupied habitat, a buffer area around the habitat may be required and can be worked out on a site-specific basis through consultation with the Service.*

*For coastal species, protect all coastal strand habitat from human disturbance, including:*

*- No fires or wood collecting*

*- Leave woody debris in place*

*- Restrict vehicles to existing roads and trails*

*- Post educational signs to inform people of the presence of sensitive species.*

**General species information (bold islands are known populations):**

| Species | Island(s) | Habitat |
|---|---|---|
| *H. anthracinus* | Hawai‘i , Maui, ‘Kaho‘olawe, Lāna‘i, Molokai, O‘ahu | Coastal and lowland dry forests |
| *H. assimulans* | Maui, Kahoolawe, Lāna‘i, O‘ahu | Coastal and lowland dry forests |
| *H. facilis* | Maui, Lāna‘i, **Molokai, O‘ahu** | Coastal and dry and mesic shrublands and forests |

| | | |
|---|---|---|
| *H. hilaris* | Maui, Lānaʻi, **Molokai** | Coastal to dry forest; obligate parasite on *H. anthracinus*, *H. longiceps*, and *H. assimulans*. |
| *H. kuakea* | Oʻahu | Lowland mesic |
| *H. longiceps* | Maui, Lānaʻi, Molokai, Oʻahu | Coastal and dry shrubland |
| *H. mana* | Oʻahu | Lowland mesic; possible close association with *Santalum freycinetianum* |

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# Endangered land snails ()

*OAHU: Achatinella spp.*
*LANAI: Partulina semicarinata and Partulina variabilis*
*WEST MAUI: Newcomb's tree snail (Newcombia cumingi)*
*AMERICAN SAMOA: Tutuila tree snail (Eua zebrina) and the American Samoa land snail, Sisi or akaleha' (Ostodes strigatus)*

## Habitat:

Surveys to determine if listed tree snails occur in a project area may require a permit from the Service. Check with the Service about what is required if surveys are needed. If permits are not needed, we offer the following recommendations.

**If listed tree snails may occur in the vicinity of the proposed project area, we offer the following recommendations to avoid potential adverse effects to listed tree snails:**

*-Where work must be conducted in forested areas, survey proposed project sites for the presence of tree snails following the approved Service survey protocol (see separate document).*

*-If any tree snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.*

*-Avoid cutting or removing vegetation within 200 feet of the known occurrence to minimize impacts to the tree snails and their habitat.*

*-Mark the trees and shrubs occupied by tree snails with brightly colored flagging tape and keep foot traffic to a minimum of 33 feet from marked vegetation to avoid inadvertently dislodging and trampling individuals.*

*-Avoid clearing understory and overstory forest vegetation outside existing developed areas. Intact vegetation is important for maintaining microclimates and air movement conditions that allow snails to survive in a given area.*

*-Confine movement of heavy equipment to existing roadways.*

*-If helicopters are used to reach the project site, avoid affecting the occupied site with helicopter rotor wash that could dislodge snails by selecting alternate landing areas.*

*-Train personnel who work in tree snail habitat to identify the listed species and their habitat.*

**Hawai‘i :** Hawaiian tree snails are found in montane wet forests, usually dominated by ‘ōhi‘a (*Metrosideros polymorpha*). Snails feed on fungi and algae that grow on the leaves of trees. *N. cumingi* is found nearly exclusively on ‘ōhi‘a, while other species can occur on a variety of predominately native, but also some non-native tree species. Common native species include *Broussaisia arguta*, *Psychotria* spp., *Melicope* spp., *Coprosma* spp., *Kadua* spp., *Antidesma* spp. and *Perrottetia sandwicensis*. Threats to tree snails include habitat destruction and fragmentation resulting from the impacts of nonnative ungulates such as pigs, goats, and deer, habitat modification due to invasive plants, and predation by nonnative mammals, reptiles, flatworms and snails. Wildfire is also a threat to the tree snails.

**American Samoa:** *Eua zebrina* is a tree snail found on the islands of Tutuila and Ofu, where they are found primarily on leaves of understory trees. Native forest canopy and understory is a critical need for this species, as all live snails have been found on understory plants beneath native canopy. *Ostodes strigatus* is a ground-dwelling snail found in rocky areas under relatively closed canopy with sparse understory. It is endemic to Tutuila. Closed canopies and areas with heavy tree cover appear to be an important habitat factor for this species. Threats include habitat destruction through agriculture, urban development and introduced ungulates, fire, predation by introduced rats and invertebrates, typhoons, public collection, and low numbers of individuals.

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# Endangered Aquatic invertebrates ()

KAUAI: Newcomb’s snail (*Erinna newcombi*),
OAHU: crimson damselfly (*Megalagrion leptodemas*), blackline damselfly (*M.nigrohamatum nigrolineatum*), oceanic damselfly *(M. oceanicum*), and orange-black damselfly (*M. xanthomelas*)
MOLOKAI: Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*)
LANAI: orange-black damselfly (*M. xanthomelas*)
MAUI: flying earwig damselfly (*M. nesiotes*), Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*); anchialine pool shrimp (*Procaris hawaiana*)
HAWAII: Pacific damselfly (*M. pacificum*) and orange-black damselfly (*M. xanthomelas*); anchialine pool shrimp (*Procaris hawaiana*) and (*Vetericaris chaceorum*)

## Snails -

Newcomb’s snail is restricted to fast-flowing freshwater streams on Kaua‘i, where it feeds on vegetation growing on submerged rocks. Threats to the species include reduced stream flow from drought, water diversion projects, or other natural and human causes; predation by introduced snails, flies, and aquatic species; and small population dynamics.

**We can also offer the following recommendations:**

*- The Service recommended Best Management Practice for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.*

*- Permits are required for accurate surveys of this species, so consult with the Service if work will be done in proximity to stream areas or within water bodies or near critical habitat.*

## Damselflies –

Hawaiian damselflies are found in aquatic habitats across the islands, with high species endemism within islands. Breeding habitat includes anchialine pools, perennial streams, marshes, ponds, and even artificial pools and seeps. Major threats include introduced fish, amphibians, and invertebrates in streams, reduced stream flow from drought and water diversion, small isolated populations, reduced habitat quality from ungulates and nonnative plants, and possibly overcollection.

**All of the species are site specific, so check for detailed locations if stream work is occurring.**

*M. leptodemas* breeds in slow reaches of streams and seep-fed pools.

*M. nesiotes* is found along one stream on Maui (formerly on Hawaii as well). Naiads may be terrestrial or semi-terrestrial and the species appears to be closely associated with uluhe.

*M. nigrohamatum nigrolineatum* occurs in slow sections or pools along mid-reach and headwater sections of upland streams and seep-fed pools.

*M. oceanicum* is found in swiftly flowing sections of streams, usually amid rocks and gravel in stream riffles. Naiads can forage out of the stream on wet moss on rocks.

*M. pacificum* is found in seepage-fed pools cut off from the main stream channel, usually in areas with thick vegetation. Formerly found on all islands, now known from Molokai, Maui, and Hawaii Islands at low elevations.

*M. xanthomelas* is known from Hawaii, Maui, Lānaʻi, Molokai, Oʻahu, and formerly Kauaʻi. It breeds in a widespread number of sites, including anchialine pools, coastal wetlands, small streams, and artificial ponds at low elevations.

