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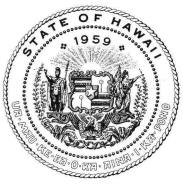

KATIE L. LAMBERT
DEPUTY TO THE CHAIR
Ka Hope Luna Ho'okele

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
Ka 'Oihana 'Āina Ho'opulapula Hawai'i

P. O. BOX 1879
HONOLULU, HAWAII 96805

Sep 9, 2024

Mary Alice Evans, Director
Office of Planning and Sustainable Development
Environmental Review Program
235 South Beretania Street, Room 702
Honolulu, Hawai'i 96813

DHHL Tracking #: PO-24-113

SUBJECT: Department of Hawaiian Home Lands 'Ewa Beach Homestead Project
Honouliuli, O'ahu, Hawai'i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)
Publication of Draft Environmental Impact Statement and Anticipated Finding of No Significant Impact

Dear Director Evans,

With this letter, the Department of Hawaiian Home Lands hereby transmits the Draft Environmental Assessment for the proposed 'Ewa Beach Homestead Project for publication in the next available periodic bulletin *The Environmental Notice*.

In addition to this letter, we are submitting the electronic version of the Environmental Review Program Publication Form and a PDF formatted electronic copy of the Draft EA and Anticipated Finding of No Significant Impact through the online submission platform.

Should you have any questions or require further information, please contact Malia Cox by email at malia.m.cox@hawaii.gov or by phone at (808) 620-9500. Thank you for your assistance.

Mahalo,

Kali Watson

Kali Watson
Chairperson
Hawaiian Homes Commission

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Monday, September 16, 2024 1:19:58 PM

Action Name

Ewa Beach Homestead Project

Type of Document/Determination

Draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds

Judicial district

ʻEwa, Oʻahu

Tax Map Key(s) (TMK(s))

(1) 9-1-001:001 (por.)

Action type

Agency

Other required permits and approvals

HRS Chapter 6E, NPDES General Permit, County Grading Permit, Community Noise Permit/Variance, County Building Permit

Proposing/determining agency

Department of Hawaiian Home Lands

Agency contact name

Malia Cox

Agency contact email (for info about the action)

malia.m.cox@hawaii.gov

Agency contact phone

(808) 620-9500

Agency address

P.O. Box 1879
Honolulu, Hawaii 96805
United States
Map It

Is there a consultant for this action?

Yes

Consultant

SSFM International, Inc.

Consultant contact name

Jennifer Scheffel

Consultant contact email

jscheffel@ssfm.com

Consultant contact phone

(808) 356-1273

Consultant address

99 Aupuni Street
Suite 220
Hilo, HI 96720
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Map It

Action summary

The State Department of Hawaiian Home Lands (DHHL) is proposing to build a new homestead community in ʻEwa Beach, Oʻahu. The Project is approximately 80 acres and identified as a portion of Tax Map Key (TMK) (1) 9-1-001:001. The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. The ʻEwa Beach Homestead Project is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's Oʻahu Residential Waitlist. As of August 2024, there were a total of 24,198 applicants on the various residential waitlists statewide, of which 11,497 are on DHHL's Oʻahu Residential Waitlist. The need for homestead development is the highest priority on Oʻahu and this site offers good conditions for residential homestead development.

Reasons supporting determination

The Proposed Action would have short-term and temporary impacts during construction associated with water resources, faunal resources, soils, traffic, air quality, and noise. These impacts would be less than significant. Best Management Practices (BMPs) and other measures would be implemented to minimize impacts, as applicable.

The Proposed Action would have beneficial impacts by providing additional access to homes and community space for native Hawaiians who have been on the DHHL's Oʻahu Residential Waitlist. The Proposed Action would be located adjacent to an existing residential neighborhood and compatible with surrounding community character and planned growth patterns. The implementation of the DHHL housing would have an increased beneficial impact in particular for vulnerable native Hawaiian families and aims to provide access critical services for a growing population.

Attached documents (signed agency letter & EA/EIS)

- 240916-DHHL_Ewa_DraftEA_COMPLETE.pdf
- PO-24-113-Submit-DEA-to-TEN-for-Ewa-Beach-Homestead-part-1-signed.pdf

Action location map

- DHHL_EB-Property.zip

Authorized individual

Jennifer M Scheffel

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

DHHL 'EWA BEACH HOMESTEAD PROJECT

Draft Environmental Assessment

'Ewa, Island of O'ahu, Hawai'i

Prepared for:
Department of Hawaiian Home Lands

SSFM International

HAWAIIAN HOME LANDS
HAWAIIAN HOMES COMMISSION · DEPARTMENT OF HAWAIIAN HOME LANDS

September 2024

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Draft Environmental Assessment

DHHL ʻEWA BEACH HOMESTEAD PROJECT

ʻEwa, Island of Oʻahu, Hawaiʻi

Prepared for:

Department of Hawaiian Home Lands

HAWAIIAN HOME LANDS
HAWAIIAN HOMES COMMISSION
DEPARTMENT OF HAWAIIAN HOME LANDS

Prepared by:

SSFM International, Inc.

SSFM International
Innovate | Adapt | Sustain

September 2024

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Project Summary

Project Name	‘Ewa Beach Homestead Project
Location	‘Ewa, Island of O‘ahu, Hawai‘i
District	‘Ewa
Project Site Tax Map Key	(1) 9-1-001:001 (por.)
Landowners	Department of Hawaiian Home Lands
Project Site Existing Uses	Vacant Land/Preservation
State Land Uses	Urban
City & County Zoning	Zone F-1 Military and Federal Preservation
Project Description	The State Department of Hawaiian Home Lands (DHHL) is proposing to build a new homestead community in ‘Ewa Beach, O‘ahu. The Project is approximately 80 acres and identified as a portion of Tax Map Key (TMK) (1) 9-1-001:001. The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. As recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL’s only parcel in ‘Ewa Beach. DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL’s Island Plans. Because the Project Area was not in DHHL’s land inventory at the time of the last O‘ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development. Land use designations would include the following: residential – single family, residential – multi-family, community use, community agriculture, and stewardship. The ‘Ewa Beach Homestead Project is primarily intended to provide residential homesteading opportunities to native[1] Hawaiian beneficiaries on DHHL’s O‘ahu Residential Waitlist. As of August 2024, there were a total of 24,198 applicants on the various residential waitlists statewide, of which 11,497 are on DHHL’s O‘ahu Residential Waitlist. The need for homestead development is the highest priority on O‘ahu and this site offers good conditions for residential homestead development.
Anticipated Impacts	The Proposed Action would have short-term and temporary impacts during construction associated with water resources, faunal resources,

[1] Native Hawaiian with a upper case “N” refers to all persons of Hawaiian ancestry regardless of blood quantum. Native Hawaiian with a lower case “n” refers to those with 50% and more Hawaiian blood.

	soils, traffic, air quality, and noise. These impacts would be less than significant. Best Management Practices (BMPs) and other measures would be implemented to minimize impacts, as applicable. The Proposed Action would have beneficial impacts by providing additional access to homes and community space for native Hawaiians who have been on the DHHL's O'ahu Residential Waitlist. The Proposed Action would be located adjacent to an existing residential neighborhood and compatible with surrounding community character and planned growth patterns. The implementation of the DHHL housing would have an increased beneficial impact in particular for vulnerable native Hawaiian families and aims to provide access critical services for a growing population.
Proposing Agency	Department of Hawaiian Home Lands
Anticipated Determination	Finding of No Significant Impact
Project Site Permits/ Approvals Required	See **Table 1**
EA Preparer	SSFM International 501 Sumner Street, Suite 620 Honolulu, HI 96817 Contact: Jennifer Scheffel (808) 356-1273
Consultations	See **Section 6.1**

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Appendices

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Acronyms

2035 ORTP	2035 O'ahu Regional Transportation Plan
µg/m³	micrograms per cubic meter
AADT	average annual daily traffic
AIS	Archaeological Inventory Survey
ALICE	Asset Limited Income Constrained Employed
ALRFI	Archaeological Literature Review and Field Inspection
BMPs	best management practices
BWS	Board of Water Supply
CATV	cable television
CCH	City & County of Honolulu
CIA	Cultural Impact Assessment
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DHHL	Department of Hawaiian Home Lands
DOH	Department of Health
DPP	Department of Planning and Permitting
DPR	Department of Parks and Recreation
ENV	Department of Environmental Management
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GHG	greenhouse gases
gpd	gallons per day
GSA	General Services Administration
HAR	Hawaii Administrative Rules
HCAP	Honolulu Community Action Program
HDOT	Hawaii Department of Transportation
HECO	Hawaiian Electric Company
HHCA	Hawaiian Homes Commission Act
HRS	Hawaii Revised Statutes
kV	kilovolt
kVA	kilovolt-ampere
LID	low impact development
LOS	Level of Service
MCBH	Marine Corps Base Hawai'i
MP	milepost
MPH	miles per hour
NAAQS	National Ambient Air Quality Standards

NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NWS	National Weather Service
ppm	parts per million
PRTF	Pu'uola Range Training Facility
PTWS	Pacific Tsunami Warning System
REC	recognized environmental condition
ROH	Revised Ordinances of Honolulu
SHPD	State Historic Preservation Division
SLR-XA	sea level rise exposure area
TIAR	Traffic Impact Analysis Report
TMK	Tax Map Key
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	volume to capacity ratio
Vph	volume per hour
WWTP	Wastewater Treatment Plant

1.0 Project Description

1.1 Introduction

The State Department of Hawaiian Home Lands (DHHL) is proposing to build a new homestead community in 'Ewa Beach, O'ahu. This Draft Environmental Assessment was prepared in conformance with Hawaii Revised Statutes (HRS), Chapter 343, Environmental Impact Statements, and Hawaii Administrative Rules (HAR), Title 11, Chapter 200.1, Environmental Impact Statement Rules. This project will use State capital improvement funds and as a result, is subject to State environmental documentation requirements. The DHHL serves both as the Proposing Agency and the Approving Agency for this environmental assessment.

1.2 Project Background

The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. As recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL's only parcel in 'Ewa Beach. A Master Plan was completed for the proposed project in July 2024 and is included as **Appendix A** of this Draft EA. The goal of the master planning process was to involve beneficiary lessees, waiting list applicants, and the surrounding community in envisioning and shaping the homestead community and ultimately create a thriving homestead community in 'Ewa Beach that honors culture, environment, and sense of place. The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian[2] beneficiaries on DHHL's O'ahu Residential Waitlist, which currently has the most beneficiaries waiting for homesteads. The need for homestead development is the highest priority on O'ahu and this site offers good conditions for residential homestead development.

The master planning and environmental assessment process is intended to identify constraints due to topography, sensitive resources, or other characteristics and environmental factors, and confirm the area is suitable for homestead development. In addition, as recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL's only parcel in 'Ewa Beach. DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL's Island Plans. Because the Project Area was not in DHHL's land inventory at the time of the last O'ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development, as shown in **Figure 1** and described in **Table 1**. These land use designations will require approval from the Hawaiian Homes Commission. The master planning and environmental review process are funded by the Native Hawaiian Housing Block Grant as administered by the U.S. Department of Housing and Urban Development's Office of Native American Programs.

[2] Native Hawaiian with a upper case "N" refers to all persons of Hawaiian ancestry regardless of blood quantum. Native Hawaiian with a lower case "n" refers to those with 50% and more Hawaiian blood.

Figure 1. Land Use Designations for the 'Ewa Beach Homestead Project

Table 1. Land Use Designations

Land Use Designation	General Plan Definition
Residential – Single Family	Single-family lots at least 5,000 square-feet in size. Residential lot subdivisions are built to County standards in areas close to existing infrastructure.
Residential – Multi-Family	Low-rise multi-family or kūpuna housing ranging between 15-20 units per acre. Residential lot subdivisions are built to County standards in areas close to existing infrastructure.
Community Use	Common areas for community uses and public facilities. Includes space for parks and recreation, cultural activities, community based economic development, utilities, and other public facilities and amenities.
Community Agriculture	Common areas used for the cultivation of fruits, vegetables, plants, flowers, or herbs by multiple users. The land must be served by a water supply sufficient to support cultivation practices on the site.
Stewardship	Land not currently used for homesteading. Allow uses that maintain or enhance the value and condition of the land to the benefit of beneficiaries and the Trust. May serve as an interim use until opportunities for higher and better uses become available.
Internal roads/infrastructure	Roadways and underlying infrastructure built to County standards.

1.3 Project Description

The 'Ewa Beach Homestead Project consists of demolition of seven (7) buildings and the construction of sub-surface infrastructure, internal roadways, and vertical construction of residential housing units. Based upon consultation with beneficiaries on DHHL's O'ahu Residential Waitlist, DHHL is proposing to develop approximately 220 single family lots and approximately 120 to 160 low-rise multi-family units. In addition to the infrastructure, roadways, and residential lots; 27 acres would be designated for a combination of community use, community agriculture, stewardship, and open space/drainage. These uses are defined above in **Table 1**.

1.4 Project Location

The proposed project comprises approximately 80 acres and is identified as a portion of Tax Map Key (TMK) (1) 9-1-001:001 located in the 'Ewa Beach District of Honolulu on the Island of O'ahu. The site is located on the makai end of Fort Weaver Road within a vacant parcel that used to serve as the Pacific Tsunami Warning Center (PTWS) and National Weather Service (NWS). North Road is to the northwest of the project site, 'Ewa Beach Golf Club is to the east, Fort Weaver Road is to the south, and single-family homes and low-rise apartments are to the west. The DHHL property wraps around the U.S. Geological Survey (USGS) Magnetic Observatory property, which occupies 95-acres. The project location is shown in **Figure 2**.

Figure 2: DHHL Project Site and Surrounding Area

The project site parcel is favorably situated within the community of 'Ewa Beach with access to employment centers, public transit, public services, and recreational facilities. A brief summary of surrounding uses is provided below. Photos of the site and surrounding uses are included in **Appendix A**.

- 'Ewa Beach Golf Course
- 'Ewa Beach Public Library
- Pohakea Elementary
- Campbell High School Stadium
- Ilima Intermediate School
- 'Ewa Beach Community Park
- Pu'uloa Beach Park
- Kaimiloa Elementary School

1.5 Purpose and Need

1.5.1 Purpose of the Proposed Project

The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's O'ahu Residential Waitlist. The DHHL objectives for the proposed homestead community are:

- Provide residential homesteads to beneficiaries on DHHL's O'ahu Residential Waitlist.
- Create a thriving homestead community in 'Ewa Beach that honors culture, environment, and sense of place.

1.5.2 Need for the Proposed Project

According to the August 2024 Hawaiian Homes Commission report, there are currently 11,497 applicants on DHHL's O'ahu Residential Waitlist. To address this significant backlog, the DHHL O'ahu Island Plan recommends acquiring additional lands on the island to expand homesteading opportunities for these beneficiaries. The proposed project is essential for the following reasons:

1. The proposed project aligns with established regulatory frameworks.
2. The proposed project responds to the urgent demand for residential homesteads.
3. The proposed project follows strategic recommendations.
4. The proposed project fulfills the legal and ethical commitment to support the Hawaiian community.

In summary, the proposed project represents a crucial step in bridging the gap between the current availability of homestead lands and the needs of those on DHHL's O'ahu Residential Waitlist.

1.6 Permits and Approvals Which May Be Required for the Proposed Project

Implementation of the Proposed Action would require coordination with State and County agencies for permits or approvals. The permits and approvals presented in **Table 2** may be required for the proposed

project. Permit requirements would be determined through continued agency coordination during the HRS Chapter 343 and design processes.

Table 2. Permits and Approvals Which May be Required for Implementation of the Proposed Action

Permit or Approval	Description	Regulation(s)	Administrative Authority
Environmental Assessment and Finding of No Significant Impact	Required for projects that "trigger" environmental review, including those that propose the use of state or county lands and the use of state or county funds.	• HRS Chapter 343, Environmental Impact Statements • HAR Title 11 Section 200.1, Environmental Impact Statement Rules	Office of Planning and Sustainable Development, Environmental Review Program
Historic Preservation Review	Required for projects that may affect historic property or a burial site.	• HRS Chapter 6E	Department of Land and Natural Resources, State Historic Preservation Division
National Pollutant Discharge Elimination System	Coverage under the National Pollutant Discharge Elimination System (NPDES) General Permit is required for stormwater discharge associated with construction activities over 1 acre.	• Clean Water Act, Section 401 • HAR Section 11-55	Department of Health (DOH) – Clean Water Branch
County Grading Permit	Required when any one of the following items are exceeded: • 100 cubic yards of excavation or fill; • Vertical height of excavation or fill measured at its highest point exceeds 5 feet; or • When the general and localized drainage pattern with respect to abutting properties is altered.	• Revised Ordinances of Honolulu (2021) Volume IV Chapter 18-Fees and Permits for Building, Electrical, Plumbing, and Sidewalk Codes	City & County of Honolulu (CCH) Department of Planning and Permitting (DPP) - Site Development Division
Community Noise Permit/ Community Noise Variance	Required for construction projects exceeding 78 decibels or has a total cost of more than $250,000.	• HRS Chapter 342F • HAR Title 11, Chapter 46	Hawai'i State Department of Health (DOH) - Indoor and Radiological Health Branch
County Building Permit	Required for any project that proposes to erect, construct, enlarge, alter, repair, move, convert, or demolish any building or structure in the County.	• Revised Ordinances of Honolulu (2021) Volume IV Chapter 18-Fees and Permits for Building, Electrical, Plumbing, and Sidewalk Codes	CCH-DPP- Site Development Division

2.0 Proposed Action and Alternatives

2.1 Proposed Action

The Proposed Action would include approximately 220 single-family lots and up to 160 multi-family units that would be available to beneficiaries, as well as community use, community agriculture, stewardship, and infrastructure (e.g., internal roads, electrical/broadband, street lighting, drainage, and open space) as shown in **Table 3**. The site plan for the Proposed Action is shown in **Figure 3**. Hazard zones are shown in **Figure 4**.

Table 3. Proposed Action Land Use

Land Use	Acres	Est. No. of Lots/Units
Residential – Single-Family	25	220
Residential – Multi-Family	8	120-160
Community Use	8	N/A
Community Agriculture	4	N/A
Stewardship	15	N/A
Internal roads, infrastructure, drainage/open space	22	N/A
TOTAL	**80**	**340-380**

2.1.1 Residential

The design and style of residential land uses may vary, but the residential density and lot sizes would generally be consistent with current DHHL residential developments as provided in **Table 4**.

Table 4. DHHL Residential Development Density

Housing Type	Units/Lots per Acre
Single-Family	5,000 to 7,500 square feet with one unit per lot
Low-rise Multi-Family (Townhouse)	Up to 15 units per acre
Low-rise Multi-Family (Cluster or Complex)	Up to 18 units per acre
Low-rise Kūpuna Rental Housing	Up to 20 units per acre

Approximately 25 acres are proposed for single-family housing. Single-family lots would be at least 5,000 square feet in size and built to City & County of Honolulu (CCH) standards in areas close to existing infrastructure on the west side of the 'Ewa Beach Golf Club golf course. Possible single-famiy housing lots will include three variations, move in ready homes for purchase, move in ready homes for rent with option to purchase, and vacant lots. Single-family lots would be located in areas that are outside designated flood zones, the six (6) foot sea level rise exposure area (SLR-XA), and the tsunami evacuation zone.

Figure 3. Preferred Alternative

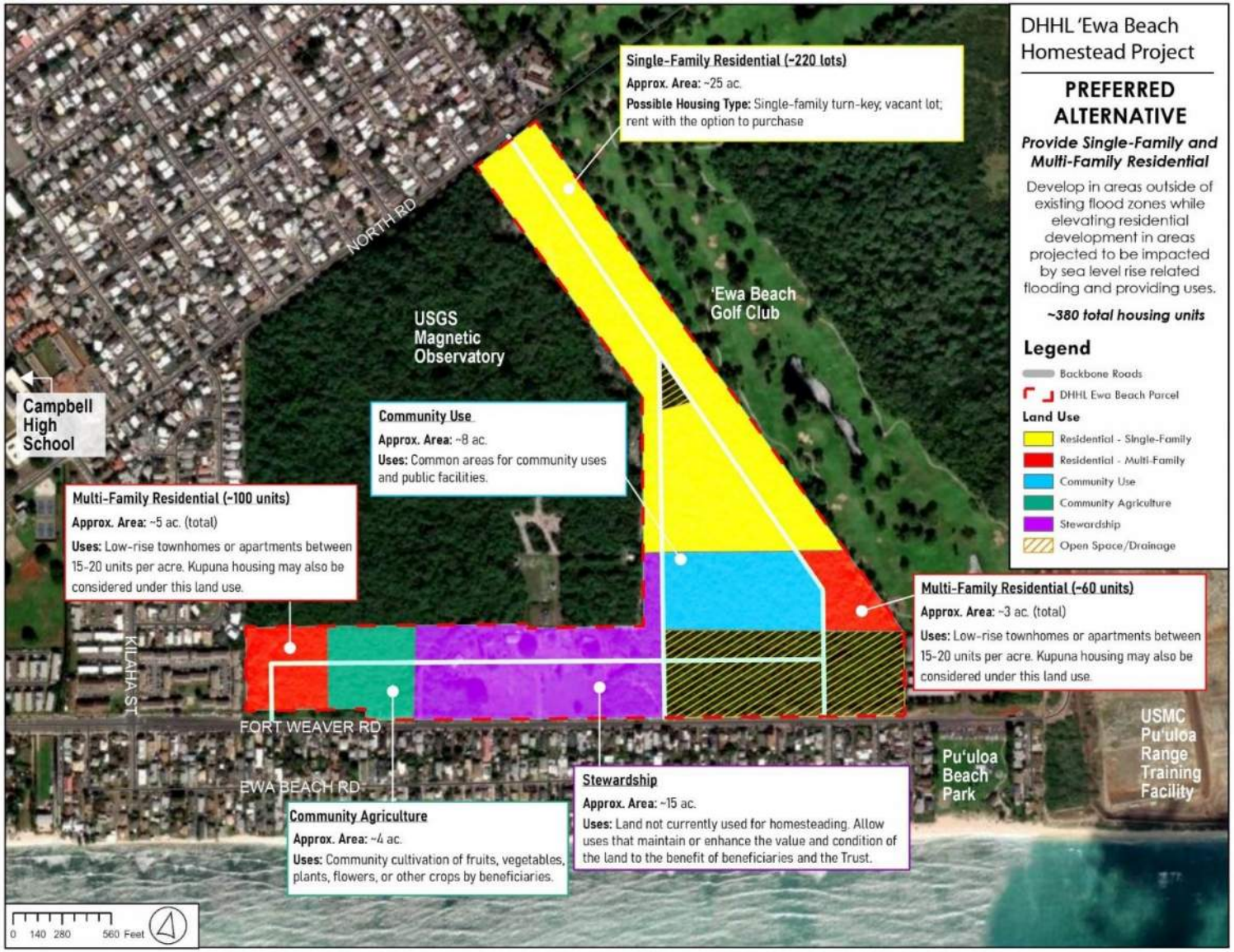
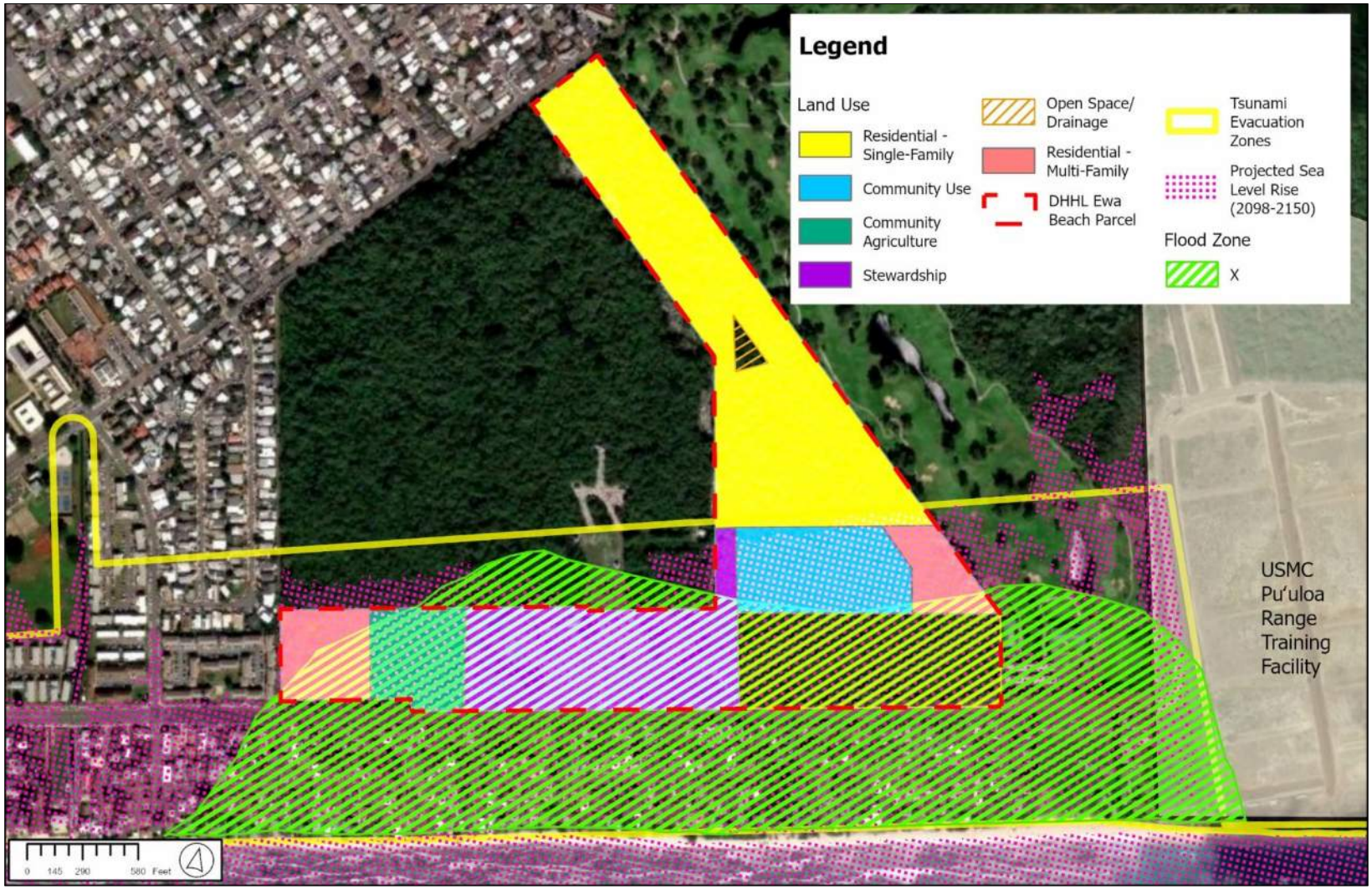


Figure 4. Hazard Zones



Approximately eight (8) acres are proposed for multi-family housing with 15 to 20 units per acre. Approximately five (5) acres would be developed along Fort Weaver Road on the west side of the project site adjacent to the existing multi-family development. Approximately three (3) acres would be developed south of the proposed single-family housing area adjacent to the 'Ewa Beach Golf Club golf course. Possible housing types include townhouses, low-rise apartment complex, and/or kūpuna housing. The multi-family uses are located in areas that are mostly outside of existing flood zones but may be impacted by sea level rise impacts within the 99-year homestead lease period at current elevations. Risks to development in these areas would be mitigated through land preparation and design measures that ensure safety and resilience, such as elevating habitable structures above the projected six-foot SLR-XA and providing additional drainage and stormwater retention capacity. The multi-family uses are also located within the tsunami evacuation zone.

2.1.2 Community Use

Community use includes common areas for public facilities, including space for parks and recreation, cultural activities, community based economic development activities, and other public facilities and amenities. Approximately eight (8) acres has been designated for community use. The community use area would be located south of the single-family residential area and west of the three (3) acre multi-family residential area. The community use area is located outside the existing flood zone but may be impacted by sea level rise as it is located in the projected six-foot SLR-XA. It is also located within the tsunami evacuation zone.

2.1.3 Community Agriculture

Community agriculture includes common areas for the cultivation of fruits, vegetables, plants, flowers, or herbs by the homestead community. Approximately four (4) acres have been designated for community agriculture east of the five (5) acre multi-family residential area. The community agriculture area is located within the designated flood zone, the six (6) foot SLR-XA, and the tsunami evacuation zone.

2.1.4 Stewardship

Stewardship lands are those that are not currently proposed for homesteading. Approximately 15 acres have been designated stewardship. This land would allow uses that maintain or enhance the value and condition of the land to the benefit of the beneficiaries and the Trust. It may serve as an interim use until opportunities for higher and better uses become available. Since this area is located within in the designated flood zone, the six (6) foot SLR-XA, and the tsunami evacuation zone, it would allow for future flexibility for exploring and analyzing suitability for future homestead development as the information and science regarding flooding and projected sea level rise projections evolve.

2.1.5 Infrastructure

Internal Roads

Access to the development would be provided by one (1) access point from North Road and four (4) access points from Fort Weaver Road. The internal roadways would provide a new connection between Fort Weaver Road and North Road.

Electrical/Broadband

The Proposed Action would include the installation of underground electrical infrastructure to be consistent with recent subdivision developments on O'ahu and in the area. The new system would transition from the existing overhead distribution along the streets to underground upon entering the project site. Underground infrastructure would consist of manholes, handholes, concrete encased ducts, conductors, pad mounted transformers, and pad mounted switches. Underground ducts would be provided to extend Hawaiian Electric Company (HECO) primary service throught the site and to each parcel. The HECO distribution system would follow the alignment of the new or existing roadways and would be located within the road right-of-way.

The Proposed Action would include the installation of underground broadband (i.e., telecom, cable television [CATV], internet). The new system would extend from the existing overhead utility poles along Fort Weaver Road and North Road and transition underground upon entering the project site. Underground infrastructure would consist of handholes and concrete encased ductlines with muletape. The system would generally follow the alignment of the proposed underground HECO system and would be designed to allow flexibility in service providers. Conduit stubouts would be provided from the utility company's handholes to the property line of each lot for future utility services to the properties.

Street Lighting

The Proposed Action would include a new underground street lighting system that would be designed consistent with CCH street light standards. The typical street lighting standard consists of a steel pole with transformer base, steel bracket arm, and "cobra head" street light luminaire. Street light luminaries would have cutoff optics to mimimize glare, light trespass, and sky glow and will utilize LED lamps. Power for the street lighting system would be supplied by a new underground secondary lighting circuit consisting of lighting ductlines, handholes, and conductors. New secondary services and a HECO meter cabinet would be provided to power the lighting system.

Drainage/Open Space

Since the Proposed Action would increase the impermeable surfaces on the property, runoff would be required to be retained on-site. A minimum of 12 acres would be designated for drainage and retention/infiltration of stormwater runoff. The Proposed Action designates drainage/open space area in the lowest lying area at the southeast portion of the project site.

2.2 No-Action Alternative

Under the No-Action Alternative, the DHHL residential home lots would not proceed and the purpose of and need for the project would not be met. This would have significant and far-reaching consequences for both the affected community and the broader region. Without the construction of the residential home lots, the current O'ahu Residential Waitlist for DHHL applicants, which already numbers in the thousands, would continue to grow. This increase would exacerbate the already critical shortage of affordable housing on the island of O'ahu. The DHHL's mission to provide housing for native Hawaiian families would be hindered, resulting in prolonged waiting times and heightened frustration for those awaiting their opportunity to secure a home. Additionally, the absence of the DHHL residential home lots means that designated project area would remain underutilized. This underutilization could lead to a missed opportunity to efficiently use available land resources in a manner that aligns with community and State planning objectives. Instead of contributing to the alleviation of housing shortages and the growth of

residential neighborhoods, the area would continue to sit idle, potentially resulting in economic and social inefficiencies.

There would be positive impacts associated with the No-Action Alternative. These include no increase in traffic, no increase in imperviable surface area, and the maintaining of existing open space.

2.3 Alternatives Considered But Not Carried Forward for Further Analysis

Draft conceptual site alternatives were developed to illustrate different ways of meeting the goal of providing leases to DHHL beneficiaries on the O'ahu Residential Waitlist while considering beneficiaries' preferences and addressing the existing opportunities and constraints discussed in **Section 6.0**. Three alternatives were proposed for beneficiary feedback via survey and beneficiary consultation. Following the second beneficiary consultation, a preferred alternative was developed in response to the feedback received, which is discussed in **Section 2.1**. The following alternatives include a variety of community and non-homestead uses, with variations in the type and number of residential units.

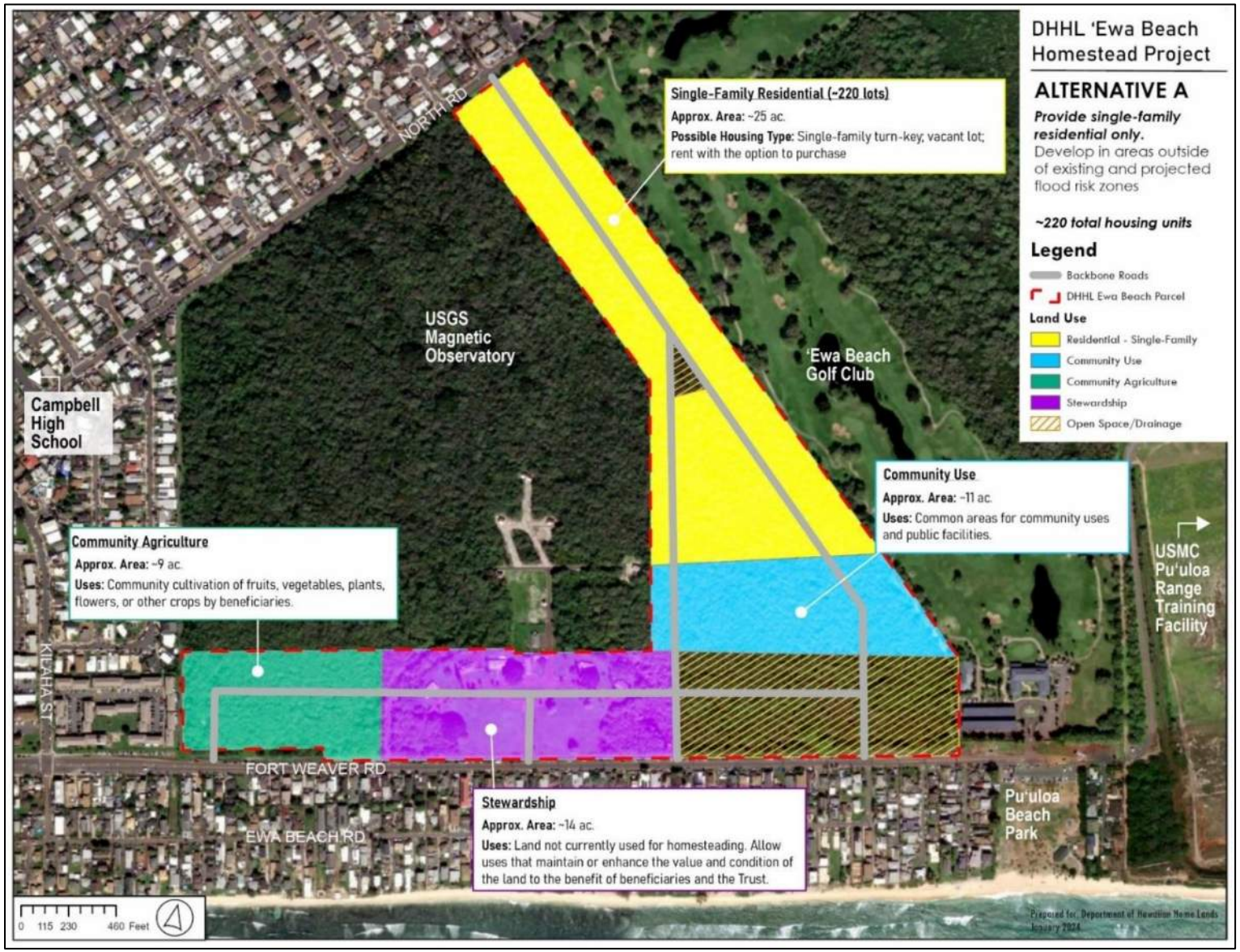
1. **Alternative A:** Provide single-family residential lots only uses
2. **Alternative B:** Provide single-family residential lots with added multi-family residential land uses
3. **Alternative C:** Maximize multi-family residential while maintaining single-family residential lots

2.3.1 Alternative A: Provide Single-Family Residential Lots Only

Alternative A would not include development in areas of the site currently at risk of flooding and tsunami hazards as well as areas projected to be impacted by sea level rise flooding within the 99-year homestead lease and 100-year lease extension timeframe at current elevations. As shown in **Figure 5**, residential development is proposed only on the mauka side of the property, which would provide approximately 220 single-family residential homestead lots. In addition, a large community use area is included makai of the residential lots and additional non-homestead land use areas for community agriculture and stewardship are identified along Fort Weaver Road. Land dedicated for on-site stormwater retention/infiltration is located in the lowest lying areas.

Alternative A provides the smallest developable area for housing and provides only single-family homestead lots, which are the most expensive housing option and may be financially out of reach for many wait list beneficiaries. However, single-family units were identified as the most preferred housing option in beneficiary surveys and through early beneficiary input on the 'Ewa Beach Homestead Project. Alternative A provides the lowest risk and lowest land preparation costs for DHHL at approximately $79,960,000.

Figure 5. Alternative A Site Uses

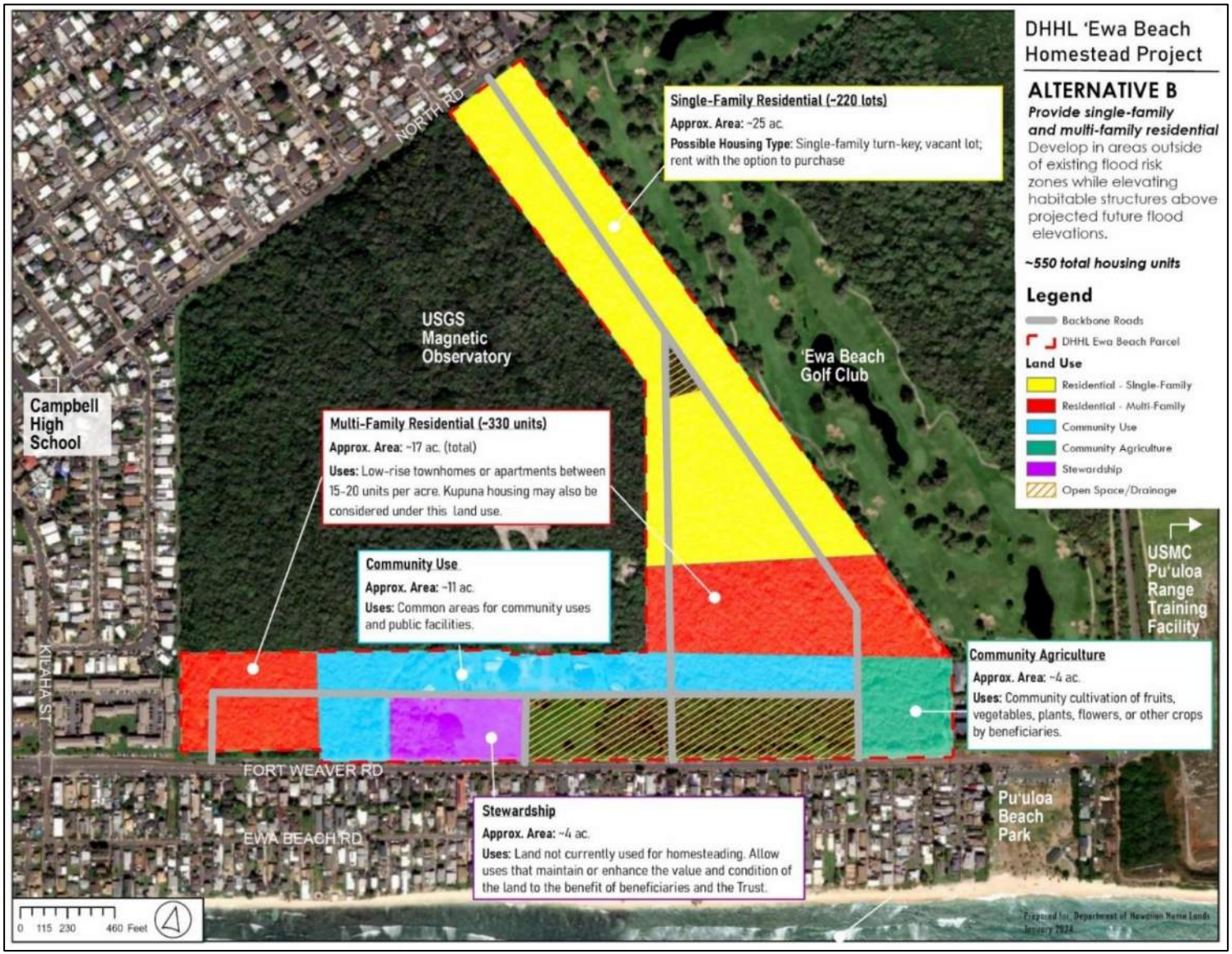


2.3.2 Alternative B: Provide Single-Family Residential Lots with added Multi-Family Residential

Alternative B maintains the same footprint of single-family residential lots in the lowest risk area of the property as Alternative A but increases the overall number of housing units with the addition of multi-family residential. Approximately 220 single-family lots and up to 330 multi-family units would be available to beneficiaries. As shown in **Figure 6**, the multi-family uses are located in areas that are outside of existing hazard zones but may be impacted by sea level rise impacts within the 99-year homestead lease period at current elevations. Alternative B assumes that risks to development in these areas would be mitigated through land preparation and design measures that ensure safety and resilience, such as elevating habitable structures above the projected six-foot sea level rise inundation depths and providing additional drainage and stormwater retention capacity. A large community use area stretches along the makai area of the site. The community use area is intended to be easily accessible from the multi-family units. Smaller non-homestead use areas for community agriculture and stewardship are also included. Land dedicated for on-site stormwater retention/infiltration is identified in the lowest lying areas.

Multi-family housing would provide more affordable residences to a greater number of beneficiaries, and could be provided as rentals to beneficiaries or designated specifically for kūpuna housing. Kūpuna housing does not provide beneficiaries with homestead leases but has been identified as a need as affordable housing for kūpuna is in high demand. DHHL rules allow for homestead leases to be awarded for multi-family housing units, but a more detailed program would need to be developed in order to implement multi-family homestead housing. In terms of traffic impacts, multi-family and kūpuna housing also generate less traffic per unit than a single-family home. Alternative B provides a wider range of housing and more affordable housing options through the addition of multi-family residential; however, construction would require more expensive land preparation and development costs to raise residential uses above flood prone elevations. Site preparation for Alternative B is estimated to cost $92,040,000.

Figure 6. Alternative B Site Layout

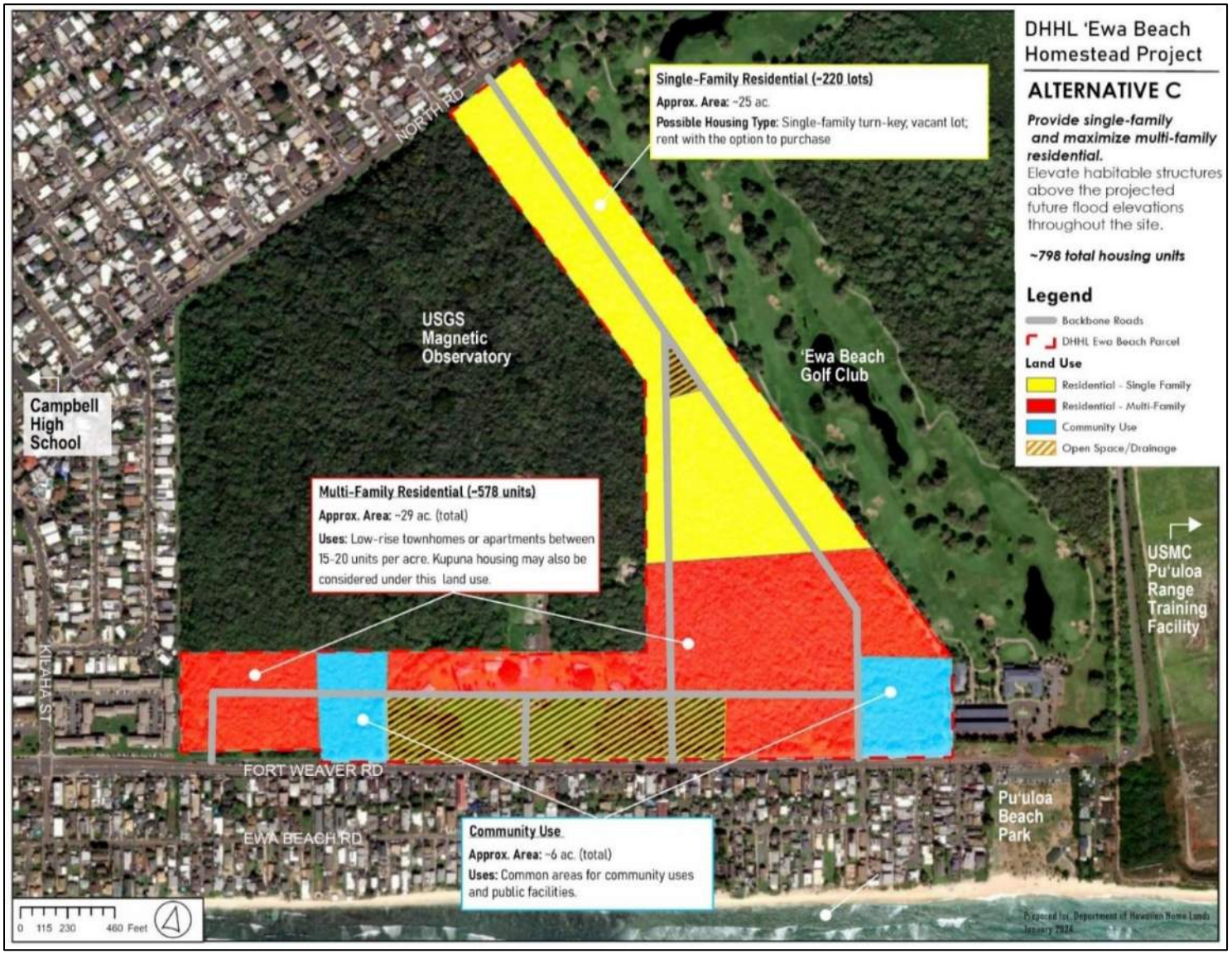


2.3.3 Alternative C: Single-Family and Maximize Multi-Family Residential

Alternative C maintains the same footprint of single-family residential lots as Alternative A and Alternative B but maximizes multi-family housing throughout the makai area of the property. Under Alternative C, 220 single-family lots and 434 to 578 multi-family units would be available to beneficiaries. As shown in **Figure 7**, the multi-family uses are expanded to areas within makai portions of the site that are projected to be impacted by sea level rise within the 99-year homestead lease at current elevations, which could mean that structures may eventually be uninhabitable. Like Alternative B, buildings would need to be elevated to ensure safety and resilience. Smaller community use areas are in proximity to multi-family residential and the required minimum land area for on-site stormwater retention/infiltration is identified in the lowest lying makai portion of the site. Other non-homestead uses are not included in Alternative C.

Alternative C provides the most units but would require more extensive and costly land preparation to elevate residential uses above flood prone areas and ensure the site design includes adequate on-site stormwater retention/infiltration. Furthermore, Alternative C would result in greater traffic impacts to the Fort Weaver Road corridor and would likely require DHHL to fund roadway improvements to mitigate the traffic impacts generated by the project. Overall, Alternative C is estimated to cost $108,533,600 for site preparation.

Figure 7. Alternative C Site Layout



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3.0 Affected Environment, Potential Impacts, and Avoidance and Minimization Measures

3.1 Water Resources

3.1.1 Affected Environment

Groundwater, Surface Waters, and Wetlands

As shown in **Figure 8,** the project area is located within the Waipahu–Waiawa Aquifer System of the Pearl Harbor Aquifer Sector (Aquifer Code 30203). The Pearl Harbor Aquifer Sector Area is comprised of the Waimalu, Waipahu-Waiawa, and 'Ewa-Kunia Aquifer Systems.

The Waipahu–Waiawa Aquifer System comprises 60.7 square miles and has an estimated sustainable yield of 105 million gallons per day (MGD) (CWRM, 2019). Between 1890 and 1960, the average withdrawal rate for sugar cultivation was 92.1 MGD. During the 1970s, the average withdrawal rate was 154 MGD. Sugar cultivation in the area ceased in 1994 which greatly reduced the average withdrawal rate from the Waipahu-Waiawa Aquifer System. From 1990 through 1999 the average withdrawal rate was 69.2 MGD; between 2000 and the end of 2012 the average withdrawal rate dropped further to 51.7 MGD (CWRM, 2019).

High pumping rates and deep wells owned by the sugar companies contributed to the salting up of the Waipahu-Waiawa Aquifer System below an elevation of 700 feet mean sea level (msl). Since the mid-1990s, the State of Hawai'i has adopted sustainable yields for state-wide aquifer systems, controlled the amount of withdrawal, and limited the depth of new wells which has allowed for the freshening of the potable sources. Deep monitor wells show that the structure of the basal lens in the Waipahu-Waiawa Aquifer System has been relatively stable over the last 20 years.

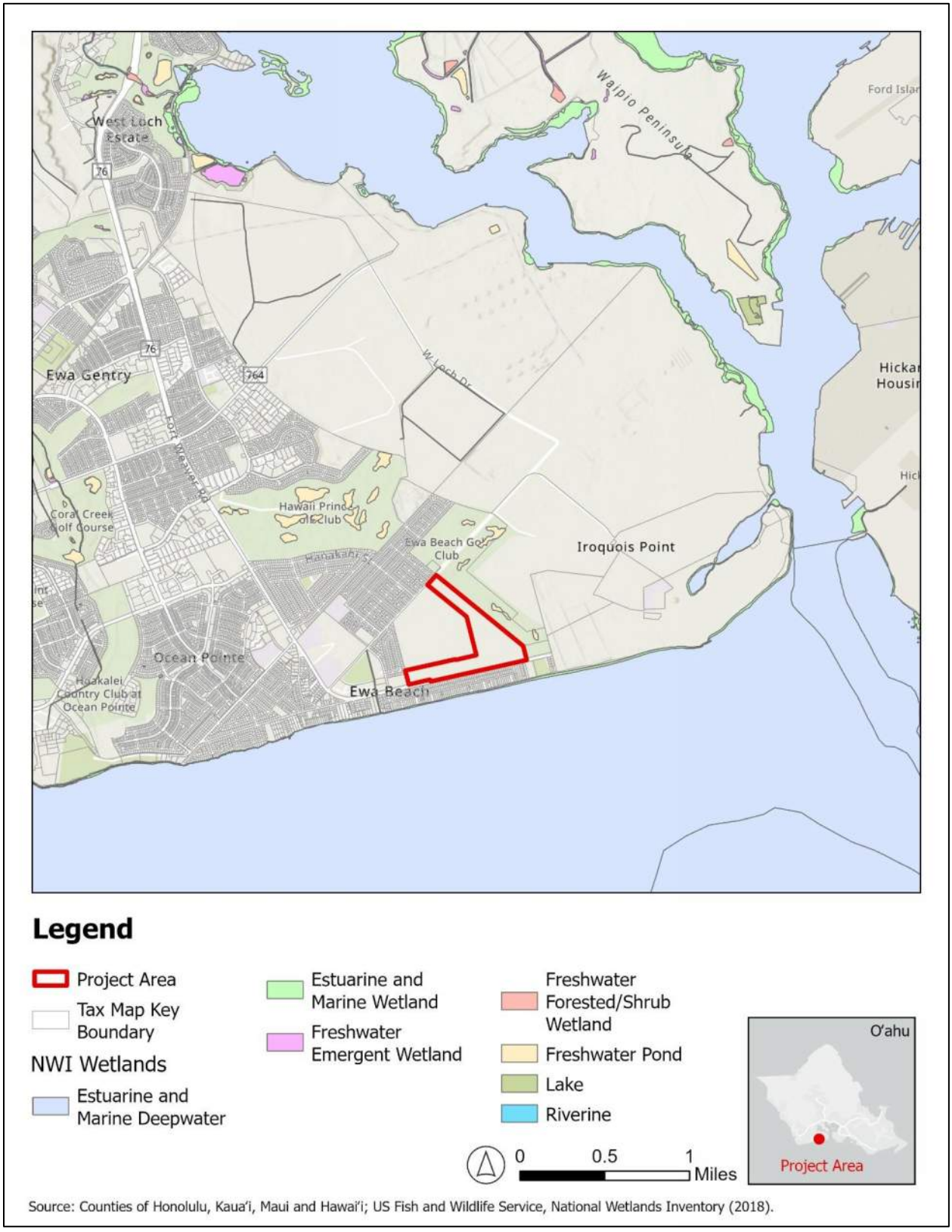
As discussed in **Section 3.5**, the 'Ewa coastal plain is a karst landscape composed of limestone. The area is full of sinkholes of various sizes and hidden voids that may be present just a few feet below the ground surface. Groundwater flowing towards the ocean a few feet above sea level may express in springs or be visible in sinkholes. The ground surface of the project site is three (3) to 13 feet above sea level, and groundwater is clearly visible in many of the sinkholes on the project site.

As shown in **Figure 9**, there are no surface waters or wetlands within or in the immediate vicinity of the project area. Developments in the surrounding area have altered the historic flow of stormwater, which is likely now diverted along the large, grassed channel running parallel to North-South Road. Both the historical and current conditions at the project site appear insufficient for the development of wetlands.

Figure 8. Aquifers

Source: Counties of Honolulu, Kaua'i, Maui and Hawai'i; Department of Land and Natural Resources, Commission on Water Resource Management, August 2022.

Figure 9. Wetlands and Surface Waters



Source: Counties of Honolulu, Kaua'i, Maui and Hawai'i; US Fish and Wildlife Service, National Wetlands Inventory (2018).

The State of Hawai'i Department of Health (DOH) Safe Drinking Water Branch (SDWB) and Wastewater Branch (WWB) work together to protect surface and groundwater. The SDWB administers the Underground Injection Control (UIC) program to prevent contamination from injection wells that are used to dispose of water or other fluids into a groundwater aquifer. The boundary between "exempted" aquifers and those that are used as underground sources of drinking water is referred to as the "UIC Line." As shown in **Figure 10**, the project area is makai of the UIC Line indicating that the underlying aquifer is not considered a drinking water source.

Storm Water

There is an existing storm sewer along North Road adjacent to the project site. A catch basin is located approximately 565 feet west of the site along Fort Weaver Road. Given the relatively flat slope and pervious surface, it is estimated that less than 10% of the rainfall runs off the site and generally runs toward the ocean.

3.1.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action would consist of grubbing and grading of the chosen parcel. There would be more than one (1) acre of disturbed land area; therefore, construction of the Proposed Action would be considered a Category 5 Priority A project under CCH Rules Related to Storm Water Quality.

- **Category 5** projects require a robust erosion and sediment control plan for implementation during construction that outlines the necessary best management practices (BMPs), maintenance, and inspections.
- **Priority A** projects are required to implement low impact development (LID) strategies to the maximum extent practicable. LID aims to preserve, restore, and create green space using soils, vegetation, and rain harvest techniques.

By implementing BMPs and incorporating LID strategies, no significant impacts to groundwater underlying the project are anticipated during construction. Construction of the project is unlikely to introduce or release any substance into the soil that could adversely affect groundwater quality. Any runoff generated by the construction would be disposed of on-site and not directed toward any adjacent properties. Since there are no surface waters or wetlands on or within the vicinity of the project site, there would be no impacts to surface waters or wetlands from construction.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no construction impacts to water resources.

Figure 10. UIC Line

Operation

Proposed Action

No significant impact to groundwater, surface waters, or wetlands are anticipated during operation of the Proposed Action. The amount of impervious area of the project site would significantly increase compared to the amount of existing impervious area. A new drainage system would be installed within the proposed development, and any runoff generated would be retained on site with retention/infiltration basins and not directed toward any adjacent properties.

No-Action Alternative

Under the No-Action Alternative, the DHHL 'Ewa Beach Homestead project would not be constructed. There would not be an increase in impervious surface, and there would be no impacts to water resources.

3.1.3 Avoidance and Minimization Measures

BMPs would be implemented to minimize risk of siltation and pollution through construction related stormwater runoff. BMP measures may include, but not be limited to, the following:

- Watering or applying dust suppressants at active work areas and project access roads, as needed.
- Installing dust screens or wind barriers around the construction site.
- Installation of Filter Sock Perimeter Controls adjacent and downslope from disturbed areas.
- Cleaning nearby pavements and paved roads after construction.
- Covering open trucks carrying construction materials and debris.
- Limiting areas to be disturbed at any given time.

Design features may be considered for the project that would provide ongoing protection from stormwater runoff. These may include, but not be limited to, the following:

- Dikes and swales may be installed as a permanent site drainage control feature.
- Pipe slope drains to contain and convey runoff without coming in contact with bare slope soils causing erosion.
- Sediment traps and ponds.
- Landscaping/riparian buffer restoration.
- Various green infrastructure solutions including retention/infiltration basins/trenches, dry wells, rain gardens, pervious pavement, bioswales, and buffer strips.

3.2 Biological Resources

3.2.1 Affected Environment

A Biological Survey was conducted for the project in 2023 by Geometrician Associates, LLC. The survey included both flora and fauna. The objectives of the botanical survey were to describe the vegetation, list all species encountered, determine the general likelihood of the presence of threatened or endangered plant species, and identify the locations of any threatened or endangered plant species. The faunal survey included a tally of birds and introduced mammals, reptiles, and amphibians, as well as two multi-hour observations focused on the Hawaiian short-eared owl or pueo (*Asio flammeus* subsp. *Sandwichensis*)

conducted at dawn and dusk. The field survey also assessed the general value of the area for native bird habitat. The Biological Survey Report is included in **Appendix B**.

Flora

The vegetation of the 'Ewa coastal plain has been almost completely overtaken by the non-native kiawe (*Prosopis pallida*) and koa haole (*Leucaena leucocephala*). The most extensive vegetation type at the project site is kiawe forest. An open to closed canopy forest of medium-size (15 to 25-feet-tall) kiawe trees along with highly variable numbers of koa haole, *Ficus* sp., 'opiuma (*Pithecellobium dulce*), octopus tree (*Schefflera actinophylla*) and other trees overtops an understory dominated by buffelgrass (*Cenchrus ciliaris*), marsh fleabane (*Pluchea indica*), Chinese violet (*Asystasia gangetica*), Guinea grass (*Megathyrsus maximus*), love-in-a-mist (*Passiflora foetida*), and other herbs, vines and shrubs. Native species 'uhaloa (*Waltheria indica*), kauna'oa pehu (*Cassytha filiformis*), and koali (*Ipomoea indica*) are also widespread. Small sinkholes are very common throughout the forest. They are often hazardously obscured by non-native vegetation but do not seem to support any distinct vegetation or native species.

The remainder of the area has been cleared to accommodate structures, roads and trails, or open space activities. Buffel grass, fingergrass (*Chloris* spp.), lovegrass (*Eragrostis tenella*) and many other grasses dominate the ground layer. A variety of weedy species, including Australian saltbush (*Atriplex semibaccata*) and various euphorbiaceous, chenopode and, malvaceous weeds. Native species present include 'uhaloa, akulikuli (*Sesuvium portulacastrum*), nena (*Heliotropium currasavicum*), 'ilima (*Sida fallax*) and naio (*Myoporum sandwicense*). Some areas have been landscaped with a great variety of ornamental species such as mango (*Mangifera indica*), coconut trees (*Cocos nucifera*), pink tecoma (*Tabebuia pentaphylla*), agave (*Agave sisalana*), and coral tree (*Erythrina* sp.). Many areas that were previously disturbed are reverting back to kiawe forest.

A total of 89 plant species were identified during the survey. Out of the 89 plant species identified**,** 11 were listed as native to the Hawaiian Islands, and one (1) was listed as endemic: maiapilo *(Capparis sandwichiana*). The maiapilo is considered rare due to the loss of its coastal leeward habitat to development. The maiapilo was found throughout various locations of the property. Apart from maiapilo, all native plants found in the property area are very common throughout the island of O'ahu and the state.

No state or federal listed threatened, endangered, or candidate plant species were observed in the project area during the survey.

Fauna

The Survey identified 12 species of birds within the boundaries of the property area. The 12 bird species are non-native to O'ahu, and are typically found in similar areas of lowland disturbed habitat. Most common were myna (*Acridotheres tristis*), spotted dove (*Streptopelia chinensis*), red-crested cardinal (*Paroaria coronata*), and Japanese white-eye (*Zosterops japonicus*).

The area of observation extended beyond the project site to the adjacent 'Ewa Beach Golf Course. The open grass and ponds of the golf course attracted three native birds: black-crowned night heron or auku'u (*Nycticorax nycticorax hoactli*), the Pacific golden-plover or kolea (*Pluvialis fulva*), and the endangered Hawaiian stilt or ae'o (*Himantopus mexicanus knudseni*). The project site is poor habitat for these species, and although they may fly over they are not likely to utilize the site for nesting.

No pueo were heard or observed during the dawn and dusk surveys for the species. The project site appears to be poor pueo habitat because of surrounding land uses and extremely dense, thorny vegetation in the upper and middle canopy layers.

Although the survey did not include the use of detection equipment for the Hawaiian hoary bat *(Lasiurus cinereus* semotus), it is assumed that they may be present at the project site as they have been observed in the surrounding and similar areas. Bats may forage for flying insects on and within the vicinity of the project site on a seasonal basis, and the larger shrubs and trees at the site may provide suitable nesting habitat.

The only mammal identified during the survey was a number of Indian mongoose (*Herpestes a. auropunctatus*). It is likely that feral cats (*Felis catus*), mice (*Mus* spp.), rats (*Rattus* spp.), and domestic dogs (*Canis f. familiaris*) are occasionally present. There are no native terrestrial reptiles or amphibians in Hawai'i. Although not observed, various anoles (*Anolia* sp.), geckoes (Family: Gekkonidae), and skinks (Family: Scincidae) are probably present at times.

3.2.2 Potential Impacts

Construction

Proposed Action

No rare, threatened, or endangered plant or animal species were identified at the project site. However, there is the potential for the presence of the Hawaiian hoary bat, Hawaiian seabirds, and Hawaiian waterbirds.

The Hawaiian hoary bat roosts in woody vegetation across all islands and will leave their young unattended in trees and shrubs when they forage. If trees or shrubs 15 feet or taller are cleared during the pupping season, June 1 through September 15, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or move away from disturbance. Hawaiian hoary bats forage for insects from as low as three (3) feet to higher than 500 feet above the ground and can become entangled in barbed wire used for fencing. Measures would be implemented to minimize impacts to the Hawaiian hoary bat as discussed in **Section 3.2.3**.

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 light attraction. Measures would be implemented to minimize impacts to Hawaiian seabirds as discussed in **Section 3.2.3**.

There are no perennial streams, ponds, or wetlands present to provide waterbird habitat. However, construction activities could result in areas of standing water that could create temporary waterbird habitat. Measures would be implemented to minimize impacts to Hawaiian waterbirds as discussed in **Section 3.2.3**.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur associated with the Proposed Action. The existing buildings would remain and the landscaping associated with those buildings would be re-absorbed by the kiawe plant community, furthering the expanse of the invasive kiawe forest.

Operation

Proposed Action

Operation of the project would include outdoor lighting which may impact seabirds. These impacts would be minimized as discussed in **Section 3.2.3**.

The Proposed Action would include drainage retention and/or retention/infiltration basin to address run-off during significant storm events that could create temporary waterbird habitat. Measures would be implemented to minimize impacts to Hawaiian waterbirds as discussed in **Section 3.2.3**.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be built; therefore, there would be no impacts to biological resources.

3.2.3 Avoidance and Minimization Measures

The following measures would be implemented to minimize potential impacts to the Hawaiian hoary bat:

- Any fences that are erected during the construction of the Proposed Action would have barbless top strand wire to prevent Hawaiian hoary bats from becoming entangled on barbed wire.
- Trees taller than 15 feet would not be removed or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

The following measures would be implemented to minimize potential impacts to Hawaiian seabirds:

- Construction activity would be restricted to daylight hours as much as practicable during the seabird peak fledgling fallout period (September 15 to December 15) to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights would be shielded to prevent upward radiation to reduce the potential for seabird attraction and shall not be directed to travel across property boundaries toward the shoreline and ocean waters.
- Automatic motion sensor switches and controls would be installed on all outdoor lights or lights would be turned off when human activity is not occurring in the lighted area.

The following measures would be implemented to minimize potential impacts to Hawaiian waterbirds:

- In areas where waterbirds are known to be present, reduced speed limits would be posted and enforced, and project personnel and contractors would be informed of the presence of endangered species on-site.
- The U.S. Fish and Wildlife Service's (USFWS) *Best Management Practices for Work in Aquatic Environments* would be incorporated into the project design.

- A biological monitor that is familiar with the species' biology would conduct Hawaiian waterbird nest surveys where appropriate habitat occurs within the vicinity of the proposed project site prior to project initiation. Surveys would be repeated within three (3) days of project initiation and after any subsequent delay of work of three (3) or more days (during which the birds may attempt to nest). If a nest or active brood is found:
    - The USFWS would be contacted within 48 hours for further guidance.
    - A 100-foot buffer would be established and maintained around all active nests and/or broods until the chicks/ducklings have fledged. Potentially disruptive activities or habitat alteration within this buffer would not be conducted.
    - A biological monitor that is familiar with the species' biology would be 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.

3.3 Archaeological and Historic Resources

3.3.1 Affected Environment

An Archaeological Literature Review and Field Inspection (ALRFI) was completed in July 2023 by Honua Consulting. The objectives of this study were to document and describe the project site's land use history in the context of both its traditional Hawaiian character as well as its historic period changes, identify any potential above-ground historic properties or component features, and provide information relevant to the likelihood of encountering subsurface historically significant cultural deposits during construction. The Archaeological Literature and Field Inspection Report is included in **Appendix C**.

History of the Project Area

The project area located within the 'ili of Pu'uloa of Honouliuli Ahupua'a, but sometimes referred to the Pu'uloa Ahupua'a. The Honouliuli (translates to dark bay) Ahupua'a is the largest ahupua'a on the island of O'ahu as it is approximately 43,000 acres. This includes approximately 12 miles of marine coastline from Keahi Point in the east to Pili O Kahe in the west at the boundary with Nānākuli.

Around the turn of the 18th to 19th century, and continuing throughout the 19th century, life on O'ahu was drastically changed with the arrival and increasing influence of foreign political, economic, and ideological systems. As a result, traditional Hawaiian settlement patterns, subsistence, and religious institutions were largely abandoned. By the late 1800s, nearly the entire ahupua'a of Honouliuli had been purchased by a few large landowners and developed into cattle ranches, sugar cane fields, sisal farms, and other types of agricultural. Military development of the region began in the late 1800s with the construction of the Barbers Point Lighthouse and accelerated significantly in the early 1900s with the creation of several large bases including Naval Air Station Barbers Point, Hickam Field, and Pearl Harbor.

The project site was condemned in 1944, and subsequently occupied by the U.S. Navy. On November 24, 1959, the U.S. Navy transferred the 'Ewa Beach property to the U.S. Department of Commerce, to be used for the operation of the Honolulu Magnetic Observatory. There are no existing structures from the Navy's occupation of the site. In 1968, the Intergovernmental Oceanographic Commission established the Intergovernmental Coordination Group for the PTWS. Since the U.S. Department of Commerce had ownership of land for the operation of the Honolulu Magnetic Observatory, it was agreed that the Intergovermental Coordination Group would use the same site for the operational headquarters of the

PTWS. Since that time, the PTWS has continued to be at the site. In 2014, the NWS who is now in ownership of the PTWS, relocated personnel to the new Pacific Regional Center at another location in Honolulu, and has declared the 'Ewa property surplus to its operational needs.

Previous Archeological Surveys within the Vicinity of the Project Site

No previous archaeological surveys are known to have been conducted on the project site. The most relevant previous archaeological research was conducted east of the project area on the golf course property, once known as the Pu'uloa Golf Course, currently the Ewa Beach Country Club. These studies identified several dozen sites, including traditional Hawaiian above-ground structures as well as sinkholes with cultural material. In total, 11 previous archaeological surveys are known to have been conducted in the vicinity of the Proposed Action. These surveys are summarized in **Table 5**.

Table 5. Summary of Previous Archaeological Studies and Results in the Vicinity of the Proposed Action

Previous Study	Formal Type	Location	Results & Comments
McAllister 1933	Earliest survey / compilation of sites on O'ahu	O'ahu Island-wide	Citing oral-historic accounts, identified general area near current project area as Site 145 = ". . . site where the first breadfruit tree in Hawaii is said to have been planted."
McCoy 1972	ARS	(Then) proposed Pu'uloa Elementary School – grounds of current Kaimiloa Elementary School	Identified numerous coral-stacked walls, enclosures & mounds; as well as modified depressions (small sinkholes); most sites were interpreted as historic-period ranching remnants; mounds were interpreted as likely pre-Contact; no State Inventory of Historic Places #s assigned
Davis 1988	ARS	Pu'uloa Golf Course (currently Ewa Beach Country Club)	Identified 25 above-ground rock structures, including 1 habitation enclosure, 11 temporary shelters, 5 mounds, 2 wall-enclosed sinkholes and 1 remnant wall; no SIHP #s assigned
Denham & Kennedy 1992	PP		Preservation plan for 12 sites
Kennedy et al. 1992	AIS		Identified 72 sites, including 15 walls, 17 mounds, 17 enclosures, 16 C- or L-shapes, 13 sinkholes, 2 platforms and 1 site composed of upright stones; sites were in 4 clusters (see Figure 17); test excavations yielded pre-Contact radiocarbon dates
Kennedy & Denham 1992	DR		Data recovery work on 10 sites
Davis & Burtchard 1991	ARS w. 1 subsurface test unit	PPV Housing Area, West Loch of Lualualei Naval Ammunition Depot	No historic properties identified
Hammatt & Borthwick 1997	AIS	Ewa High Frequency Transmitter Station	No historic properties identified

Previous Study	Formal Type	Location	Results & Comments
Jensen & Head 1997	ARS	1,483-acre project area (Naval Magazine Lualualei NAVMAG-West Loch)	281 sites identified, 111 of which were interpreted as traditional Hawaiian from pre-Contact to early historic times; site location data from original report missing from available pdf copies
Sroat et al. 2010	ALRFI	Campbell High School campus	Above-ground finds were limited to 2 filled-in sinkholes
Hazlett 2016	AM (plan)	Solar Electric Installation at Ewa Beach Country Club)	Provided background information near current project area
O'Neill & Spear 2017	AM (report)		No historic properties identified

Abbreviations: AIS = Archaeological Inventory Survey; ALRFI = Archaeological Literature Review and Field Inspection; AM = Archaeological Monitoring; ARS = Archaeological Reconnaissance Survey; DR = Data Recovery; PP = Preservation Plan

Existing Structures

A small portion of the project site consists of above-ground, architectural resources associated with the PTWS-NWS. These buildings have been subject to previous Section 106, National Historic Preservation Act (NHPA), historic preservation consultation. In 2018, the above-ground buildings and structures of the PTWS-NWS were determined not eligible for listing on the National Register of Historic Places by the U.S. General Services Administration (GSA). In a "NHPA Section 106 Historic Preservation Review" letter (LOG: 2018.02473, DOC: 1810KN16) dated October 23, 2018, the State Historic Preservation Division (SHPD) concurred with the GSA's determination of "no historic properties affected."

Archaeological Field Inspection

The archaeological field inspection consisted of a pedestrian survey of portions of the project site to obtain a sample of the site types present and to understand the existing conditions of the project site. The archaeological field inspection identified 29 archaeological/historic sites on the project site, as shown in **Table 6**.

Table 6. Archaeological and Historic Sites Identified During the Archaeological Field Inspection

Site #	Formal Type	Description
Honua 1	Sinkhole	Opening is ~2.0 m wide
Honua 2	Sinkhole	Opening is ~4.5 m wide
Honua 3	Sinkhole	Complex of at least 5 openings; openings are ~2.0 m wide
Honua 4	Sinkhole	Complex of at least 5 openings; openings are ~1.5 m wide
Honua 5	Sinkhole	Opening is ~3.0 m wide
Honua 6	Sinkhole	Opening is ~3.0 m wide
Honua 7	Sinkhole	Opening is ~3.0 m wide; banyan tree in hole
Honua 8	Coral rock pile	~2.0 m long, several courses high, informal construction
Honua 9	Sinkhole	Opening is ~1.0 m wide
Honua 10	Sinkhole	Opening is ~1.5 m wide
Honua 11	Sinkhole	Multiple openings; openings are ~2.0 m wide
Honua 12	Sinkhole	Opening is ~1.5 m wide
Honua 13	Sinkhole	Complex w. several openings; site area is ~10 m diameter

Site #	Formal Type	Description
Honua 14	Push pile	Evidence of past land disturbance (bulldozing)
Honua 15	Sinkhole	Opening is ~0.4 m wide
Honua 16	Sinkhole	Opening is ~2.0 m wide
Honua 17	Filled sinkhole	Complex, at least 3 filled openings
Honua 18	Coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 19	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 20	Push pile	Evidence of past land disturbance (bulldozing)
Honua 21	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 22	Small shed	64 sq. ft. shed constructed of concrete block walls, concrete floor, wood door & corrugated sheet metal roof; part of PTWC-NWS; this site is possibly a fresh-water well
Honua 23	Push pile	Evidence of past land disturbance (bulldozing)
Honua 24	Push pile	Evidence of past land disturbance (bulldozing)
Honua 25	Coral rock mound	--
Honua 26	Coral rock mound	--
Honua 27	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 28	Crushed coral road bed	Associated with 1960s build out of PTWC-NWS facility
Honua 29	Push pile	Evidence of past land disturbance (bulldozing)

The following general observations regarding the sites are relevant:

1. The entire eastern boundary of the project area contains a discontinuous berm of bulldozed debris, including rocks, uprooted trees and trash, which extends into the project area by as much as 20 or 30 meters in places; this berm was mostly likely the result of bulldozing in the adjacent, golf-course parcel when it was first developed in the 1990s.
2. The 14 sinkhole sites represent only a sample of the potential sinkholes that were observed during the field inspection; these sites require additional investigation determine whether they are cultural, rather than natural, features (and, therefore, historic properties).
3. Patterning of the sites in the project area demonstrates substantial previous ground disturbance (e.g., bulldozing) in three main areas: (1) along the entire eastern boundary, extending into the project area by some 20 to 30 meters; (2) along the lower (makai or southern) portion adjacent to Fort Weaver Road; and (3) in and near the abandoned PTWC-NWS facilities in the lower, central portion of the project area.
4. It is likely that previous ground disturbance (e.g., bulldozing) covered up and/or filled in sinkholes in the lower (makai or southern) portion of the project area; and that sinkholes (whether visible from the ground surface or not) extend throughout the entire project area.

3.3.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action may impact archaeological resources. Since the ALRFI was designed as an identification exercise and only covers a sample of the project area, it is unknown the significance of potential impacts to archaeological features. Therefore, prior to any ground disturbing work, an AIS may be required if requested by SHPD. This is expected to minimize the possibility of construction activity interfering with historic resources of significance. Overall, the probability of adverse impacts in this area seems very low as no historic properties have been identified during archaeological investigations on nearby parcels.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts to archaeological and historic resources.

Operation

Proposed Action

Operation of the Proposed Action is not expected to have impacts to archaeological and historic resources. However, the Proposed Action includes lands designated for community agriculture which would involve ground disturbing activities that could reveal subsurface archaeological resources.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts to archaeological and historic resources.

3.3.3 Avoidance and Minimization Measures

The following measures would be implemented to minimize potential impacts to archaeological and historic resources:

- If human remains or burials are identified, all earth-moving activities in the area would stop, the area would be cordoned off, and SHPD and the CCH Police Department would be notified pursuant to HAR Section 13-300-40.
- If any potential historic properties are identified during construction activities, including the discovery of subterranean lava tube entrances at the chosen project site, all activities in the area would cease and SHPD would be notified pursuant to HAR Section 13-280-3.

3.4 Cultural Practices and Beliefs

3.4.1 Affected Environment

A Cultural Impact Assessment (CIA) was conducted by Honua Consulting in June 2024. The purpose of the CIA is to ensure the protection and preservation of traditional and customary Native Hawaiian rights while reasonably accommodating competing private development interests. This is accomplished by identifying valued cultural, historic, or natural resources in the project area, including the extent to which traditional and customary Native Hawaiian rights are exercised in the area; identifying the extent to which those

resources would be affected or impaired by the Proposed Action; and identifying the feasible action, if any, to be taken to reasonably protect Native Hawaiian rights if they are found to exist. The geographic extent of the CIA includes the immediate project area and localized surroundings. The CIA Report is included in **Appendix D**.

Overall, 'Ewa is an important region for traditional and customary practices, and there are many Native Hawaiian families that continue to live in the area. Practitioners identified plants with culturally importance that grow on the project site, but these plants are common and can be easily found in the larger region.

No intangible cultural resources (i.e., those without physical form such as hula or mele) are known or currently taking place on the property.

3.4.2 Potential Impacts

Construction

Proposed Action

During the construction of the Proposed Action, there would be an increase in noise and dust. These impacts would be temporary and minimized to the extent possible.

Currently, the project site is not known to host cultural gatherings or contain culturally sensitive resources utilized by the community. It is unlikely that construction of the Proposed Action would adversely impact any cultural practices in the area. Although fishing occurs in the coastal areas, those areas are far from the project site and the Proposed Action's potential to impact this activity is negligible. It is therefore not anticipated that construction activities would impact cultural practices and beliefs.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts to cultural practices and beliefs.

Operation

Proposed Action

The operation of the project is not anticipated to impact existing cultural gatherings or culturally sensitive resources. As mentioned, there are culturally important plants that grow on the project site, but these plants are available throughout the region; therefore, there would be no adverse impact to cultural practitioners' ability to access these plants.

Unlike other locations on O'ahu, this community has not managed to maintain many of the traditional activities that once flourished in the area. The return of native Hawaiians to the area could help restore and uplift the knowledge and traditions that once thrived in this part of 'Ewa. The Proposed Action is a critical opportunity to reclaim Hawaiian traditional names and knowledge that have been impacted by the area's development and military use of resources in the area. The Proposed Action is a significant opportunity to restore traditional and customary knowledge that has been partially lost due to the long use of the land by the federal government.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed. The benefits associated with the Proposed Action would not be realized.

3.4.3 Avoidance and Minimization Measures

The minimization measures in **Section 3.3.3** related to archaeological impacts are applicable in the event of the discovery of human remains or historic properties.

3.5 Geology and Soils

3.5.1 Affected Environment

The coastal plain of 'Ewa is a karst landscape composed of limestone. In the late Pleistocene era when sea-level was approximately 25 feet higher than what it is today, the landscape formed on porous, permeable algal and deposited coralline reefs. Due to this formation of the unique environment, there are various sizes of sinkhholes and hidden voids that may be present just a few feet below the ground surface. The groundwater flowing from mauka to makai may express in springs or be visible in sinkholes. Existing topography is relatively flat and generally slopes toward the ocean. Elevations at the Site range from approximately 3 feet to 13 feet mean sea level.

The U.S. Natural Resources Conservation Service classified the soil in the project area as coral outcrop, as shown in **Figure 11,** which consists of cemented calcareous sand or coral. A majority of the project area surface is rubble or bare rock. There is minimal soil derived from the decay of plant material and windblown sediment in cracks and crevices. This land type is commonly used for urban development, military installations, and quarries.

3.5.2 Potential Impacts

Construction

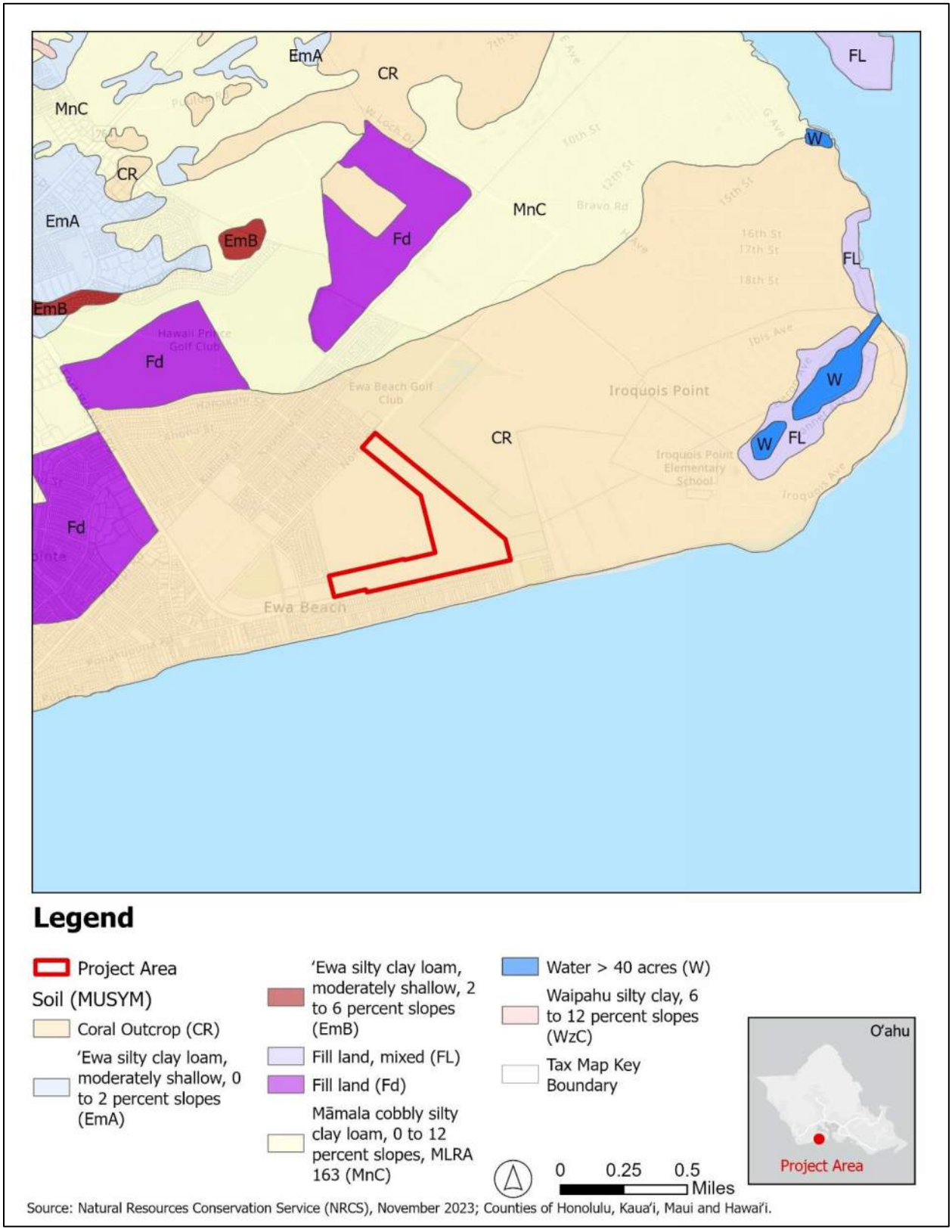
Proposed Action

Construction of the Proposed Action would not substantially alter the overall existing geology and topography. Ground disturbing activities associated with construction have the potential to cause minor soil loss and erosion. The existing sinkholes would be filled during clearing and grading activities. All excavation and grading activities would be limited to the project area to minimize erosion potential.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts to geology and soils.