**We can also offer the following recommendations:**

*- The Service recommended BMPs for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.*

*- You cannot survey for damselflies without a permit, as accurate identification requires trapping, capturing, and holding. If work is occurring within a stream or within the riparian zone, consult with the Service.*

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# Anchialine pool shrimp ()

## Habitat:

*P. hawaiana* is restricted to a small number of anchialine pools on Hawaii and Maui, while *V. chaceorum* is found in only two anchialine pool areas of Hawaii. Threats to these species include habitat loss due to in-filling and bulldozing of anchialine pools, waste disposal including used oil and grease into pools, nonnative fish, human use of pools for bathing, water extraction, in-flow of fertilizer and pesticides, and collection for the aquarium trade.

If work is occurring within an anchialine pool, ground disturbance occurs near the pools that increases run-off, erosion, or sedimentation, or toxic organic or inorganic substances, or increases the opportunity for the introduction of non-native fish, if work is occurring around anchialine pools the following recommendations are provided:

The Service recommended BMPs for Work in Aquatic Environments should be incorporated into the project plan to minimize the degradation of water quality and impacts to fish and wildlife resources.

Surveying for these species requires a permit as identification of these species includes trapping, capturing, and holding.

## Avoidance and Minimization:

Protect anchialine pools (both in and around) from the following human disturbance:

*- Restrict vehicles to existing roads and trails*

*- Prevent trash, and other waste from entering into anchialine pools*

*- Avoid or limit to the maximum extent practicable entrance into the anchialine pools*

*- Install educational signs near anchialine pools to inform people of the presence of sensitive species and habitats.*

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Exhibit 8: Explosive and Flammable Hazards

No Explosive or Flammable Hazards were identified in close proximity to the Site.

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Exhibit 9: Farmlands Protection

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Map Scale: 1:614 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 4N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Island of Oahu, Hawaii
Survey Area Data: Version 15, Jun 10, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 17, 2019—Mar 3, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| KsC | Koko silt loam, 6 to 12 percent slopes | 0.2 | 34.6% |
| rRO | Rock outcrop | 0.4 | 65.4% |
| **Totals for Area of Interest** | | **0.6** | **100.0%** |

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Exhibit 10: Floodplain Management

Please see Exhibit 3 - FEMA FIRM Map and EA text discussing flood plains.

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Exhibit 11: Historic Preservation

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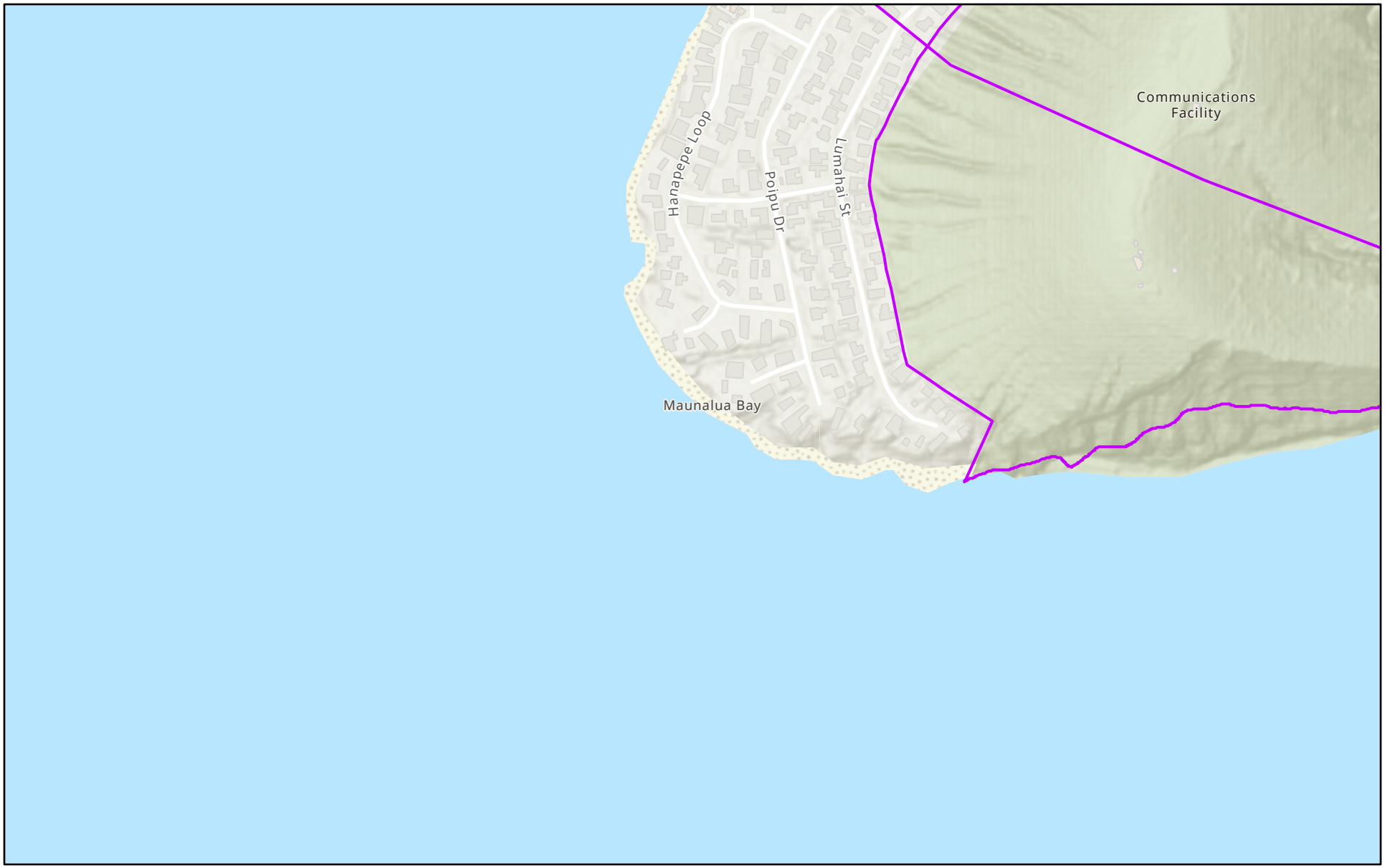


8/26/2021

Project Area of Potential Effect

1:9,028

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

Esri, NASA, NGA, USGS, FEMA, Esri Community Maps Contributors, City

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Exhibit 12: Noise Abatement and Control

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Source: Bureau of Transportation Statistics, National Transportation Noise Map

| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE:<br>Noise Map<br><br>EXHIBIT NUMBER:<br>12 |

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Exhibit 13: Sole Source Aquifers/Safe Drinking Water

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Source: EPA, Map of Sole Source Aquifer Locations

| | | |
|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE: Sole Source Aquifer Map<br>EXHIBIT NUMBER: 13 |