Figure 11. Soil



Operation

Proposed Action

DHHL does not anticipate that the operation of Proposed Action would impact existing geology and topography. The Proposed Action would increase the impermeable surfaces on the property, and runoff would be required to be retained on-site. A minimum of 12 acres would be designated for drainage and retention/infiltration of stormwater runoff. The Proposed Action designates drainage/open space area in the lowest lying area at the southeast portion of the project site. Therefore, the Proposed Action is not expected to have impacts on geology and soils.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts to geology and soils.

3.5.3 Avoidance and Minimization Measures

Any grading would be in conformance with the CCH Grading Ordinance. In addition, DHHL would obtain coverage under NPDES General Permit for stormwater discharge associated with construction activities. As part of the permit process, DHHL would prepare a construction site BMP Plan that would include an erosion and sediment control plan, a site-specific plan to minimize erosion of soil and discharge of other pollutants into state waters, and descriptions of measures that would minimize the discharge of pollutants via stormwater after construction is complete.

BMPs would include some or more of the following measures:

- Watering or applying dust suppressants at active work areas and project access roads, as needed.
- Installing dust screens or wind barriers around the construction site.
- Installation of Filter Sock Perimeter Controls adjacent and downslope from disturbed areas.
- Cleaning nearby pavements and paved roads after construction.
- Covering open trucks carrying construction materials and debris.
- Limiting areas to be disturbed at any given time.

BMPs would be implemented prior to ground-disturbing activities and would be inspected and maintained throughout the construction period.

The following measures would be implemented to minimize impacts associated with contaminated soils:

- Site workers would be informed of the presence of contaminated soil.
    - All work involving contaminated soil would be conducted in a controlled manner protective of the workers, site users, the public, and the environment.
    - All workers would be provided necessary training and hazard communication.
- Any excess excavated contaminated soils not encapsulated on site would be disposed of at an approved facility.

3.6 Roadways and Traffic

3.6.1 Affected Environment

A Traffic Impact Analysis Report (TIAR) was completed for the proposed project in 2024. The TIAR analyzed traffic operations during the AM and PM peak hours for Existing (2022), Future (2034) Without Project, and Future (2034) With Project conditions. The Traffic Impact Analysis Report is included in **Appendix E**.

Roadways

The project area is bounded by the following roadways:

- **Fort Weaver Road:** A state-owned roadway (State Route 76) extending from the Kunia Interchange in the north to the gated access at the Pu'uloa Range Training Facility near Popoi Place in the south. Fort Weaver Road is oriented in the north-south direction from the Kunia Interchange to Pōhakupuna Road, at which point it transitions into the east-west orientation from Pōhakupuna Road to the eastern terminus. Fort Weaver Road is a six (6) lane roadway north of Geiger Road, a four (4) lane roadway from Geiger Road to Kīlaha Street and continues as a two (2) lane roadway east of Kīlaha Street. A raised median exists from the Kunia Interchange to just south of Keaunui Drive. Sections of Fort Weaver Road have a two-way center turn lane between 'Aikanaka Street and Kīlaha Street. Raised curb and gutters exist for most of Fort Weaver Road from Laulaunui Street to Kīlaha Street. Bike lanes exist on Fort Weaver Road between Keone'ula Boulevard to Kīlaha Street. Portions of Fort Weaver Road between Keone'ula Boulevard to Laulaunui Drive are signed as a bike route. East of Kīlaha Street, a shoulder exists with varying widths that are used by pedestrians, cyclists, or parked vehicles. On-street parking is generally only allowed south of Keone'ula Boulevard and Hanakahi Street, except where No Parking signs are posted. The posted speed limit is 35 miles per hour (MPH), except for a 25 MPH school zone speed limit between Keone'ula Boulevard and Parish Street. Fort Weaver Road has three (3) different roadway classifications based on the O'ahu Straightline Diagram. Fort Weaver Road between the Kunia Interchange and Kolowaka Drive is classified as a "Freeway & Expressway", transitioning into a "Principal Arterial" from Kolowaka Drive to North Road, and transitioning into a "Minor Arterial" from North Road to the end of Fort Weaver Road.
- **North Road:** North Road is a two (2) lane roadway oriented in the southwest-northeast direction extending from Fort Weaver Road in the west, to West Loch Drive in the east. North Road is CCH-owned from Fort Weaver Road to Haiamū Street, and private-owned from Haiamū Street to West Loch Drive. From Fort Weaver Road to Kihala Street, Pohakea Elementary School, James Campbell High School, and the 'Ewa Beach Public Library are on the mauka side of North Road. 'Ewa Beach Community Park is on the makai side across from 'Ewa Beach Public Library and Campbell High School. All intersections along North Road east of Fort Weaver Road are unsignalized. Crosswalks exist at some intersections along North Road, but not crossing North Road. Sidewalks generally exist on both sides of North Road until 'Āpoke Place except along 'Ewa Beach Community Park. From 'Āpoke Place to Haiamū Street, the sidewalk exists on the mauka side only, which continues to Haiamū Street. The posted speed limit from Fort Weaver Road to Haiamū Street is 25 MPH and increases to 30 MPH from Haiamū Street to West Loch Dive. Four speed humps were installed between late 2023 and early 2024. On-street parking is allowed on the makai side of North Road

from Kīlaha Street to Apoke Place. On the mauka side, on-street parking is allowed from just east of Kīlaha Street to just east of Haiamu Street.

- **Hanakahi Street:** Hanakahi Street is a CCH-owned, two (2) lane roadway extending from Fort Weaver Road in the west for about one (1) mile to North Road in the east. Sidewalks exist on the entirety of the south side of Hanakahi Street and on the north side from Hanaloa Street to North Road. Marked street parking exists on both sides of Hanakahi Street from Hanaloa Street to North Road. All intersections along Hanakahi Street are unsignalized except at Fort Weaver Road. Curb ramps do not exist at any of the intersections except at Fort Weaver Raod. Regulatory 25 MPH speed limit signs are posted on Hanakahi Street, with speed humps and 15 MPH speed limit warning signs posted between Fort Weaver Road and Kuhina Street. TheBus routes 42, 44, 91, PH7, and W1 turn left from Fort Weaver Road onto Hanakahi Street, then onto North Road before returning back to Fort Weaver Road in a clockwise travel pattern.

Study Intersections

Twelve (12) study intersections were reviewed as a part of the proposed development. The study intersections along Fort Weaver Road were determined by calculating the "3% percent impact", which is the project generated traffic compared to the latest traffic volumes. Intersections along Fort Weaver Road that had more than a 3% impact were selected as a study intersection. These include the following:

- **Fort Weaver Road at Keaunui Drive (Route 76 Milepost [MP] 2.585):** A four (4) leg, signalized intersection with protected left turns on Fort Weaver Road and split phasing on Keaunui Drive, with a leading eastbound phase. Channelized right turn lanes exist for all approaches. The westbound dual right turn is channelized with permitted/overlap signal control. The cycle length is 180 seconds during the AM peak hour and varies from 160 to 175 seconds during the PM peak hour. There are marked crosswalks and curb ramps for crossing the west, south, and east legs. Sidewalks exist on each approach. Bus pullouts exist on the far side of the intersection in the northbound and southbound direction. There are no bike facilities at the intersection. The posted speed limit on Keaunui Drive is 25 MPH.
- **Fort Weaver Road at Keone'ula Boulevard/Hanakahi Street (Route 76 MP 2.098:** Fort Weaver Road at Keone'ula Boulevard and Hanakahi Street is a four-leg, signalized intersection with protected/permitted left turns on Fort Weaver Road and split phasing on the minor approach, with a leading westbound phase. Keone'ula Boulevard is a four (4) lane, raised median divided roadway, intersecting Fort Weaver Road from the west. To the east, Hanakahi Street is a two (2) lane undivided roadway with speed humps near Fort Weaver Road and a short, dedicated right-turn lane at the intersection. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for the west, south, and east legs. Sidewalks exist on Fort Weaver Road and Keone'ula Boulevard, but not on Hanakahi Street. Bus pullouts Exist on the south side of the intersection along Fort Weaver Road. The southbound bike passes through the intersection, while the northbound bike lane ends at the nearside bus stop. The posted speed limits on Keone'ula Boulevard and Hanakahi Street are 30 MPH and 25 MPH, respectively.
- **Fort Weaver Road at Kaimālie Street (Route 76 MP 1.869):** Fort Weaver Road at Kaimālie Street is a three (3) leg, signalized intersection with a protected/permitted northbound left turn on Fort Weaver Road. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for

the north and west legs. Sidewalks exist on both sides of Kaimālie Street. Bus pullouts exist on the far side of the intersection in the northbound and southbound direction. Striped bike lanes exist along Fort Weaver Road and pass through the intersection The posted speed limit on Kaimālie Street is 25 MPH.

- **Fort Weaver Road at Kuhina Street (Route 76 MP 1.682):** Fort Weaver Road at Kuhina Street is a four (4) leg, signalized intersection with protected/permitted left turns on Fort Weaver Road and permissive phasing for the minor street approaches. Kuhina Street intersects Fort Weaver Road from the east across the 'Ewa Beach Shopping Center, which intersects Fort Weaver Road from the west. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for all approaches. Sidewalks exist for all approaches except for the north side of Kuhina Street and the 'Ewa Beach Shopping Center access. A bus pullout exists on the north side of the intersection. Striped bike lanes along Fort Weaver Road pass through the intersection. The posted speed limit on Kuhina Street is 25 MPH.
- **Fort Weaver Road at Pāpipi Road (Route 76 MP 1.610):** Fort Weaver Road at Pāpipi Road is a three (3) leg, signalized intersection with a protected/permitted northbound left turn on Fort Weaver Road. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There is an uncontrolled driveway intersecting Fort Weaver Road from the east, across of Pāpipi Road. This driveway is not controlled by the traffic signal, nor does it have a stop sign or stop bar. There are marked crosswalks and curb ramps the south and west legs. Sidewalks exists for all approaches. Bus pullouts exists on south side of the intersection near Makule Road. Striped bike lanes exist along Fort Weaver Road in both directions and pass through the intersection. The posted speed limit on Pāpipi Road is 25 MPH.
- **Fort Weaver Road at 'Aikanaka Road (Route 76 MP 1.438):** Fort Weaver Road at 'Aikanaka Street is a four (4) leg, signalized intersection with protected/permitted left turns on Fort Weaver Road and permissive phasing for the minor street approaches. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps on the west, south, and east legs. Sidewalks exist along Fort Weaver Road but not on 'Aikanaka Road. Bus pullouts exist on the south side of the intersection. Striped bike lanes along Fort Weaver Road pass through the intersection The posted speed limit on 'Aikanaka Street is 25 MPH.
- **Fort Weaver Road at Kimopelekāne Road (Route 76 MP 1.270):** Fort Weaver Road at Kimopelekāne Road/North Road is a four (4) leg, signalized intersection with protected/permitted left turns on Fort Weaver Road and permissive phasing for the minor street approaches. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps across all legs. Sidewalks exist for all approaches except on Kimopelekāne Road. A bus pullout exists on the far side of the intersection in the southbound direction. Striped bike lanes exist along Fort Weaver Road and pass through the intersection The posted speed limits on Kimopelekāne Road and North Road are 15 and 25 MPH, respectively.
- **Fort Weaver Road at Pōhakupuna Road (Route 76 MP 1.158):** Fort Weaver Road at Pōhakupuna Road is a three (3) leg intersection with stop control on Pōhakupuna Road. Fort Weaver Road is orientated in the east-west direction from Pōhakupuna Road to the east end of Fort Weaver Road.

Pōhakupuna Road intersects Fort Weaver Road from the south. There is a dedicated westbound left turn lane and two (2) way center turn lane on Fort Weaver Road. There are marked crosswalks and curb ramps for the south and east legs of the intersections. The east leg crosswalk is raised with a "gateway treatment" consisting of plastic delineators on lane lines. Sidewalks exist on each approach. Striped bike lanes exist along Fort Weaver Road. The posted speed limit on Pōhakupuna Road is 25 MPH.

- **Fort Weaver Road at Kīlaha Street/'Ewa Beach Road (Route 76 MP 0.915):** Fort Weaver Road at Kīlaha Street is a four(4) leg intersection with stop control on Kīlaha Street. Kīlaha Street intersects Fort Weaver Road from the north, while 'Ewa Beach Road intersects Fort Weaver Road from the south. There are dedicated left turn lanes and two (2) way center turn lanes on Fort Weaver Road. The Hawai'i Department of Transportation (HDOT) constructed a raised intersection here in late 2022. Marked crosswalks and curb ramps exist on each approach. Corner bulbouts were recently installed on Fort Weaver Road from Kīlaha Street to 'Aekai Place. The posted speed limit on Kīlaha Street is 25 MPH.
- **North Road at Kīlaha Street:** North Road at Kīlaha Street is a three (3) leg intersection with stop control for Kīlaha Street. Kīlaha Street intersects North Road from the south. There is a parking lot entrance for Campbell High School across of Kīlaha Street. The parking lot across Kīlaha Street has 26 marked stalls, but 145 vehicles were observed turning into this parking lot, mainly using the parking lot as a drop-off and pick-up location for students. Vehicles generally exited the parking lot within one (1) minute, but there was still heavy queueing observed on North Road and Kīlaha Street due to the heavy demand of the parking lot for drop-offs and pick-ups. There are marked crosswalks and curb ramps for the west and south legs of the intersections. Sidewalks exist on the westbound and northbound approaches. There is a pedestrian walkway separated from traffic by an AC berm on the north side of North Road between the 'Ewa Beach Public Library to west of Kehue Street.
- **North Road at Hanakahi Street:** North Road at Hanakahi Street is a three (3) leg intersection with stop control for the Hanakahi Street approach. Hanakahi Street intersects North Road from the north. On-street parking is allowed on the mauka side of North Road and on both sides of Hanakahi Street. During the AM peak hour, the westbound queue was observed to extend slightly east of this intersection. There are no curb ramps or marked crosswalks at this intersection. Sidewalks exist on the mauka side of the intersection.
- **North Road at Haiamu Street:** North Road at Haiamu Street is a three (3) leg intersection with stop control for Kīlaha Street. Haiamu Street intersects North Road from the north. To the north of the intersection are single family residential homes. To the south of the intersection will be the future project access onto North Road. There are no curb ramps or marked crosswalks at this intersection. Sidewalks exist on the mauka side of the intersection.

Transit Facilities

The CCH bus transit service, TheBus, runs several routes (Route 41, Route 42, Route 44, Route 91, Route 91A, Route E, Route PH7, and Route W1) along the study area. There are about 40 bus stops in the study area, 10 of those being on Fort Weaver Road between Kīlaha Street and the end of Fort Weaver Road (less than 1-mile of roadway) fronting the project site. Benches and shelters exist at most bus stops. The 'Ewa Beach Transit Center is located on the east side of Fort Weaver Road between 'Aikanaka Road and Makule Road.

Existing Volumes

Traffic

Historic HDOT counts in the study area on Fort Weaver Road were available from 2016 to 2021. Twenty-four (24) hour tube counts were also collected on Tuesday, November 8, 2022, on Fort Weaver Road between 'Ewa Beach Road and the National Oceanic and Atmospheric Administration (NOAA) driveway. Traffic count data is provided in **Table 7**.

Table 7. 2016 to 2021 Average Annual Daily Traffic (AADT)

Location	Year and AADT							Growth Rate
	2016	2017	2018	2019	2020	2021	2022	
Laulaunui Street and Fort Weaver Road	51,800	53,800	53,700	53,000	48,900	52,100	N/A	0.12%
Kolowaka Drive and Geiger Road	41,800	44,300	38,100	37,700	31,900	37,800	N/A	-1.99%
Geiger Road and Keaunio Road	31,300	29,900	30,300	29,700	27,200	31,400	N/A	0.06%
Kaimālie Street and Keone'ula Boulevard	20,400	19,300	21,100	21,200	18,500	20,600	N/A	0.20%
Aekai Place and Parish Street	6,000	6,000	6,100	6,200	5,800	6,200	N/A	0.66%
NOAA and 'Ewa Beach Road	2,300	2,200	2,300	2,100	2,200	2,100	2,015*	-1.80%

* Tuesday, November 8, 2022 (not AADT)

Pedestrian

Intersection pedestrian volumes were taken at the study intersections. As shown in **Table 8**, in the AM peak hour, the pedestrian volumes at intersections nearest to schools are extremely high. In the PM peak hour, most of the pedestrian crossings occurred at signalized intersection of Fort Weaver Road and Kuhina Street, which is adjacent to various fast-food restaurants and is the main access to 'Ewa Beach Shopping Center.

Bicycle

The approach bike volumes were collected at each study intersection during the AM and PM peak hours. As shown in **Table 9**, in the AM peak hour there is a significant increase in bicycle useage between Keaunui Drive and North Road. Bicycle riders were observed to be mainly Middle School and High School students and were observed heading southbound in the northbound bike lane during the AM peak hour.

Table 8. Existing Pedestrian Crossings

Study Intersection		AM Peak (7:00 AM - 8:00 AM)					PM Peak (3:30 PM - 4:30 PM)				
		North Leg	West Leg	South Leg	East Leg	Total	North Leg	West Leg	South Leg	East Leg	Total
1	FWR at Keaunui Dr	-	1	17	15	33	-	1	22	17	40
2	FWR at Keone'ula Blvd/Hanakahi St	-	6	10	32	48	-	9	8	8	25
3	FWR at Kaimālie St	4	2	-	19	25	3	7	-	11	21
4	FWR at Kuhina St	18	103	42	42	205	32	33	23	26	114
5	FWR at Pāpipi Rd	-	151	82	178	411	-	2	3	1	6
6	FWR at 'Aikanaka Rd	-	45	103	20	168	-	29	11	13	53
7	FWR at Kimopelekāne Rd/North Rd	18	9	0	20	47	2	6	1	2	11
8	FWR at Pōhakupuna Rd	20	-	2	0	22	1	-	1	1	3
9	FWR at Kilaha St	3	0	2	3	8	1	2	1	2	6
10	North Road at Kilaha St	50	119	30	0	199	9	9	4	1	23
11	North Road at Hanakahi Street	3	0	-	0	3	3	0	-	0	3
12	North Road at Haiamu Street	0	3	-	0	3	0	3	-	0	3

Table 9. Existing Approach Bicycle Volumes

Study Intersection		AM Peak (7:00 AM - 8:00 AM)					PM Peak (3:30 PM - 4:30 PM)				
		SB	EB	NB	WB	Total	SB	EB	NB	WB	Total
1	FWR at Keaunui Dr	11	7	12	6	36	2	0	4	2	8
2	FWR at Keone'ula Blvd/Hanakahi St	33	23	2	0	58	4	1	16	1	22
3	FWR at Kaimālie St	60	4	1	-	65	6	2	11	-	19
4	FWR at Kuhina St	79	0	1	1	81	7	1	13	0	21
5	FWR at Pāpipi Rd	78	14	0	-	92	2	0	1	3	6
6	FWR at 'Aikanaka Rd	44	6	3	1	54	7	0	8	4	19
7	FWR at Kimopelekāne Rd/North Rd	12	3	5	1	21	8	2	8	3	21
8	FWR at Pōhakupuna Rd	-	2	1	10	13	-	5	3	4	12
9	FWR at Kilaha St	0	3	1	3	7	4	4	8	5	21
10	North Road at Kilaha St	-	0	4	2	6	-	6	6	3	15
11	North Road at Hanakahi Street	1	4	-	7	12	0	2	-	4	6
12	North Road at Haiamu Street	0	1	-	6	7	0	2	-	4	6

Existing Level of Service

Level of Service (LOS) is a term used to describe the conditions of a roadway based on factors that determine the rate of movement of vehicles along the roadway. LOS are ranked from A (free flow, the optimum condition) to F (forced or breakdown flow, the worst condition). The LOS method can be used as a tool to determine whether modification of a roadway is needed to prevent congestion. The following is a summary of existing LOS at study intersections:

- **Fort Weaver Road at Keaunui Drive:** Fort Weaver Road at Keaunui Drive operates at LOS D during the AM and PM peak hours. The Fort Weaver Road left turns and minor street approaches operate at LOS E or worse. The delay is a result of the traffic volume and the split phasing for the Keaunui Drive approaches. The overall intersection operates at an acceptable LOS. Vehicle queues cleared during every cycle and no major traffic issues were observed.
- **Fort Weaver Road at Keone'ula Drive/Hanakahi Street:** Fort Weaver Road at Keone'ula Drive/Hanakahi Street intersection operates at LOS D and LOS C in the AM and PM peak hours, respectively. The Fort Weaver Road southbound left turn, and eastbound left turn and through movements operate at LOS E during the AM peak hour. The delay is a result of the traffic volume and the split phasing for the Keaunui Drive approaches. The overall intersection operates at an acceptable LOS. Vehicle queues cleared every cycle and no major traffic issues were observed.
- **Fort Weaver Road at Kaimālie Street, Kuhina Street/'Ewa Beach Shopping Center, Pāpipi Street, 'Aikanaka Road, and Kimopelekāne Road/North Road:** Fort Weaver Road at Kaimālie Street, Kuhina Street/'Ewa Beach Shopping Center, Pāpipi Street, 'Aikanaka Road, and Kimopelekāne Road/North Road all operated at LOS C or better, with all movements operating at LOS D or better. Vehicle queues cleared every cycle and no major traffic issues were observed.
- **Fort Weaver Road at Kīlaha Street, Hanakahi Street, and Haiamu Street:** All movements at the unsignalized intersections of Fort Weaver Road at Pōhakupuna Road and Fort Weaver Road at Kīlaha Street operate at LOS D or better.
- **North Road at Kīlaha Street, Hanakahi Street, and Haiamu Street:** All movements at the unsignalized intersections of North Road at Kīlaha Street, Hanakahi Street, and Haiamu Street operate at LOS D or better.

3.6.2 Potential Impacts

Construction

Proposed Action

Potential impacts of construction activities on traffic patterns can be minimized through coordination with emergency services to ensure police, fire, and medical services can still operate effectively and efficiently. Construction activities involving the movement of equipment or roadway construction would be limited to non-peak traffic hours to minimize potential impacts. These impacts overall are expected to be short term and minimal.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no construction related impacts to roadways and traffic from the Proposed Action.

Operation

Proposed Action

The Proposed Action would increase estimated trips as shown in **Table 10**.

Table 10. Project Related Development Phasing and Trips Generated

Land Use	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Single-Family	42	121	163	138	78	216
Multi-Family	20	64	84	63	39	102
TOTAL	**62**	**185**	**247**	**201**	**117**	**318**

The single-family homes are planned to be located closer to North Road and therefore are anticipated to access the project from North Road. Vehicles accessing the project site through North Road are anticipated to use Hanakahi Street to travel to and from Fort Weaver Road. Traffic volumes at Keaunui Drive and Keone'ula Boulevard/Hanakahi Street will be distributed using 2022 turning movements.

The multi-family homes are planned to be located closer to Fort Weaver Road and are anticipated to access the project from Fort Weaver Road. Vehicles accessing the project site through the four Fort Weaver Road access points will be distributed along Fort Weaver Road using 2022 turning movements. For the Preferred Alternative, about one-half of the multi-family project generated trips are anticipated to use Fort Weaver Road Access #1 and #4, while Fort Weaver Road Access #2 will be used by NOAA.

The following intersections are expected to operate at LOS E or worse:

- **Fort Weaver Road at Keaunui Drive:** Fort Weaver Road at Keaunui Drive intersection would continue to operate at LOS D during the AM and PM peak hours. The Fort Weaver Road left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the Fort Weaver Road left turns and Keaunui Drive westbound approaches operate at LOS E or worse. The delay is due to the split phasing for the Keanui Drive approaches.
- **Fort Weaver Road at Keone'ula Drive/Hanakahi Street:** Fort Weaver Road at Keone'ula Drive/Hanakahi Street intersection would continue to operate at LOS E and LOS C in the AM and PM peak hours, respectively. Various movements will operate at LOS E or worse. The northbound left turn, northbound through, and southbound left turn movements operate with a v/c over 1.00.
- **Fort Weaver Road at Kaimālie Street:** Fort Weaver Road at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.71) during the PM peak hour. The eastbound right turn volume is 67 vph. This movement would clear the intersection every cycle.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed. Impacts to roadways and traffic would be associated with the future growth rate of the area. The 2016 to 2021 historical HDOT date showed relatively no growth along Fort Weaver Road. The 2035 O'ahu Regional Transportation Plan (2035 ORTP) used a travel demand forecast model to determine person trips in 2007 and 2035. Person trips include single occupancy vehicles, vehicles with two (2) or more passengers, and transit trips. The 2035 ORTP estimates person trips at various screenlines to compare growth for future

year forecasts. The 'Ewa screenline trips were estimated to be 183,900 trips and 241,300 trips in 2007 and 2035, respectively, resulting in a compound annual growth rate of 0.97%. The following intersections are expected to operate at LOS E or worse:

- **Fort Weaver Road and Keaunui Drive:** Fort Weaver Road at Keaunui Drive intersection would continue to operate at LOS E and LOS D during the AM and PM peak hours, respectively. The Fort Weaver Road left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the Fort Weaver Road left turns and Keaunui Drive westbound movements operate at LOS E or worse.
- **Fort Weaver Road at Keone'ula Drive/Hanakahi Street:** Fort Weaver Road at Keone'ula Drive/Hanakahi Street intersection would continue to operate at LOS D and LOS C in the AM and PM peak hours, respectively. The Fort Weaver Road left turns, and eastbound left turn and through movements would operate at LOS E or worse during the AM peak hour. The delay is due to the split phasing, rather than the inability of vehicles to clear the intersection. Existing vehicle queues cleared every cycle and no major traffic issues were observed. Future (2034) Without Project conditions are expected to operate similarly.
- **Fort Weaver Road at Kaimālie Street:** Fort Weaver Road at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.70) during the PM peak hour. The eastbound right turn volume is 67 vehicles per hour. This movement would clear the intersection every cycle.

3.6.3 Avoidance and Minimization Measures

The following measures would be implemented during construction:

- Construction activities involving the movement of equipment or roadway construction would be limited to non-peak traffic hours to minimize potential impacts.
- Construction activity would be restricted to daylight hours as much as practicable during the seabird peak fledgling fallout period (September 15 to December 15) to avoid the use of nighttime lighting that could attract seabirds.

The following mitigation is recommended to mitigate the impacts at the Fort Weaver Road at Keone'ula Drive/Hanakahi Street intersection:

- Installation of a new signal head (with right arrow) and programming of the traffic controller. This change would not require any roadway construction or restriping. The overlap phase would allow more right turn vehicles to be processed through the intersection.

3.7 Air Quality

3.7.1 Affected Environment

The Clean Air Act of 1972 and its 1990 Amendments and subsequent legislation regulate air emissions from area, stationary, and mobile sources. Both the United States Environmental Protection Agency and the State of Hawai'i have instituted Ambient Air Quality Standards (AAQS) to maintain air quality in the interest of public health and secondary public welfare.

At the present time, seven parameters are regulated: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone, and lead. The Hawai'i AAQS are in some cases is more stringent than the comparable National Ambient Air Quality Standards (NAAQS). In particular, the Hawai'i 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. In other cases, the NAAQS is more stringent. **Table 11** illustrates the NAAQS and State AAQS and the units of measure (micrograms per cubic meter [$\mu g/m^3$] and parts per million [ppm]).

Table 11. State of Hawai'i and National Ambient Air Quality Standards

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawai'i
Particulate Matter <10 microns (PM_{10})	$\mu g/m^3$	Annual 24 Hours	- 150[a]	- 150[a]	50 150[b]
Particulate Matter <2.5 microns ($PM_{2.5}$)	$\mu g/m^3$	Annual 24 Hours	12[c] 35[d]	15[c] 35[d]	- -
Sulfur Dioxide (SO_2)	ppm	Annual 24 Hours 3 Hours 1 Hour	- - - 0.075[e]	- - 0.5[b] -	0.03 0.14[b] 0.5[b] -
Nitrogen Dioxide (NO_2)	ppm	Annual 1 Hour	0.053 0.100[f]	0.053 -	0.04 -
Carbon Monoxide (CO)	ppm	8 Hours 1 Hour	9[b] 35[b]	- -	4.4[b] 9[b]
Ozone (O_3)	ppm	8 Hours	0.070[g]	0.070[g]	0.08[g]
Lead	$\mu g/m^3$	3 Months Quarter	0.15[h] 1.5[i]	0.15[h] 1.5[i]	- 1.5[i]
Hydrogen Sulfide	ppb	1 Hour	-	-	25[b]

Notes: [a]Not to be exceeded more than once per year on average over three years.
[b]Not to be exceeded more than once per year.
[c]Three-year average of the weighted annual arithmetic mean.
[d]98th percentile value averaged over three years.
[e]Three-year average of fourth-highest daily 1-hour maximum.
[f]98th percentile value of the daily 1-hour maximum averaged over three years.
[g]Three-year average of annual fourth-highest daily 8-hour maximum.
[h]Rolling 3-month average.
[i]Quarterly average.
Source: DOH, 2015

In addition to the NAAQS and the State AAQS, the DOH Clean Air Branch regulates fugitive dust. HAR Section 11-60.1-33, Fugitive Dust, states that no person shall cause or permit visible fugitive dust to become airborne without taking reasonable precautions, and no person shall cause or permit the discharge of visible fugitive dust beyond the property lot line on which the fugitive dust originates (DOH, 2014). This rule applies to construction projects and would, therefore, be applicable to the Proposed Action.

Prevailing winds throughout the year in Hawai'i are the northeasterly trade winds. These trade winds generally help maintain good air quality conditions. The DOH operates a network of air quality monitoring stations at various locations around the State. The closest DOH air quality monitoring station is in Kapolei, approximately 8 miles from the project site. Air quality data from the Kapolei monitor consistently trends well below Federal air quality standards.

Locally generated contributors to air pollution in the vicinity of the project site include vehicle exhaust, chemical fumes from construction and maintenance activities, and fugitive dust from various sources.

3.7.2 Potential Impacts

Construction

Proposed Action

During development of the property, there would be short-term impacts to air quality from construction vehicle activities. There are two potential types of air pollution emissions associated with these construction activities: vehicle exhause emissions from on-site construction equipment and fugitive dust caused by vehicle movements and excavation/fill activities. These impacts would be minimized through the implementation of BMPs to control construction dust and emissions in compliance with provisions of HAR Section 11.60.1-33. All work would be in conformance with the State AAQS and regulations of the State DOH and the NAAQS. The Proposed Action would comply with the most stringent of the State AAQS or NAAQS.

No-Action Alternative

Under the No-Action Alternative, no construction would occur; therefore, there would be no impacts to air quality.

Operation

Proposed Action

The Proposed Action is not anticipated to increase emission sources due to the development being residential lots and community spaces. There would be an increase of traffic in the area, which would increase emissions. However, this increase is not expected to exceed AAQS or NAAQS, whichever is more stringent.

No-Action Alternative

Under the No-action Alternative, there would not be an increase of population or vehicles in the area; therefore, there would be no impact to the existing air quality.

3.7.3 Avoidance and Minimization Measures

All construction activities would comply with the provisions of HAR Chapter 11-60.1, Air Pollution Control, and HAR Chapter 11.60.1-33, Fugitive Dust. A dust control plan would be developed and implemented to minimize fugitive dust during construction. Measures to control fugitive dust during construction may include, but not be limited to, the following:

- Watering of active work areas and project access roads, as needed
- Screening piles of materials from wind, if appropriate
- Covering open trucks carrying construction materials

- Limiting areas to be disturbed at any given time
- Mulching or chemically stabilizing inactive areas that have been disturbed
- Minimizing airborne, visible fugitive dust from shoulders and access roads

Additionally, contractors would be required to maintain equipment with emissions controls.

3.8 Noise

3.8.1 Affected Environment

Noise is defined as "any sound that may produce adverse physiological or psychological effects or interfere with individual or group activities, including but not limited to communication, work, rest, recreation, or sleep" (HAR Title 11, Chapter 46). A number of factors affect sound as it is perceived by the human ear. These include the actual level of the sound (i.e., noise), the frequencies involved, the period of exposure to the noise, and changes or fluctuations in the noise levels (HAR, Title 11, Chapter 200.1 – Occupational Noise Exposure).

The State of Hawai'i Community Noise Control Rules (HAR Title 11, Chapter 46) defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, and generators. The accepted unit of measure for noise levels is the decibel. The Community Noise Control Rules do not address most moving sources, such as vehicular traffic noise, air traffic noise, or rail traffic noise. However, the Community Noise Control Rules do regulate noise related to construction activities, which may not be stationary.

The State of Hawai'i regulates noise exposure in the following statutes and rules:

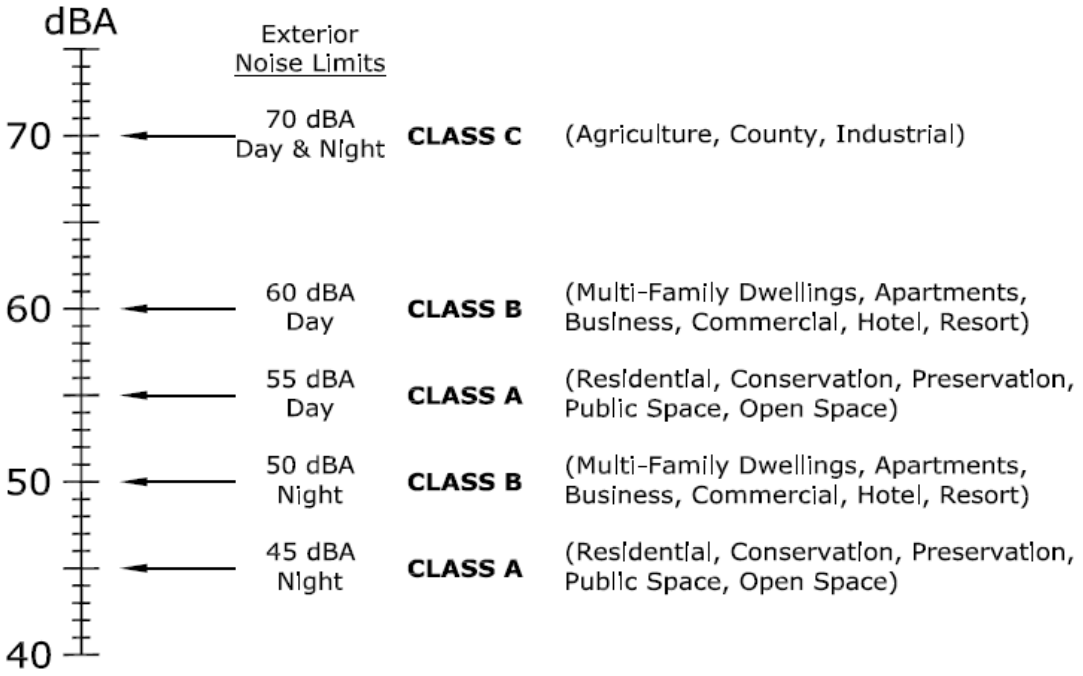
- HRS Chapter 342F – Noise Pollution
- HAR, Title 11, Chapter 46 – Community Noise Control

The maximum permissible noise levels are enforced by DOH for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits are a function of the zoning and time of day as shown in **Figure 12.** With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level. In determining the maximum permissible sound level, the background noise level is considered by the DOH.

The DHHL site is located adjacent to the U.S. Navy's Pu'uola Range Training Facility (PRTF), which is operated by the Marine Corps Base Hawai'i (MCBH). Military facilities including the PRTF are required to comply with Federal, State, and local noise regulations. MCBH has been working with the community to respond to noise complaints from the facility's operations in recent years, including concerns about how its operations may affect the Proposed Action.

Figure 12. Zoning Noise Limits

Zoning District	**Day Hours** (7 AM to 10 PM)	**Night Hours** (10 PM to 7 AM)
CLASS A Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
CLASS B Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
CLASS C Agriculture, Country, Industrial	70 dBA (Exterior)	70 dBA (Exterior)



3.8.2 Potential Impacts

Construction

Proposed Action

Noise generated by this project would generally involve short-term construction related noise generated by equipment and ambient noises from the surrounding environment. The noise sensitive properties that are predicted to experience the highest noise levels during construction activities are the existing residences nearby. Construction equipment may include excavators, trucks, and other heavy equipment. Typical noise emission levels for construction equipment are provided in **Table 12.**

Table 12. Noise Emission Levels for Construction Equipment

Equipment Type	Equipment Type
Air Compressor	81
Backhoe	80
Bulldozer	82
Chain Saw	85
Concrete/Grout Pumps	82
Crawler Service Crane (100-ton)	83
Dump Truck	88
Excavator	85
Front End Loader	80
Generator	81
Jackhammer (compressed air)	85
Lift Booms	85
Pick-Up Truck	55
Power-Actuated Hammer	88
Water Pump	76
Water Truck	55

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no noise-related impacts to nearby residences.

Operation

Proposed Action

In the context of long-term operation, the Proposed Action is not anticipated to affect ambient noise levels. The Proposed Action would be within Zoning District Class A and Zoning District Class B. Daytime maximum permissible noise levels are 55 and 60 decibels, respectively. Nighttime maximum permissible noise levels are 45 and 50 decibels, respectively. Noise from outside sources, specifically the PRTF, would need to be mitigated. Measures for the PRTF to minimize their operations on the Proposed Action may include reorienting the direction of loudspeakers, continuing to notify the community when there are changes in the firing schedule, changing the start time of daily training, and continuing to seek impact mitigation while maintaining the use of the PRTF.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no change in ambient noise levels.

3.8.3 Avoidance and Minimization Measures

According to the DOH Community Noise Control rules, in cases where construction noise exceeds or is expected to exceed the State's "maximum permissible" property line noise levels, a permit must be obtained from DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels. The Contractor would be required to submit a noise permit application to the DOH, which describes the construction activities for the project. Prior to issuing the noise permit, DOH may require action by the Contractor to incorporate noise mitigation into the construction plan. The DOH may also require the Contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The Contractor should use reasonable and standard practices to mitigate noise, such as using mufflers on diesel and gasoline engines, using properly tuned and balanced machines, etc. However, the State DOH may require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities.

Specific permit restrictions for construction activities in the DOH Community Noise Control rules are:

- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."
- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 a.m. and after 6:00 p.m. on Saturday."
- "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

3.9 Scenic Resources

3.9.1 Affected Environment

The *Ewa Development Plan* (City, 2013) identifies significant views and vistas within the plan area. These include the following:

- Distant vistas of the shoreline from the H-1 Freeway above the 'Ewa Plain;
- Views of the ocean from Farrington Highway between Kahe Point and the boundary of the Waianae Development Plan Area;
- Views of the Waianae Range from H-1 Freeway between Kunia Road and
- Kaloʻi Gulch and from Kunia Road;
- Views of Puʻu at Kapolei, Palailai, and Makakilo;
- Mauka and makai views; and
- Views of central Honolulu and Diamond Head, particularly from Puʻu ʻO Kapolei, Puʻu Palailai, and Puʻu Makakilo.

The project site is not located within a significant viewplane or vista. The *Ewa Development Plan* establishes guidelines for development in 'Ewa Beach. These include using landscaping to enhance and complement the City's urban form, provide continuity between the various districts, and enhance and preserve view corridors wherever possible.

3.9.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action would introduce construction equipment and activity along Fort Weaver Road. Construction activities would be short-term and temporary and would not have significant impacts to the existing scenic and visual environment.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts to scenic resources.

Operation

Proposed Action

Building and landscape development and improvements would be consistent with the Community Guidelines. The housing would be low rise and would not have a significant impact on surrounding area views. The proposed project would include a landscaping plan that would utilize native flora to the extent practicable.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts to scenic resources.

3.9.3 Avoidance and Minimization Measures

No measures are proposed or expected to be required to minimize impacts to visual resources.

3.10 Natural Hazards

3.10.1 Affected Environment

Floods

The Federal Emergency Management Agency (FEMA) creates Flood Insurance Rate Maps (FIRM) that delineates flood hazard areas. The FEMA FIRM flood zone designations include the following:

- A – Areas of 100-year flood, base flood elevations not determined
- AE – Areas of 100-year flood, base flood elevation determined
- XS – Areas of 500-year flood; areas of 100-year flood with average depths of less than one foot or within the drainage area less than one square mile, and areas protected by levees from 100-year flood
- X – Areas determined to be outside the 500-year floodplain
- D – Areas in which flood hazard is undetermined

- VE – Areas of 100-year coastal flood with velocity (wave action), base flood elevations determined (Coastal High Hazard District)

As shown in **Figure 13,** 46% of the subject property is located in Flood Zone X, which represents areas with minimal flood hazard that are determined to be outside the 500-year floodplain. Approximately 54% of the project area is designated as Zone D, which represents areas of undetermined but possible flood hazards were detailed flood hazard analyses have not been conducted by FEMA.

Tsunami

A tsunami involves the generation of a series of destructive ocean waves that can affect all shorelines. These waves can occur at any time with limited or no warning and are most commonly generated by earthquakes in marine and coastal regions (NOAA, 2017). As shown in **Figure 14,** the makai side of the project area is located within the tsunami evacuation zone.

Hurricanes and Tropical Storms

Tropical storms and hurricanes have historically had a relatively low probability of occurrence in the vicinity of the Hawaiian Islands. Two powerful hurricanes have impacted O'ahu: Iwa (1982) and Iniki (1992). Hurricanes have become more frequent in Hawaiian waters, which is likely exacerbated by climate change. In recent years, several hurricanes and tropical storms have made close approaches to O'ahu. The 2018 Pacific hurricane season produced a total of 23 named storms and is the fourth most active hurricane season on record. Five of the storms threatened the Hawaiian Islands by either close approach or direct landfall. This includes Category 3 Hector, which pounded south and west shores with dangerously large surf, and Category 5 Lane, which was forecast to make landfall but weakened unexpectedly and veered into the open ocean just hours before predicted landfall. In late July 2020, Hurricane Douglas made an extremely close pass with its weak southern eyewall crossing O'ahu causing minor effects.

3.10.2 Potential Impacts

Construction

Proposed Action

Natural hazards cannot be controlled; however, impacts can be minimized through good project design that minimize exposure and then remediated for after the events occur. The CCH Department of Emergency Management coordinates the emergency management activities and functions of the island of O'ahu with State, Federal, and other public and private organizations. In the event of a hurricane or tsunami, watches and/or warnings are issued by the Central Pacific Hurricane Center and the PTWC, respectively. In the event of a hurricane or tsunami warning, construction would halt, and loose construction material and equipment would be removed from the site or secured until such time as the warning is lifted.

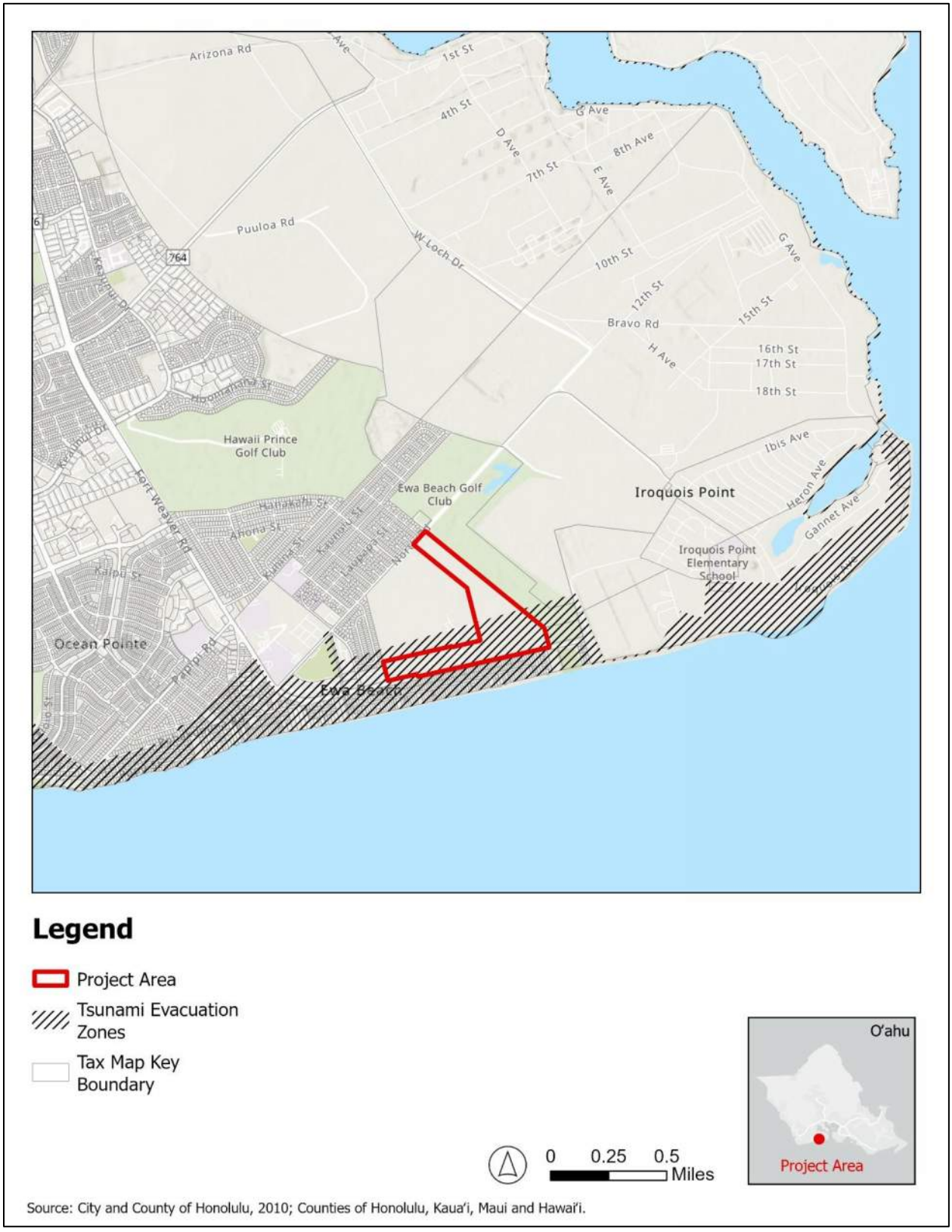
No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts associated with natural hazards.

Figure 13. Flood Zones

Source: Federal Emergency Management Agency (FEMA), 2014; Counties of Honolulu, Kaua'i, Maui and Hawai'i.

Figure 14. Tsunami Evacuation Zones



Operation

Proposed Action

The use of Native Hawaiian Housing Block Grant funds precludes development of residences within floodways or 100-year floodplains. The Proposed Action would not be in an area determined to be a Special Flood Hazard Area. The Proposed Action would be designed to withstand the level of forces necessary to minimize the likelihood that an extreme event would damage the structures. There are no anticipated adverse impacts associated with natural hazards.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts associated with natural hazards.

3.10.3 Avoidance and Minimization Measures

The following measures would be implemented to minimize potential impacts associated with natural hazards:

- In the event of a severe weather advisory (e.g., hurricanes, tropical storm, tsunami) or when deemed necessary, regular construction operations would stop, and the work crew would secure the project site and evacuate until the severe weather condition has passed.
- The Proposed Action would be designed to withstand natural hazards.

3.11 Climate Change and Sea Level Rise

3.11.1 Affected Environment

Climate Change is a long-term shift in patterns of temperature, precipitation, humidity, wind, and seasons. Scientific data show that the earth's climate has been warming. This warming is mostly attributable to rising levels of carbon and other greenhouse gases (GHG) generated by human activity. These changes are already impacting Hawai'i through rising sea levels, increasing ocean acidity, changing rainfall patterns, decreasing stream flows, and changing wind and wave patterns. While the earth's climate experiences natural change and variability over geologic time, the changes that have occurred over the last century due to human input of GHG into the atmosphere are unprecedented (Hawai'i Climate Change Mitigation and Adaptation Commission [HCCMAC], 2017). A changing climate creates conditions that increase the frequency and severity of many natural hazards which is discussed in **Section 3.11**.

Sea levels are risking at increasing rates due to global warming of the atmosphere and oceans and the melting of glaciers and ice sheets (HCCMAC, 2017). These rising seas and the projection for more increased tropical storms in the Pacific Ocean would increase Hawai'i's vulnerability to coastal inundation and erosion.

A sea level rise desktop study was conducted in 2023 by Sea Engineering, Inc., to identify and quantify the vulnerability of the proposed project to sea level rise as well as to inform the selection of sea level rise planning scenarios and design parameters and facilitate development of alternatives to ensure that the community is resilient to sea level rise. The Sea Level Rise Desktop Study is included in **Appendix F**. Potential hazards associated with sea level rise include the following:

- **Passive Flooding:** Elevations that are below the elevation of the combined sea level rise and local mean higher high water are considered passive flood areas. Passive flood areas that are connected to the ocean are considered "marine inundation" areas, while areas that are not connected to the ocean are considered "groundwater inundation" areas.
- **High Wave Flooding:** Also known as high tide flooding, occurs when sea level rise combines with local factors to push water levels above the normal high tide mark.
- **Coastal Erosion:** Shoreline change resulting from a combination of historic erosion pressures on the coastline, rising water levels, and the influence of additional water level on coastal erosion processes.

Figure 15 shows the combined hazard hazard exposure area with 6.0 feet of sea level rise.

3.11.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action would result in emissions of GHG from operation of construction equipment. These emissions would be short-term and temporary and would not be substantial; therefore, construction of the Proposed Action would not have significant impacts that would exacerbate climate change.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no increase of GHG emissions.

Operation

Proposed Action

The Proposed Action would not add an emission source that could result in climate change impacts. As discussed in **Section 3.7**, the Proposed Action would cause and increase in traffic in the area which would increase emissions from people travelling to and from the housing. However, this increase in traffic would not be substantial and would not have a significant impact on GHG emissions which would exacerbate climate change.

The Proposed Action is not expected to be impacted by coastal erosion due to its location away from the shoreline. Flooding from subaerial and marine sources are the primary hazards that could impact the 'Ewa Beach Homestead Project due to low elevation. Passive flooding may begin to occur with 2.0 feet of sea level rise, which is projected to occur between the years 2053 and 2092. High wave flooding and high tides may begin to occur with 3.2 feet of sea level rise, which is projected to occur between the years 2068 and 2135. Tidal flooding at high tide may begin to occur with 6.0 feet of sea level rise, which is projected to occur between the years 2098 and 2150.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed. Climate change and sea level rise impacts would continue on their current course and would ultimately impact the project site.

Figure 15. Projected Sea level Rise Exposure Area

Source: Counties of Honolulu, Kaua'i, Maui and Hawai'i; Hawai'i Climate Change Mitigation and Adaptation Commission, State of Hawai'i Sea Level Rise Viewer, 2021.

3.11.3 Avoidance and Minimization Measures

The Proposed Action would follow FEMA's Federal Flood Risk Management Standards or Base Flood Elevation standards, whichever is more stringent. BMPs would be considered and implemented as applicable to minimize the risk of climate change and sea level rise. Potential options that may be considered during design include the following: elevated structures, flood-resistant structures, flood resistant utilities, and flood-adaptive elements.

3.12 Socioeconomics

3.12.1 Affected Environment

The project area is located within the 'Ewa Beach on the Island of O'ahu. 'Ewa Beach has experienced rapid population growth along with other areas on O'ahu. As of 2020 Census, the population recorded in 'Ewa Beach is 16,415.

Environmental Justice

The U.S. Environmental Protection Agency (EPA) provides guidance for considering environmental justice concerns for a proposed action which puts forward general principles to assist in the process of comprehensive decision-making for impact minimization (EPA, 2015).

Demographic Composition

Demographic data is useful to determine whether minority, low-income, and indigenous populations are present in the area affected by a proposed action. The reported residents that had an income below poverty level is 6.4%. 'Ewa Beach has a mix of middle-income and lower-income households. The median household income is lower than the average for the State of Hawai'i, which can contribute to higher levels of poverty. Additional factors that have contributed to poverty are inflation, COVID-19, wage growth, and expiration of pandemic public assistance (Asset Limited Income Constrained Employed, [ALICE], 2024). For the State of Hawai'i, the number of residents in poverty has decreased (total 11%) but the number of Assisted Limited Income Constrained Employed (ALICE) households increased (total 33%). ALICE, assisted limited income constrained employed, are households that are above poverty level but struggle to afford the basic cost of living. The people who are ALICE normally are unable to qualify for public assistance (ALICE, 2024).

The five largest ethnic groups in 'Ewa Beach shown in **Table 13** are Asian (54.4%), Two or More Races (27.6%). Native Hawaiian and Other Pacific Islander (11.6%), White (11.6%), and Hispanic or Latino (11.2%) (Census Bureau, 2020).

Table 13. Ethnic Groups of 'Ewa Beach

Race	Percentage
American Indian and Alaska Native	0.0%
Asian	54.4%
Black or African American	0.0%
Hispanic or Latino	11.2%
Native Hawaiian and Other Pacific Islander	11.6%
White	11.6%
Two or More Races	27.6%

Inter-related Factors

Federal environmental justice guidance proposes that environmental assessments explore inter-related factors that can impact surrounding populations. This includes cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed agency action.

The 2015 Healthcare Association Report identified several subpopulations of people who experience disproportionate impacts and have higher risk factors to environmental conditions. Children, teens, and adolescents were found to have limited access to health care, healthy foods, and outlets for physical activity. They were found to have a higher burden of asthma, mental health issues, substance abuse, and teen birth rates than State averages. Older adults were another vulnerable population with inadequate care services, infrastructure, and support systems. They were found to underutilize preventative services, and there are elevated percentages of seniors living alone or in poverty (Healthcare Association of Hawai'i, 2015).

Public Participation

To identify potential community impacts, ensuring adequate and meaningful representation in the public participation process is essential. **Section 6.0** details the community engagement process for this project in more detail.

3.12.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action would result in temporary, positive economic activity in the form of construction jobs and material procurements.

No-Action Alternative

Under the No-Action Alternative, no construction would occur, and the benefits associated with construction of the Proposed Action would not be realized.

Operation

Proposed Action

Implementation of the Proposed Action is expected to yield significant positive impacts on the surrounding area. The Proposed Action is focused on social equity to provide homes to low-income families, elderly individuals, and native Hawaiians, to prevent exacerbating existing inequalities and to foster inclusive community growth. The development of new housing could improve access to healthcare services for native Hawaiians by bringing them closer to medical facilities and support services. The proximity of new residential developments to job centers could enhance economic stability for residents. This can contribute to better economic outcomes for low-income and vulnerable populations.

Increased housing and community development could stimulate local economic growth by generating demand for goods and services, potentially creating job opportunities and supporting local businesses.

The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities

gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

By addressing the housing needs of native Hawaiians and reducing DHHL's O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed, and the benefits associated with the Proposed Action would not be realized.

3.12.3 Avoidance and Minimization Measures

No avoidance and minimization measures are proposed for potential socioeconomic impacts, and none are expected to be required.

3.13 Public Facilities and Services

3.13.1 Affected Environment

Emergency Services

Police protection is provided by the Honolulu Police Department. The project site is located in District 8 – Leeward areas, Sector 4, which covers the 'Ewa Beach area within the larger 'Ewa District. It is served by the Kapolei Station located at 1100 Kamokila Boulevard approximately seven (7) miles northwest of the project site.

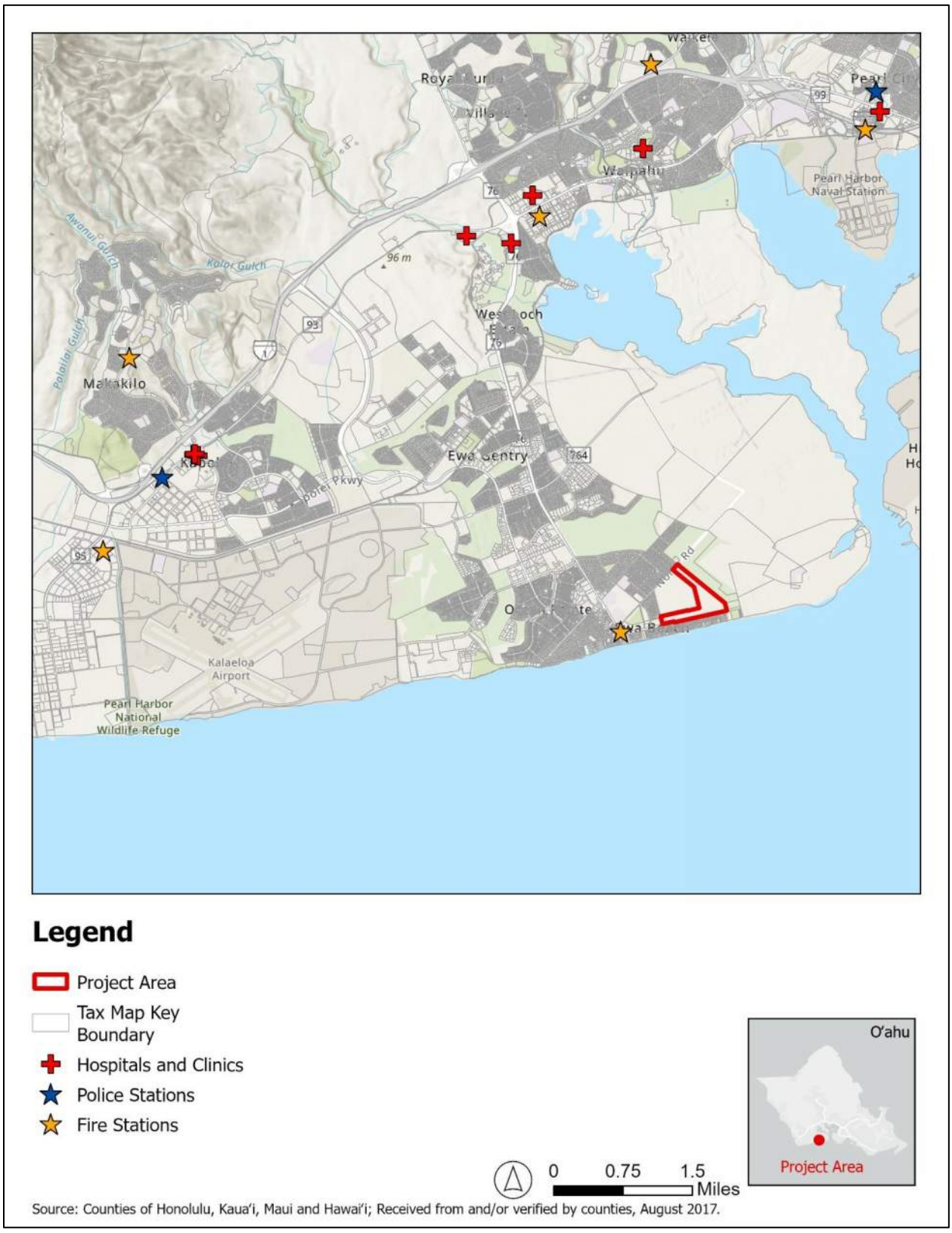
Fire protection is provided by the Honolulu Fire Department. The project site is a part of Battalion 1 and is served by the Fires Station 24 'Ewa Beach located at 91-995 Kaileole'a Drive, approximately 1.5 miles northwest of the project site.

Emergency medical service is provided by the City's Emergency Services Department, Emergency Medical Services Division. All ambulance units are designated as advanced life support units, meaning they are staffed by at least two people. The project area is served by District 1, which includes the western region of O'ahu.

The nearest hospital is the Queens Medical Center – West O'ahu located in 'Ewa Beach at 91-2141 Fort Weaver Rd, approximately five (5) miles of the project site. The next nearest full service medical facility to the project site is EmPower Health, approximately two (2) miles of the project site.

The location of emergency services are shown in **Figure 16.**

Figure 16. Emergency Services



Schools

Public schools in the immediate vicinity of the proposed project include James Campbell High School, Pohakea Elemenetary School, Kaimiloa Elementary School, and Ilima Intermediate School. Other schools that serve the 'Ewa Beach area include: Calvary Chapel West O'ahu Preschool, 'Ewa Beach Elementary School, Honolulu Community Action Program (HCAP) Head Start Kaimiloa Elementary, HCAP Head Start Pohakea Elementary School, 'Ewa Pre-Plus Head Start, 'Ewa Makai Middle School, Keone'ula Elementary School, Holomua Elementary School, Iriquois Point Elementary School.

Recreation Areas

The CCH, Department of Parks and Recreation (DPR) manages and maintains a system of parks on the island of O'ahu. The proposed project is located in District 3 – Leeward. The nearest DPR-managed parks to the project site include the following: Pu'uloa Beach Park, 'Ewa Beach Park, 'Ewa Beach Community Park, and Pu'uloa Neighborhood Park, as shown in **Figure 17**.

3.13.2 Potential Impacts

Construction

Proposed Action

Construction of the Proposed Action is not expected to have significant negative impacts on community facilities or services, including educational facilities, medical facilities, emergency responders, or community parks and recreational resources. It is not anticipated that construction activities associated with the Proposed Action would result in an increase in calls for fire, police, or medical services. However, if an incident were to occur during construction that required fire, police, or medical attention, the level of demand could be met by the existing emergency service providers.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts to public facilities and services.

Operation

Proposed Action

There would be an increase of population in the area that would increase the use of community facilities or services, including the educational facilities, medical facilities, emergency responders, and community parks and recreational resources. It is expected that the level of demand could be met by the existing facilities.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed. Therefore, there would not be increased demand of public facilities and services.

3.13.3 Avoidance and Minimization Measures

No avoidance and minimization measures are proposed for public facilities and services, nor or any expected to be required.

Figure 17. Parks and Recreation in Vicinity of Project

Source: Counties of Honolulu, Kaua'i, Maui and Hawai'i; County of Hawai'i, March 2023.

3.14 Utilities

3.14.1 Affected Environment

Water

Potable water supply for the project site is provided by the Honolulu Board of Water Supply (BWS). The water distribution lines adjacent to the project area consist of a 12-inch cast-iron pipe along North Road and an 8-inch cast-iron pipe along Fort Weaver Road.

Wastewater

There are multiple sewer mains around the project area. A 24-inch diameter cast-iron gravity sewer known as the 'Ewa Interceptor Sewer funs along the mauka side of Fort Weaver Road and interconnects with an 8-inch vitrified clay pipe that runs along the makai side of Fort Weaver Road. There is also an 8-inch lateral connection from the site connecting to the 'Ewa Interceptor Sewer.

Electricity & Broadband

There is an existing electrical distribution system in the area that runs overhead along Fort Weaver Road and North Road on wooden utility poles owned by HECO. These overhead power lines consist of 12 kilovolt (kV) and secondary power lines. Three-phase and single-phase pole mounted transformers are utilized to step the 12kV distribution down to secondary utilization voltages. The secondary power lines distribute the power from the pole mounted transformers to the properties along the Fort Weaver Road and North Road.

The project site also has an exisitng 12kV primary overhead distribution system owned by the NWS with a single HECO meter mounted on the second utility pole on the property. The HECO meter currently meters electrical loads from the seven (7) abandoned NWS building, the antenna tower, and the existing USGS property. Services to the abandoned NWS buildings and USGS property consist of 12kV-120/240 volt, single-phase, three-wire pole mounted transformers and service drops. Overhead broadband services from Hawaiian Telcom and Spectrum also run on the same utility poles and serve the abandoned NWS buildings and USGS property.

3.14.2 Potential Impacts

Construction

Proposed Action

Water

The Proposed Action would include installation of new onsite distribution waterlines that would connect to the North Road and Fort Weaver Road waterlines. Existing water meters and service laterals on the site would need to be removed.

Wastewater

The Proposd Action would include installation of new onsite wastewater lines. It is expected that an eight (8) inch sewer line would be required for each point of connection to the existing wastewater collection system.

Electrical and Broadband

The Proposed Action would include the installation of underground electrical and broadband infrastructure to be consistent with recent subdivision developments on O'ahu and in the area. The new system would transition from the existing overhead distribution along the streets to underground upon entering the project site.

The underground electrical infrastructure would consist of the installation of manholes, handholes, concrete encased ducts, conductors, pad mounted transformers, and pad mounted switches. Underground ducts would be provided to extend HECO primary service throught the site and to each parcel. The HECO distribution sustem would follow the alignment of the new or existing roadways and would be located within the road right-of-way.

Ownership of the existing HECO meter serving USGS would need to be transferred to USGS. Alternatively, the meter could be removed and a new easement granted to HECO through the project site to maintain the existing overhead electrical distribution system that currently serves the USGS property. The utility services to the abandoned buildings would be removed. The existing electrical and broadband overhead distribution system would be moved underground.

The underground telecom and CATV distribution system would consist on the installation of handholes and concrete encased ductlines with muletape. The telecom distribution system would generally follow the alignment of the proposed underground HECO distribution system. The telecom underground infrastructure would be designed to allow flexibility in service providers. Conduit stubouts would be provided from the utility company's handholes to the property line of each lot for future utility service to the properties.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur. The existing utility infrastructure would remain, and no new utility infrastructure would be installed.

Operation

Proposed Action

Water

Domestic and fire flow demands were estimated using BWS Standards for Water Requirements. The water system would be designed to meet the needs of the community at full build-out. The capacity of the distribution system would deliver the maximum daily demand simultaneously with the required fire flow. The distribution system would also deliver the peak hour flow without fire flow.

Domestic demand was estimated using an average daily demand of 300 gallons per unit for multi-family mid-rise residential buildings and 500 gallons per single-family home or 2,500 gallons per acre, whichever is greater. Fire flow demand is estimated at 1,000 gallons per minute for a one (1) hour duration for single-family home neighborhoods and 2,000 gallons per minute for a two (2) hour duration for mid-rise apartments. Fire hydrants would be spaced no more than 350 feet in the single-family home sections and no more than 250 feet apart in the areas for multi-family use. Water demand calculations are shown in **Table 14**.

Table 14. Water Demand

Housing Type	Potable Water (gallons per day [gpd])	Fire Flow Demand (gpd)	Total (gpd)
Single-Family	110,000	60,000	170,000
Multi-Family	36,000 to 48,000	240,000	276,000 to 288,000
TOTAL	**146,000 to 158,000**	**300,000**	**446,000 to 458,000**

In a letter dated November 23, 2022, BWS stated that the existing water system is generally adequate to accommodate 319 single-family homes and 960 multi-family units. This is far greater than the 220 single-family homes and 120 to 160 multi-family units that are proposed.

A new water main would need to be installed within the new project development. The proposed water main would adhere to the BWS Water System Standards (2002) and its amendments to the roadway being dedicated to the CCH. Preliminary discussions with BWS indicate there are no concerns with the new development connecting to the existing municipal water system. BWS requested that the Proposed Action connect the North Road water line to the Fort Weaver Road water line.

Wastewater

Domestic sewer demands were estimated using the City & County of Honolulu's Department of Environmental Services (ENV) Wastewater System Design Standards for quantity of wastewater. Demand was based on estimated use, which includes four (4) persons per single-family home and 2.8 persons per multi-family unit at 70 gallons per day (gpd) base flow. Domestic sewer demand calculations are provided in **Table 15**.

Table 15. Domestic Sewer Demand

Housing Type	Wastewater Flow (gpd)
Single-Family	61,600
Multi-Family	23,520 to 31,360
TOTAL	**85,120 to 92,960**

To support the new development, a new sewer main would need to be installed. The proposed project would connect to the Honouliuli Wastewater Treatment Plant (WWTP) which is owned and operated by the City & County of Honolulu. The Honouliuli WWTP service area encompasses approximately 76,000 acres and ranges from Red Hill up to Mililani and extends to Ko Olina Resort.

Electrical and Broadband

Electrical demand was estimated based on an average load of 7.5 kilovolt-amperes (kVA) per residential unit. Estimated electrical demand is provided in **Table 16**.

Table 16. Estimated Electrical Demand

Housing Type	Electrical Demand (kVA)
Single-Family	1,650
Multi-Family	900 to 1,200
TOTAL	**2,550 to 2,850**

The existing off-site electrical and broadband distribution system is assumed to have sufficient spare capacity to support the development of the Proposed Action. However, the existing HECO substations that currently serve the 'Ewa Beach area may to be upgraded or upsized to support the additional electrical loads. Further coordination with HECO would occur as the project progresses forward into design. If additional substation capacity is required, it is assumed that HECO would upgrade/upsize their existing substations or provide a new substation in an area outside the flood zone that would be sized to accommodate the Proposed Action as well as electrical demands from other parts of 'Ewa Beach.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts to existing utilities.

3.14.3 Avoidance and Minimization Measures

The following measures would be applied to minimize impacts associated with water service:

- DHHL would coordinate with the various utility providers to ensure that any disruptions to service in the area is minimized.
- DHHL shall submit a water master plan for BWS review and approval. The water master plan shall address the following:
    - Proposed system improvements and connections
    - Estimated water demand
    - Estimated fire flow demand
    - Fire protection
    - Phasing

3.15 Solid and Hazardous Waste

3.15.1 Affected Environment

Solid waste collection, disposal, and recycling operations serving 'Ewa is provided by ENV's Refuse Division.

A Phase I Environmental Site Assessment (ESA) was conducted by EnviroServices & Training Center, LLC, in July 2020. The survey was conducted to document and assess the environmental condition of the property to identify. potential high risk uses that would identify a "recognized environmental condition" (REC). The Phase 1 ESA found no evidence of RECs on the project parcel, although there are limited quantities of solid waste (e.g., tires, debris, rubbish) that should be properly disposed. The Phase I ESA Report is provided in **Appendix G**.

A Limited Hazardous Materials Survey was conducted by EnviroServices & Training Center, LLC, in July 2020. The limited hazardous materials survey studied existing structures to identify presence of hazardous materials above the regulatory limit. The findings included findings of one (1) sample out 178 total taken showing asbestos above the regulatory limit and found that the ceiling panels within the buildings contained detectable levels of arsenic. The report recommends that removal and disposal of materials be done in accordance with applicable regulation prior to demolition activities. The Limited Hazardous Materials Survey Report is provided in **Appendix H**.

A Magnetic Anomaly Survey was conducted by Element Environmental, LLC, in September 2023. The survey identified eight (8) "high priority" magnetic anomalies. It was determined that there is a low likelihood that any of the anomalies are unexploded ordnance. The Magnetic Anomaly Survey Report is provided in **Appendix I**.

3.15.2 Potential Impacts

Construction

Proposed Action

Testing and proper management/disposal of environmental hazards such as lead, asbestos, and arsenic would be required in the early stages of construction of the Proposed Action. Construction activities may result in an accidental spill of hazardous products in the event of an accident or equipment malfunction. Construction would generate some solid waste, which is typical of construction related activities. The volume of solid waste is expected to be minor and temporary due to the limited area of development.

No-Action Alternative

Under the No-Action Alternative, no construction activities would occur; therefore, there would be no impacts associated with solid or hazardous waste.

Operation

Proposed Action

The 'Ewa Beach Homestead Project would be serviced by ENV's Refuse Division or a private waste collection company. The Proposed Action is not expected to affect the existing waste collection operations.

Although residents would keep and utilize standard household chemicals (e.g., cleaning supplies, gas for lawn equipment), the Proposed Action is not expected to have any impacts associated with hazardous materials.

No-Action Alternative

Under the No-Action Alternative, the 'Ewa Beach Homestead Project would not be constructed; therefore, there would be no impacts to existing solid waste collection operations. There would also be no impacts associated with hazardous materials.

3.15.3 Avoidance and Minimization Measures

The following measures would be implemented to minimize potential solid and hazardous waste impacts:

- All project construction-related debris would be removed and disposed of at an approved site.
- Sanitary waste would be collected from the portable units a minimum of once per week, or as required.
- Asbestos material, if present, would be separated, double-bagged, and disposed of in accordance with regulations of the ENV's Refuse Division.
- Debris containing arsenic would be separated and disposed of in accordance with regulations of the ENV's Refuse Division.
- Abatement would comply with worker safety standards provided by the Occupational Safety and Health Administration and land disposal restrictions.

3.16 Secondary and Cumulative Impacts

3.16.1 Secondary Impacts

Secondary impacts are those effects that are caused by an action and are later in time or further removed in distance but are reasonably foreseeable. They may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related to effects on air and water or other natural systems.

The implementation of the Proposed Action would not only produce direct benefits such as increased housing availability and enhanced community spaces, but also give rise to secondary cumulative impacts. These impacts, though indirect, warrant careful consideration: growth-inducing effects, changes in land use patterns, increased population density, and effects on air and water quality. The Proposed Action is likely to stimulate additional growth in the surrounding areas. The provision of new housing and community amenities will make 'Ewa Beach a more attractive location for both current residents and new residents. This increased desirability may lead to further residential and commercial development, potentially accelerating the expansion of 'Ewa urban areas and contributing to a more intensive pattern of land use in the region. The reconfiguration of land use may influence adjacent areas, prompting additional development and altering the landscape of 'Ewa Beach and its surroundings.

The influx of new residents and the expansion of community facilities may result in increased population density in the area. Higher population density can strain existing infrastructure and services, such as transportation, utilities, and healthcare. This growth may necessitate further investment in these services to meet the demands of a larger population, potentially leading to increased development activities in nearby regions.

Secondary impacts on air and water quality may arise from increased development and population density. The construction of new homes and community spaces can lead to higher levels of vehicular traffic, construction-related emissions, and increased energy consumption. Additionally, with more residents, there could be higher levels of waste generation and runoff, which may affect local water bodies and natural systems. These changes could contribute to cumulative effects on air and water quality over time.

3.16.2 Cumulative Impacts

Cumulative impacts refer to the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant impacts taking place over time.

The following cumulative impacts should be considered related to the Proposed Action: infrastructure strain and environmental degradation. The addition of new residential units and community spaces would increase demand on existing infrastructure, such as transportation networks, utilities, and public services. When aggregated with other development projects, this increased demand may strain infrastructure capacity, necessitating upgrades and expansions. The cumulative effect on infrastructure could lead to greater environmental impacts, such as increased traffic congestion, higher emissions, and more extensive resource use. Cumulative impacts on environmental quality can arise from the combined effects of multiple development projects. The construction and operation of new residential spaces, in conjunction

with other local developments, may contribute to degradation of air and water quality, loss of natural habitats, and increased waste production. The aggregate impact of these projects can lead to diminished environmental health, affecting ecosystems, wildlife, and human populations.

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4.0 Relationship to Land Use Plans and Policies

4.1 Department of Hawaiian Home Lands Planning Documents

4.1.1 DHHL General Plan Update (2022)

The DHHL General Plan Update (adopted November 21, 2022), is an update of the DHHL General Plan which was initially adopted in 2002. The DHHL General Plan Update is a comprehensive framework guiding the development and management of Hawaiian Home Lands and sets the vision and establishes goals and policies to guide the decision-making of the HHC and the DHHL plans, programs, and policies for the next 20 years (until 2040). It aims to fulfill the mission of providing land to native Hawaiians as outlined in the Hawaiian Homes Commission Act of 1920. The plan covers various themes, including land use and water resources, infrastructure, housing, food production, healthy communities, natural and cultural resource management, revenue generation, and economic development. The following is a discussion regarding the Proposed Action's consistency with teh applicable objectives of the DHHL General Plan Update.

Land Use and Water Resources

Goal LU-1: Utilize Hawaiian home lands for uses most appropriate to meet the needs and desires of the beneficiary population.

> **Policy LU-1A:** Increase beneficiary participation in the planning, development, and use of Hawaiian home lands and improve communications between DHHL and the beneficiary community.
>
> **Policy LU-1B:** Provide space for and designate a balanced mixture of appropriate land uses, economic opportunities, and community services in a Native Hawaiian-friendly environment.
>
> **Policy LU-1C:** Consider opportunities to acquire or exchange lands best suited for purposes of the HHCA, including increasing homesteading opportunities for native Hawaiians.
>
> **Policy LU-1D:** Incorporate Native Hawaiian mana'o, traditional place names, historical uses, and cultural knowledge in land use planning to identify appropriate uses in appropriate places.

Discussion: As discussed in **Section 6.2**, two (2) beneficiary meetings were held on December 8, 2022, and April 30, 2024. In addition, a survey was sent to over 1,300 current DHHL applicants to learn more about their preferences and needs for the 'Ewa Beach Homestead Community (see **Section 6.2.3**). The first beneficiary meeting introduced the project and and engaged the 43 beneficiaries in attendance to envision the plan for the future 'Ewa Beach Homestead community. The second meeting presented the results from the beneficiary survey and the first beneficiary meeting, an update on the findings of the technical studies, and three draft alternatives for discussion. A third beneficiary meeting will be held following the release of the Final EA.

The parcel for the Proposed Action was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. A Master Plan was completed for the proposed project in July 2024 and is included as **Appendix A** of this Draft EA. The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's O'ahu Residential Waitlist, which currently has the most beneficiaries waiting for homesteads. The

need for homestead development is the highest priority on O'ahu and this site offers good conditions for residential homestead development. Specifically, DHHL is proposing to develop approximately 220 single family lots and approximately 120 to 160 low-rise multi-family units. In addition to the infrastructure, roadways, and residential lots, 27 acres would be designated for a combination of community use, community agriculture, stewardship, and open space/drainage.

Goal LU-2: Encourage a balanced pattern of contiguous growth into urban and rural centers.

> **Policy LU-2A:** Prioritize the development of homestead communities in areas with suitable development conditions that are close to jobs, transportation, infrastructure, and services.

Discussion: The Proposed Action is located in an area identified in the 'Ewa Development Plan as designated Urban and is located within the 'Ewa Community Growth Boundary (see **Section 4.3.2**).

Goal LU-3: Protect life and property from the effects of natural hazards and climate change on Hawaiian home lands.

> **Policy LU-3C:** Incorporate climate change projections and hazard zones into land use development plans by identifying areas vulnerable to climate change and other hazards and applying the Special District Natural Hazards land use designation.

Discussion: The Master Plan for the project included an assessment of natural hazards including sea level rise, flood zones, and tsunami evacuation zone. Through the master planning effort, locations for the various land uses of the 'Ewa Beach Homestead community were determined:

- **Single-family lots** would be located in areas that are outside designated flood zones, the six (6) foot SLR-XA, and the tsunami evacuation zone.
- The **multi-family uses** are located in areas that are mostly outside of existing flood zones but may be impacted by sea level rise impacts within the 99-year homestead lease period at current elevations. Risks to development in these areas would be mitigated through land preparation and design measures that ensure safety and resilience, such as elevating habitable structures above the projected six-foot SLR-XA and providing additional drainage and stormwater retention capacity. The multi-family uses are also located within the tsunami evacuation zone.
- The **community use** area is located outside the existing flood zone but may be impacted by sea level rise as it is located in the projected six-foot SLR-XA. It is also located within the tsunami evacuation zone.
- The **community agriculture** area is located within the designated flood zone, the six (6) foot SLR-XA, and the tsunami evacuation zone.
- **Stewardship** lands are those that are not currently proposed for homesteading. Since this area is located within in the designated flood zone, the six (6) foot SLR-XA, and the tsunami evacuation zone, it would allow for future flexibility for exploring and analyzing suitability for future homestead development as the information and science regarding flooding and projected sea level rise projections evolve.

Infrastructure

Goal IN-1: Provide and maintain infrastructure for homestead communities within resource limitations.

> **Policy IN-1A:** Design infrastructure to County standards and license systems to the Counties whenever possible for development within Residential, Commercial, and Industrial areas.

Goal IN-2: Promote innovative, cost-effective, and sustainable ways to meet infrastructure needs.

> **Policy IN-2C:** Promote energy self-sufficiency, climate change mitigation, and sustainability by implementing DHHL's Energy Policy.

Discussion: DHHL intends to design and construct the Project to generally conform with CCH development standards. The Proposed Action would comply with applicable sections of DHHL's Hoʻomaluō Energy Policy. The Proposed Action would include the installation of energy efficient fixtures, appliances, and solar water heating systems in the residences, as feasible.

Housing

Goal HS-1: Increase the number of housing opportunities awarded each year.

> **Policy HS-1A:** Maintain a housing development pipeline in proportion to the number of applicants on the residential waiting list for each island.

Goal HS-2: Provide a mix of housing opportunities that reflect the needs and desires of native Hawaiian beneficiaries.

> **Policy HS-2A:** Provide a variety of residential types that match beneficiary needs in terms of housing products (owner-builder, turnkey, self-help, etc.), types of housing units (single-family, multi-family, kūpuna housing, rental, etc.), and financing.

Discussion: The Proposed Action would include approximately 220 single-family lots and up to 160 multi-family units that would be available to beneficiaries. Possible single-famiy housing lots would include three variations: move in ready homes for purchase, move in ready homes for rent with option to purchase, and vacant lots. Possible multi-family housing types include townhouses, low-rise apartment complex, and/or kūpuna housing.

Food Production

Goal FP-5: Promote a diversity of food production on Hawaiian home lands.

> **Policy FP-5B:** Designate areas on Hawaiian home lands for communal growing and processing of food through Community Agriculture land use designation.

Discussion: Approximately four (4) acres have been designated for community agriculture east of the five (5) acre multi-family residential area. Community agriculture includes common areas for the cultivation of fruits, vegetables, plants, flowers, or herbs by the homestead community.

Natural and Cultural Resources

Goal RM-1: Be responsible, long-term stewards of the Trust's lands and the natural, historic, and community resources on these lands.

> **Policy RM-1B:** Identify, preserve, and protect significant natural, historic, and cultural resources on Hawaiian home lands, using Special District or Conservation land use designations to identify areas with resources requiring protection or management.

Discussion: A CIA and ALRFI were completed for the Proposed Action to ensure protection of cultural and historic resources. The DHHL will comply with State rules and regulations regarding the preservation of archaeological and historic sites. Native Hawaiians will be able to use natural resources on the Site for traditional and cultural purposes. For further discussion, see **Section 3.3** and **Section 3.4**.

4.1.2 DHHL O'ahu Island Plan

The DHHL O'ahu Island Plan (2014) is a guide for DHHL to use when developing on lands on the Island of O'ahu as the plan engages with CCH, State, and Federal agencies, as well as private organizations. The plan updates the acres, applicants, and other necessary information to keep track for making informed decisions for Hawaiian home lands. Additionally, the plan identifies current and potential homestead locations and needs of DHHL.

Although the proposed project is not included in the DHHL O'ahu Island Plan, the 'Ewa Beach Homestead Project aligns with the DHHL O'ahu Island Plan as it will provide new housing solutions that meet the needs of Hawaiians. The project specifically targets the needs of applicants who are currently waitlisted for residential homes. By focusing on these individuals and families, the project addresses a critical component of the DHHL O'ahu Island Plan, which aims to reduce the wait times and improve access to housing for native Hawaiians. Overall, the proposed project helps the goals and plans of the O'ahu Island Plan by advancing its vision by addressing immediate housing needs, utilizing land resources, and fostering a collaborative approach to development.

4.2 State of Hawai'i Planning Documents

4.2.1 The Hawai'i State Plan

The Hawaii State Plan, codified as Chapter 226, Hawaii Revised Statutes, serves as a guide for the future long-range development of the State. The Hawaii State Plan identifies goals, objectives, and policies for the State to: provide a basis for determining priorities and allocating limited resources; improve coordination of Federal, State, and County plans, policies, programs, projects, and regulatory activities; and establish a system for plan formulation and program coordination to integrate major state and county activities. Applicable sections of HRS Chapter 226 are shown in **Table 17** and discussed below.