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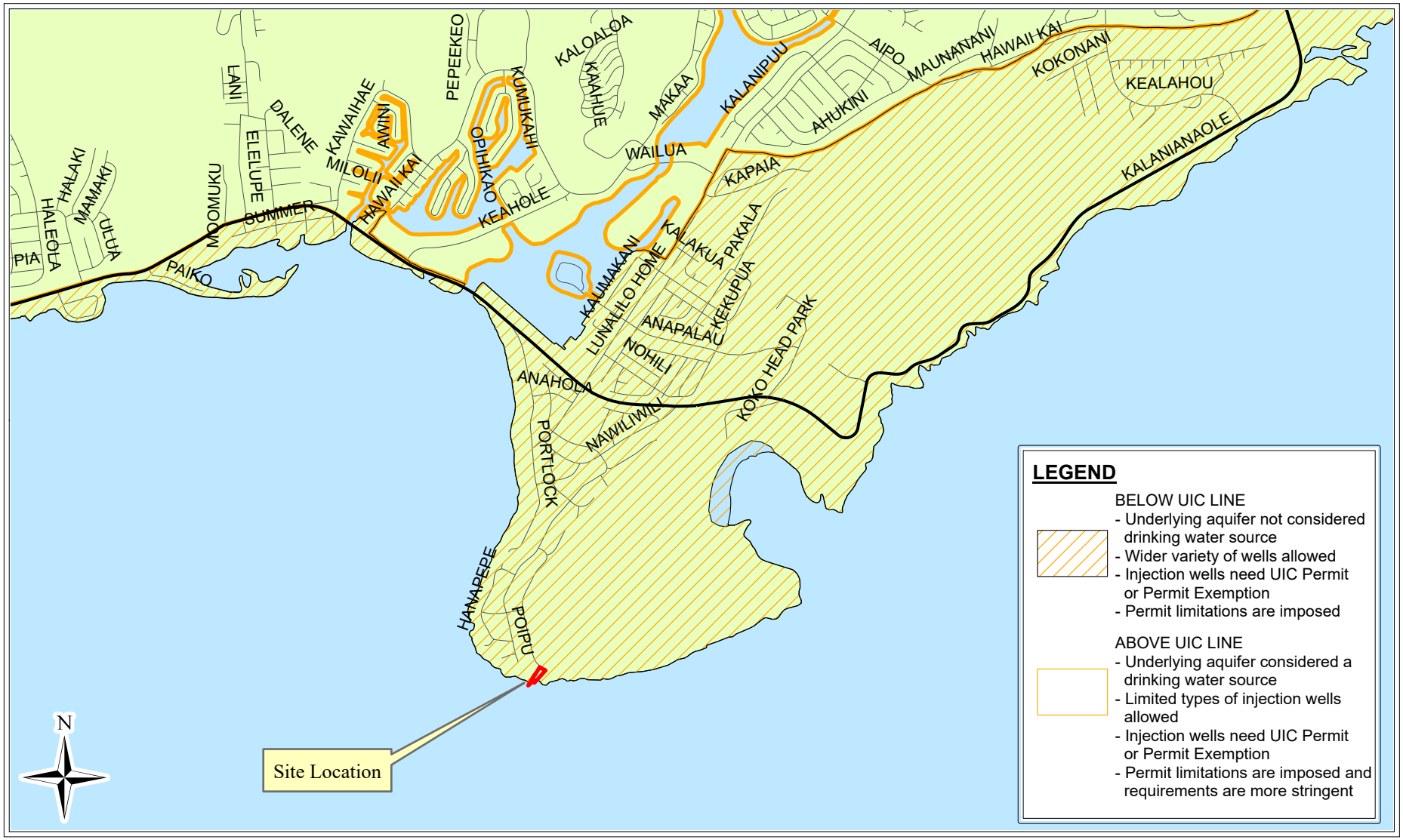


0 0.5 1 2 3 Miles

Environmental Risk Analysis

PROJECT NAME:

Environmental Assessment
4 Lumahai Street
Honolulu, Hawaii 96825
Tax Map Key 3-9-013:32

EXHIBIT TITLE:

Underground Injection Control Map

EXHIBIT NUMBER:

13

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The water serving Your Location has been tested and meets all Federal and State standards. 00112261

**The water quality monitoring results are presented below.**

The water sources serving this address are:

| Source Name | Origin of Water | Treatment | Region |
|---|---|---|---|
| a) Aina Koa Well II | Groundwater | Chlorination | 1 |
| b) Halawa Shaft | Groundwater | Chlorination | 1 |
| c) Kaimuki Pumping Station Low Service | Groundwater | Chlorination | 1 |
| d) Kalihi Shaft | Groundwater | Chlorination | 1 |
| e) Punanani Wells | Groundwater | Chlorination | 1 |
| f) Wilder Wells | Groundwater | Chlorination | 1 |

## Source Water Monitoring

The substances detected in these sources are shown below. If a substance is not shown, then it was not detected.

### Regulated Contaminants (2)

| Contaminant | Sample Year | Unit | Highest Average | Range | | MCL (Allowed) | MCLG (Goal) | Found in Sources |
|---|---|---|---|---|---|---|---|---|
| | | | | Minimum | Maximum | | | |
| Barium | 2020 | ppm | 0.016 | 0.006 | 0.016 | 2.000 | 2.000 | b,d,e |
| Chlordane | 2020 | ppb | 0.140 | 0.140 | 0.140 | 2.000 | 0.000 | c |
| Chromium | 2020 | ppb | 2.400 | 1.200 | 2.400 | 100.000 | 100.000 | b,c,d,e,f |
| Fluoride | 2020 | ppm | 0.058 | 0.058 | 0.058 | 4.000 | 4.000 | f |
| Nitrate | 2020 | ppm | 0.630 | 0.330 | 0.630 | 10.000 | 10.000 | b,c,d,e,f |

**Definitions:**

| | |
|---|---|
| MCL | Maximum Contaminant Level. The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology. |
| MCLG | Maximum Contaminant Level Goal. The level of a contaminant in drinking water below which there is no known or expected risk to health. MCGLs allows for a margin of safety. |
| GAC | Granular Activated Carbon Filtration |
| Health Advisory | An estimate of acceptable drinking water levels for a chemical substance based on health effects information. Health advisory is not a legally enforceable standard. |
| CFU/100ml | Colony forming units per 100 milliliter |
| mrem/yr | Millirems Per Year (A measure of Radiation) |
| pCi/L | Picocuries Per Liter (A measure of Radioactivity) |
| ppb | Parts per billion or Micrograms per Liter |
| ppm | Parts per million or Milligrams per liter |
| ppt | Parts per Trillion or Nanograms per liter |
| NQ | Not Quantifiable (<means "less than") |
| NYA | Not Yet Applicable |
| N/A | Not Applicable |
| ND | Not Detected |
| * | EPA considers 50 pCi/L to be the level of concern for beta particles |
| (1) | Analysis by the State of Hawaii Department of Health |
| (2) | Analysis by the Honolulu Board Of Water Supply. Questions, call 748-5370. |
| LRAA | Locational running annual average is the average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. |
| MRDL | Maximum residual disinfectant level: The highest level of a disinfectant allowed in drinking water. |
| MRDLG | Maximum residual disinfectant level goal: The level of a drinking water disinfectant below which there is no known or expected risk to health. |