Table 17. Summary of Applicability of HRS Chapter 226 to the Proposed Action

HRS Chapter 226 Hawai'i State Planning Act	Applicability to Project
Part I. Overall Theme, Goals, Objectives, and Policies	
§226-5 Objective and policies for population	**Applicable**
§226-6 Objectives and policies for the economy--in general	Not applicable
§226-7 Objectives and policies for the economy-- agriculture	Not applicable
§226-8 Objective and policies for the economy--visitor industry	Not applicable
§226-9 Objective and policies for the economy--federal expenditures	Not applicable
§226-10 Objective and policies for the economy--potential growth and innovative activities	Not applicable
§226-10.5 Objectives and policies for the economy--information industry	Not applicable
§226-11 Objectives and policies for the physical environment--land-based, shoreline, and marine resources	**Applicable**
§226-12 Objective and policies for the physical environment--scenic, natural beauty, and historic resources	**Applicable**
§226-13 Objectives and policies for the physical environment--land, air, and water quality	**Applicable**
§226-14 Objective and policies for facility systems--in general	Not applicable
§226-15 Objectives and policies for facility systems--solid and liquid wastes	Not applicable
§226-16 Objective and policies for facility systems--water	Not applicable
§226-17 Objectives and policies for facility systems--transportation	Not applicable
§226-18 Objectives and policies for facility systems--energy	Not applicable
§226-18.5 Objectives and policies for facility systems--telecommunications	Not applicable
§226-19 Objectives and policies for socio-cultural advancement--housing	**Applicable**
§226-20 Objectives and policies for socio-cultural advancement--health	Not applicable
§226-21 Objective and policies for socio-cultural advancement--education	Not applicable
§226-22 Objective and policies for socio-cultural advancement--social services	Applicable
§226-23 Objective and policies for socio-cultural advancement--leisure	**Applicable**
§226-24 Objective and policies for socio-cultural advancement--individual rights and personal well-being	**Applicable**
§226-25 Objective and policies for socio-cultural advancement--culture	**Applicable**
§226-26 Objective and policies for socio-cultural advancement--public safety	Not applicable
§226-27 Objective and policies for socio-cultural advancement--government	Not applicable
Part III. Priority Guidelines	
§226-103 Economic priority guidelines	Not applicable
§226-104 Population growth and land resources priority guidelines	**Applicable**
§226-105 Crime and criminal justice	Not applicable
§226-106 Affordable housing	Not applicable
§226-107 Quality education	Note applicable
§226-108 Sustainability	**Applicable**
§226-109 Climate change adaptation priority guidelines	Not applicable

Section 226-5: Objective and Policies for Population.

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

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

(1) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.

(3) Promote increased opportunities for Hawai'i's people to pursue their socioeconomic aspirations throughout the islands.

(4) Encourage research activities and public awareness programs to foster an understanding of Hawai'i's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawai'i's population.

(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

Discussion: The Proposed Action would result in population growth in the 'Ewa Beach community. The proposed development of housing and common spaces for Hawaiian Homelands would support the State's goals by allowing people of Hawai'i to puruse their socioeconomic aspirations by being able to house near the city of Honoulu and use the project area as a space of social, cultural, and economic development.

Section 226-11. Objectives and policies for the physical environment – land-based, shoreline, and marine resources.

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

(1) Prudent use of Hawai'i's land-based, shoreline, and marine resources.

(2) Effective protection of Hawai'i's unique and fragile environmental resources.

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

(1) Exercise an overall conservation ethic in the use of Hawai'i's natural resources.

(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.

(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawai'i.

(8) Pursue compatible relationships among activities, facilities, and natural resources.

Discussion: No rare, threatened, or endangered plant or animal species were identified at the project site. However, there is the potential for the presence of the Hawaiian hoary bat, Hawaiian seabirds, and Hawaiian waterbirds. Measures to minimize impacts to these species are provide in **Section 3.2.3**.

Section 226-12. Objectives and policies for the physical environment – scenic, natural beauty, and historic resources

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

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

(1) Promote the preservation and restoration of significant natural and historic resources.
(2) Provide incentives to maintain and enhance histoic, cultural, and scenic amenities.
(5) Encourage the design of developments and activies that complement the natural beauty of the islands.

Discussion: The project site is not located within a significant viewplane or vista. The *Ewa Development Plan* establishes guidelines for development in 'Ewa Beach. These include using landscaping to enhance and complement the City's urban form, provide continuity between the various districts, and enhance and preserve view corridors wherever possible. Building and landscape development and improvements would be consistent with the Community Guidelines. The housing would be low rise and would not have a significant impact on surrounding area views. The proposed project would include a landscaping plan that would replicate the naturalized dry shrub and grass lands common to the 'Ewa Plain.

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

(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:
(1) Maintenance and pursuit of improved quality in Hawai'i's land, air, and water resources.
(2) Greater public awareness and appreciation of Hawai'i's land, air, and water resources.

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

Discussion: The Proposed Action would include approximately 220 single-family lots and up to 160 multi-family units that would be available to beneficiaries, as well as community use, community agriculture, stewardship, and infrastructure (e.g., internal roads, electrical/broadband, street lighting, drainage, and open space). The development would be located in close proximity to existing services and facilities. The Proposed Action would not be in an area determined to be a Special Flood Hazard Area. The Proposed Action would be designed to withstand the level of forces necessary to minimize the likelihood that an extreme event would damage the structures.

The Proposed Action is not expected to be impacted by coastal erosion due to its location away from the shoreline. Flooding from subaerial and marine sources are the primary hazards that could impact the 'Ewa Beach Homestead Project due to low elevation. Passive flooding may begin to occur with 2.0 feet of sea level rise, which is projected to occur between the years 2053 and 2092. High wave flooding and high tides may begin to occur with 3.2 feet of sea level rise, which is projected to occur between the years 2068 and 2135. Tidal flooding at high tide may begin to occur with 6.0 feet of sea level rise, which is projected to occur between the years 2098 and 2150.

BMPs would be considered and implemented as applicable to minimize the risk of climate change and sea level rise. Potential options that may be considered during design include the following:

- **Elevated structures:** Flood protection elevation exceeds Base Flood Elevation
- **Flood-resistant structures:** Post and pier foundations, flood resistant foundations
- **Flood-resistant utilities:** Flood-resistant equipment, utility platforms, elevated utilities
- **Flood-adaptive elements:** Open space, pervious surfaces, wetlands, bioswales, fishponds

Section 226-19. Objectives and policies for socio-cultural advancement – housing.

(a) Planning for the State's socio-cultural advancement with regard to housing shall be directed toward the achievement of the following objectives:

(1) Greater opportunities for Hawai'i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more rental and for sale affordable housing is made available to extremely low-, very low-, lower-, moderate-, and abover moderate-income segments of Hawai'i's population.

(2) The orderly development of residential areas sensitive to community needs and other land uses.

(3) The development and provision of affordable rental housing by the State to meet the housing needs of Hawai'i's people.

(b) To achieve the housing objectives, it shall be the policy of this State to:

(1) Effectily accommodate the housing needs of Hawai'i's people.

(2) Stimulate and promote feasible approaches that increase affordable rental and for sale housing choices for extremely low-, very low-, lower-, moderate-, and above moderate-income households.

(3) Increase homeownership and rental opportunities and choices in terms of quality, location, cost, densities, style, and size of housing.

(5) Promote design and location of housing developments taking into account the physical setting, accessibility to public facilities and services, and othe concerns of existing communities and surrounding areas.

(7) Foster a variety of lifestyles traditional to Hawai'i through the design and maintenance of neighborhoods that reflect the culture and values of the community.

Discussion: Implementation of the Proposed Action is expected to yield significant positive impacts on the surrounding area. The Proposed Action is focused on social equity to provide homes to low-income families, elderly individuals, and native Hawaiians, to prevent exacerbating existing inequalities and to foster inclusive community growth. The development of new housing could improve access to healthcare services for native Hawaiians by bringing them closer to medical facilities and support services. The proximity of new residential developments to job centers could enhance economic stability for residents by reducing commute times and improving job accessibility. This can contribute to better economic outcomes for low-income and vulnerable populations.

Increased housing and community development could stimulate local economic growth by generating demand for goods and services, potentially creating job opportunities and supporting local businesses.

The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

By addressing the housing needs of native Hawaiians and reducing the O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

Section 226-25. Objective and policies for socio-cultural advancement – culture

(a) Planning for the State's socio-cultural advancement with regard to culture shall be directed toward the achievement of the objective of enhancement of cultural identities, traditions, values, customs, and arts of Hawai'i's people.

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

(1) Foster increased knowledge and understanding of Hawai'i's ethnic and cultural heritages and the history of Hawai'i.

(2) Support activities and conditions that promote cultural values, customs, and arts that enrich the lifestyles of Hawai'i's people and which are sensitive and responsive to family and community needs.

(3) Encourage increase awareness of the effects of the proposed public and private actions on the integrity and quality of cultural and community lifestyles in Hawai'i.

(4) Encourage the essence of the aloha spirit in people's daily activities to promote harmonious relationships among Hawai'i's people and visitors.

Discussion: Unlike other locations on O'ahu, the 'Ewa community has not managed to maintain many of the traditional activities that once flourished in the area. The return of native Hawaiians to the area could help restore and uplift the knowledge and traditions that once thrived in this part of 'Ewa. The Proposed Action is a critical opportunity to reclaim Hawaiian traditional names and knowledge that have been impacted by the area's development and military seizure of resources in the area. The Proposed Action is a significant opportunity to restore traditional and customary knowledge that has been partially lost due to the long use of the land by the federal government.

Section 226-104. Population growth and land resources priority guidelines.

(a) Priority guidelines to effect desired statewide growth and distribution:
   (1) Encourage planning and resource management to ensure that population growth rates throughout the State are consistent with available and planned resource capacities and reflect the needs and desires of Hawai'i's people.
   (3) Ensure that adequate support services and facilities are provided to accommodate the desired distribution of future growth throughout the State.
   (5) Explore the possibility of making available urban land, low-interest loans, and housing subsidies to encourage the provision of housing to support selective economic and population growth on the neighbor islands.

(b) Priority guidelines for regional growth distribution and land resource utilization:

   (1) Encourage urban growth primarily to existing urban areas where adequate public facilities are already readily available or can be provided with reasonable public expenditures, and away from areas where other important benefits are present, such as protection of important agricultural land or preservation of lifestyles.
   (6) Seek participation from the private sector for the cost of building infrastructure and utilities and maintaining open spaces.
   (9) Direct future urban development away from critical environmental areas or impose mitigating measures so that negative impacts on the environment would be minimized.
   (12) Utilize Hawai'i's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.
   (13) Protect and enhance Hawai'i's shoreline, open spaces, and scenic resources.

Discussion: The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's O'ahu Residential Waitlist. The DHHL objectives for the proposed homestead community are:

- Provide residential homesteads to beneficiaries on DHHL's O'ahu Residential Waitlist.
- Create a thriving homestead community in 'Ewa Beach that honors culture, environment, and sense of place.

- Involve beneficiary lessees, waiting list applicants, and the surrounding community in envisioning and shaping the homestead community.

According to the 2021 DHHL Annual Report, there are currently 11,163 applicants on O'ahu waiting for residential homesteads. To address this significant backlog, the DHHL O'ahu Island Plan recommends acquiring additional lands on the island to expand homesteading opportunities for these beneficiaries. The proposed project is essential for many reasons:

- The proposed project aligns with established regulatory frameworks.
- The proposed project responds to the urgent demand for residential homesteads.
- The proposed project follows strategic recommendations.
- The proposed project fulfills the legal and ethical commitment to support the Hawaiian community.

In summary, the proposed project represents a crucial step in bridging the gap between the current availability of homestead lands and the needs of those on the O'ahu Residential Waitlist.

Section 226-108. Sustainability.

(a) Priority guidelines and principles to promote sustainability shall include:
  (1) Encouraging balanced economic, social, community, and environmental priorities;
  (2) Encouraging planning that respects and promotes living within the natural resources and limits of the State;
  (3) Promoting a diversified and dynamic economy;
  (4) Encouraging respect for the host culture;
  (5) Promoting decisions based on meeting the needs of the present without compromising the needs of future generations;
  (6) Considering the principles of the ahupua'a system; and
  (7) Emphasizing that everyone, including individuals, families, communities, businesses, and government, has the responsibility for achieving a sustainable Hawai'i.

Discussion: The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's O'ahu Residential Waitlist. According to the 2021 DHHL Annual Report, there are currently 11,163 applicants on O'ahu waiting for residential homesteads. To address this significant backlog, the DHHL O'ahu Island Plan recommends acquiring additional lands on the island to expand homesteading opportunities for these beneficiaries.

The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

By addressing the housing needs of native Hawaiians and reducing the O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and

preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

4.2.2 State Land Use Law

Hawai'i was the first of the fifty states to have a State Land Use Law and a State Plan. Today, Hawai'i remains unique among the fifty states with respect to the extent of control that the state exercises in land use regulation. The State Land Use Law, HRS Chapter 205, was originally adopted by the State Legislature in 1961. This law establishes an overall framework of land use management whereby all lands in the State of Hawai'i are classified into one of four land use districts: Urban, Agricultural, Conservation, and Rural.

Discussion: As shown in **Figure 18**, the Proposed Action is located in the Urban Land Use District. Hawaiian Home Lands are not subject to regulation by the State Land Use Districts nor City and County of Honolulu Zoning. Attorney General opinion 72-21 states "Hawaiian home lands needed for purposes of the Hawaiian Homes Commission Act (HHCA) are to be used and disposed of in accordance with the act and are not subject to County zoning requirements." Since the lands are to be used to fulfill the purposes of the HHCA, DHHL is not subject to County zoning. However, there are underlying land use designations that are important to understand in the context of the surrounding area and intended broader community character.

DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL's Island Plans. Because the Project Area was not in DHHL's land inventory at the time of the last O'ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development.

Figure 18. State Land Use District

4.2.3 Hawai'i Coastal Zone Management Program

The National Coastal Zone Management (CZM) Program was created with the passage of the Coastal Zone Management Act of 1972 (CZMA). Hawai'i's CZM Program, established pursuant to HRS Chapter 205A, as amended, is administered by the State of Hawai'i Office of Planning and Sustainable Development and provides for the beneficial use, protection, and development in the State's coastal zone. The objectives and policies of the Hawai'i CZM Program encompass a wide array of concerns including impacts to recreational resources, historic and archaeological resources, coastal scenic resources and open space, coastal ecosystems, coastal hazards, and the management of development. The Hawai'i CZM area includes all lands within the State and the areas seaward to the extent of the State's management jurisdiction. Therefore, the Proposed Action is located within the CZM area.

The Proposed Action is consistent with the following objectives and policies of the Hawai'i CZM Program:

RECREATIONAL RESOURCES
Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

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

Discussion: The Proposed Action would not impact shoreline recreational resources as it is not located

on the coastline; therefore, policies regarding shoreline recreational resources are not applicable. To protect the recreational value of coastal waters, the State of Hawai'i has adopted water quality standards. Generally, these standards require submittal and adherence to the conditions in a NPDES permit. This permit requires compliance with BMPs during construction to minimize soil erosion into adjacent waterways and to maintain water quality during operation. A NPDES permit would be required for the Proposed Action.

HISTORIC RESOURCES

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

Policies:

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

Discussion: The presence of archaeological features is not anticipated due to the lack of archaeological resources identified by previously conducted AIS in the surrounding area. Prior to any ground disturbing work, an AIS may be required if requested by SHPD. This is expected to minimize the possibility of construction activity interfering with historic resources of significance. Overall, the probability of adverse impacts in this area seems very low as no historic properties have been identified during archaeological investigations on nearby parcels.

The following measures would be implemented to minimize potential impacts to archaeological and historic resources:

- If human remains or burials are identified, all earth-moving activities in the area would stop, the area would be cordoned off, and SHPD and the CCH Police Department would be notified pursuant to HAR Section 13-300-40.
- If any potential historic properties are identified during construction activities, including the discovery of subterranean lava tube entrances at the chosen project site, all activities in the area would cease and SHPD would be notified pursuant to HAR Section 13-280-3.

SCENIC AND OPEN SPACE RESOURCES

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

Policies:

(A) Identify valued scenic resources in the coastal zone management area.
(B) Ensure that new developments are compatible with their visual environment by designing and locating those developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic

resources.

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

Discussion: The project area is not located in an area designated with "valued scenic resources" and are located away from coastal areas. The final design of the Proposed Action would be consistent with the visual environment of the surrounding area.

COASTAL ECOSYSTEMS

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

Policies:

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

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

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

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

(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion: The Proposed Action does not involve coastal development.

ECONOMIC USES

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas.

(B) Ensure that coastal dependent development and coastal related development are located, designed, and constructed to minimize exposure to coastal hazards and adverse social, visual, and environmental impacts in the coastal zone management area.

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

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

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

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

Discussion: The Proposed Action would not conflict with the State's objectives or policies for the general economy. The construction of the new housing should have an overall positive economic impact mainly associated with the creation of short-term construction related jobs and long-term impact to nearby schools, stores, and jobs with the increase of population in the area.

COASTAL HAZARDS

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

Policies:

(A) Develop and communicate adequate information about the risks of coastal hazards.
(B) Control development, including planning and zoning control, in areas subject to coastal hazards.
(C) Ensure that developments comply with requirements of the National Flood Insurance Program.
(D) Prevent coastal flooding from inland projects.

Discussion: The Proposed Action would not be in an area determined to be a Special Flood Hazard Area. The Proposed Action would be designed to withstand the level of forces necessary to minimize the likelihood that an extreme event would damage the structures. There are no anticipated adverse impacts associated with natural hazards.

MANAGING DEVELOPMENT

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

Policies:

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

Discussion: The master planning process for this project involved a detailed public review process that provided opportunities for impacted community members to share their thoughts on many aspects of the project design and development, as discussed in **Section 6.0**. This Draft EA is being provided for public comment and review. To facilitate the agency review process for the required permits for the Proposed Action, DHHL would meet with the various agencies prior to submitting permit application packages. The permit review process could also provide additional opportunities for public involvement.

PUBLIC PARTICIPATION

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

Policies:

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

Discussion: The Proposed Action is not located along the coastal shore. The Proposed Action includes housing along with community areas that could be used for traditional practices and education centered around Hawaiian culture which includes sustainable land management.

BEACH PROTECTION
Objective: Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion.
(B) Prohibit construction of private shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
(C) Minimize the construction of public shoreline hardening structures, including seawalls and revetments, at sites having sand beaches and at sites where shoreline hardening structures interfere with existing recreational and waterline activities.
(D) Minimize grading of and damage to coastal dunes.
(E) Prohibit private property owners from creating a public nuisance by inducing or cultivating the private property owner's vegetation in a beach transit corridor.
(F) Prohibit private property owners from creating a public nuisance by allowing the private property owner's unmaintained vegetation to interfere or encroach upon a beach transit corridor.

Discussion: The Proposed Action is located inland, away from shoreline; therefore, there would be no effect on the use of beaches for public use and recreation.

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

Policies:

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial.
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency.
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone.
(D) Promote research, study, and understanding of ocean and coastal processes, impacts of climate change and sea level rise, marine life, and other ocean resources to acquire and inventory information necessary to understand how coastal development activities relate to and impact ocean and coastal resources.
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The Proposed Action is located inland, away from marine resources. By implementing BMPs and incorporating LID strategies, no significant impacts to marine resources are anticipated during construction. Any runoff generated by the construction would be disposed of on-site and not directed

toward any adjacent properties. Since there are no surface waters or wetlands on or within the vicinity of the project site, there would be no impacts to surface waters or wetlands from construction.

The amount of impervious area of the project site would significantly increase compared to the amount of existing impervious area. A new drainage system would be installed within the proposed development, and any runoff generated would be disposed of on-site and not directed toward any adjacent properties.

4.3 City & County of Honolulu Planning Documents

4.3.1 O'ahu General Plan

The *O'ahu General Plan* is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of island residents and shapes the strategies and actions needed to achieve them. The General Plan was adopted in 1992 and most recently amended in 2002. It is the first level of a comprehensive planning process that addresses physical, social, economic, and environmental concerns. The proposed project is consistent with the following objectives and policies of the Honolulu General Plan:

POPULATION

Objective A: To plan for anticipated population in a manner that acknowledges the limits of O'ahu's natural resources, protects the environment, and minimizes social, cultural, and economic disruptions.

> **Policy 2:** Seek a balanced pace of physical development in harmony with the City's environmental, social, cultural, and economic goals by effecting and enforcing City regulations.
>
> **Policy 4:** Establish geographic growth boundaries to accommodate future population growth while at the same time protecting valuable agricultural lands, environmental resources, and open space.
>
> **Policy 5:** Support family planning and social equity.

Discussion: The 'Ewa Beach Homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on DHHL's O'ahu Residential Waitlist. According to the 2021 DHHL Annual Report, there are currently 11,163 applicants on O'ahu waiting for residential homesteads. To address this significant backlog, the DHHL O'ahu Island Plan recommends acquiring additional lands on the island to expand homesteading opportunities for these beneficiaries.

By addressing the housing needs of native Hawaiians and reducing DHHL's O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

Objective B: To establish a pattern of population distribution that will allow the people of O'ahu to live, work, and play in harmony.

> **Policy 2:** Encourage development within the secondary urban center at Kapolei and the 'Ewa and Centeral O'ahu urban-fringe areas to relieve development pressures in the remaining urban-fringe and rural areas and to meet housing needs not readily provided in the primary urban center.

Policy 3: Manage land use and development in the urban-fringe and rural areas so that:

a. Development is contained within growth boundaries; and

b. Population densities in all areas remain consistent with the character, culture, and environmental qualities desired for each community.

Policy 4: Direct growth according to Policies, 1, 2, and 3 above by providing development capacity and needed infrastructure to support a distribution of O'ahu's resident population that is consistent with the following **Table 18.**

Table 18. O'ahu General Plan (2021) Distribution of Residential Population

Location	*% Distribution of 2040 Oahu Population**
Policy 1 Area:	
Primary Urban Center	43%
Policy 2 Areas:	
'Ewa	16%
Central O'ahu	18%
Policy 3 Areas:	
East Honolulu	5%
Ko'olau Poko	10%
Ko'olau Loa	1%
North Shore	2%
Wai'anae	5%
	100.0%
* O'ahu's population is based on DBEDT's latest population projections. The percent share for each DP area is an approximation derived through rounding.	

Discussion: The proposed project comprises approximately 80 acres and is identified as a portion of TMK (1) 9-1-001:001 located in the 'Ewa Beach District of Honolulu on the Island of O'ahu. The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. The project site parcel is favorably situated within the community of 'Ewa Beach with access to employment centers, public transit, public services, and recreational facilities. As recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL's only parcel in 'Ewa Beach. DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL's Island Plans. Because the Project Area was not in DHHL's land inventory at the time of the last O'ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development. Land use designations would include the following: residential – single family, residential – multi-family, community use, community agriculture, and stewardship.

NATURAL ENVIRONMENT AND RESOURCE STEWARDSHIP

Objective A: To protect and preserve the natural environment.

Policy 4: Require development projects to give due consideration to natural features and hazards such as slope, inland and coastal erosion, flood hazards, water-recharge areas, and existing vegetation, as well as to plan for coastal hazards that threaten life and property.

Policy 6: Design and maintain surface drainage and flood-control systems in a manner which will help preserve natural and cultural resources.

Policy 8: Protect plants, birds, and other animals that are unique to the State of Hawai'i and O'ahu and protect their habitats.

Policy 9: Increase tree canopy and ensure its integration into new developments, and protect significant trees on public and private lands.

Policy 10: Increase public awareness, appreciation, and protection of O'ahu's land, air, and water resources.

Policy 12: Plan, prepare for, and mitigate the impacts of climate change on the natural environment, including strategies of adaptation.

Discussion: As discussed in **Section 3.0**, the Proposed Action is not expected to have significant impacts to the environment. The final design of the Proposed Action would be consistent with the visual environment of the surrounding area.

HOUSING AND COMMUNITIES

Objective A: To ensure a balanced mix of housing opportunities and choices for all residents at prices they can afford.

Policy 3: Encourage innovative residential developments that result in lower costs, sustainable use of resources, more efficient use of land and infrastructure, greater convenience and privacy, and a distinct community identity

Policy 5: Make full use of government programs that provide assistance for low- and moderate-income renters and homebuyers.

Policy 13: Encourage the production and maintenance of affordable rental housing.

Objective C: To provide residents with a choice of living environments that are reasonably close to employment, schools, recreation, and commercial centers, and that are adequately served by transportation networks and public utilities.

Policy 2: Encourage the fair distribution of low- and moderate-income housing throughout the island.

Policy 3: Encourage the co-location of residential development and employment centers with commercial, educational, social, and recreational amenities in the development of desirable communities.

Policy 4: Encourage residential development in suburban areas where existing roads, utilities, and other community facilities are not being used to capacity, and in urban areas where higher densities may be readily accommodated.

Discussion: Implementation of the Proposed Action is expected to yield significant positive impacts on the surrounding area. The Proposed Action is focused on social equity to provide homes to low-income families, elderly individuals, and native Hawaiians, to prevent exacerbating existing inequalities and to foster inclusive community growth. The development of new housing could improve access to healthcare services for native Hawaiians by bringing them closer to medical facilities and support services. The proximity of new residential developments to job centers could enhance economic stability for residents by reducing commute times and improving job accessibility. This can contribute to better economic outcomes for low-income and vulnerable populations.

Increased housing and community development could stimulate local economic growth by generating demand for goods and services, potentially creating job opportunities and supporting local businesses.

The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

By addressing the housing needs of native Hawaiians and reducing DHHL's O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

TRANSPORTATION AND UTILITIES

Objective B: Provide an adequate supply of water and environmentally sound systems of waste disposal for O'ahu's existing populatin and for future generations, and support a one water approach that uses and manages freshwater, wastewater, and stormwater resources in an integrated manner.

> **Policy 6:** Provide safe, reliable, efficient, and environmentally sound waste-collection, waste-disposal, and recycling services that consider the near- and long-term impacts of climate change during the siting and construction of new facilities.
>
> **Policy 9:** Require the safe use and disposal hazardous materials.

Discussion: The 'Ewa Beach Homestead Project would be serviced by ENV's Refuse Division or a private waste collection company. The Proposed Action is not expected to affect the existing waste collection operations.

The Proposed Action would not use or result in the use of hazardous materials for the operation of the project; therefore, the Proposed Action would not have any impacts associated with hazardous materials.

Objective C: To ensure reliable, cost-effective, and responsive service for all utilities with equitable access for residents.

> **Policy 1:** Maintain and upgrade utility systems in order to avoid major breakdowns and service interruptions.

Policy 3: Facilitate timely and orderly upgrades and expansions of utility systems.

Discussion:

Objective D: To maintain transportation and utility systems which support O'ahu as a desirable place to live and visit.

Policy 2: Evaluate the social, cultural, economic, and environmental impact of additions to the transportation and utility systems before they are constructed.

Discussion: The purpose of this Draft EA is to evaluate the social, cultural, economic, and environmental impacts associated with the Proposed Action. These impacts are discussed in **Section 3.0**.

PHYSICAL DEVELOPMENT AND URBAN DESIGN

Objective A: To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Policy 1: Provide infrastructure improvements to serve new growth areas, redevelopment areas, and areas with badly deteriorating infrastructure.

Policy 2: Coordinate the location and timing of new development with the availability of adequate water supply, sewage treament, drainage, transportation, and other public facilities and services.

Policy 4: Facilitate and encourage compact, higher-density development in urban areas designated for such uses.

Policy 10: Discourage uses which are major sources of noise, air, and light pollution.

Policy 11: Implement siting and design solutions that seek to reduce exposure to natural hazards, including those related to climate change, flooding, and sea level rise.

Policy 13: Promote opportunities for the community to participate meaningfully in planning and development processes, including new forms of communication and social media.

Discussion: The master planning process for this project involved a detailed public review process that provided opportunities for impacted community members to share their thoughts on many aspects of the project design and development, as discussed in **Section 6.0**.

Draft conceptual site alternatives were developed to illustrate different ways of meeting the goal of providing leases to DHHL beneficiaries on the O'ahu Residential Waitlist while considering beneficiaries' preferences and addressing the existing opportunities and constraints. Three alternatives were proposed for beneficiary feedback via survey and beneficiary consultation. Following the second beneficiary consultation, a preferred alternative was developed in response to the feedback received. The preferred alternative is the Proposed Action discussed in this Draft EA.

Objective B: To plan and prepare for the long-term physical impacts of climate change.

Policy 1: Integrate climate change adaptation into the planning, design, and construction of all significant improvements to and development of the built environment.

Policy 3: Prepare for the anticipated impacts of climate change and sea level rise on existing communities and facilities through mitigation, adaptation, managed retreat, or ther measures in exposed areas.

Discussion: A sea level rise desktop study was conducted in 2023 by Sea Engineering, Inc., to identify and quantify the vulnerability of the proposed project to sea level rise as well as to inform the selection of sea level rise planning scenarios and design parameters and facilitate development of alternatives to ensure that the community is resilient to sea level rise.

The Proposed Action is not expected to be impacted by coastal erosion due to its location away from the shoreline. Flooding from subaerial and marine sources are the primary hazards that could impact the 'Ewa Beach Homestead Project due to low elevation. Passive flooding may begin to occur with 2.0 feet of sea level rise, which is projected to occur between the years 2053 and 2092. High wave flooding and high tides may begin to occur with 3.2 feet of sea level rise, which is projected to occur between the years 2068 and 2135. Tidal flooding at high tide may begin to occur with 6.0 feet of sea level rise, which is projected to occur between the years 2098 and 2150.

Objective E: To maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live.

Policy 2: Coordinate plans for developments within the 'Ewa and Central O'ahu urban-fringe areas with the State and federal governments, major landowners and developers, agricultural industries, and the community.

Discussion: The proposed project comprises approximately 80 acres and is identified as a portion of TMK (1) 9-1-001:001 located in the 'Ewa Beach District of Honolulu on the Island of O'ahu. The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. The project site parcel is favorably situated within the community of 'Ewa Beach with access to employment centers, public transit, public services, and recreational facilities. As recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL's only parcel in 'Ewa Beach. DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL's Island Plans. Because the Project Area was not in DHHL's land inventory at the time of the last O'ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development. Land use designations would include the following: residential – single family, residential – multi-family, community use, community agriculture, and stewardship.

Objective F: To create and maintain attractive, meaningful, and stimulating environments throughout O'ahu.

Policy 1: Encourage distinctive community identities for both new and existing communities and neighborhoods.

Policy 3: Require developments in stable, established communities and rural areas to be compatible with the existing communities and areas.

Policy 5: Seek to protect residents' quality of life and to maintain the integrity of neighborhoods by strengthening regulatory and enforcement strategies that address the presence of inappropriate non-residential activities.

Policy 9: Recognize the importance of using Native Hawaiian plants in landscaping to further the traditional Hawaiian concept of mālama 'āina and to create a more Hawaiian sense of place.

Discussion: The project site parcel is favorably situated within the community of 'Ewa Beach with access to employment centers, public transit, public services, and recreational facilities. Implementation of the Proposed Action is expected to yield significant positive impacts on the surrounding area. The Proposed Action is focused on social equity to provide homes to low-income families, elderly individuals, and native Hawaiians, to prevent exacerbating existing inequalities and to foster inclusive community growth. The development of new housing could improve access to healthcare services for native Hawaiians by bringing them closer to medical facilities and support services. The proximity of new residential developments to job centers could enhance economic stability for residents by reducing commute times and improving job accessibility. This can contribute to better economic outcomes for low-income and vulnerable populations.

Increased housing and community development could stimulate local economic growth by generating demand for goods and services, potentially creating job opportunities and supporting local businesses.

The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

By addressing the housing needs of native Hawaiians and reducing DHHL's O'ahu Residential Waitlist for homes, the Proposed Action would help alleviate some of the socio-economic challenges currently faced by community members, particularly those exacerbated by rising housing and living costs. The proposed development would not only ease these financial pressures but also offer opportunities for revitalizing and preserving traditional practices in 'Ewa Beach, thereby fostering a stronger connection to cultural heritage and enhancing community resilience.

Objective G: To promote and enhance the social and physical character of O'ahu's older towns and neighborhoods.

Policy 1: Encourage new construction in established areas to be compatible with the character and cultural values of the surrounding community.

Policy 5: Acknowledge the cultural and historical significance of kuleana lands, and promote policies that preserve and protect kuleana lands.

Policy 6: Support and encourage cohesive neighborhoods which foster interactions among neighbors, promot vibrant community life, and enhance livability.

Discussion: The project site parcel is favorably situated within the community of 'Ewa Beach with access to employment centers, public transit, public services, and recreational facilities. Implementation of the Proposed Action is expected to yield significant positive impacts on the surrounding area. The Proposed Action is focused on social equity to provide homes to low-income families, elderly individuals, and ethnic minorities, to prevent exacerbating existing inequalities and to foster inclusive community growth.

Increased housing and community development could stimulate local economic growth by generating demand for goods and services, potentially creating job opportunities and supporting local businesses.

CULTURE AND RECREATION

Objective A: To foster the multiethnic culture of Hawai'i and respect the host culture of the Native Hawaiian people.

> **Policy 1:** Recognize the Native Hawaiian host culture, including its customs, language, history, and close connection to the natural environment, as a dynamic, living culture and as an integral part of O'ahu's way of life.
>
> **Policy 2:** Promote the preservation and enhancement of local cultures, values and traditions.
>
> **Policy 3:** Encourage greater public awareness, understanding, and appreciation of the cultural heritage and contributions to Hawai'i made by O'ahu's various ethnic groups.
>
> **Policy 4:** Foster equity and increased opportunities for positive interaction among people with different ethnic, social, and cultural backgrounds.
>
> **Policy 5:** Preserve the identities of the historical community of O'ahu.

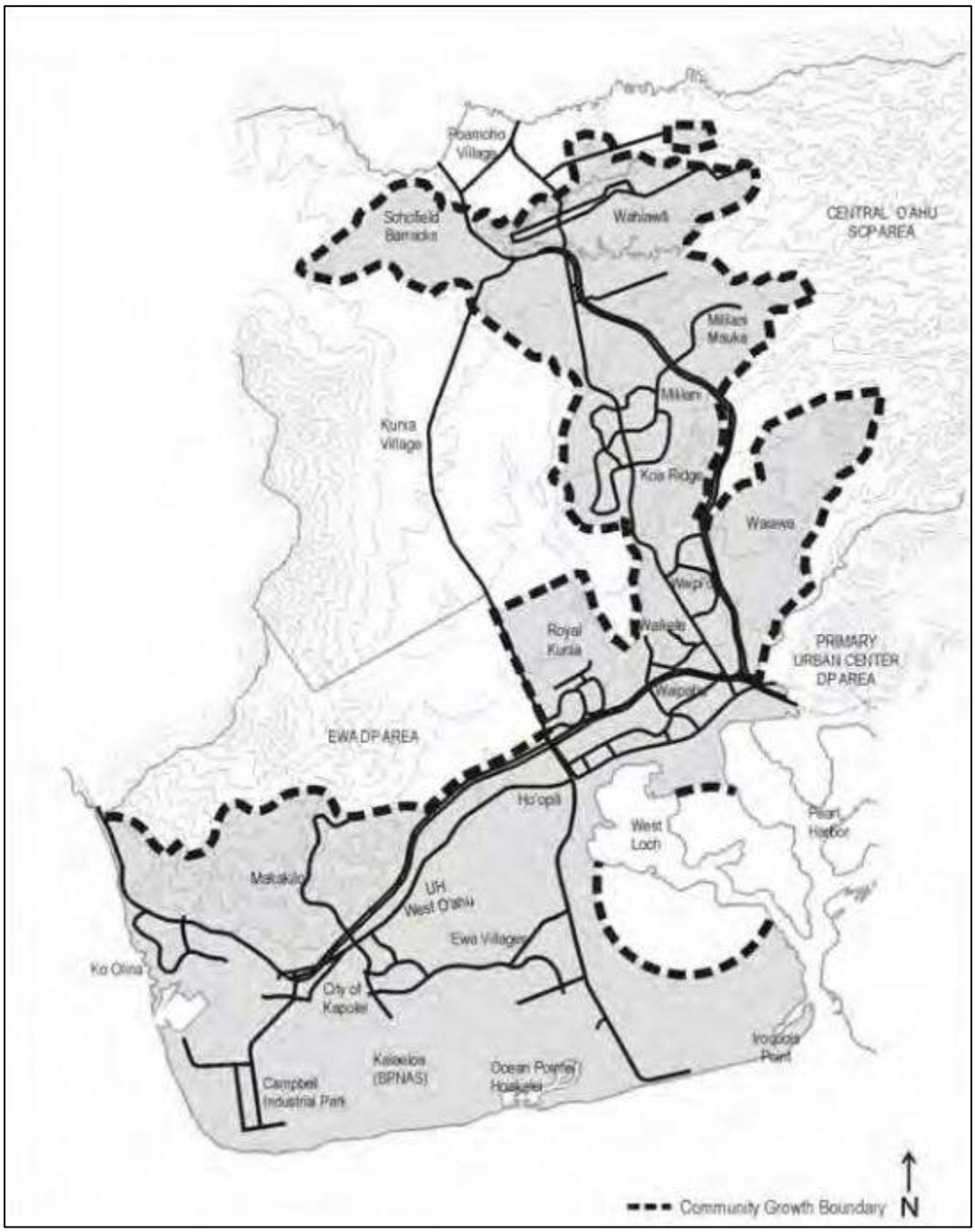
Discussion: The development of DHHL residential homes and community spaces has the potential to support the revitalization of traditional cultural practices by providing spaces for cultural activities and communities gatherings. This can strengthen community cohesions and cultural identity as shown in other DHHL homestead communities across the State.

4.3.2 'Ewa Development Plan

The City's Development or Sustainable Communities Plans consist of conceptual schemes for implementing the development or sustainable community objectives and policies of the City's *General Plan*. The purpose of the plans are to set forth the desired sequence, patterns, and characteristics of future development or sustainability of a region or community. Therefore, these plans are detailed guidelines for the physical sustainability or development of the island. The plans consist of maps depicting the land use pattern, public facilities, open spaces, general principles and common provisions, and specific urban design principles and controls. The *'Ewa Development Plan* was first adopted by the City Council in 1997. The current version of the plan was adopted as Ordinance 20-46 in December 2020.

The Proposed Action is located in an area identified in the plan as designated Urban and is located within the 'Ewa Community Growth Boundary which is shown in **Figure 19**.

Figure 19. 'Ewa Community Growth Boundary



Source: 'Ewa Development Plan, Exhibit 2.1

4.3.3 Revised Ordinances of Honolulu Chapter 21, Land Use Ordinance

The Revised Ordinances of Honolulu (ROH) Chapter 21, Land Use Ordinance, contains ordinances regulating the utilization of land in the CCH. Chapter 21 of the ROH is also referred to as the zoning ordinance and includes the establishment of zoning districts and zoning district regulations in Article 3.

Discussion: Hawaiian Home Lands are not subject to regulation by the State Land Use Districts nor City and County of Honolulu Zoning. Attorney General opinion 72-21 states "Hawaiian home lands needed for purposes of the HHCA are to be used and disposed of in accordance with the act and are not subject to County zoning requirements." Since the lands are to be used to fulfill the purposes of the HHCA, DHHL is not subject to County zoning. However, there are underlying land use designations that are important to understand in the context of the surrounding area and intended broader community character.

DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL's Island Plans. Because the Project Area was not in DHHL's land inventory at the time of the last O'ahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development.

5.0 Findings and Conclusions

5.1 Significance Criteria

HAR Chapter 11-200.1 provides significance criteria for which all projects in Hawai'i are assessed. These significance criteria and their relationship to the project area are as follows:

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

The Proposed Action would not irrevocably commit a natural, cultural, or historic resource. An Archaeological Literature Review and Field Inspection was completed for the Proposed Action in July 2023 by Honua Consulting. This study, which is included in **Appendix C** was conducted in order to provide DHHL with information regarding the general nature, density, and distribution of archaeological and historic resources that may be expected in the location of the Proposed Action.

Construction of the Proposed Action may impact archaeological resources. Since the ALRFI was designed as an identification exercise and only covers a sample of the project area, it is unknown the significance of potential impacts to archaeological features. Therefore, prior to any ground disturbing work, an AIS may be required if requested by SHPD. This is expected to minimize the possibility of construction activity interfering with historic resources of significance. Overall, the probability of adverse impacts in this area seems very low as no historic properties have been identified during archaeological investigations on nearby parcels.

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

The Proposed Action would provide homes for those who have been on DHHL's O'ahu Residential Waitlist and community spaces for the homesteads to utilize for traditional/ cultural practices, play spaces, and/or restoration and cultivation of native plants. The development of the homes and preservation of land for community spaces would be consistent with future growth plans for the area and would not provide a significant negative environmental impact.

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

HRS Chapter 344 states that "It shall be the policy of the State, through its programs, authorities, and resources to:

(1) Conserve the natural resources, so that land, water, mineral, visual, air and other natural resources are protected by controlling pollution, by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics in a manner which will foster and promote the general welfare, create and maintain conditions under which humanity and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of the people of Hawai'i.
(2) Enhance the quality of life by:
    (A) Setting population limits so that the interaction between the natural and artificial environments and the population is mutually beneficial;
    (B) Creating opportunities for the residents of Hawai'i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments;

(C) Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawaiian; and
(D) Establishing a commitment on the part of each person to protect and enhance Hawai'i's environment and reduce the drain on nonrenewable resources."

As discussed in **Section 3.0,** the Proposed Action would have short-term and temporary impacts during construction that would be less than significant. BMPs and other measure would be implemented to minimize impact, as applicable.

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

The Proposed Action would have beneficial socioeconomic impacts by providing homes to those who have been waiting on DHHL's O'ahu Residential Waitlist, provide open areas for community use, and place native Hawaiians close to job centers and recreational activities. The Proposed Action would be designed consistent with the 'Ewa Beach Neighborhood Guidelines to ensure that the new development maintains the community character and give the opportunity to native Hawaiians to pursue cultural practices. The Proposed Action would result in temporary, positive economic activity in the form of construction jobs and material procurements.

The findings of the cultural-historical background information revealed limited information regarding the identification of valued cultural or natural resources and traditional customary practices specific to the project area. Unlike other locations on O'ahu, this community has not managed to maintain many of the traditional activities that once flourished in the area. The return of native Hawaiians to the area could help restore and uplift the knowledge and traditions that once thrived in this part of 'Ewa. The Proposed Action is a critical opportunity to reclaim Hawaiian traditional names and knowledge that have been impacted by the area's development and military seizure of resources in the area. The Proposed Action is a significant opportunity to restore traditional and customary knowledge that has been partially lost due to the long use of the land by the federal government.

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

Construction of the Proposed Action would have some temporary, short-term, minor impacts to water resources, air quality, and the existing noise environment. However, these impacts would be minimized through the implementation of BMPs and other measures, as applicable, and would not affect public health.

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

The implementation of the Proposed Action would not only produce direct benefits such as increased housing availability and enhanced community spaces, but also give rise to secondary cumulative impacts. These impacts, though indirect, warrant careful consideration: growth-inducing effects, changes in land use patterns, increased population density, and effects on air and water quality. The Proposed Action is likely to stimulate additional growth in the surrounding areas. The provision of new housing and community amenities will make 'Ewa Beach a more attractive location for both current residents and new residents. This increased desirability may lead to further residential and commercial development, potentially accelerating the expansion of 'Ewa urban areas and contributing to a more intensive pattern of

land use in the region. The reconfiguration of land use may influence adjacent areas, prompting additional development and altering the landscape of 'Ewa Beach and its surroundings.

The influx of new residents and the expansion of community facilities may result in increased population density in the area. Higher population density can strain existing infrastructure and services, such as transportation, utilities, and healthcare. This growth may necessitate further investment in these services to meet the demands of a larger population, potentially leading to increased development activities in nearby regions.

Secondary impacts on air and water quality may arise from increased development and population density. The construction of new homes and community spaces can lead to higher levels of vehicular traffic, construction-related emissions, and increased energy consumption. Additionally, with more residents, there could be higher levels of waste generation and runoff, which may affect local water bodies and natural systems. These changes could contribute to cumulative effects on air and water quality over time.

(7) Involve a substantial degradation of environmental quality.

As discussed in **Section 3.0**, the Proposed Action would have short-term and temporary impacts during construction that would be less than significant. BMPs and other measures would be implemented to minimize impacts, as applicable.

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

The following cumulative impacts should be considered related to the Proposed Action: infrastructure strain and environmental degradation. The addition of new residential units and community spaces would increase demand on existing infrastructure, such as transportation networks, utilities, and public services. When aggregated with other development projects, this increased demand may strain infrastructure capacity, necessitating upgrades and expansions. The cumulative effect on infrastructure could lead to greater environmental impacts, such as increased traffic congestion, higher emissions, and more extensive resource use. Cumulative impacts on environmental quality can arise from the combined effects of multiple development projects. The construction and operation of new residential spaces, in conjunction with other local developments, may contribute to degradation of air and water quality, loss of natural habitats, and increased waste production. The aggregate impact of these projects can lead to diminished environmental health, affecting ecosystems, wildlife, and human populations.

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

No rare, threatened, or endangered plant or animal species were identified at the project site. However, there is the potential for the presence of the Hawaiian hoary bat, Hawaiian seabirds, and Hawaiian waterbirds. Measures to minimize impacts to these species are provide in **Section 3.2.3**.

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

Air pollutant emissions from construction activities would include dust or particulate matter and exhaust fumes from vehicular travel to and from the project site and from equipment operations. Potential impacts would be short-term and temporary and would be minimized through the implementation of BMPs and other measures.

There would be no direct impacts to surface waters. Construction activities may produce sediment from soil erosion during and after excavation. In addition, contaminants associated with equipment during construction may percolate in groundwater. With the implementation of BMPs, potential indirect impacts to water resources during the short-term construction period would be less than significant.

The Proposed Action would result in a short-term increase in noise levels during construction activities. Noise generated from short-term construction activities and the use of machinery would be minimized by requiring contractors to adhere to State and County noise regulations, including HRS Chapter 342F, Noise Pollution, and HAR Chapter 11-46, Community Noise Control.

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

The use of Native Hawaiian Housing Block Grant funds precludes development of residences within 100-year floodplains. The Proposed Action would not be in an area determined to be a Special Flood Hazard Area. The Proposed Action would be designed to withstand the level of forces necessary to minimize the likelihood that an extreme event would damage the structures. There are no anticipated adverse impacts associated with natural hazards.

The Proposed Action is not expected to be impacted by coastal erosion due to its location away from the shoreline. Flooding from subaerial and marine sources are the primary hazards that could impact the 'Ewa Beach Homestead Project due to low elevation. Passive flooding may begin to occur with 2.0 feet of sea level rise, which is projected to occur between the years 2053 and 2092. High wave flooding and high tides may begin to occur with 3.2 feet of sea level rise, which is projected to occur between the years 2068 and 2135. Tidal flooding at high tide may begin to occur with 6.0 feet of sea level rise, which is projected to occur between the years 2098 and 2150.

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

Building and landscape development and improvements would be consistent with the Community Guidelines. The housing would be low rise and would not have a significant impact on surrounding area views. The proposed project would include a landscaping plan that would replicate the naturalized dry shrub and grass lands common to the 'Ewa Plain.

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

The Proposed Action would result in increased energy consumption during the construction and operation stages. GHG emissions may increase in the area due to the increase of population and vehicle use.

5.2 Anticipated Finding of No Significant Impact

Based on the significance criteria set forth in HAR Chapter 11-200.1 and discussed in **Section 5.1**, it is anticipated that the 'Ewa Beach Homestead Project would not have a significant effect on the environment and that a Finding of No Significant Impact would be filed with the State of Hawai'i Office of Planning and Sustainable Development's Environmental Review Program following the public comment period.

6.0 Agency and Public Consultation

6.1 Early Stakeholder Engagement

Early stakeholder engagement occurred in October and November 2022 to apprise key stakeholders of the project and gather input on community and beneficiary concerns. Dialogue with elected officials began in October 2022 and briefings were provided to Senator Kurt Fevella, Councilmember Augie Tulba, and Councilmember Andria Tupola. In addition, a virtual meeting with Kapolei homestead leaders from Kapolei Community Development Corporation, Malu‘ōhai, Kaupe‘a, Kānehili, and Ka‘uluokaha‘i homesteads was held on November 2, 2022. Agency stakeholders are discussed in **Section 6.4** and **Table 19**.

6.2 Beneficiary Consultation

6.2.1 Beneficiary Consultation 1

The first beneficiary consultation meeting was held virtually on December 8, 2022. The meeting introduced the project and engaged beneficiaries, particularly applicants on the O‘ahu residential wait list, in envisioning and planning for the future ‘Ewa Beach Homestead community. Forty-three (43) beneficiaries attended the meeting. In addition to group discussions, the meeting utilized Mentimeter live polling to gather real time input. Of the beneficiaries using Mentimeter, 16 answered that they are currently on the wait list for a homestead lease and one (1) attendee answered that they are an existing lessee.

Beneficiaries who attended the December 2022 meeting largely prefer to see single family homes on the ‘Ewa Beach site, and envision community use amenities including a community center, walking/bike paths, community gardens/agriculture and open space. Beneficiaries also expressed that the community MP should include multiple access routes in and out of community, offering a connection away from the areas makai of Fort Weaver Road within the tsunami inundation zone.

6.2.2 Beneficiary Consultation 2

The second beneficiary consultation meeting was held virtually on April 30, 2024, with 51 attendees. The meeting presented results from the beneficiary survey and the first community meeting, as well as an update on the findings of technical studies. Finally, three draft alternatives were presented for input and discussion. Of the beneficiaries using the Mentimeter polling feature, 23 answered that they are currently on the wait list for a homestead lease, one (1) attendee answered that they are an existing lessee, and two (2) indicated they are “Other.”

Beneficiaries in attendance expressed concerns about hazards on the site, and largely preferred Alternative A due to its siting of homestead development outside of sea level rise hazard areas, as well as its lower population density and focus on single family homes. Other expressed urgency around providing housing for beneficiaries and offering affordable options such as multi-family housing. The general consensus was that Alternative A could be modified to include some multi-family options in addition to single family homes. This input resulted in the finalization of the preferred alternative presented in this Draft EA as the Proposed Action.

6.2.3 Beneficiary Survey

SMS surveyed over 1,300 current DHHL applicants to learn more about their preferences and needs for the 'Ewa Beach Homestead Community. Major findings from this survey research include the following:

- In areas of the homestead community that are at risk of shorter-term flooding, 44% of applicants prefer no housing be built, 18% prefer to build as many homesteads as possible that include flooding mitigation, 9% prefer to build fewer homes in flood prone areas, and 3% prefer that these areas are used for short-term housing rather than homesteads. Nineteen percent (19%) need more information.
- In areas of the property projected to be impacted by a six-foot sea-level rise within the next 50-100 years, 43% of applicants prefer that no housing be built, 15% prefer to build as many homesteads as possible that include flooding mitigation, 9% prefer to build fewer homes in flood-prone areas, and 5% prefer that these areas be used for short-term housing rather than homesteads. Twenty-one percent (21%) need more information.
- Of the three land-use plans presented to applicants, 33% prefer Plan A, 22% Prefer Plan B, 16% prefer Plan C, 10% don't like any of the plans, 9% like all of them equally, and 10% don't know what they prefer. Applicants who like Plan A cite the low hazard risks and inclusion of only single-family homes; applicants who like Plan B believe it makes good use of the land, houses a sufficient number of individuals or families, and includes a balanced community by including multi-family housing units with single-family housing units; and applicants who prefer Plan C like the fact that it produces the most housing of the three options. Applicants who don't like any of the plans primarily have issues with the fact that the property is subject to hazards and sea-level rise, while those who like all plans equally do so because all plans increase the overall DHHL housing stock.
- Plan A is rated highest in terms of types of housing offered and mix of land uses; Plan C is rated highest regarding the number of housing units provided.
- Major concerns about a homestead in 'Ewa Beach include safety and security, traffic, spacing of houses, and housing options.
- Despite concerns, 69% a somewhat and very likely to accept an award in the 'Ewa Beach Homestead Community, 9% are somewhat and definitely unlikely to accept an award, and 21% are unsure or don't know. Nearly 70% would live there alone or with family, and 72% would be available to relocate within the next two years.
- Fifty-six percent (56%) of applicants are interested in an affordable rental if they are not financially ready to purchase a house; of this group, 60% prefer a single-family home.
- Most applicants (58%) currently live in a single-family home (not on DHHL land) and in housing units owned by someone in the household. Applicants have lived in these units for an average of 16 years and have an average of 4.1 people in their household (1.1 are over the age of 62 and 2.0 are employed adults).

- If applicants were to move into a homestead unit, they would have an average of 4.2 people in their households (1.2 would be under the age of 18, and 1.0 would be 62 or older). They would need an average of 3.6 bedrooms and would need to accommodate an average of 2.7 cars at the new home.
- Applicants prefer a turn-key single-family home for purchase above all other property types.

6.3 Community and Stakeholder Consultation

6.3.1 Community Meeting 1

Outreach to the surrounding 'Ewa Beach community was also conducted following the first Beneficiary Consultation. The community meeting was intended to provide a project overview, preliminary results from the due diligence, technical studies, and outreach efforts to date, and gather community mana'o on opportunities and concerns around the proposed homestead community. The meeting was hosted at the 'Ewa Beach Public and School Library on January 26, 2023, and was intended for nearby residents and community stakeholders, regardless of their native Hawaiian beneficiary status. Forty-four (44) people signed the attendance sheet, including 30 people that self-identified as non-beneficiaries, 14 people that self-identified as DHHL wait list beneficiaries, and three (3) people that identified as DHHL homestead lessees.

Community members expressed concern with the flooding conditions of the area, noting that the makai area of the site has poor drainage and floods often and expressed concern that if the site is elevated, it may cause more runoff and flooding in surrounding areas. Community meeting attendees also shared their concerns about noise and lead pollution associated with the U.S. Marines Corps Base Hawai'i Pu'uloa Rifle Range. Lastly, community members were hopeful that the development of the site would provide needed evacuation routes between Fort Weaver Road and North Road.

A presentation to the 'Ewa Neighborhood Board was given in the lead up to the community meeting on January 12, 2023.

6.3.2 Community Meeting 2

The second community meeting is scheduled for October 9, 2024. The meeting will announce the availability of the Draft EA and the 30-day public comment period and will seek community input on the Draft EA and Proposed Action.

6.4 Pre-Assessment Consultation

Table 19 identifies the State and County agencies and elected officials consulted via a pre-assessment consultation letter dated July 10, 2024, prior to the preparation of the Draft EA, as well as whether a comment was received. All comments received and responses are included in **Appendix J.**

Table 19. Pre-Assessment Consultation and Comments

Agency	Pre-Assessment Consultation Comment Date Received
Federal Agencies	
U.S. Geological Survey	
Natural Resource Conservation Service	
Pacific Islands Region, U.S. Fish and Wildlife Service	07/25/2024
U.S. Department of Transportation, Federal Highways Administration	
State of Hawai'i Agencies	
State of Hawai'i Department of Health - Wastewater Branch	
State of Hawai'i Department of Health – Clean Air Branch	07/19/2024
State of Hawai'i Department of Health – Clean Water Branch	
State of Hawai'i Department of Health – Hazard Evaluation and Emergency Response Office	
State of Hawai'i Department of Health – Safe Drinking Water Branch	
State of Hawai'i Department of Health – Solid and Hazardous Waste Branch	
State of Hawai'i Department of Health – Indoor and Radiological Health Branch	
State of Hawai'i Department of Health – Disability and Communication Access Board	07/23/2024
Hawai'i Housing Finance and Development Corporation	
Office of Planning and Sustainable Development	
Hawai'i Public Housing Authority	
Department of Education	08/21/2024
State of Hawai'i Department of Accounting and General Services – Office of the Comptroller	07/22/2024
State of Hawai'i Department of Land and Natural Resources – Land Division	
State of Hawai'i Department of Land and Natural Resources – State Historic Preservation Division	
State of Hawai'i Department of Transportation	08/05/2024
State of Hawai'i Office of Hawaiian Affairs	
City & County of Honolulu	
Department of Planning & Permitting	08/08/2024
Department of Design & Construction	07/16/2024
Department of Environmental Services	
Department of Facility Maintenance	
Department of Parks & Recreation	
Department of Transportation Services	
Department of Facility Maintenance	
Office of Housing	
Board of Water Supply	07/31/2024
Department of Community Services	08/09/2024
Honolulu Fire Department	07/24/2024
Honolulu Police Department	08/07/2024
Elected Officials	
Council Member Augie Tulba, District 9	
Senator Kurt Fevella, District 20	08/09/2024
Representative Rose Martinez, District 40	07/17/2024
Utility Companies	
Spectrum	

Agency	Pre-Assessment Consultation Comment Date Received
Hawai‘i Gas	
Hawaiian Electric	
Hawaiian Telcom	07/30/2024
Other Interested Parties	
‘Ewa Neighborhood Board #23	
Kanehili Community Association	08/07/2024
Kapolei Community Development Corporation	
Kauluokhai Hawaiian Homestead Community	
Kaupea Homestead Association	
Maluohai Residents Association	

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APPENDIX A
DHHL ʻEwa Beach Homestead Project
Master Plan Report

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DHHL 'EWA BEACH HOMESTEAD PROJECT

Master Plan Report

Prepared by:

SSFM International

HAWAIIAN HOME LANDS
Hawaiian Homes Commission
Department of Hawaiian Home Lands

July 2024
FINAL

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Figures

Introduction

Purpose & Organization of the Report

This report is a deliverable for the Department of Hawaiian Home Lands (DHHL) ʻEwa Beach Homestead Master Plan and Environmental Assessment project.

The purpose of this report is to: (1) confirm areas within DHHL's ʻEwa Beach Homestead project area are suitable for residential homestead development and identify existing and projected constraints such as topography, sensitive resources, climate hazards, surrounding community impacts, or other characteristics; (2) summarize beneficiary and community input received from meetings and a beneficiary survey; and (3) identify the land use master plan alternatives to be evaluated in the environmental assessment (EA) for this project, including the preferred alternative.

Project Background

The Project is approximately 80 acres and identified as a portion of TMK [1] 9-1-001: Parcel 001 (Figure 1), located in the ʻEwa Beach District of Honolulu on the Island of Oʻahu. The parcel was conveyed to DHHL by the federal government as provided by the Hawaiian Homes Recovery Act, Public Law 104-42. As recently acquired land, the land use is undesignated under DHHL's O'ahu Island Plan and is currently DHHL's only parcel in ʻEwa Beach. The site is located on the makai end of Fort Weaver Road within a vacant parcel that used to serve as the Pacific Warning Tsunami Center (PTWC) and National Weather Station. North Road is to the northwest of the project site, ʻEwa Beach Golf Club is to the east, Fort Weaver Road to the south, and Single-family homes and low-rise apartments to the west. The DHHL property wraps around the USGS Magnetic Observatory property, occupies 95-acres.

The ʻEwa Beach homestead community is primarily intended to provide residential homesteading opportunities to native Hawaiian beneficiaries on the Oʻahu Residential waiting list, which currently has the most beneficiaries waiting for homesteads. The need for homestead development is the highest priority on Oʻahu and this site offers good conditions for residential homestead development The goal of the master planning process was to involve beneficiary lessees, waiting list applicants, and the surrounding community in envisioning and shaping the homestead community and ultimately create a thriving homestead community in ʻEwa Beach that honors culture, environment and sense of place.

The master planning and environmental assessment process is intended to identify constraints due to topography, sensitive resources, or other characteristics and environmental factors, and confirm the area suitable for homestead development. The master planning and environmental compliance is expected to be funded by the Native American Housing Assistance and Self-Determination Act.

Figure 1: Project Location Map

Project Activities and Technical Studies

The activities informing the development of master plan alternatives are summarized below and described in further detail in the next section of this report.

Pre-Acquisition Due Diligence & Beneficiary Consultation: Prior to DHHL acquiring the parcel in 2021, due diligence was completed by DHHL Planning Office to vet the site and better inform the Hawaiian Homes Commission's decision whether to accept the surplus land from the federal government.

Site Visit: The project team conducted a site visit on September 6, 2022 to observe the existing conditions and surrounding area. Much of the site was inaccessible due to thick overgrowth, but the project team conducted a pedestrian survey within the accessible portions on the makai end of the site.

Site Research & Environmental Studies: In consultation with DHHL, SSFM and the subconsultant team researched conducted studies of the proposed 80-acre project area and surrounding area. The studies included:

Phase 1 Environmental Site Assessment to document and assess the environmental condition of the property to identify. potential high risk uses that would identify a "recognized environmental condition."

Hazardous Materials Survey of the existing structures to identify presence of hazardous materials above the regulatory limit.

Magnetometer Survey to identify buried infrastructure and potential unexploded ordnance (UXO) objects.

Magnetic Anomaly Assessment to confirm no UXO are present at locations showing higher magnetic intensity.

Topographic Survey to map the contour elevations across the project site.

Biological Survey to document vegetation and birds, mammals, reptiles, and amphibians observed to determine likelihood of threatened or endangered species.

Preliminary Infrastructure Reports to document and assess the existing site conditions related to water, waste water, stormwater drainage, telecommunications and electrical infrastructure.

Archaeological Literature Review and Field Investigation to document and describe the parcel's history and identify presence of above-ground historic features and the likelihood of encountering significant subsurface cultural/historical deposits.

Cultural Impact Assessment to review all cultural resource management documents and practices in the area through research and interviews with lineal descendants and cultural practiotioners with knowledge of the area.

Traffic Impact Analysis Report to collect data on current conditions and evaluate current traffic facilities and anticipated traffic impacts related to the planned development.

Sea Level Rise and Coastal Hazards Study to analyze projected sea level rise related flooding impacts to the project site.

Beneficiary & Community Consultation: The project team organized and conducted virtual meetings with Oʻahu beneficiaries on the Oʻahu residential waiting list and other beneficiaries in the ahupuaʻa of Honouliluli, including leadership of the Kapolei homestead associations. A presentation to the ʻEwa Neighborhood Board and a community meeting open to the surrounding ʻEwa Beach community was also organized and hosted at the ʻEwa Beach Public Library.

Stakeholder & Elected Official Consultation: The project team conducted outreach to the elected representatives for the project area as well as other stakeholders in the surrounding community, including the U.S. Navy – Puʻuloa Range Training Facility, the neighborhood Relocated Puʻuloa Range Coalition, and a presentation at a town hall meeting hosted by State Senator Kurt Fevella (district 19).

ʻEwa Beach Community Meeting #1 January 26, 2023 at ʻEwa Beach Public Library

Summary of Findings

Pre-Acquisition Due Diligence

Prior to acquiring the property in 2020, DHHL conducted a due diligence investigation of the property, which was categorized into four potential issues areas: [1] property title and boundary issues; [2] environmental hazard considerations; [3] development potential and constraints; [4] interim cost to maintain and manage the property prior to development. At the conclusion of the due diligence period, DHHL staff recommended acquiring the parcel and the Hawaiian Homes Commission voted to accept the land transfer from the GSA.

The findings from the initial due diligence period are highlighted below:

Property Title and Boundary Issues

The property was confirmed to be a Land Court property and the GSA provided a preliminary title report showing no encumbrances of record, which was followed up and confirmed. The 80-acre property is a portion of a larger 175-acre federal parcel under one TMK. Prior to offering the surplus land to DHHL, the federal government determined that the USGS intends to retain the adjacent 95-acre property and reserve a nonexclusive easement for access and utilities over the former PTWC property. DHHL will undertake the process to subdivide the 175-acre property into the DHHL and USGS parcels.

Environmental Considerations

Pre-acquisition due diligence included the Phase 1 ESA, Hazardous Materials Survey, and Magnetometer Survey – the findings are summarized along with the other technical studies in the Site Research section below.

In addition to the field studies, DHHL completed desktop analysis of the climate change and natural hazard conditions for the Project site. FEMA flood maps were assessed, noting that the makai area of the site is in the X flood hazard zone which is considered outside the Special Flood Hazard Area and higher than the elevation of the 0.2% annual chance of flooding (see Figure 2). However, this area was anecdotally noted by beneficiaries and area residents to be prone to flooding. Using the State's 3.2 foot sea level rise exposure areas, it was determined that the makai portion of the parcel may be impacted in the future. Lastly, the due diligence report notes that the makai portion of the site is within the tsunami evacuation zone and the entire site is within the extreme tsunami evacuation zone (see Figure 3).

Development Potential and Constraints

The development potential and constraints were assessed on a high-level. DHHL prepared schematic design options and determined that current infrastructure capacity for potable water. Further investigation was completed for the Master Plan development and included in the Site Research section below.

Figure 2: FEMA Flood Hazard Zones

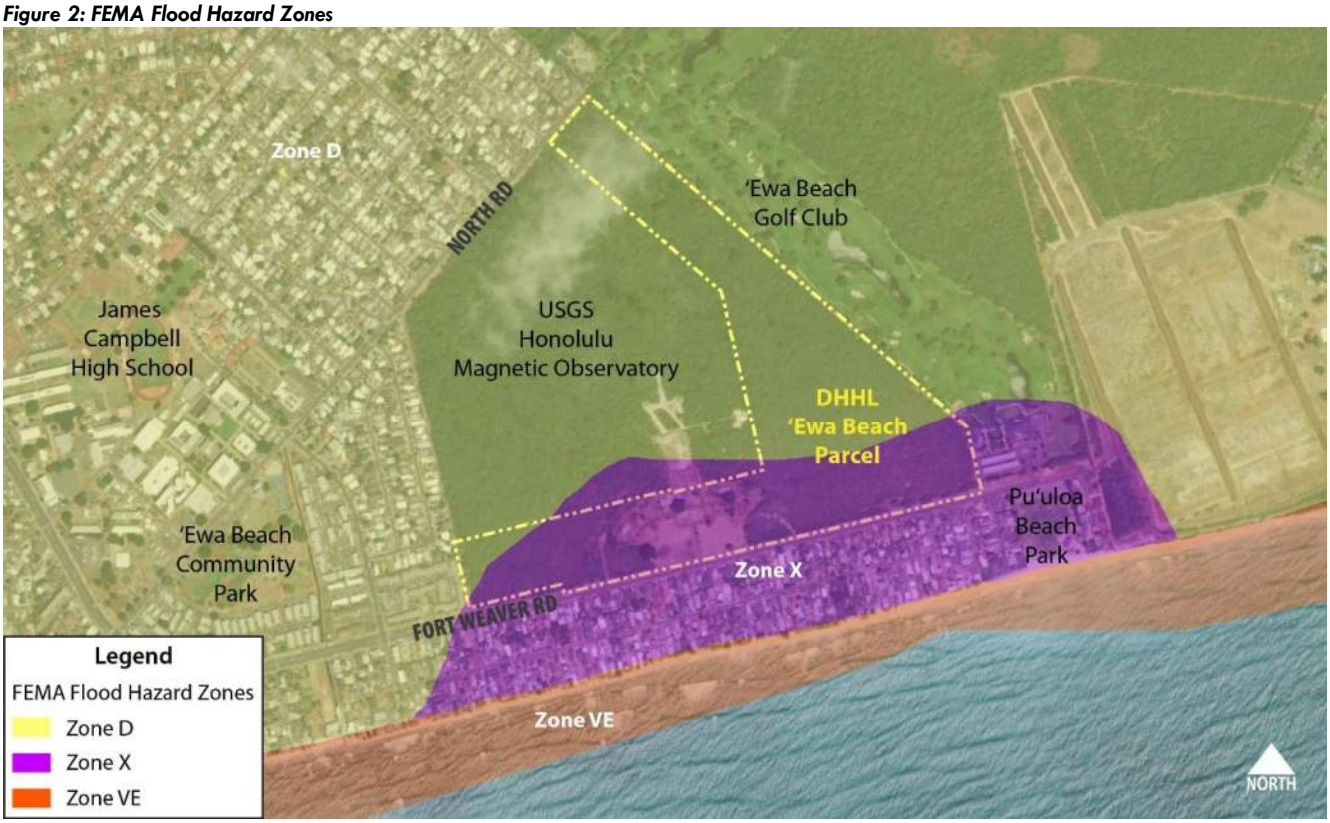


Figure 3: Project 3.2 Sea Level Rise Exposure Area & Tsunami Evacuation Zone

Site Visit

A site visit was conducted by the project team on September 6, 2022. Members of the project team from DHHL, SSFM and subconsultants Ron Ho & Associates and Honua Consulting attended.

Observations

Site Boundaries: The site boundary between the former PTWC and DHHL parcel has been surveyed and staked. The boundary follows the existing overhead electrical lines that run through the parcel behind the existing row of abandoned residences. The eastern boundary along the golf course is not fenced and was observed and assumed to be maintained by the golf course

Site Access: The parcel's main access gate is off Fort Weaver Road, with a paved driveway leading to a row of residences, now unoccupied, and the former PTWC building, which has a row of parking. The property enclosed by a perimeter fence along Fort Weaver Road, the western border of the parcel and along North Road. An access road cleared along the interior fence line and there are five (5) additional locked entry gates along the fence. The majority of the site, outside of the areas near existing structures and access roads, is thickly overgrown and difficult to traverse by foot or vehicle.

Sinkholes and Debris: The project team identified numerous sinkholes covered with rocks and debris throughout the property including some with apparent plantings such as tī leaf.

Infrastructure: The civil and electrical engineers and subconsultants identified and mapped the existing infrastructure connections, which are primarily located near Fort Weaver Road and along the existing entry road and structures. The overhead electrical lines connect at Fort Weaver Road and connect to the individual structures from the backyards.

Transportation: The traffic engineers mapped access routes to the site and intersections. Fort Weaver Road and ʻEwa Beach Road intersection twice, once just southwest of the property boundary and again along the south boundary near the southeastern corner of the property. They identified 14 bus stops in the vicinity of the project site and six (6) beach access roads makai of the property from Fort Weaver Road.

Site Research

Hawaiian Cultural Landscape

The project area is in what is sometimes referred to as Puʻuloa Ahupuaʻa, but, more commonly, the ʻili of Puʻuloa within Honouliuli Ahupuaʻa. As the largest ahupuaʻa on the island of Oʻahu (~43,000 acres), Honouliuli (literally "dark bay," Pukui et al. 1974) includes approximately 12 miles of marine coastline from Keahi Point in the east to Pili o Kahe in the west at the boundary with Nānākuli (and the district, or moku, of Waiʻanae). Puʻuloa, or "long hill" (ibid.), is also the traditional Hawaiian name for Pearl Harbor.

Honouliuli has several miles of shoreline along the western margins of Keawalauopuʻuloa (a more formal name for Puʻuloa). Although appearing as barren limestone with thin soil and sinkholes, archaeological studies of undeveloped portions of limestone in the project area have documented numerous traditional Hawaiian sites, such as the presence of bananas and sugar cane growing in them.

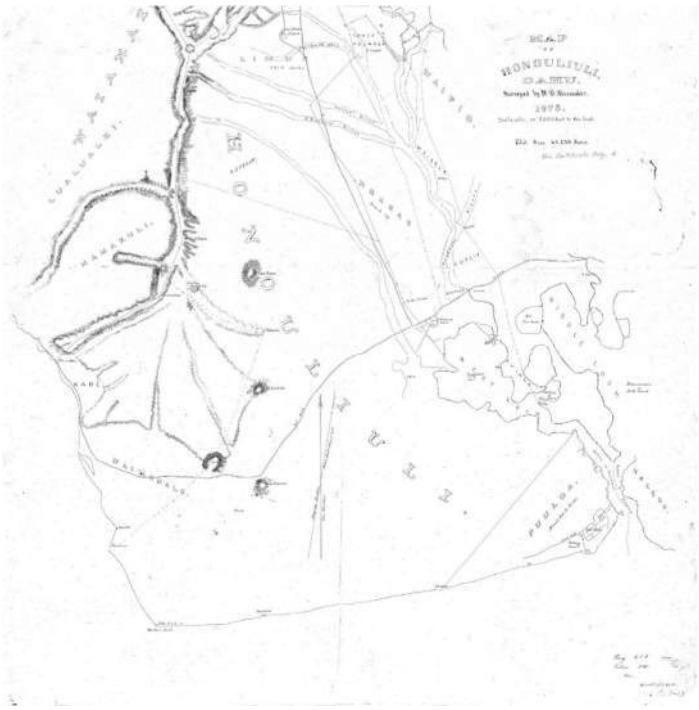


Figure 4: Map 'ili Puʻuloa (1873)

Because of its large size, Honouliuli had a vast upland forest that extended 10–12 miles back from the seashore. This mauka (inland) region was a reliable source of native, endemic, and Polynesian-introduced plants including kukui, koa, ʻōhia, ʻiliahi (sandalwood), hau, kī (ti leaf), bananas, and many others. These resources provided not only food but also medicinal plants, waʻa (canoe) trees, and other needed items (e.g., for religious practices, hula, and so on) (ibid.). A network of trails once connected the uplands with the lower makai areas. Many named puʻu (hills and peaks), some with associated heiau (temples), are found throughout the mauka region of Honouliuli. The well-known depiction of major trails in this region around 1800 by John Papa ʻIʻī (1959:96) shows a an east to west-oriented trail inland (mauka) of Puʻu o Kapolei. A coastal trail once passed by just makai of the project area.

A famous salt pan area was once located in the now Iroquois Pint residential about a mile east of the project area. The salt production was commercialized as Puʻuloa Salt Works by Isaac Montgomery in partnership with King Kamehameha III, Kauikeaouli. Salt production began from the mid 1800s and continued into the early 1900s.

History of Development in the Project Area

An 1880 Hawaiian Government map shows no develop in the project area but the nearby coastal trail, slat pans and various buildings and structures are shown the the east near the mouth of Puʻuloa (Pearl Harbor). See Figure 3.

Historical background information compiled by the General Services Administration (GSA) in support of consultation with the SHPD provides the following relevant summary:

> The site was originally occupied by the U.S. Navy, upon condemnation in 1944. On November 24, 1959, the U.S. Navy transferred the Ewa Beach property to the U.S. Department of Commerce (DOC), for operation of the Honolulu Magnetic Observatory, which has been in operation since that time. No structures are existing from the Navy's occupation of the site. In 1968, the Intergovernmental Oceanographic Commission established the Intergovernmental Coordination Group for the Pacific Tsunami Warning System (ICG/PTWS). Since the DOC already had this sizable piece of property in Ewa Beach for the USGS's Honolulu Geomagnetic Observatory, it was agreed that the ICG would use the same site for the operational headquarters of the PTWS. The PTWS has been at this site since that time. In 2014, NOAA's National Weather Service (NWS) who now operates the PTWS, relocated personnel to NOAA's new Pacific Regional Center at another location in Honolulu, and has declared this property surplus to its operational needs.

Existing Development

Currently, approximately 13 acres of the site are developed in one area around the former Pacific Tsunami Warning Center (PTWC). The remaining acreage of the property is undeveloped with thick brush cover. A fence encloses the perimeter of the property along the north, west and south of the property;. an access road is cleared along the fence line. There is no fence or access road on the east boundary bordering the golf course.

At the time of acquisition, former PTWC consisted of seven (7) buildings and structures, including five single-family residential housing units, and a main office building and office annex building. The residential housing units were used to house employees of the PTWC who lived on site. In addition to the structures listed, the property also included an antennae farm. The USGS property is accessed through the project site and will require continued access.

Zoning & Land Use

Hawaiian Home Lands are not subject to regulation by the State Land Use Districts nor City and County of Honolulu Zoning. Attorney General opinion 72-21 states “Hawaiian home lands needed for purposes of the Hawaiian Homes Commission Act (HHCA) are to be used and disposed of in accordance with the act and are not subject to County zoning requirements.” Since the lands are to be used to fulfill the purposes of the HHCA, DHHL is not subject to County zoning. However, there are underlying land use designations that are important to understand in the context of the surrounding area and intended broader community character.

DHHL has land use designations specific to Hawaiian Home Lands that are defined in the DHHL General Plan (2022) and implemented through DHHL’s Island Plans. Because the Project Area was not in DHHL’s land inventory at the time of the last Oʻahu Island Plan in 2014, it is undesignated. The DHHL will adopt land use designations for the homestead site when it proceeds with subdivision of the next phase of development.

City & County of Honolulu Zoning: the Project area is zone F-1 Military and Federal Preservation which identifies areas in military of federal government use and permits the full range of military or federal government activities. The surrounding area, including the residential areas north (mauka) and south (makai), is primarily zoned R-5 residential. The area adjacent to the southwest border of the property is zoned A-1 low density apartment. Per the property tax information

State Land Uses: The Project area and surround area are within the State Land Use Urban District.

Figure 5: Portion of 1880 Hawaiian Government map showing project area location

Environmental Studies

Phase 1 ESA

The survey was conducted to document and assess the environmental condition of the property to identify. potential high risk uses that would identify a "recognized environmental condition" (REC). The Phase 1 ESA found no evidence of RECs on project parcel, although there are limited quantities of solid waste (e.g., tires, debris, rubbish) that should be properly disposed.

Hazardous Materials Survey

The limited hazardous materials survey studied existing structures to identify presence of hazardous materials above the regulatory limit. The findings included findings of one (1) sample out 178 total taken showing asbestos above the regulatory limit and found that the ceiling panels within the buildings contained detectable levels of arsenic. The report recommends that removal and disposal of materials be done in accordance with applicable regulation prior to demolition activities.

Magnetometer Survey & Magnetic Anomaly Assessment

An initial flyover survey to identify buried infrastructure and potential unexploded ordnance (UXO) objects base on magnetic fields. A follow-up survey was then completed do "ground truth" the data and investigate the locations with magnetic anomalies (e.g., higher readings). In the follow-up survey eight "high priority" magnetic anomalies were identified and investigated on the ground. It was determined that there is a low likelihood that any are UXO.

Topographic Survey

to map the contour elevations across the project site.

Biological Survey to document vegetation and birds, mammals, reptiles, and amphibians observed to determine likelihood of threatened or endangered species.

Preliminary Infrastructure Reports to document and assess the existing site conditions related to water, waste water, stormwater drainage, telecommunications and electrical infrastructure.

Archaeological Literature Review and Field Investigation to document and describe the parcel's history and identify presence of above-ground historic features and the likelihood of encountering significant subsurface cultural/historical deposits.

Cultural Impact Assessment to review all cultural resource management documents and practices in the area through research and interviews with lineal descendants and cultural practitioners with knowledge of the area.

Traffic Impact Analysis Report to collect data on current conditions and evaluate current traffic facilities and anticipated traffic impacts related to the planned development.

Sea Level Rise and Coastal Hazards Study to analyze projected sea level rise related flooding impacts to the project site.

Developable Land Analysis

Based on the technical study analysis, site constraints were identified and mapped, and a developable land map was created to inform the master plan alternatives. Overall, the project parcel is relatively flat and generally slopes toward the ocean. Elevations on site range from approximately 3ft to 15ft. However, the potential flood hazards and projected sea level rise related impacts on the site were identified as key constraints, driving land use and design considerations. It should be noted that the entire property is within the extreme tsunami inundation zone, which is a new class of seismic event where predictions for impact have been modeled but not observed historically.

The developable land analysis identifies four sections on the site ranging from lowest risk areas for develop to the highest risk areas, based on exposure to existing or projected flooding and/or sea level rise related impacts at existing elevations. The section categories are summarized in more detail below:

Section 1: developable areas ranging from elevations of approx. 10-15 ft mean sea level (msl). This area is not projected to be impacted by sea level rise related impacts within the 99-year homestead nor the 100-year extension period and is not within the tsunami evacuation zone but is within the extreme tsunami evacuation zone.

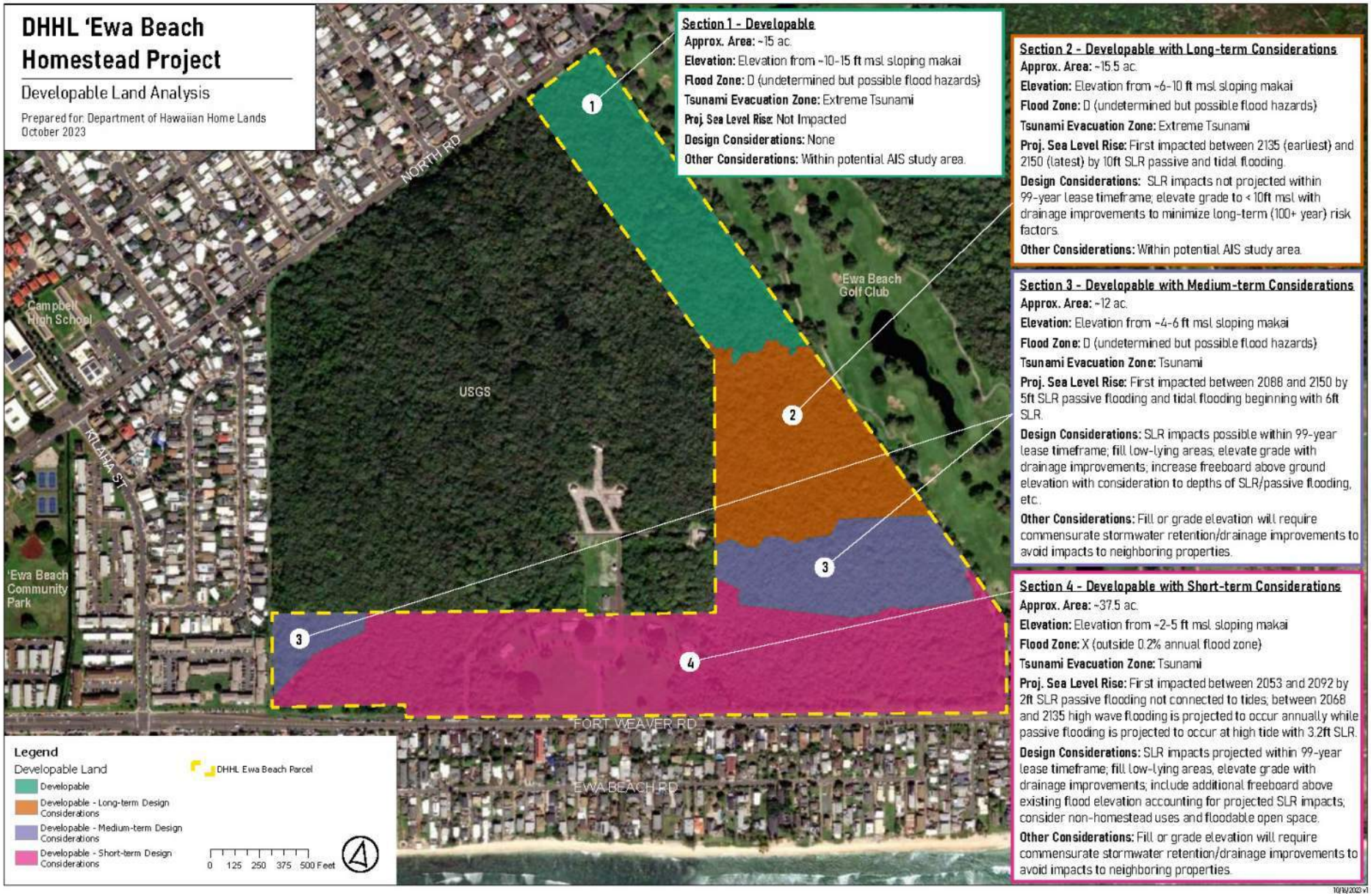
Section 2: developable areas with long-term considerations, which range from elevations of approx. 6-10 ft msl. This area is not projected to be impacted by sea level rise within the 99-year homestead lease, however, may be impacted if the lease is extended an additional 100 years. Section 2 is not within the tsunami evacuation zone but within the extreme tsunami evacuation zone.