### Unregulated Contaminants (Do not have designated maximum limits but require monitoring)

| Contaminant | Tested By | Sample Year | Unit | Highest Average | Range | | Health Advisory | Found in Sources |
|---|---|---|---|---|---|---|---|---|
| | | | | | Minimum | Maximum | | |
| Chlorate | (2) | 2020 | ppb | 67.000 | 26.000 | 67.000 | 210.000 | b,c,d,e,f |
| Chloride | (2) | 2020 | ppm | 150.000 | 68.000 | 150.000 | 250 ** | b,c,d,e,f |
| Chromium, Hexavalent | (2) | 2020 | ppb | 2.600 | 1.400 | 2.600 | 13.000 | b,c,d,e,f |
| Dieldrin | (2) | 2020 | ppb | 0.046 | 0.046 | 0.046 | 0.200 | c |
| Manganese | (2) | 2018 | ppb | 1.295 | 0.470 | 1.600 | 50.000 | e,f |
| Sodium | (2) | 2020 | ppm | 52.000 | 35.000 | 52.000 | 60.000 | b,c,d,e,f |
| Strontium | (2) | 2020 | ppb | 210.000 | 45.000 | 210.000 | 4000.000 | b,c,d,e,f |
| Sulfate | (2) | 2020 | ppm | 26.000 | 8.500 | 26.000 | 250 ** | b,c,d,e,f |
| Vanadium | (2) | 2020 | ppb | 12.000 | 7.400 | 12.000 | 21.000 | b,c,d,e,f |

**Secondary Maximum Containment Levels (SMCLs) are standards established as guidelines to assist public water systems in managing the aesthetics quality (taste, odor, and color) of drinking water. EPA does not enforce SMCLs.

## Distribution System Monitoring

### Disinfection By-Products (2)

| System Name | Contaminant | Unit | Min | Max | Highest LRAA | MCL (Allowed) | MCLG (Goal) |
|---|---|---|---|---|---|---|---|
| Honolulu-Windward-Pearl Harbor | Total Trihalomethanes | ppb | 0.00 | 13.00 | 8.50 | 80 | None |
| | Haloacetic Acids (HAA5) | ppb | 0.00 | 2.20 | 0.70 | 60 | None |
| | | Unit | Min | Max | Average | MCL (Allowed) | MCLG (Goal) |
| | Haloacetic Acids (HAA6BR) | ppb | 0.00 | 1.50 | 0.82 | NYA | NYA |
| | Haloacetic Acids (HAA9) | ppb | 0.00 | 1.50 | 0.82 | NYA | NYA |

### Microbial Contaminants (2)

| System Name | Contaminant | Number of positive E. coli samples found | Violation (Yes/No) | Number of assessments required to perform | Major sources in drinking water |
|---|---|---|---|---|---|
| Honolulu-Windward-Pearl Harbor | E. Coli | 0 | No | 0 | Human and animal fecal waste |

Level 1 Assessment: A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine (if possible) why an E. coli MCL violation has occurred and/or why total coliform bacteria have been found in our water system on multiple occasions.

### Residual Chlorine (2)

| System Name | Sample Year | Unit | Lowest Monthly Average | Highest Monthly Average | Running Annual Average | MRDL | MRDLG |
|---|---|---|---|---|---|---|---|
| Honolulu-Windward-Pearl Harbor | 2020 | ppm | 0.29 | 0.33 | 0.30 | 4 | 4 |

### Lead/Copper Testing (2)

| Contaminant | Sample Year | Unit | 90th Percentile Reading | Action Level | # Samples Above Action Level |
|---|---|---|---|---|---|
| Copper | 2018 | ppm | 0.029 | 1.300 | 0 |
| Lead | 2018 | ppb | <1.000 | 15.000 | 0 |

No violations found for calendar year 2020

Date Report Printed: 3/31/2021

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Exhibit 14: Wetlands Protection

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| | | | |
|---|---|---|---|
| Environmental Risk Analysis | PROJECT NAME:<br>Environmental Assessment<br>4 Lumahai Street<br>Honolulu, Hawaii 96825<br>Tax Map Key 3-9-013:32 | EXHIBIT TITLE:<br>Wetlands Map | |
| | | EXHIBIT NUMBER:<br>14 | |

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Exhibit 15: Wild and Scenic Rivers

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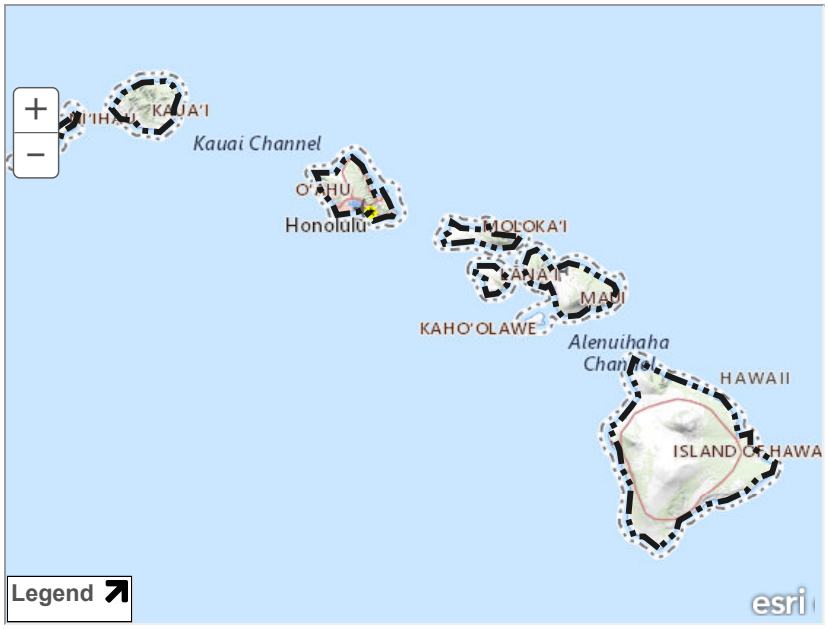
# HAWAII

Hawaii has approximately 3,905 miles of river, but no designated wild & scenic rivers.




+ View larger map

Hawaii does not have any designated rivers.

## EXPLORE DESIGNATED RIVERS

Choose A State Go

Choose A River Go

*Dark and foreboding one minute, sun-drenched and exploding with color the next, tropical rivers span every mood.*

**Designated Rivers**

About WSR Act
State Listings
Profile Pages

**National System**

WSR Table
Study Rivers
Stewardship
WSR Legislation

**River Management**

Council
Agencies
Management Plans
River Mgt. Society
GIS Mapping

**Resources**

Q & A Search
Bibliography
Publications
GIS Mapping
Logo & Sign Standards

Exhibit 16: Environmental Justice

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# EJSCREEN Report (Version 2020)