Section 3: developable areas with medium-term considerations, which range from approx. 4-6 ft msl. These are areas where sea level rise impacts are possible within the 99-year homestead lease timeframe. Section 3 is within the tsunami evacuation zone.

Section 4: developable areas with short-term considerations, which cover the lowest elevation areas up to those at 5 ft msl. This area is within the existing FEMA flood hazard zone X, meaning it is outside the Special Flood Hazard Area and higher than the limits of the 0.2-percent-annual-chance (or 500-year) flood. This section of the site is projected to be first impacted by sea level rise related impacts between 2053 and 2092. Section 4 is also within the tsunami evacuation zone.

The Developable Land Analysis Map is included on the following page.

Figure 6: Developable Land Analysis



Outreach & Consultation

Early stakeholder engagement occurred in October and November 2022 to apprise key stakeholders of the project and gather input on community and beneficiary concerns. Dialogue with elected officials began in October 2022 and briefings were provided to Senator Kurt Fevella, Councilmember Augie Tulba, and Councilmember Andria Tupola. addition, a virtual meeting with Kapolei homestead leaders from Kapolei Community Development Corporation, Maluʻōhai, Kaupeʻa, Kānehili, and Kaʻuluokahaʻi homesteads was held on November 2, 2022.

Beneficiary Consultation

Beneficiary Consultation 1

The first beneficiary consultation meeting was held virtually on December 8, 2022. The meeting introduced the project and engaged beneficiaries, particularly applicants on the Oʻahu residential wait list, in envisioning and planning for the future ʻEwa Beach homestead community. 43 beneficiaries attended the meeting. In addition to group discussions, the meeting utilized Mentimeter live polling to gather real time input. Of the beneficiaries using Mentimeter, 16 answered that they are currently on the wait list for a homestead lease and 1 attendee answered that they are an existing lessee.

Beneficiaries who attended the December 2022 meeting largely prefer to see single family homes on the ʻEwa Beach site, and envision community use amenities including a community center, walking/bike paths, community gardens/agriculture and open space. Beneficiaries also expressed that the community MP should include multiple access routes in and out of community, offering a connection away from the areas makai of Fort Weaver Road within the tsunami inundation zone.

Beneficiary Consultation 2

The second beneficiary consultation meeting was held virtually on April 30, 2024, with 51 attendees. The meeting presented results from the beneficiary survey and the first community meeting, as well as an update on the findings of technical studies. Finally, three draft alternatives were presented for input and discussion. Of the beneficiaries using the Mentimeter polling feature, 23 answered that they are currently on the wait list for a homestead lease, 1 attendee answered that they are an existing lessee, and 2 indicated they are “Other.”

Beneficiaries in attendance expressed concerns about hazards on the site, and largely preferred Alternative A due to its siting of homestead development outside of sea level rise hazard areas, as well as its lower population density and focus on single family homes. Other expressed urgency around providing housing for beneficiaries and offering affordable options such as multi-family housing. The general consensus was that Alternative A could be modified to include some multi-family options in addition to single family homes. This input resulted in the finalization of the preferred alternative presented in this Master Plan.

Beneficiary Consultation 3

A third and final virtual Beneficiary Consultation meeting will be held following the release of the Final EA.

Community & Stakeholder Consultation

Community Meeting 1

Outreach to the surrounding ʻEwa Beach community was also conducted following the first Beneficiary Consultation. The community meeting was intended to provide a project overview, preliminary results from the due diligence, technical studies, and outreach efforts to date, and gather community manaʻo on opportunities and concerns around the proposed homestead community. The meeting was hosted at the ʻEwa Beach Public and School Library on January 26, 2023 and was intended for nearby residents and community stakeholders, regardless of their native Hawaiian beneficiary status. 44 people signed the attendance sheet, including 30 people that self-identified as non-beneficiaries, 14 people that self-identified as DHHL wait list beneficiaries, and three people that identified as DHHL homestead lessees.

Community members expressed concern with the flooding conditions of the area, noting that the makai area of the site has poor drainage and floods often and expressed concern that if the site is elevated, it may cause more runoff and flooding in surrounding areas. Community meeting attendees also shared their concerns about noise and lead pollution associated with the U.S. Marines Corps Base Hawaiʻi (MCBH)Puʻuloa Rifle Range. Lastly, community members were hopeful that the development of the site would provide needed evacuation routes between Fort Weaver Road and North Road.

A presentation to the ʻEwa Neighborhood Board was given in the lead up to the community meeting on January 12, 2023.

Community Meeting 2

The second community meeting is planned to be held around the release of the Draft EA in September 2024. A presentation to the ʻEwa Neighborhood Board is planned for August 2024. The meeting will announce the availability of the Draft EA and the 30-day public comment period, and will seek community input on the Draft EA and preferred alternative.

Additional Outreach & Engagement

Additional meetings and engagement with the surrounding ʻEwa community are summarized below:

- Meeting with Relocate Puʻuloa Range Training Facility Coalition, September 14, 2023.
- Presentation to Senator Fevella's Town Hall Meeting, Iroquois Point, September 20, 2023.
- Site visit to MCBH Puʻuloa Range Training Facility, November 20, 2023.

Land Use Master Plan Alternatives

Draft conceptual site alternatives were developed to illustrate different ways of meeting the goal of providing leases to DHHL beneficiaries on the Oʻahu residential waitlist while considering beneficiaries' preferences and addressing the existing opportunities and constraints.

Three alternatives were proposed for beneficiary feedback via survey and beneficiary consultation. Following the second beneficiary consultation, a preferred alternative was developed in response to the feedback received. All alternatives include a variety of community and non-homestead uses, with variations in the type and number of residential units, as described further in the following pages:

1. **Alternative A – Provide single-family residential lots only uses**
2. **Alternative B – Provide single-family residential lots with added multi-family residential land uses**
3. **Alternative C – Maximize multi-family residential while maintaining single-family residential lots**
4. **Preferred Alternative – Provide single-family residential with limited multi-family**

Land Use Designation	**General Plan Definition**
Residential – Single Family	Single-family lots at least 5,000 square-feet in size. Residential lot subdivisions are built to County standards in areas close to existing infrastructure.
Residential – Multi-Family	Low-rise multi-family or kūpuna housing ranging between 15-20 units per acre. Residential lot subdivisions are built to County standards in areas close to existing infrastructure.
Community Use	Common areas for community uses and public facilities. Includes space for parks and recreation, cultural activities, community based economic development, utilities, and other public facilities and amenities.
Community Agriculture	Common areas used for the cultivation of fruits, vegetables, plants, flowers, or herbs by multiple users. The land must be served by a water supply sufficient to support cultivation practices on the site.
Stewardship	Land not currently used for homesteading. Allow uses that maintain or enhance the value and condition of the land to the benefit of beneficiaries and the Trust. May serve as an interim use until opportunities for higher and better uses become available.
Internal roads/infrastructure	Roadways and underlying infrastructure built to County standards.

<u>Assumptions and Considerations</u>

The alternatives developed were framed several key assumptions:

1. Each alternative includes the same backbone road layout, which provides one access point from North Road and four access points from Fort Weaver Road. The backbone roads provide a new connection between Fort Weaver Road and North Road through the project site.
2. Because the proposed project will increase the impermeable surfaces on the property, the project will be required to retain runoff on-site. Each alternative reserves a minimum of 12 acres or 15% of the site area for drainage and detention of stormwater run-off. The 15% estimate does not account for the potential impacts that projected sea level rise and related rising of groundwater tables may have on the drainage and percolation of water on site. Further geotechnical study is required to fully understand site drainage.
3. Any development in flood zones or sea level rise exposure areas will require mitigation or adaptation measures to ensure safety and resiliency. These measures may include elevating the grade of the developed area through fill or elevating structures above base flood elevations. These mitigation and design measures will also incur added development costs.
4. Design and style of residential land uses may vary (see Figure 3), but the residential density and lot sizes will generally be consistent with current DHHL residential developments and are generalized as follows:

Housing Type	**Units/Lots per Acre**
Single-family	5,000-7,500 SF with one unit per lot
Low-rise multi-family (townhouse)	up to 15 units per acre
Low-rise multi-family (cluster or complex)	up to 18 units per acre
Low-rise kūpuna rental housing	up to 20 units per acre

Initial Alternatives Considered

Alternative A - Provide single-family residential only. Develop in areas outside of hazard zones.

Alternative A does not develop in areas of the site currently at risk of flooding and tsunami hazards as well as areas projected to be impacted by sea level rise flooding within the 99-year homestead lease and 100-year lease extension timeframe at current elevations. Residential development is proposed only in the mauka side of the property, providing approximately 220 residential homestead lots to applicants.

A large community use area is included makai of the residential lots and additional non-homestead land use areas for community agriculture and stewardship are identified along Fort Weaver Road. Land dedicated for on-site stormwater detention and infiltration is located in the lowest lying areas.

Alternative A provides the smallest developable area for housing and provides only single-family homestead lots. Single family residential lots are the most expensive housing option and may be financially out of reach for many wait list beneficiaries, but single-family has been identified as the most preferred housing option in beneficiary surveys and through early beneficiary input on the ʻEwa Beach Homestead Project. Overall, Alternative A does not include homestead and housing development in areas of the property that are currently at risk of flooding

and projected to be impacted by flooding within the 99-year homestead lease or 100-year lease extension timeframe. Alternative A provides the lowest risk and lowest land preparation costs for DHHL.

Land Use	Acres	Est. No. of Lots/Units
Residential – Single Family	25	220
Community Use	11	--
Community Agriculture	9	--
Stewardship	14	--
Internal roads, infrastructure, drainage and open space	22	
TOTAL	**80**	**220**

ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Description	Unit Cost	Total
Civil Site Work	$ 737,000.00	$ 58,960,000.00
Electrical Site Work	$ 18,000,000.00	$ 18,000,000.00
	Total Alternative A	**$ 76,960,000.00**

See Figure 7 for the Alternative A Map.

Alternative B – Single-family and multi-family residential. Develop in areas outside of hazard zones while elevating all buildings above the projected sea level rise height.

Alternative B maintains the same footprint of single-family residential lots in the lowest risk area of the property but increases the overall number of housing units with the addition of multi-family residential. Approximately 220 single-family lots and up to 330 multi-family units would be available to beneficiaries.

The multi-family uses are located in areas that are outside of existing hazard zones but may be impacted by sea level rise impacts within the 99-year homestead lease period at current elevations. Alternative B assumes that risks to development in these areas would be mitigated through land preparation and design measures that ensure safety and resilience, such as elevating habitable structures above the projected 6-foot sea level rise inundation depths and providing additional drainage and stormwater retention capacity.

Multi-family housing would provide more affordable residences to a greater number of beneficiaries. Multi-family housing could be provided as rentals to beneficiaries or designated specifically for kūpuna housing. Kūpuna housing does not provide beneficiaries with homestead leases, but has been identified as a need and affordable housing for kūpuna is in high demand. DHHL rules allow for homestead leases to be awarded for multi-family housing units, but a more detailed program would need to be developed in order to implement multi-family homestead housing. In terms of traffic impacts, multi-family and kūpuna housing also generate less traffic per unit than a single-family home.

A large community use area is included and stretches along the makai area of the site. The community use area is intended to be easily accessible from the multi-family units. Smaller non-homestead use areas for community

agriculture and stewardship are also included. Land dedicated for on-site stormwater detention and infiltration is identified in the lowest lying areas.

Alternative B provides a wider range and more affordable housing options through the addition of multi-family residential, however construction would require more expensive land preparation and development costs to raise residential uses above flood prone elevations.

Land Use	Acres	Est. No. of Lots/Units
Residential – Single Family	25	220
Residential – Multi-Family	17	248-330
Community Use	11	--
Community Agriculture	4	--
Stewardship	4	--
Internal roads, infrastructure, drainage and open space	20	
TOTAL	**80**	**468-550**

ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Description	Unit Cost	Total
Civil Site Work	$ 838,000.00	$ 67,040,000.00
Electrical Site Work	$ 25,000,000.00	$ 25,000,000.00
	Total Alternative B	**$ 92,040,000.00**

See Figure 8 for the Alternative B Map.

Alternative C – Single-family and maximize multi-family residential. Elevate all buildings above the projected sea level rise height throughout the site.

Alternative C maintains the same footprint of single-family residential lots in the lowest risk area of the property but maximizes multi-family housing throughout the makai area of the property. Like Alternative B, buildings would need to be elevated to ensure safety and resilience. The multi-family uses are expanded to areas within makai portions of the site that are projected to be impacted by sea level rise within the 99-year homestead lease at current elevations – this could mean that structures may eventually be uninhabitable.

Smaller community use areas are in proximity to multi-family residential and the required minimum land area for on-site stormwater detention and infiltration is identified in the lowest lying makai portion of the site. Other non-homestead uses are not included in Alternative C.

Alternative C provides the most units but would require more extensive and costly land preparation to elevate residential uses above flood prone areas and ensure the site design includes adequate on-site stormwater detention and infiltration. Furthermore, Alternative C would result in greater traffic impacts to the Fort Weaver Road corridor and will likely require DHHL to fund roadway improvements to mitigate the traffic impacts generated by the project.

Land Use	Acres	Est. No. of Lots/Units
Residential – Single Family	25	220
Residential – Multi-Family	29	434-578
Community Use	6	--
Internal roads, infrastructure, drainage and open space	20	
TOTAL	**80**	**654-798**

ROUGH ORDER OF MAGNITUDE COST ESTIMATE

Description	Unit Cost	Total
Civil Site Work	$ 944,000.00	$ 75,520,000.00
Electrical Site Work	$ 30,000,000.00	$ 30,000,000.00
Ft. Weaver Rd. Improvements	$ 4,740,000.00	$ 3,033,600.00
	Total Alternative C	**$ 108,553,600.00**

See Figure 9 for the Alternative C Map.

Figure 7: Alternative A

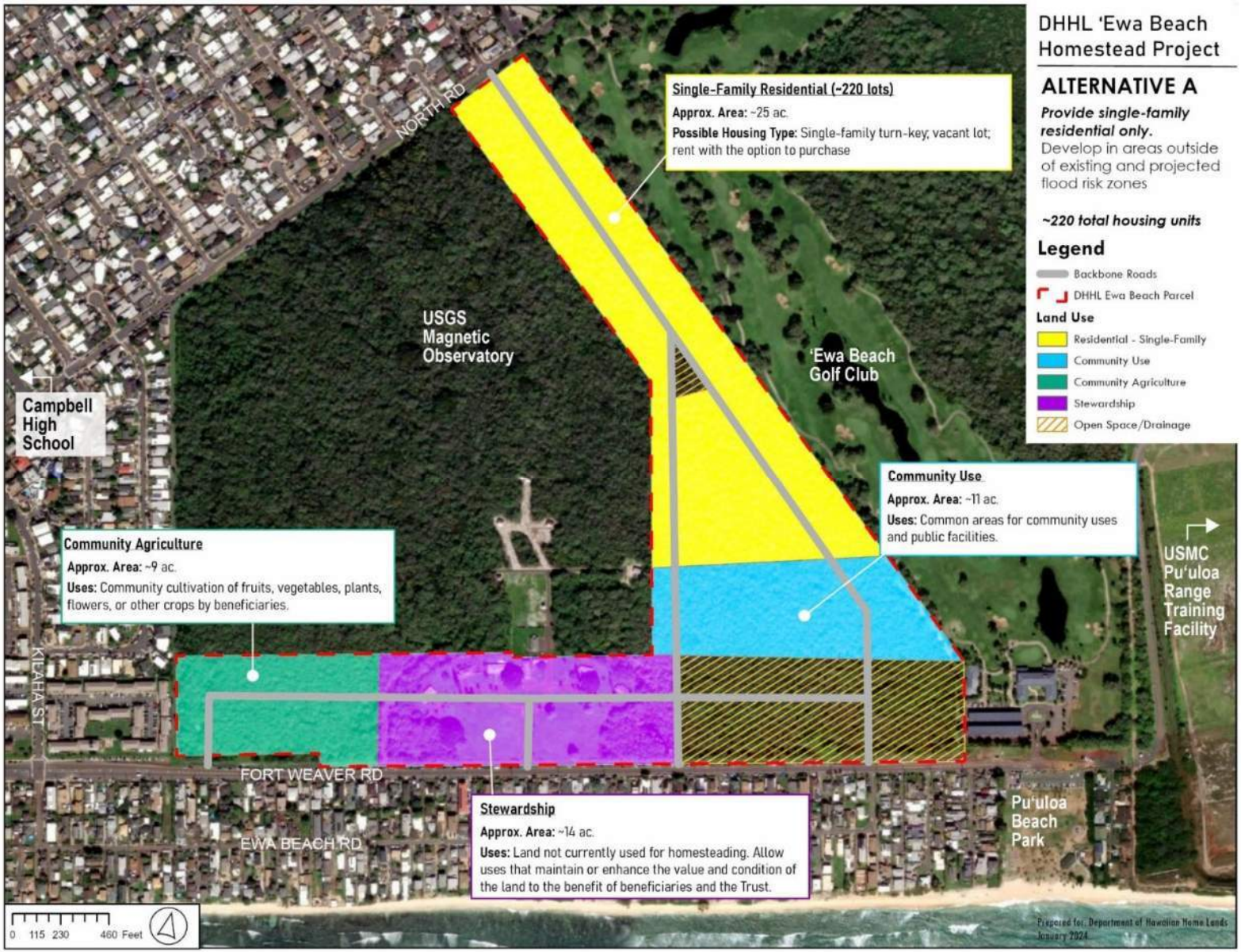


Figure 8: Alternative B

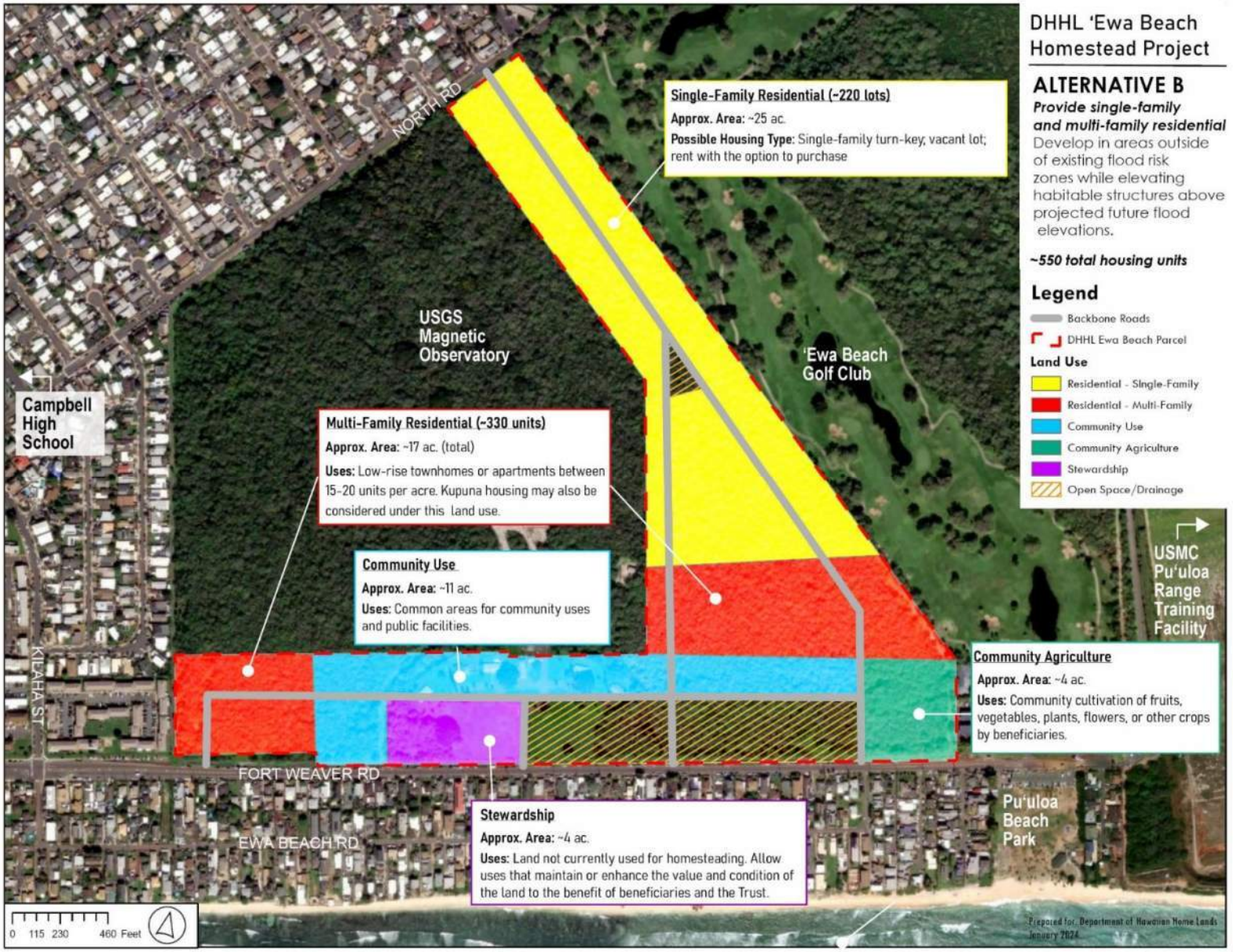
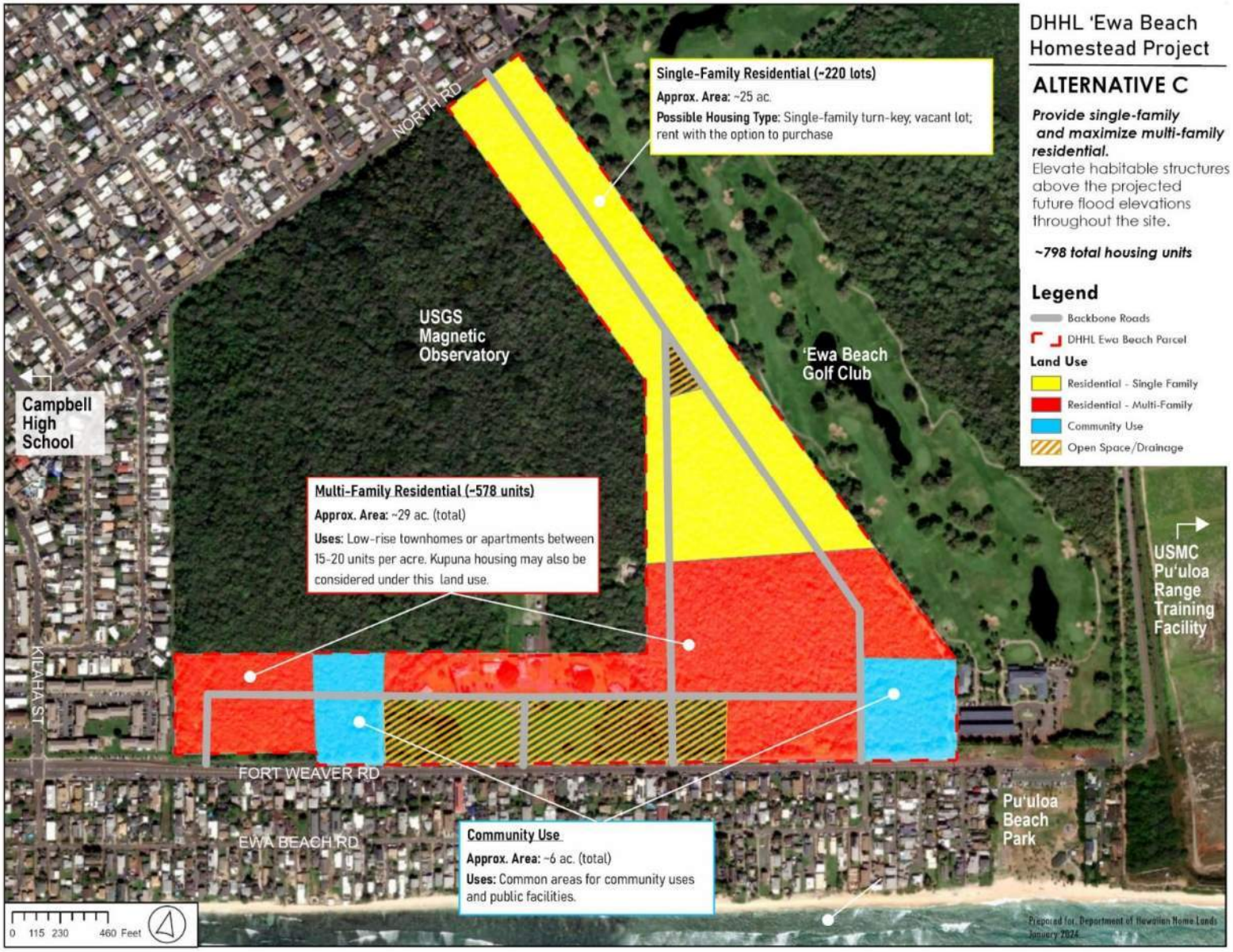


Figure 9: Alternative C



Beneficiary Survey

SMS surveyed over 1,300 current Department of Hawaiian Home Lands (DHHL) applicants to learn more about their preferences and needs for the ʻEwa Beach Homestead Community. Major findings from this survey research include the following:

Beneficiary Survey Results

- In areas of the homestead community that are at risk of shorter-term flooding, 44% of applicants prefer no housing be built, 18% prefer to build as many homesteads as possible that include flooding mitigation, 9% prefer to build fewer homes in flood prone areas, and 3% prefer that these areas are used for short-term housing rather than homesteads. Nineteen percent (19%) need more information.
- In areas of the property projected to be impacted by a six-foot sea-level rise within the next 50-100 years, 43% of applicants prefer that no housing be built, 15% prefer to build as many homesteads as possible that include flooding mitigation, 9% prefer to build fewer homes in flood-prone areas, and 5% prefer that these areas be used for short-term housing rather than homesteads. Twenty-one percent (21%) need more information.
- Of the three land-use plans presented to applicants, 33% prefer Plan A, 22% Prefer Plan B, 16% prefer Plan C, 10% don't like any of the plans, 9% like all of them equally, and 10% don't know what they prefer. Applicants who like Plan A cite the low hazard risks and inclusion of only single-family homes; applicants who like Plan B believe it makes good use of the land, houses a sufficient number of individuals or families, and includes a balanced community by including multi-family housing units with single-family housing units; and applicants who prefer Plan C like the fact that it produces the most housing of the three options. Applicants who don't like any of the plans primarily have issues with the fact that the property is subject to hazards and sea-level rise, while those who like all plans equally do so because all plans increase the overall DHHL housing stock.
- Plan A is rated highest in terms of types of housing offered and mix of land uses; Plan C is rated highest regarding the number of housing units provided.
- Major concerns about a homestead in ʻEwa Beach include safety and security, traffic, spacing of houses, and housing options.
- Despite concerns, 69% a somewhat and very likely to accept an award in the ʻEwa Beach Homestead Community, 9% are somewhat and definitely unlikely to accept an award, and 21% are unsure or don't know. Nearly 70% would live there alone or with family, and 72% would be available to relocate within the next two years.
- Fifty-six percent (56%) of applicants are interested in an affordable rental if they are not financially ready to purchase a house; of this group, 60% prefer a single-family home.
- Most applicants (58%) currently live in a single-family home (not on DHHL land) and in housing units owned by someone in the household. Applicants have lived in these units for an average of 16 years and have an average of 4.1 people in their household (1.1 are over the age of 62 and 2.0 are employed adults).

- If applicants were to move into a homestead unit, they would have an average of 4.2 people in their households (1.2 would be under the age of 18, and 1.0 would be 62 or older). They would need an average of 3.6 bedrooms and would need to accommodate an average of 2.7 cars at the new home.
- Applicants prefer a turn-key single-family home for purchase above all other property types.

Preferred Alternative

The Preferred Alternative maintains the same footprint of single-family residential lots in the lowest risk area of the property but increases the overall number of housing units with the addition of two areas of multi-family residential. Approximately 220 single-family lots and up to 160 multi-family units would be available to beneficiaries.

The multi-family uses are located in areas that are outside of existing flood zones but may be impacted by sea level rise impacts within the 99-year homestead lease period at current elevations. The preferred alternative assumes that risks to development in these areas would be mitigated through land preparation and design measures that ensure safety and resilience, such as elevating habitable structures above the projected 6-foot sea level rise inundation depths and providing additional drainage and stormwater retention capacity.

The area designated Stewardship is also expanded to allow for future flexibility for exploring and analyzing suitability for future homestead development as the information and science and flooding and projected sea level rise projections evolve.

Land Use	Acres	Est. No. of Lots/Units
Residential – Single Family	25	220
Residential – Multi-Family	8	120-160
Community Use	8	--
Community Agriculture	4	--
Stewardship	15	--
Internal roads, infrastructure, drainage and open space	22	
TOTAL	**80**	**340-380**

See Figure 10 for the Preferred Alternative Map. Figure 11 shows the Preferred Alternative in relation to the location of flood, sea level rise, and tsunami hazard zones.

Figure 10: Preferred Alternative

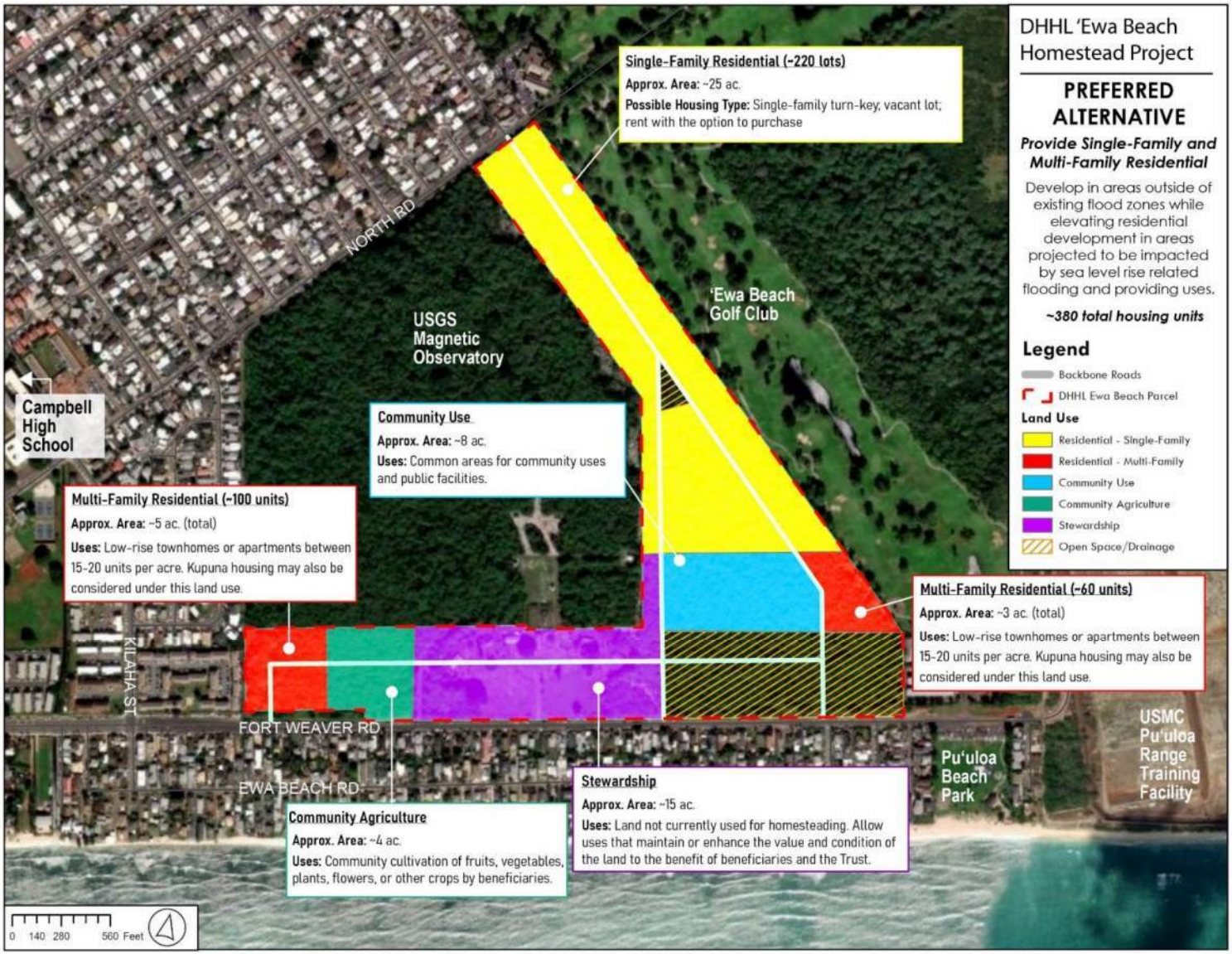
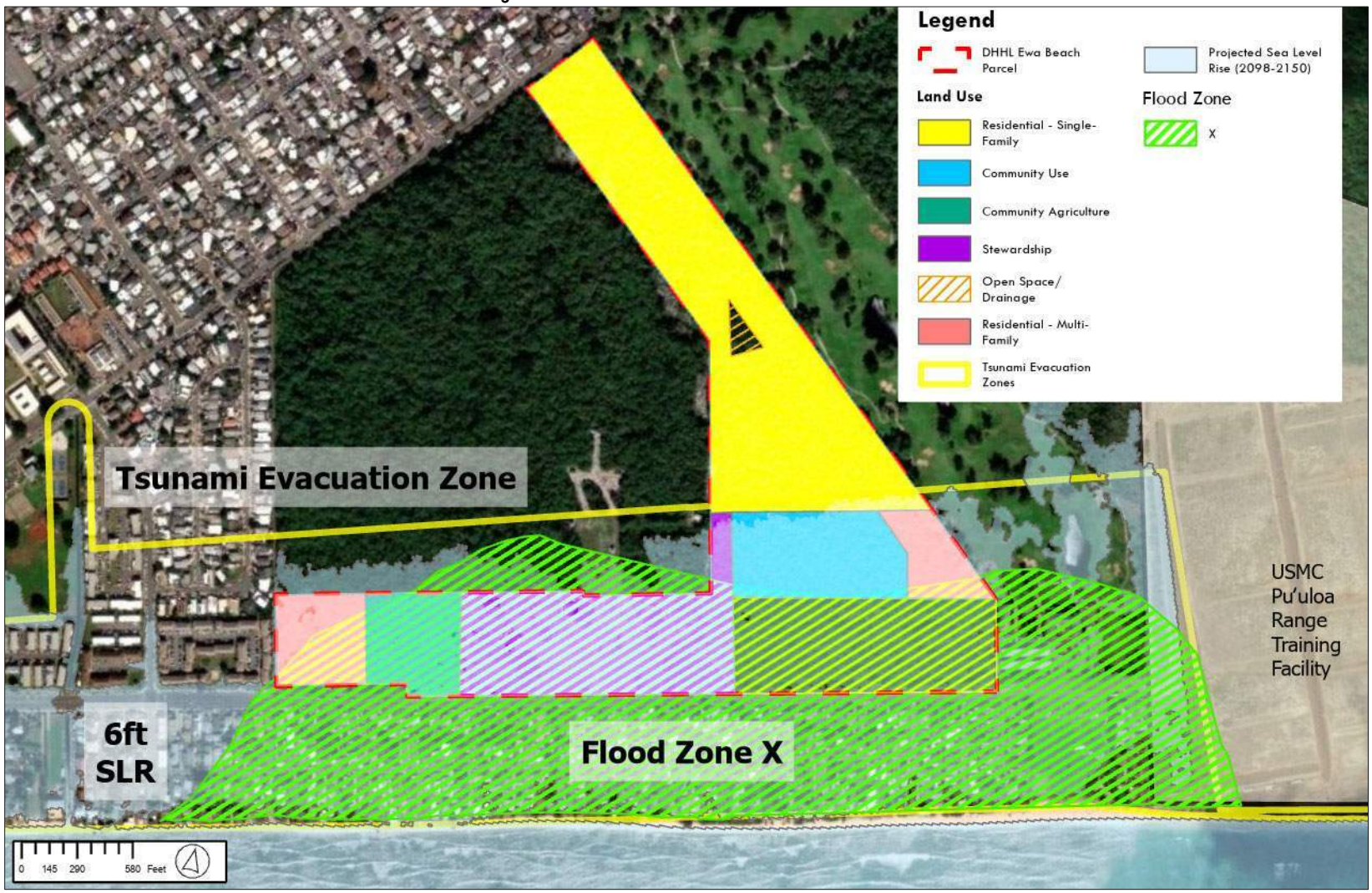


Figure 11: Preferred Alternative with Hazard Zones



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APPENDIX B
Biological Survey Report

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Biological Survey
TMK (1) 9-1-001:001 (por.) (+/- 80 acres)
‘Ewa Beach, Island of O‘ahu

By Ron Terry, Ph.D. and Patrick J. Hart, Ph.D.
Geometrician Associates, LLC
January 2023

Introduction

This biological survey was prepared for SSFM International Inc. to provide information for a project to develop a residential community on an approximately 80-acre property in ‘Ewa Beach on the island of O‘ahu that was transferred from the federal government to the Department of Hawaiian Home Lands (DHHL) as provided by the Hawaiian Homes Recovery Act of 1995 (see map in Figure 1).

The objectives of the botanical survey component of this survey were to: 1) describe the vegetation; 2) list all species encountered; and 3) determine the general likelihood of the presence of threatened or endangered (T&E) plant species and identify their locations if found. The area was surveyed by Ron Terry and Pat Hart on three days in December 2022 and January 2023. Plant species were identified in the field and, as necessary, collected and keyed out in the laboratory. Special attention was given to the possible presence of any federally listed (USFWS 2023) threatened or endangered plant species, which are known from certain areas of the ‘Ewa coastal plain.

The work also included a faunal survey involving a tally of birds and introduced mammals, reptiles, or amphibians observed during the botanical fieldwork, as well as two multi-hour observations focused on the Hawaiian sub-species of the short-eared owl or pueo (*Asio flammeus* subsp. *sandwichensis*) conducted at dawn and dusk. The field survey also assessed the general value of the subject area for native bird habitat. Although we conducted no radar or ultrasound observations to detect endangered Hawaiian hoary bats, the general value of the habitat for the bats was evaluated.

Not included in the survey was assessment of invertebrates. Aquatic biology, including any potential biota associated with groundwater and karst topography, was also not part of the report’s scope.

Vegetation: Influences and Previous Studies

We reviewed the environmental context, previous studies in the general area and T&E species monographs to determine the likelihood of various T&E species being present.

While most of the surface of the Hawaiian Islands is volcanic in origin, the ‘Ewa coastal plain is a karst landscape composed of limestone. It formed on porous, permeable algal and coralline reefs deposited in the late Pleistocene era when sea-level was approximately 25 feet higher than it is today. This unique environment is full of sinkholes of various sizes and hidden voids that may be present just a few feet below the ground surface. These may open up as large and potentially dangerous sinkholes if disturbed or weakened. These hazardous conditions may be mitigated by identifying voids using subsurface scanning technologies. Groundwater flowing towards the sea a few feet above sea level may express in springs or be visible in sinkholes. The ground surface of the subject area is 3 to 13 feet

above sea level, and groundwater is clearly visible in many of the thousands of sinkholes on the property, which tend to be a foot or two in diameter but are larger in some places.

Soil in the subject area is classified by the U.S. Natural Resources Conservation Service as coral outcrop (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). Minimal soil derived from windblown sediment and the decay of plant material is present in cracks and crevices, but much of the surface is rubble or bare rock. The area receives an average annual rainfall of about 21 inches, which is typically highest in November-January and lowest in June-July (Giambelluca et al 2013).

The comprehensive overview of regional Hawaiian vegetation in the *Manual of the Flowering Plants of Hawai'i* (Gagne and Cuddihy 1990:45-114) does not describe the natural vegetation of the 'Ewa coastal plain, which has been almost completely overtaken by the non-native kiawe (*Prosopis pallida*) and koa haole (*Leucaena leucocephala*). Based on what remains today in somewhat similar areas, the natural vegetation was likely a mixture of dry herbland/shrubland and sparse forest composed of diverse coastal species and dry forest trees such as wiliwili (*Erythrina sandwicensis*).

No perennial streams, ponds or wetlands providing waterbird bird habitat are present in the subject area, based on field inspection and U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data (https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper). However, many sinkholes are deep enough to intersect the groundwater and host miniature anchialine pools, which are defined as waterbodies that have no surface connection to the ocean but display tidal fluctuations and salinity ranges from subsurface connections to the groundwater table and the ocean. Anchialine pools occur in highly porous lava and limestone substrates and are well known from the bottom of sinkholes (Brock and Kam 1997).

The subject area is surrounded by kiawe forest on the west, the 'Ewa Beach Golf Club on the east, and the 'Ewa Beach residential area on the north and also on the south (beyond which is the sea). Military, commercial and recreational uses are present beyond these immediately adjacent land uses. Review of recent biological surveys in the area (summarized in Tetra Tech Inc. 2021) indicates that there are several threatened and endangered plant species in the general area. *Euphorbia skottsbergii* var. *skottsbergii* is an endangered variety of flowering plant in the euphorbia family that shares with other family members the Hawaiian name 'akoko. It is endemic to Hawai'i and found in coastal shrublands on O'ahu, Moloka'i, Maui, and Kaho'olawe. On O'ahu, it is known only from the 'Ewa coastal plain. It is found wild there in a number of locations and has been extensively outplanted or encouraged to grow as part of mitigation for development activities. Another endangered plant, *Achyranthes spendens* var. *rotundata* (hinahina o 'Ewa) is endemic to O'ahu, where it occurs on the talus slopes behind Kaena Point and in the 'Ewa coastal plain area. It usually occupies areas with limestone topography characterized by sinkholes and coralline rubble, with only thin soils and pockets of humus. It is typically found in the non-native kiawe forest and open shrubland dominated by koa haole. In addition to these two endangered plants, two increasingly rare plants, the wiliwili tree and the caper shrub maiapilo (*Capparis sandwichiana*) are also known from the area.