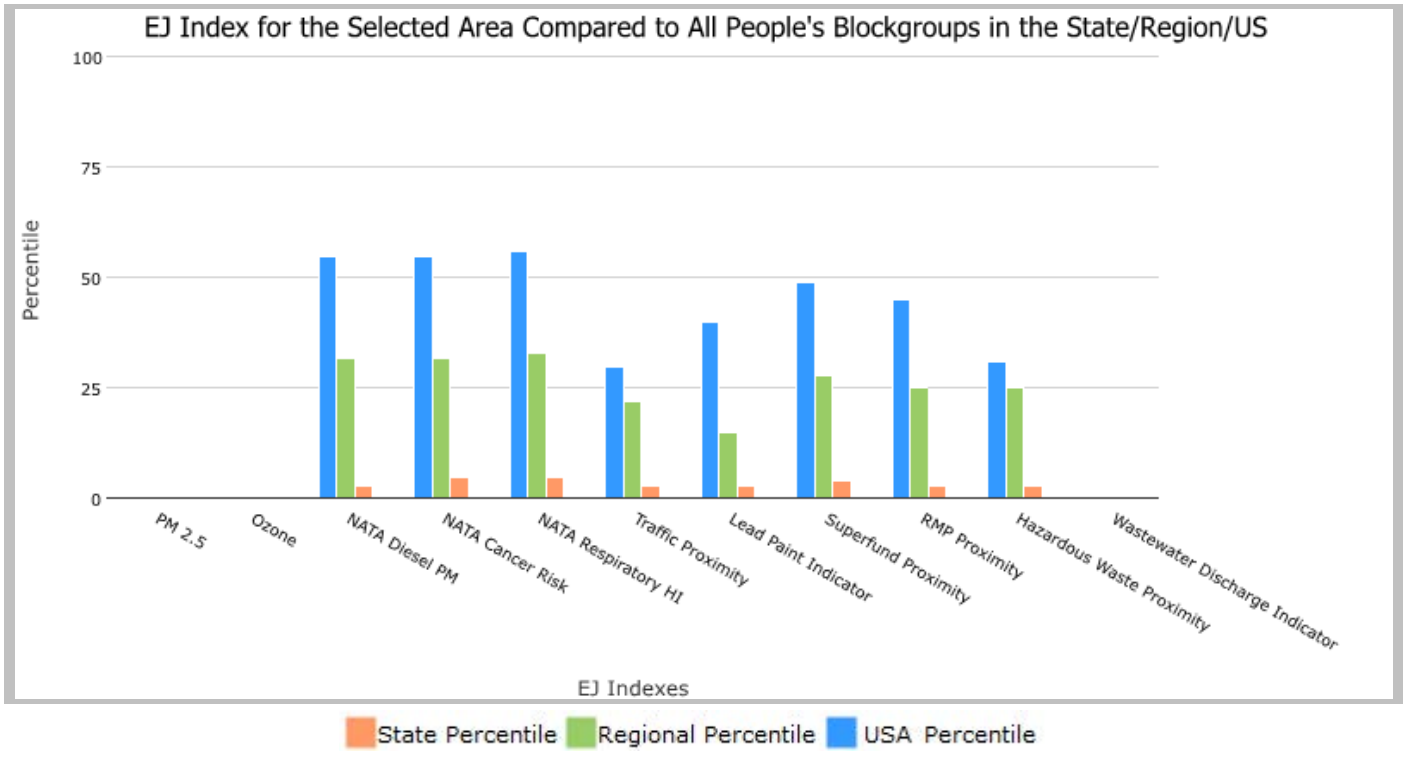
**1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9**

**Approximate Population: 1,249**

**Input Area (sq. miles): 3.14**

**4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)**

| Selected Variables | State Percentile | EPA Region Percentile | USA Percentile |
|---|---|---|---|
| **EJ Indexes** | | | |
| EJ Index for PM2.5 | N/A | N/A | N/A |
| EJ Index for Ozone | N/A | N/A | N/A |
| EJ Index for NATA* Diesel PM | 3 | 32 | 55 |
| EJ Index for NATA* Air Toxics Cancer Risk | 5 | 32 | 55 |
| EJ Index for NATA* Respiratory Hazard Index | 5 | 33 | 56 |
| EJ Index for Traffic Proximity and Volume | 3 | 22 | 30 |
| EJ Index for Lead Paint Indicator | 3 | 15 | 40 |
| EJ Index for Superfund Proximity | 4 | 28 | 49 |
| EJ Index for RMP Proximity | 3 | 25 | 45 |
| EJ Index for Hazardous Waste Proximity | 3 | 25 | 31 |
| EJ Index for Wastewater Discharge Indicator | N/A | N/A | N/A |




This report shows the values for environmental and demographic indicators and EJSCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports.

# EJSCREEN Report (Version 2020)

**1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9**

**Approximate Population: 1,249**

**Input Area (sq. miles): 3.14**

**4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)**


| Sites reporting to EPA | |
|---|---|
| Superfund NPL | 0 |
| Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) | 0 |

# EJSCREEN Report (Version 2020)

**1 mile Ring Centered at 21.259896,-157.707466, HAWAII, EPA Region 9**

**Approximate Population: 1,249**

**Input Area (sq. miles): 3.14**

**4 Lumahai (The study area contains 2 blockgroup(s) with zero population.)**

| Selected Variables | Value | State Avg. | %ile in State | EPA Region Avg. | %ile in EPA Region | USA Avg. | %ile in USA |
|---|---|---|---|---|---|---|---|
| **Environmental Indicators** | | | | | | | |
| Particulate Matter (PM 2.5 in µg/m$^3$) | N/A | N/A | N/A | 9.99 | N/A | 8.55 | N/A |
| Ozone (ppb) | N/A | N/A | N/A | 50.1 | N/A | 42.9 | N/A |
| NATA* Diesel PM (µg/m$^3$) | 0.0814 | 0.164 | 45 | 0.479 | <50th | 0.478 | <50th |
| NATA* Cancer Risk (lifetime risk per million) | 11 | 14 | 36 | 35 | <50th | 32 | <50th |
| NATA* Respiratory Hazard Index | 0.12 | 0.16 | 35 | 0.53 | <50th | 0.44 | <50th |
| Traffic Proximity and Volume (daily traffic count/distance to road) | 320 | 1200 | 49 | 1700 | 33 | 750 | 58 |
| Lead Paint Indicator (% Pre-1960 Housing) | 0.15 | 0.16 | 58 | 0.24 | 52 | 0.28 | 46 |
| Superfund Proximity (site count/km distance) | 0.032 | 0.097 | 31 | 0.15 | 22 | 0.13 | 28 |
| RMP Proximity (facility count/km distance) | 0.25 | 0.39 | 58 | 0.99 | 35 | 0.74 | 44 |
| Hazardous Waste Proximity (facility count/km distance) | 1.3 | 3.2 | 42 | 5.3 | 25 | 5 | 56 |
| Wastewater Discharge Indicator (toxicity-weighted concentration/m distance) | N/A | 37 | N/A | 18 | N/A | 9.4 | N/A |
| **Demographic Indicators** | | | | | | | |
| Demographic Index | 30% | 50% | 4 | 46% | 26 | 36% | 50 |
| People of Color Population | 54% | 78% | 11 | 60% | 42 | 39% | 68 |
| Low Income Population | 7% | 23% | 9 | 33% | 7 | 33% | 8 |
| Linguistically Isolated Population | 2% | 6% | 40 | 8% | 29 | 4% | 56 |
| Population With Less Than High School Education | 2% | 8% | 13 | 16% | 10 | 13% | 11 |
| Population Under 5 years of age | 9% | 6% | 83 | 6% | 80 | 6% | 81 |
| Population over 64 years of age | 27% | 17% | 87 | 14% | 91 | 15% | 90 |

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: https://www.epa.gov/national-air-toxics-assessment.

For additional information, see: www.epa.gov/environmentaljustice

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Exhibit 17: Consultation Letters

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**BOARD OF WATER SUPPLY**

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843
www.boardofwatersupply.com

August 6, 2021



Ms. Rachel Okoji
Environmental Risk Analysis LLC
905-A Makahiki Way
Honolulu, Hawaii 96826

Dear Ms. Okoji:

Subject: Your Letter Dated July 19, 2021 Requesting Comments on the Environmental Assessment Pre-Consultation for the Single-Family Residential Project at 4 Lumahai Street - Tax Map Key: 3-9-013: 032

Thank you for the opportunity to comment on the proposed two-story single-family residence project.

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

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

Water conservation measures are required for all proposed developments. These measures include utilization of nonpotable water for irrigation using rain catchment, drought tolerant plants, xeriscape landscaping, efficient irrigation systems, such as a drip system and moisture sensors, and the use of Water Sense labeled ultra-low flow water fixtures and toilets.

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

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

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DAVID Y. IGE
GOVERNOR

CURT T. OTAGURO
COMPTROLLER

AUDREY HIDANO
DEPUTY COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P O BOX 119, HONOLULU, HAWAII 96810-0119

(P)21.145

AUG - 6 2021

Ms. Rachel Okoji, M.S., President
Environmental Risk Assessment, LLC
905A Makahiki Way
Honolulu, Hawaii 96826
ATTN: 4 Lumahai Street, DRAFT EA

Dear Ms. Okoji:

Subject: Pre-Consultation: DRAFT Environmental Assessment for
4 Lumahai Street Residence Project
Honolulu, Oahu, Hawaii
TMK: (1) 3-9-013: 032

Thank you for the opportunity to comment on the subject project. We have no comments to offer at this time as the proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities.

If you have any questions, your staff may call Ms. Gayle Takasaki of the Planning Branch at 586-0584.

Sincerely,

CHRISTINE L. KINIMAKA
Public Works Administrator

GT:mo

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DEPARTMENT OF COMMUNITY SERVICES
CITY AND COUNTY OF HONOLULU
925 DILLINGHAM BOULEVARD, SUITE 200•HONOLULU, HAWAII 96817
PHONE: (808) 768-7762 • FAX: (808) 768-7792
www.honolulu.gov/dcs

RICK BLANGIARDI
MAYOR

SARAH ALLEN
DIRECTOR

JOY BARUA
DEPUTY DIRECTOR

July 23, 2021

Ms. Rachel Okoji, M.S.
Environmental Risk Analysis LLC
905A Makahiki Way
Honolulu, Hawai'i 96826
Attn: 4 Lumahai St DRAFT EA

Dear Ms. Okoji:

SUBJECT: Pre-Consultation: DRAFT Environmental Assessment
Single-Family Residence at 4 Lumahai Street
TMK: (1) 3-9-013:032 O'ahu, Hawai'i

Thank you for your pre-consultation notice of a Draft Environmental Assessment for the 4 Lumahai Street Residence project.

Our review indicates that the proposed project will have no adverse impacts on any Department of Community Services activities or projects in the surrounding neighborhood.

Thank you for providing us the opportunity to comment on this matter.

Sincerely,

Sarah Allen
Director

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**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

August 10, 2021

Ms. Rachel Okoji, M.S.
President
Environmental Risk Analysis LLC
905 A Makahiki Way
Honolulu, Hawaii 96826

Attn: 4 Lumahai St. DRAFT EA

Dear Ms. Okoji,

Subject: Pre-Consultation: DRAFT Environmental Assessment
4 Lumahai Street Residence Project
TMK: (1) 3-9-013:32, Oahu, Hawaii

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,

For Alex Kozlov, P.E.
Director

AK:krn (857919)

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DEPARTMENT OF FACILITY MAINTENANCE

**CITY AND COUNTY OF HONOLULU**

1000 Ulu`ohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

RICK BLANGIARDI
MAYOR

ROGER BABCOCK, JR., Ph. D., P.E.
DIRECTOR AND CHIEF ENGINEER

DAWN B. SZEWCZYK, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 21-463

August 3, 2021

Environmental Risk Analysis LLC
Ms. Rachel Okoji
905A Makahiki Way
Honolulu, Hawaii 96826

Dear Ms. Okoji:

Subject: Pre-Consultation, Draft Environmental Assessment
4 Lumahai Street Residence Project
TMK: (1) 3-9-013:032

Thank you for the opportunity to review and comment on the subject project.

Our comments are as follows:

- During construction and upon completion of the project, any damages/deficiencies along the City roadway, sidewalks and drainage structures on Lumahai Street shall be repaired to current City standards and at no cost to the City and County of Honolulu.
- We have identified a City drainage easement Drain Easement "6" within the subject property. The property owner shall obtain an easement variance to construct over the City's drainage easement.
- Please note that the construction project shall not impact the City's Beach Access located next to the subject property.
- Once the construction phase commence, install approved Best Management Practices fronting drainages structures at the subject property.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,

Roger Babcock, Jr., Ph. D., P.E.
Director and Chief Engineer

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DAVID Y. IGE
GOVERNOR

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

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

IN REPLY REFER TO:
DIR 0717
STP 8.3226

July 27, 2021

Ms. Rachel Okoji, M.S.
President
Environmental Risk Analysis LLC
905A Makahiki Way
Honolulu, Hawaii 96826

Attention: 4 Lumahai St. DRAFT EA

Dear Ms. Okoji:

Subject: Pre-Consultation for Draft Environmental Assessment
4 Lumahai Street Residence Project
Honolulu, Oahu, Hawaii
Tax Map Key: (1) 3-9-013:032

Thank you for your letter dated July 19, 2021 requesting the State of Hawaii Department of Transportation's (HDOT) review and comments on the subject property. HDOT understands the project involves the demolition of existing structures and construction of a new single-family residence located at 4 Lumahai Street in East Honolulu. The subject property is approximately 1.5 miles away from Kalanianaole Highway (State Route 72), which is the nearest roadway under HDOT jurisdiction.

Based on the project description and location, HDOT does not anticipate any significant adverse impacts to State roadways; therefore, we have no comments to provide.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

Sincerely,

JADE T. BUTAY
Director of Transportation

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HONOLULU FIRE DEPARTMENT

# CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

RICK BLANGIARDI
MAYOR

LIONEL CAMARA JR.
ACTING FIRE CHIEF

SHELDON K. HAO
ACTING DEPUTY FIRE CHIEF

August 3, 2021

Ms. Rachel Okoji, M.S.
President
Environmental Risk Analysis LLC
905A Makahiki Way
Honolulu, Hawaii 96826

Dear Ms. Okoji:

Subject: Pre-Consultation Draft Environmental Assessment for Single Family Home
4 Lumahai Street
Honolulu, Hawaii 96825
Tax Map Key: 3-9-013: 032

In response to your letter dated July 19, 2021, regarding the abovementioned subject, the Honolulu Fire Department (HFD) reviewed the submitted information and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (45 meters) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; 2012 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1.)

   A fire department access road shall extend to within 50 feet (15 meters) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; 2012 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter

constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet (45,720 millimeters) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; 2012 Edition, Section 18.3.1, as amended.)

3. The unobstructed width and unobstructed vertical clearance of a fire apparatus access road shall meet county requirements. (NFPA 1; 2012 Edition, Sections 18.2.3.4.1.1 and 18.2.3.4.1.2, as amended.)

4. Submit civil drawings to the HFD for review and approval.

Should you have questions, please contact Battalion Chief Reid Yoshida of our Fire Prevention Bureau at 723-7151 or ryoshida@honolulu.gov.

Sincerely,

JASON SAMALA
Assistant Chief

JS/TC:gl

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

RICK BLANGIARDI
MAYOR

RADE K. VANIC
INTERIM CHIEF

OUR REFERENCE DK-DK

July 29, 2021

SENT VIA EMAIL

Ms. Rachel Okoji
rachelokoji@enviroriskhawaii.com

Dear Ms. Okoji:

This is in response to your letter of July 19, 2021, requesting input on a Pre-Consultation, Draft Environmental Assessment, for the proposed construction and occupation of a single family home development on real property located at 4 Lumahai Street in Portlock, Oahu.

The Honolulu Police Department has reviewed the information provided and does not have any comments or concerns at this time.

If there are any questions, please call Acting Major Brian Lynch of District 7 (East Honolulu) at 723-3369.

Thank you for the opportunity to review this project.

Sincerely,

DARREN CHUN
Assistant Chief of Police
Support Services Bureau

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# Solid and Hazardous Waste Branch Standard Comments

November 26, 2018

The Solid and Hazardous Waste Branch administers programs in the areas of:

1) Management of hazardous waste;
2) Management of solid waste; and
3) Regulation of underground storage tanks.

Our general comments on projects are below. For further information about these programs, please contact the Solid and Hazardous Waste Branch at (808) 586-4226. All chapters of the Hawaii Revised Statutes (HRS) are at https://www.capitol.hawaii .gov/hrscurrent/.

**Hazardous Waste Program**

- The state regulations for hazardous waste and used oil are in chapters 11-260.1 to 11-279.1, Hawaii Administrative Rules (HAR) [http://health.hawaii.go v/shwb/hwrules/]. These rules apply to the identification, handling, transportation, storage and disposal of regulated hazardous waste and used oil. Generators, transporters and treatment, storage, and disposal facilities of hazardous waste and used oil must adhere to these requirements. Violations are subject to penalties under chapter 342J, HRS.

**Solid Waste Section**

- The Solid Waste Section (SWS) enforces laws and regulations contained in chapters 342H and 3421, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [http://health.hawaii .gov/shwb/solid-waste/].

- The purpose of the rules is to establish minimum standards governing the design, construction, installation, operation, and maintenance of solid waste disposal, recycling, reclamation and transfer systems.

- All facilities that accept solid wastes are required to obtain a solid waste management permit from the SWS. Examples of the types of facilities governed by these regulations include landfills, transfer stations and convenience centers, recycling facilities, composting facilities, and salvage facilities. Medical waste, infectious waste, and foreign waste treatment facilities are also included.

- Generators of solid waste are required to ensure that their wastes are properly delivered to permitted solid waste management facilities. Managers of construction and demolition projects should require their waste contractors to submit disposal receipts and invoices to ensure proper disposal of wastes.

- Chapter 342G, HRS, encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. The project developer is highly encouraged to develop a solid waste management plan to ensure proper handling of wastes and divert recyclables from being landfilled. Ideally, the plan would seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

**Office of Solid Waste Management**

- The Office of Solid Waste Management (OSWM) administers statewide integrated solid waste management planning activities, which apply to the counties, as well as various recycling programs, e.g. the Glass Advance Disposal Fee (ADF) and Deposit Beverage Container (DBC) Programs. Management of the DBC Program is conducted pursuant to chapter 342G, HRS, which contains compliance and enforcement provisions, and chapter 11-282, HAR, "Deposit Beverage Recycling" [http://health.hawaii.gov/hi5/rules-regulations-additional- links/]. OSWM is also responsible for limited enforcement and compliance of solid waste management facilities that operate primarily as certified DBC redemption centers pursuant to chapter 342H, HRS, and chapter 11-58.1, HAR, "Solid Waste Management Control" [http://health.hawaii.gov/shwb/solid-waste/]. Authority for the integrated solid waste management planning and ADF programs is contained in chapter 342G, HRS.

- Glass Advance Disposal Fee Program: Businesses that import glass containers into Hawaii are required to register with the Department of Health and pay a 1.5 cent per container fee. Fee revenue is distributed to the counties for the operation of glass recycling programs.

- Deposit Beverage Container Program: Business that manufacture or import deposit beverage containers into Hawaii are required to register with the Department of Health and pay the five-cent deposit and one cent container fee on each deposit container. Deposits and fees are deposited into a special fund and are used to reimburse DBC redemption center refunds paid to consumers; and to pay handling fees to redemption/recycling companies to process and recycle collected deposit beverage containers; and to pay program administrative costs.

- The Department of Health reimburses and pays an associated handling fee for the redemption of deposit beverage containers (DBC). These transactions are conducted only with certified redemption centers. Certification requires obtaining a solid waste management permit from the SWS (which addresses environmental issues) and a certification from the DBC program (which standardizes the redemption process).

- Chapter 342G, HRS, encourages the reduction of waste generation, reuse of discarded materials, and the recycling of solid waste. Businesses, property managers and developers, and government entities are highly encouraged to develop solid waste management plans to ensure proper handling of wastes and divert recyclables from being landfilled. The project developer is highly encouraged to develop a solid waste management plan to ensure proper handling of wastes and divert recyclables from being landfilled. Ideally, the plan would seek to

maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

- Solid waste management plans seek to maximize waste diversion and minimize disposal. Such plans should include designated areas to promote the collection of reusable and recyclable materials.

**Underground Storage Tank Program**

- The state's underground storage tank (UST) regulations, found in chapter 11-280.1, HAR [http://health.hawaii.gov/shwb/underg round-storage-tanks/], include specific requirements that UST owners and operators must meet when installing, operating, and permanently closing their UST systems and addressing releases from USTs. Violations are subject to penalties under chapter 11-280.1, HAR, and chapter 342L, HRS.

- A permit is required prior to the installation and operation of a UST. Any new UST system that will be installed must have secondary containment with interstitial monitoring. Refer to subchapters 2, 3, 4, and 12 of chapter 11-280.1, HAR. The installation permit expires 1 year from the date of issuance. The operation permit expires 5 years from the date of issuance.

- §11-280.1-50, HAR, requires owners and operators of USTs or tank systems to notify DOH within twenty-four (24) hours and follow the procedures in§ 11-280.1-52, HAR, if any of the following occur, with specific exceptions found in the rules:
  1) The discovery by any person of evidence of regulated substances which may have been released at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, or nearby surface water);
  2) Unusual UST system operating conditions observed or experienced (such as the erratic behavior of product dispensing equipment, the sudden loss of product from the UST, or an unexplained presence of water in the tank); or
  3) Monitoring results from a release detection method required under §§11-280.1-41 or 11-280 .1-42 indicate a release may have occurred.

- For release response actions, responsible parties and their consultants and contractors should follow the applicable guidance in the Department of Health Hazard Evaluation Emergency (HEER) Office Technical Guidance Manual, HEER Environmental Action Level (EAL) guidance, and other guidance documents on the DOH HEER Office website [http://eha-web.doh.hawaii.gov /eha-cma/Org/HEER/], including those pertaining to Multi-Increment Sampling of soil, low flow groundwater sampling, soil vapor sampling, and Environmental Hazard Evaluations (EHE)/Environmental Hazard Management Plans (EHMP).

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# 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-0400

August 2, 2021

Ms. Rachel Okoji, M.S.
Environmental Risk Analysis LLC
905A Makahiki Way
Honolulu, Hawai‘i 96826

Subject: Technical Assistance Regarding the Draft EA at 4 Lumaha‘i Street Residence Honolulu, O‘ahu

Dear Ms. Okoji:

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

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

If you are representing a federal action agency, please request an official species list following the instructions at our PIFWO website https://www.fws.gov/pacificislands/articles.cfm?id=149489558. You can find out if your project occurs in or near designated critical habitat here: https://ecos.fws.gov/ipac/.

Under section 7 of the ESA, it is the Federal agency's (or their non-Federal designee) responsibility to make the determination of whether or not the proposed project "may affect" federally listed species or designated critical habitat. A "may affect, not likely to adversely affect" determination is appropriate when effects to federally listed species are expected to be discountable (i.e., unlikely to occur), insignificant (minimal in size), or completely beneficial. This conclusion requires written concurrence from the Service. If a "may affect, likely to adversely affect" determination is made, then the Federal agency must initiate formal consultation with the Service. Projects that are determined to have "no effect" on federally listed species and/or critical habitat do not require additional coordination or consultation.

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

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

Sincerely,

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

| **Scientific Name** | **Common Name / Hawaiian Name** | **Federal Status** | **May Occur In Project Area** |
|---|---|---|---|
| **Mammals** | | | |
| *Lasiurus cinereus semotus* | Hawaiian hoary bat/‘ōpe‘ape‘a | E | ☒ |
| **Reptiles** | | | |
| *Chelonia mydas* | green sea turtle/honu - Central North Pacific distinct population segment (DPS) | T | ☐ |
| *Eretmochelys imbricata* | hawksbill sea turtle/ honu ‘ea or ‘ea | E | ☐ |
| **Birds** | | | |
| *Anas wyvilliana* | Hawaiian duck/koloa | E | ☐ |
| *Branta sandvicensis* | Hawaiian goose/nēnē | T | ☐ |
| *Fulica alai* | Hawaiian coot/‘alae ke‘oke‘o | E | ☐ |
| *Gallinula galeata sandvicensis* | Hawaiian gallinule/‘alae ‘ula | E | ☐ |
| *Himantopus mexicanus knudseni* | Hawaiian stilt/ae‘o | E | ☐ |
| *Oceanodroma castro* | band-rumped storm-petrel Hawai‘i DPS/‘akē‘akē | E | ☒ |
| *Pterodroma sandwichensis* | Hawaiian petrel/‘ua‘u | E | ☒ |
| *Puffinus auricularis newelli* | Newell’s shearwater/‘a‘o | T | ☒ |
| *Ardenna pacificus* | wedge-tailed shearwater/‘ua‘u kani | MBTA | ☒ |
| *Buteo solitarius* | Hawaiian hawk/‘io | MBTA | ☐ |
| *Gygis alba* | white tern/manu-o-kū | MBTA | ☒ |
| **Insects** | | | |
| *Manduca blackburni* | Blackburn’s sphinx moth | E | ☐ |
| *Megalagrion pacificum* | Pacific Hawaiian damselfly | E | ☐ |
| *Megalagrion xanthomelas* | orangeblack Hawaiian damselfly | E | ☐ |
| *Megalagrion nigrohamatum nigrolineatum* | blackline Hawaiian damselfly | E | ☐ |

**Enclosure 2.** Federal Status of Plant Species

| **Plants** | | | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name or Hawaiian Name** | **Federal Status** | **Locations** | **May Occur In Project Area** |
| *Abutilon menziesii* | koʻoloaʻula | E | O, L, M, H | ☐ |
| *Achyranthes splendens* var. *rotundata* | ʻewa hinahina | E | O | ☐ |
| *Bonamia menziesii* | no common name | E | K, O, L, M, H | ☐ |
| *Canavalia pubescens* | ʻāwikiwiki | E | Ni, K, L, M | ☐ |
| *Colubrina oppositifolia* | kauila | E | O, M, H | ☐ |
| *Cyperus trachysanthos* | puʻukaʻa | E | K, O | ☐ |
| *Gouania hillebrandii* | no common name | E | Mo, M | ☐ |
| *Hibiscus brackenridgei* | maʻo hau hele | E | O, Mo, L, M, H | ☐ |
| *Ischaemum byrone* | Hilo ischaemum | E | K, O, Mo, M, H | ☐ |
| *Isodendrion pyrifolium* | wahine noho kula | E | O, H | ☐ |
| *Marsilea villosa* | ʻihiʻihi | E | Ni, O, Mo | ☐ |
| *Mezoneuron kavaiense* | uhiuhi | E | O, H | ☐ |
| *Nothocestrum breviflorum* | ʻaiea | E | H | ☐ |
| *Panicum fauriei* var. *carteri* | Carter's panicgrass | E | Molokini Islet (O), Mo | ☐ |
| *Panicum niihauense* | lauʻehu | E | K | ☐ |
| *Peucedanum sandwicense* | makou | E | K, O, Mo, M | ☐ |
| *Pleomele (Chrysodracon) hawaiiensis* | halapepe | E | H | ☐ |
| *Portulaca sclerocarpa* | ʻihi | E | L, H | ☐ |
| *Portulaca villosa* | ʻihi | E | Le, Ka, Ni, O, Mo, M, L, H, Nihoa | ☐ |
| *Pritchardia affinis (maideniana)* | loulu | E | H | ☐ |
| *Pseudognaphalium sandwicensium* var. *molokaiense* | ʻenaʻena | E | Mo, M | ☐ |
| *Scaevola coriacea* | dwarf naupaka | E | Mo, M | ☐ |
| *Schenkia* (*Centaurium*) *sebaeoides* | ʻāwiwi | E | K, O, Mo, L, M | ☐ |
| *Sesbania tomentosa* | ʻōhai | E | Ni, Ka, K, O, Mo, M, L, H, Necker, Nihoa | ☐ |
| *Tetramolopium rockii* | no common name | T | Mo | ☐ |
| *Vigna o-wahuensis* | no common name | E | Mo, M, L, H, Ka | ☐ |

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

DAVID Y. IGE
GOVERNOR OF HAWAII

ELIZABETH A. CHAR, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

LUD – 1 3 9 013 032
4 Lumahai St – ID 5731

August 12, 2021

Ms. Rachel Okoji, M.S.
President
Environmental Risk Analysis LLC
905 A Makahiki Way
Honolulu, Hawaii 96826
Email: rachelokoji@enviroriskhawaii.com

Dear Ms. Okoji:

Subject: Pre-Consultation: Draft Environmental Assessment
4 Lumahai Street, Honolulu, Hawaii 96825 TMK (1) 3-9-013: 032
(Koko Kai, Portlock)

Thank you for allowing us the opportunity to provide comments for the subject project. We searched our records and found no wastewater system for the subject property. If the property has an individual wastewater system, please provide that information to our office. If the subject property is connected to the Hawaii American Water sewer system, we would have no comments to offer.

Should you have any questions, please call Mr. Mark Tomomitsu of my staff at 586-4294.

Sincerely,

SINA PRUDER, P.E., CHIEF
Wastewater Branch

LM/MST:lmj