Habitat for the T&E fauna potentially present on the site is less place-specific. The entire island of O'ahu may be considered to support the endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*), the only native Hawaiian land mammal. This solitary bat is found on most of the major islands of Hawai'i and has been observed in a variety of tall shrubs and trees (Hawai'i DLNR 2005; Bonaccorso 2010). Although bats are often cited as only occasionally seen on O'ahu, a two year acoustic sampling that concluded in 2021 at four Marine Corps Base Hawaii properties on O'ahu documented the

presence of bats at all properties, including one on the ʻEwa coastal plain (Gross et al 2021). Hawaiian hoary bats were recorded in airspace at all critical life stages of the bats, but at relatively low levels. Recent unpublished Geometrician surveys in kiawe forests of Kaʻū and South Kona detected them foraging for flying insects at the edge of kiawe forests. According to the Hawaiʻi DLNR (2005), "…the species is rarely observed using lava tubes, cracks in rocks, or man-made structures for roosting." Hawaiian hoary bats are vulnerable to disturbance during the summer pupping season.

The (State-listed, on Oʻahu only) endangered Hawaiian endemic sub-species of the short-eared owl or pueo (*Asio flammeus sandwichensis*) nests and hunts in tall grasslands and shrublands and could be occasionally present in the general area. T&E waterbird species occurring on Oʻahu include the Hawaiian stilt (*Himantopus mexicanus knudseni*), Hawaiian coot or ʻalae ʻkeokea (*Fulica alae*), and ʻalae ʻula or Hawaiian common gallinule (*Gallinula galeata sandvicensis*). These waterbirds are commonly seen within and near fresh and brackish-water marshes and ponds and also man-made ponds such as golf course water features. Hawaiian stilts may also be found in fields, and where ephemeral or persistent shallow standing water is present (Kawasaki et al. 2019). Although the subject area lacks water features and other potential waterbird habitat, waterbirds may fly over on their way between habitat areas. No nesting areas on Oʻahu for the threatened Newell's shearwaters (*Puffinus auricularis newelli*) is currently known, but they may overfly the area between the months of March and October. There is no suitable nesting habitat for this seabird within or near the general area. The primary cause of mortality for all T&E seabirds in Hawaiʻi is predation by alien mammals at the nesting colonies. Collision with man-made structures is another significant cause. Nocturnally flying seabirds, especially fledglings on their way to sea in the summer and fall, can become disoriented by exterior lighting and collide with structures. If they are not killed outright, the dazed or injured birds are easy targets for feral mammals (Banko 1980; Day et al 2003).

Results

Vegetation

The most extensive vegetation type in the subject area – which is present everywhere that has not been disturbed for structures and clearings – is kiawe forest (Figures 2a-g). An open to closed canopy forest of medium-size (15-25-foot tall) kiawe trees along with highly variable numbers of koa haole, *Ficus* sp., ʻopiuma (*Pithecellobium dulce*), octopus tree (*Schefflera actinophylla*) and other trees overtops an understory dominated by buffelgrass (*Cenchrus ciliaris*), marsh fleabane (*Pluchea indica*), Chinese violet (*Asystasia gangetica*), Guinea grass (*Megathyrsus maximus*), love-in-a-mist (*Passiflora foetida*) and other herbs, vines and shrubs. Two natives – especially ʻuhaloa (*Waltheria indica*) but also kaunaʻoa pehu (*Cassytha filiformis*) and koali (*Ipomoea indica*) – are also widespread. Small sinkholes are very common throughout the forest. They are often hazardously obscured by non-native vegetation but do not seem to support any distinct vegetation or native species (Figures 2h-i).

The remainder of the area has been cleared to accommodate structures, roads and trails, or open space activities (Figures 2j-m). Buffel grass, fingergrass (*Chloris* spp*.),* lovegrass (*Eragrostis tenella*) and many other grasses dominate the ground layer, which also contains a variety of mostly weedy species, especially Australian saltbush (*Atriplex semibaccata*) and various euphorbiaceous, chenopode and malvaceous weeds. There are occasional natives as well, especially ʻuhaloa but also akulikuli (*Sesuvium portulacastrum*), nena (*Heliotropium currasavicum*), ʻilima (*Sida fallax*) and naio (*Myoporum sandwicense*). Some areas have been landscaped with a great variety of ornamental species such as mango (*Mangifera indica*), coconut trees (*Cocos nucifera*), pink tecoma (*Tabebuia*

pentaphylla), agave (*Agave sisalana*) and coral tree (*Erythrina* sp.). Many areas were disturbed and then managed for various purposes but are now reverting to kiawe forest.

Flora

All plant species found in the subject area during the survey are listed in Table 1. Of the 89 species detected, 11 were indigenous (native to the Hawaiian Islands and elsewhere) and one was endemic (found only in the Hawaiian Islands). Two Polynesian introduced plants – coconut and noni (*Morinda citrifolia*) – were present. The one endemic plant is maiapilo (*Capparis sandwichiana*) (Figure 2n). This hardy, attractive, fragrant shrub in the caper family is found on all the main islands but is usually considered rare because its coastal leeward habitat has been mostly lost to development. Maiapilo was found in various places on the property but extensively in one particular location, as shown in the inset in Figure 2n.

Threatened or Endangered Plants

With the exception of maiapilo, all native plants found in the subject area are fairly to very common throughout the island of O‘ahu and the State. The botanical survey involved an extensive search for individuals of the endangered *Euphorbia skottsbergii* var *skottsbergii* or ‘akoko and *Achyranthes spendens* var. *rotundata*, informed by a visit to the Kalaeloa Heritage Center, where numerous specimens are present. None were observed in the subject area.

Online maps from the U.S. Fish and Wildlife Service (USFWS) depict no critical habitat on or near the subject area (http://ecos.fws.gov/ecp/report/table/critical-habitat.html), as shown in Figure 3. Small areas of critical habitat for *Euphorbia skottsbergii* var *skottsbergii* or ‘akoko and *Achyranthes spendens* var. *rotundata* exist a few miles to the west of the subject area.

Birds

The 12 species of birds detected within the boundaries of the subject area during the survey were all non-native and typical of those found in similar areas of lowland disturbed habitat in O‘ahu (Table 2). Most common were myna (*Acridotheres tristis*), spotted dove (*Streptopelia chinensis*), red-crested cardinal (*Paroaria coronata*) and Japanese white-eye (*Zosterops japonicus*).. The area of observation extended beyond the subject area to the adjacent ‘Ewa Beach Golf Course. The open grass and ponds of the golf course attracted three native birds: black-crowned night heron or auku‘u (*Nycticorax nycticorax hoactli*), the Pacific golden-plover or kolea (*Pluvialis fulva*), and the endangered Hawaiian stilt or ae‘o (*Himantopus mexicanus knudseni*). The subject area itself is poor habitat for these species, and although they may fly over they are not likely to utilize it frequently.

The survey methods for the Hawaiian short-eared owl or pueo (*Asio flammeus* subsp. *sandwichensis*) followed generally the Pueo Project Survey Protocol (Price and Cotin 2018), but were adjusted for the specifics of the study. A morning survey was conducted from civil twilight to approximately 120 minutes after sunrise and the evening survey was conducted approximately 60 minutes before sunset until civil twilight. For most of this time, two observers were continually scanning with binoculars and the naked eye along the margin of the golf course and Fort Weaver Road, broadcasting pueo calls with a portable speaker every 15 minutes. The larger open areas and several small clearings were also sampled. No pueo were heard or observed. The subject area appears to be poor pueo habitat because of surrounding land uses and extremely dense, thorny vegetation in the upper and middle canopy layers.

Hawaiian Hoary Bat

Based on published and unpublished data on Hawaiian hoary bats, they likely utilize the subject area at least occasionally, as they have been observed in surrounding and similar areas. Although the survey include dawn and dusk observations, it did not use any detection equipment, and was not designed to detect bats. However, the Hawaiian hoary bat should be presumed to be present. Bats may forage for flying insects within the subject area on a seasonal basis, and they could find some of the larger shrubs and trees suitable nesting habitat.

Introduced Mammals, Reptiles, and Amphibians

The only live mammals seen during the survey were a number of small Indian mongooses (*Herpestes a. auropunctatus*). It is likely that feral cats (*Felis catus*), mice (*Mus* spp.), rats (*Rattus* spp.) and domestic dogs, (*Canis f. familiaris*) are occasionally present. There are no native terrestrial reptiles or amphibians in Hawai‘i. None were observed, but various anoles (*Anolia* sp.), geckoes (Family: Gekkonidae) and skinks (Family: Scincidae) are probably present at times. No non-native mammals, reptiles or amphibians have conservation value and all are deleterious to native flora and fauna.

Impacts and Mitigation Measures

As discussed above, no T&E plant species listed by the U.S. Fish and Wildlife Service (2022) appear to be present in the subject area. No existing or proposed federally designated critical plant (or animal) habitat is present in the subject area. There appears to be no potential to adversely affect T&E plant species. While no uniquely valuable plant habitat exists, the concentration of the somewhat rare plant *Capparis sandwichiana* merits consideration for preservation in some form if the community design can accommodate it.

The endangered ae‘o or Hawaiian stilt was observed near but not in the subject area, which offers very little habitat area. In the unlikely event they land and linger within construction areas (e.g., in standing water), standard precautions regarding not disturbing or harassing waterbirds or migratory birds should be implemented during construction.

The subject area does not currently appear to have any nesting pueo, DHHL may wish to conduct an additional survey a month or so before land disturbance in the open areas and major clearings to ensure that no pueo have begun using the site and that no nests are present.

The endangered Hawaiian hoary bat is vulnerable to disturbance while roosting with its juveniles in the pupping season. To minimize impacts, we recommend that woody plants taller than 15 feet not be removed or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

The housing project’s outdoor lighting may attract T&E Hawaiian seabirds, which may become disoriented by the lighting, resulting in birds being downed. To avoid this, we recommend that no construction using unshielded equipment or maintenance lighting be permitted after dark during the seabird fledging period, September 15 through December 15. All additional permanent lighting should strictly conform to the Hawai‘i Revised Statutes 201-8.5, “Night sky protection strategy,” which requires shielding of exterior lights as well as utilization of low-blue spectrum lighting so as to lower the ambient glare, which both protects seabirds and reduces light pollution.

Report Limitations

No biological survey of a large area can claim to have detected every species present. Some plant species are cryptic in juvenile or even mature stages of their life cycle. Dry conditions can render almost undetectable plants that extended rainfall may later invigorate and make obvious. Thick brush can obscure even large, healthy specimens. Birds utilize various patches of habitat during different times of the day and seasons, and only long-term study can determine the exact species composition. The findings of this survey must therefore be interpreted with proper caution; in particular, there is no warranty as to the absence of any particular species.

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Figure 1. Subject Area Aerial View

Base Map © Google Earth

Figure 2. Subject Area Photos

2a. Dense kiawe forest in limestone with little understory dominates much of area ▲

▼ 2b. Koa haole is often co-dominant in kiawe forest

Figure 2. Subject Area Photos

2c. In less dense kiawe forest, Indian fleabane and Chinese violet are in understory ▲

▼ 2d. Human-made clearings with disturbed soil have herbaceous cover

Figure 2. Subject Area Photos

2e. Boulders are present throughout much of the forest ▲

▼ 2f. Non-native trees and native and non-native vines festoon the forest, especially edges

Figure 2. Subject Area Photos

2g. Small clearings are often covered with buffel grass ▲

▼ 2h. Deep, open sinkholes are common

Figure 2. Subject Area Photos

2i. Sinkholes may be obscured partially or totally by non-native vegetation ▲

▼ 2j. Much of the perimeter of the property is cleared and maintained with low weeds

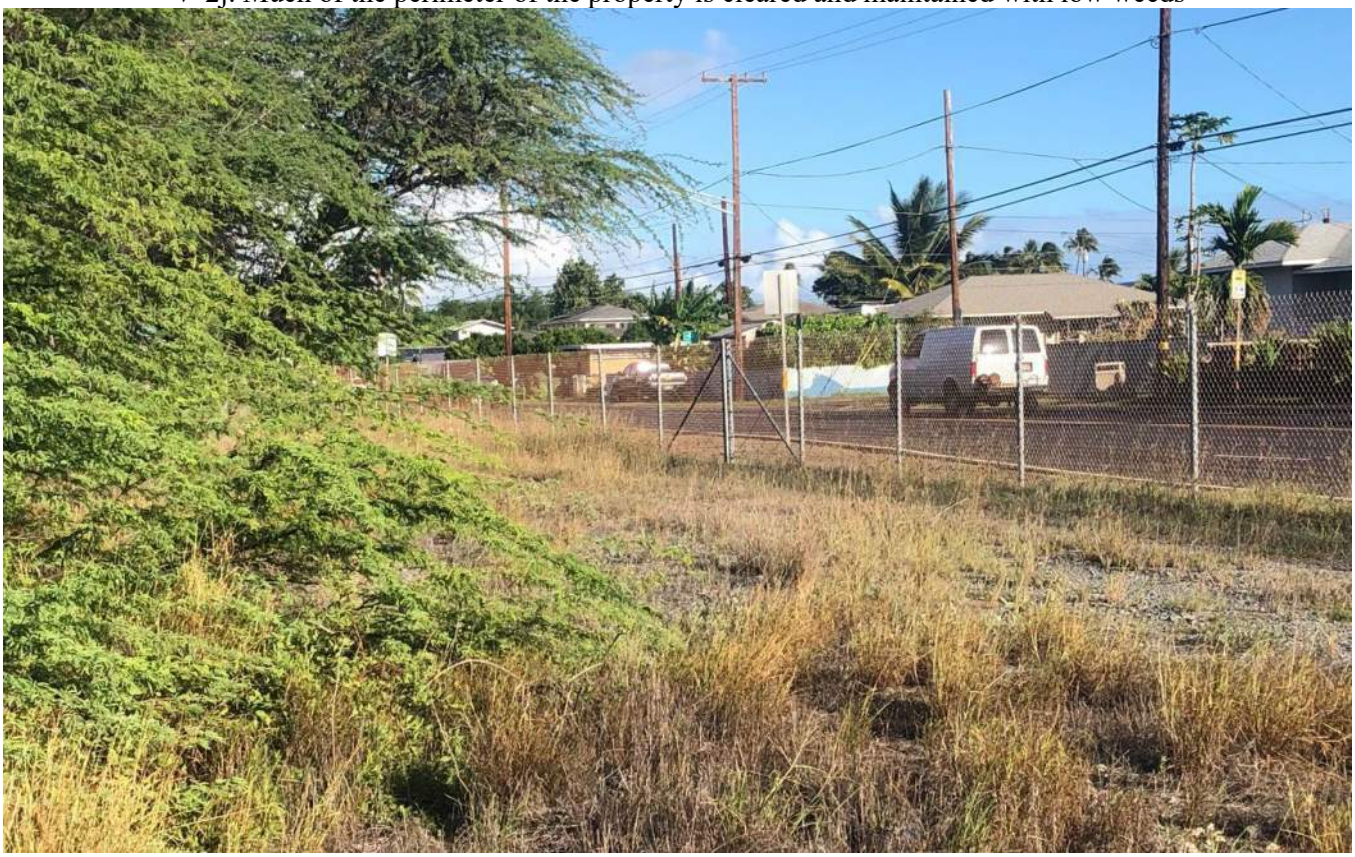

Figure 2. Subject Area Photos

2k. Clearing starting to regrow with kiawe ▲

▼ 2l. The south central part of the property was cleared for former uses and landscaped in places

Figure 2. Subject Area Photos

2m. Cleared, landscaped, maintained area ▲

▼ 2n. Capparis plant; inset: main concentration of Capparis in subject area

Table 1. Plant Species Observed in Subject Area

Scientific Name	Family	Common Name	Life Form	Status
Abutilon grandifolium	Malvaceae	Hairy Abutilon	Herb	A
Achyranthes aspera	Amaranthaceae	Achyranthes	Herb	A
Agave sisalana	Asparagaceae	Agave	Shrub	A
Aloe sp.	Asparagaceae	Aloe	Shrub	A
Alternanthera pungens	Amaranthaceae	Khaki Weed	Herb	A
Amaranthus viridis	Amaranthaceae	Amaranth	Shrub	A
Araucaria columnaris	Araucariaceae	Cook Pine	Tree	A
Asystasia gangetica	Acanthaceae	Chinese Violet	Herb	A
Atriplex semibaccata	Chenopodiaceae	Australian Saltbush	Herb	A
Barleria repens	Acanthaceae	Coral Creeper	Shrub	A
Boerhavia coccinea	Nyctaginaceae	Boerhavia	Herb	A
Capparis sandwichiana	Capparaceae	Maiapilo	Shrub	E
Cassytha filiformis	Lauraceae	Kauna‘oa Pehu	Vine	I
Cenchrus ciliaris	Poaceae	Buffel Grass	Grass	A
Cenchrus polystachios	Poaceae	Feathery Pennisetum	Grass	A
Chenopodium murale	Amaranthaceae	Lamb’s Quarters	Herb	A
Chenopodium sp.	Amaranthaceae	Chenopodium	Herb	A
Chloris spp.	Poaceae	Fingergrass	Grass	A
Cleome gynandra	Brassicaceae	Spider Flower	Herb	A
Clusia rosea	Clusiaceae	Autograph Tree	Tree	A
Coccinea grandis	Cucurbitaceae	Ivy gourd	Vine	A
Cocculus orbiculatus	Menispermaceae	Huehue	Vine	I
Cocos nucifera	Arecaceae	Coconut	Tree	P
Commelina benghalensis	Commelinaceae	Hairy Honohono	Herb	A
Convolvulus arvensis	Convolvulaceae	Field Bindweed	Vine	A
Conyza bonariensis	Asteraceae	Hairy Horseweed	Herb	A
Cordia subcordata	Boraginaceae	Kou	Tree	I
Desmanthus virgatus	Fabaceae	Slender Mimosa	Shrub	A
Digitaria insularis	Poaceae	Sourgrass	Grass	A
Eleusine indica	Poaceae	Goose Grass	Grass	A
Eragrostis tenella	Poaceae	Lovegrass	Grass	A
Erythrina sp.	Fabaceae	Coral Tree	Tree	A
Euphorbia hirta	Euphorbiaceae	Garden Spurge	Herb	A
Euphorbia hypericifolia	Euphorbiaceae	Graceful Spurge	Herb	A
Euphorbia hyssopifolia	Euphorbiaceae	Spurge	Herb	A
Euphorbia prostrata	Euphorbiaceae	Prostrate Spurge	Herb	A
Euphorbia tirucalli	Euphorbiaceae	Pencil Tree	Shrub	A
Euphorbia tithymaloides	Euphorbiaceae	Slipper Flower	Shrub	A
Ficus microcarpa	Moraceae	Chinese Banyan	Tree	A
Gossypium hirsutum	Malvaceae	Upland Cotton	Herb	A
Grevillea robusta	Proteaceae	Silver Oak	Tree	A
Heliotropium currasavicum	Boraginaceae	Nena	Herb	I
Heliotropium procumbens	Boraginaceae	Four-Spike Heliotrope	Herb	A
Hibiscus rosa-sinensis	Malvaceae	Ornamental Hibiscus	Shrub	A
Hylocereus undatus	Cactaceae	Night Blooming Cereus	Shrub	A

Table 1 continued				
Scientific Name	**Family**	**Common Name**	**Life Form**	**Status**
Ipomoea indica	Convolvulaceae	Koali ʻAwa	Vine	I
Ipomoea triloba	Convolvulaceae	Little Bell	Vine	A
Jacquemontia ovalifolia	Convolvulaceae	Paʻū O Hiʻiaka	Vine	I
Kalanchoe tubiflora	Crassulaceae	Chandelier Plant	Shrub	A
Kigelia africana	Bignoniaceae	Sausage Tree	Tree	A
Leucaena leucocephala	Fabaceae	Haole Koa	Tree	A
Malva parviflora	Malvaceae	Cheeseweed	Herb	A
Malvastrum coromandelianum	Malvaceae	Malvastrum	Herb	A
Mangifera indica	Anacardiaceae	Mango	Tree	A
Megathyrsus maximus	Poaceae	Guinea Grass	Grass	A
Melinis repens	Poaceae	Natal Red Top	Grass	A
Momordica charantia	Cucurbitaceae	Bitter Gourd	Vine	A
Morinda citrifolia	Rubiaceae	Noni	Tree	PI
Nerium oleander	Apocynaceae	Oleander	Tree	A
Myoporum sandwicense	Myoporaceae	Naio	Tree	I
Nicotiana glauca	Solanaceae	Tree Tobacco	Shrub	A
Opuntia ficus-indica	Cactaceae	Prickly Pear	Shrub	A
Passiflora foetida	Passifloraceae	Love-in-a-Mist	Vine	A
Passiflora suberosa	Passifloraceae	Huehue Haole	Vine	A
Pithecellobium dulce	Fabaceae	Opiuma	Tree	A
Pluchea carolinensis	Asteraceae	Sourbush	Shrub	A
Pluchea indica	Asteraceae	Marsh Fleabane	Shrub	A
Plumeria sp.	Apocynaceae	Plumeria	Shrub	A
Portulaca oleracea	Portulacaceae	Pigweed	Herb	A
Portulaca pilosa	Portulacaceae	ʻAkulikuli	Herb	A
Prosopis pallida	Fabaceae	Kiawe	Tree	A
Ricinus communis	Euphorbiaceae	Castor Bean	Shrub	A
Rivina humilis	Phytolaccaceae	Pokeweed	Shrub	A
Roystonea regia	Arecaceae	Royal Palm	Tree	A
Samanea saman	Fabaceae	Monkeypod	Tree	A
Schefflera actinophylla	Araliaceae	Octopus Tree	Tree	A
Schinus terebinthifolius	Anacardiaceae	Christmas Berry	Shrub	A
Sesuvium portulacastrum	Aizoaceae	Akulikuli	Herb	I
Sida ciliaris	Malvaceae	Sida	Shrub	A
Sida fallax	Malvaceae	ʻIlima	Shrub	I
Sida rhombifolia	Malvaceae	Broomweed	Herb	A
Solanum americanum	Solanaceae	Popolo	Shrub	I
Sonchus oleraceus	Asteraceae	Sow Thistle	Herb	A
Sporobolus sp.	Poaceae	Smutgrass	Grass	A
Stapelia gigantea	Asclepiadaceae	Carrion Flower	Shrub	A
Tabebuia pentaphylla	Bignoniaceae	Pink Tecoma	Tree	A
Tridax procumbens	Asteraceae	Coat Buttons	Herb	A
Verbesina encelioides	Asteraceae	Golden Crown Beard	Herb	A
Waltheria indica	Sterculiaceae	ʻUhaloa	Herb	I

* A=Alien E=Endemic I=Indigenous PI= Polynesian END=Federal and State Listed Endangered (none)

Table 2. Bird Species Observed in Subject Area

Scientific name	Common name	Status
Acridotheres tristis	Common Myna	Alien Resident
Cardinalis cardinalis	Northern Cardinal	Alien Resident
Copsychus malabaricus	White-rumped Shama	Alien Resident
Crithagra mozambica	Yellow-fronted Canary	Alien Resident
Estrilda astrild	Common Waxbill	Alien Resident
Francolinus pondicerianus	Gray Francolin	Alien Resident
Gallus gallus	Domestic Chicken	Alien Resident
Geopelia striata	Zebra Dove	Alien Resident
Haemorhous mexicanus	House Finch	Alien Resident
Himantopus mexicanus knudseni [1,2]	Hawaiian Stilt (A‘eo)	Endemic Resident
Nycticorax nycticorax hoactli [2]	Black-crowned Night Heron (Auku‘u)	Indigenous Resident
Paroaria coronata	Red-crested Cardinal	Alien Resident
Pluvialis fulva [2]	Pacific Golden-plover (Kolea)	Migratory Resident
Pycnotus cafer	Red-vented Bulbul	Alien Resident
Pycnotus jocosus	Red-whiskered Bulbul	Alien Resident
Serinus mozambicus	Yellow-fronted Canary	Alien Resident
Sicalis flaveola	Saffron Finch	Alien Resident
Streptopelia chinensis	Spotted Dove	Alien Resident
Zosterops japonicus	Japanese White-eye	Alien Resident

[1] Protected under Endangered Species Act [2] Observed off property on golf course.

APPENDIX C
Archaeological Literature Review and Field Inspection Report

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Archaeological Literature Review and Field Inspection DHHL ʻEwa Beach Homestead Community Master Plan and Environmental Assessment Project, Puʻuloa ʻIli, Honouliuli Ahupuaʻa, ʻEwa District, Oʻahu Island TMK: [1] 9-1-001:001 (por.)

Overview of project area from its southeast corner, facing west

Prepared for
SSFM International
Honolulu, Hawaiʻi

Prepared by
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Honolulu, Hawaiʻi

July 2023

Management Summary

This report was completed for SSFM International in support of an Environmental Assessment (EA) for the future development of sustainable homestead lots by the Department of Hawaiian Homelands (DHHL). The project area, which is a portion of TMK (1) 9-1-001:001, consists of 80.33 acres in Pu‘uloa ‘Ili, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu. The project area is within the boundaries of the former location of the Pacific Tsunami Warning Center and National Weather Station PTWC-NWS), which includes 16 abandoned buildings/structures. This report is focused on archaeological resources and does not include consideration of architectural buildings and structures. The landowner is the state of Hawai‘i.

The objectives of this study included: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction. This study is not an archaeological inventory survey (AIS) and did not include subsurface testing (excavation). The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275.

A small portion of the project area—consisting of above-ground, architectural resources associated with the PTWC-NWS—has been the subject of previous Section 106 (National Historic Preservation Act [NHPA]) historic-preservation consultation. In 2018, the above-ground buildings and structures of the PTWS-NWS were determined not eligible for listing on the National Register of Historic Places (NRHP) by the U.S. General Services Administration (GSA). In a “NHPA Section 106 Historic Preservation Review” letter (LOG: 2018.02473, DOC: 1810KN16) dated October 23, 2018, the State Historic Preservation Division (SHPD) concurred with the GSA’s determination of “no historic properties affected” (see Appendix A).

General findings include: (1) The entire eastern boundary of the project area contains a discontinuous berm of bulldozed debris, including rocks, uprooted trees and trash, which extends into the project area by as much as 20 or 30 meters in places; this berm was mostly likely the result of bulldozing in the adjacent, golf-course parcel when it was first developed; (2) The 15 sinkhole sites—which still need to be investigated in more detail to determine whether they are cultural, rather than natural, features—represent only a sample of the potential sinkholes that were observed during the field inspection; furthermore, based on our field observations and the relative percentage of the project area that was subject to pedestrian survey, there may be hundreds of additional (as yet unidentified) sinkholes; (3) Based on the high number of sinkholes and the relatively dense vegetation (ground) cover, surveying in the project area is a health and safety concern (e.g., for slips, trips and falls into sinkholes) that can only be mitigated by relatively slow and cautious walking, which must be taken into account when scoping any future archaeological work in the project area.

Specific findings include: (1) 15 sinkholes (one of which is filled in with rocks and sediment), which may or may not represent historic properties; (2) Three coral rock piles / mounds; (3) Nine push piles (i.e., created by bulldozing or other mechanized ground disturbance); (4) One crushed

coral road bed associated with the abandoned PTWS-NWS facility; and (5) One small shed, also associated with the PTWS-NWS facility.

Patterning of sites in the project area demonstrates substantial previous ground disturbance (e.g., bulldozing) in three main areas: (1) along the entire eastern boundary, extending into the project area by some 20 to 30 meters; (2) along the lower (makai or southern) portion adjacent to Fort Weaver Road; and (3) in and near the abandoned PTWC-NWS facilities in the lower, central portion of the project area.

It is likely that previous ground disturbance (e.g., bulldozing) covered up and/or filled in sinkholes in the lower (makai or southern) portion of the project area; and that sinkholes (whether visible from the ground surface or not) extend throughout the entire project area.

Since this study has not been conducted in support of any specific proposed project, but rather was designed to be an identification exercise, and since the work described herein covers only a sample of the project area in preliminary fashion, we do not provide formal significance assessments or project effect determinations at this time.

Should the project area be considered for development that includes ground disturbance, we recommend consultation with the SHPD-Archaeology Branch to determine next steps in the assessment process.

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Section 1 Introduction

1.1 Project Background

This Archaeological Literature Review and Field Inspection (ALRFI) report was completed on behalf of SSFM International in support of an Environmental Assessment (EA) for the future development of sustainable homestead lots by the Department of Hawaiian Homelands (DHHL). The project area, which is a portion of TMK (1) 9-1-001:001, consists of 80.33 acres in Pu‘uloa ‘Ili, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu (Figure 1, Figure 2 and Figure 3). The parcel is generally bounded by North Rd. to the north, a portion of the Ewa Beach Country Club golf course to the east, undeveloped land and residential neighborhood along Kilipoe St. to the west, and Fort Weaver Rd. to the south.

The project area is within the boundaries of the former location of the Pacific Tsunami Warning Center and National Weather Station PTWC-NWS), just west of the Iroquois Point residential neighborhood. The PTWC-NWS property, which consists of 175 acres, includes 16 abandoned buildings/structures. According to consultation correspondence for this project (see Appendix A), the PTWS-NWS was located in the subject parcel from 1968 to 2014, when it moved to another location. The landowner, which was previously the U.S. federal government, is now the state of Hawai‘i.

The objectives of this study include: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction.

Currently, there are no specific architectural or construction plans for the development project, which is in its early planning stages.

This ALRFI is not an archaeological inventory survey (AIS) and did not include subsurface testing (excavation). The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275. Archival research and analysis include discussion of historic maps and surveys dating from as early as 1825, aerial images from the mid-1900s, previous archaeological studies and findings, and other ephemera. Field inspection included a representative pedestrian survey of the project area.

1.2 Regulatory Context

A small portion of the project area—consisting of above-ground, architectural resources associated with the PTWC-NWS—has been the subject of previous Section 106 (National Historic Preservation Act [NHPA]) historic-preservation consultation. In 2018, the above-ground buildings and structures of the PTWS-NWS were determined not eligible for listing on the National Register of Historic Places (NRHP) by the U.S. General Services Administration (GSA). In a “NHPA Section 106 Historic Preservation Review” letter (LOG: 2018.02473, DOC: 1810KN16) dated October 23, 2018, the State Historic Preservation Division (SHPD) concurred with the GSA’s determination of “no historic properties affected” (see Appendix A).

The subject ALRFI is focused on archaeological resources and does not include consideration of architectural buildings and structures.

1.3 Environmental Setting

1.3.1 Natural Environment

This section describes the environmental and physiographic conditions in the project area. Some direct observations made during our field inspection on possible historic patterns of change are described where applicable. In addition, information in this section is also derived from well-known sources including Foote et al. (1972), Macdonald et al. (1983) and Juvik and Juvik (1998).

The hard-rock geology in and around the project area, which is about 200 meters (656 feet) from the shoreline, approximately 1.5 miles west of the mouth of Pearl Harbor (Pu‘uloa), consists of calcareous reef rock and marine sediments (i.e., limestone) (Macdonald et al. 1983; Sherrod et al. 2007). Elevation is about 5–15 feet (1.5–4.6 meters) above mean sea level. U.S. Department of Agriculture (USDA-NRCS n.d.) soil survey data shows that sediments in the project area consist entirely of Coral outcrop (CR) (see also Foote et al. 1972) (Figure 4). Field observations indicate a very thin soil over the exposed limestone in portions of the project area.

When exposed and not covered by historic or modern deposits, the surface of such coral outcrop, which are Pleistocene deposits, is typically characterized by numerous small dissolution “pit caves,” also known colloquially as “sinkholes.” Referring specifically to these natural features in the region where the project area is located, Ziegler (2002:97) writes:

> On the ‘Ewa Plain, rainwater has gradually dissolved **sinkholes** in more soluble portions of the exposed fossil reef. Typically, these sinkholes are bell-shaped in profile; the surface opening often is about 1 m (3.3. feet) or so in diameter, with the interior usually increasing to perhaps two or three times that. . .
>
> Originally, there were tens of thousands of these sinkholes exposed on O‘ahu; . . . At least 99 percent of these, however, have been filled or covered in the last century or so by agricultural and developmental projects, but attempts continue to permanently preserve at least a small area of the few remaining sinkholes. These cavities have been found to contain innumerable bones of endemic Hawaiian birds (many of the species prehistorically extinct) as well as many other scientifically and educationally important animal and plant remains.

The project area is in one of the driest parts of O‘ahu; mean annual rainfall is about 20 inches (508 millimeters) (Giambelluca et al. 2013). Prior to the historic period, vegetation in the project area would have consisted of lowland coastal dry shrub and grassland. Today, however, due to historic and modern human alteration of the landscape, the project area flora is dominated by invasive grasses and weeds, haole koa (*Leucaena leucocephala*), kiawe (*Prospis pallida*) and other trees (including banyan [*Ficus benghalensis*]) and shrubs (Figure 5 and Figure 6).

1.3.2 Built Environment

The existing buildings and structures of the abandoned PTWS-NWS, which were built in 1961 or later, are described by the GSA in its consultation letter (see Appendix A).

Figure 1. Portion of 1999 U.S. Geological Survey (USGS) topographic map (Pearl Harbor quadrangle) with project area (base map source: ESRI's ArcMap 10.2.2)

Figure 2. Aerial image showing location of project area (base image source: ESRI's ArcMap 10.2.2)

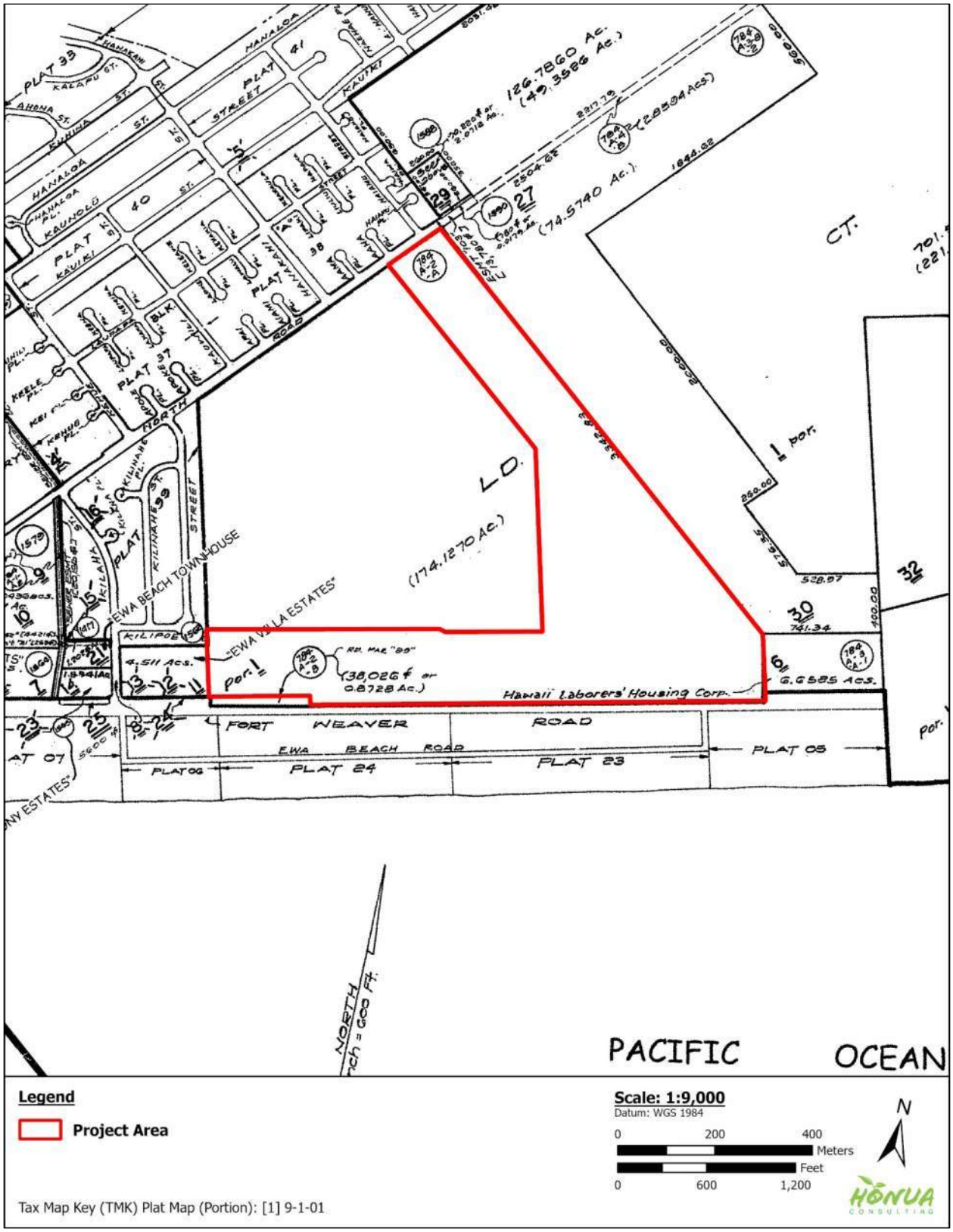

Figure 3. Tax Map Key (TMK) plat [1] 9-1-001 showing project area (portion 001) location (source: Hawai‘i TMK Service n.d.)

Figure 4. Soil series overlay showing soils in the project area (see text for discussion) (data source: Foote et al. 1972)

Figure 5. Project area overview from southeast corner; view north

Figure 6. Project area overview from north corner; view south-southwest

Section 2 Cultural and Historical Context

This section includes a brief synthesis of relevant cultural and historical information related to the types and character of land uses in and around the project area and Pu‘uloa ‘Ili, specifically, as well as Honouliuli Ahupua‘a, more generally, from pre-Contact times into the historic period and modern times. Some of this section is based on a recent study of the cultural, historical and archaeological resources of the ahupua‘a of ‘Ewa, a publicly-available document.[1] All such material used below from Uyeoka et al. (2018) was written by the lead author (Monahan). The main objective here, primarily through the analysis of historical documents, maps and aerial images, is to provide a project area-specific picture of land use and modification over time.

In addition to conducting a records search at the SHPD, as well as the on-line database of the Environmental Review Program (Office of Planning and Sustainable Development), and referencing Honua’s proprietary database, we also utilized these on-line sources to obtain cultural, historical and archaeological data:

- OHA’s Papakilo database (http://papakilodatabase.com/main/main.php)
- OHA’s Kipuka database (http://kipukadatabase.com/kipuka/)
- Bernice P. Bishop Museum archaeological site database (http://has.bishopmuseum.org/index.asp)
- Bishop’s Hawaii Ethnological Notes (http://data.bishopmuseum.org/HEN/browse.php?stype=3)
- University of Hawai‘i-Mānoa’s digital maps (http://magis.manoa.hawaii.edu/maps/index.html)
- DAGS’ State Land Survey (http://ags.hawaii.gov/survey/map-search/)
- Waihona ‘Aina website (www.waihona.com)
- Digital newspaper archive “Chronicling America, Historic American Newspapers” (http://chroniclingamerica.loc.gov/lccn/sn82014681/)
- Hawai‘i State Archives digital collections (http://archives1.dags.hawaii.gov/)
- U.S. Library of Congress digital map collections (https://www.loc.gov/maps/)
- USGS Information Service, including digital map collections (https://nationalmap.gov/historical/index.html)
- AVA Konohiki’s website (http://www.avakonohiki.org/)

2.1 Hawaiian Cultural Landscape

The project area is in what is sometimes referred to as Pu‘uloa Ahupua‘a, but, more commonly, the ‘ili of Pu‘uloa within Honouliuli Ahupua‘a. As the largest ahupua‘a on the island of O‘ahu (~43,000 acres), Honouliuli (literally “dark bay,” Pukui et al. 1974) includes approximately 12 miles of marine coastline from Keahi Point in the east to Pili o Kahe in the west at the boundary with Nānākuli (and the district, or moku, of Wai‘anae) (Figure 7).

Pu‘uloa, or “long hill” (ibid.), is also the traditional Hawaiian name for Pearl Harbor. According to Pukui et al. (1974:201), quoting Nathaniel Emerson’s (195) *Pele and Hiiaka, a Myth from Hawaii*, “it is said that breadfruit were [first] brought here from Samoa” (brackets added). McAllister (1933), citing well-known historians and chroniclers of Hawaiiana including Thrum, Kamakau and Fornander, states:

[1] Available on-line at https://www.ksbe.edu/assets/site/special_section/regions/ewa/Halau_o_Puuloa_Full-Ewa-Aina-Inventory_Binder.pdf (see Uyeoka et al. 2018 in References Cited)

> Tradition credits the introduction of the breadfruit tree in these islands to Kahai, a son of Moikeha, who brought a species from Upolo in the Samoan group on his return voyage from Kahiki, and planted same at Puuloa, Oahu (ibid.)

In addition to its marine shoreline, Honouliuli also has several miles of shoreline along the western margins of Ke-awa-lau-o-Pu‘uloa (a more formal name for Pu‘uloa), the crown jewel of harbors in all of the Hawaiian Islands. Several loko (fishponds) and fish traps are located along the Pu‘uloa coastline in Honouliuli, and these waters are famous for their pipi, or pearl oysters, and a wide variety of fish including deep-ocean species (Handy and Handy 1972:469).

The expansive plain inland of the ocean—including the project area—consists of lithified reef (limestone) with a thin soil, discontinuous soils in places, and many pit caves (or sinkholes), some of which contain brackish water. As described by McAllister (1933) in the 1930s (cited in Handy 1940:82), although appearing barren:

> It is probable that the holes and pits in the coral were formerly used by Hawaiians. Frequently the soil on the floor of the larger pits was used for cultivation, and even today one comes upon bananas and Hawaiian sugar cane still growing in them.

In fact, archaeological studies of undeveloped portions of this extensive limestone from ‘Ewa west to Kalaeloa have documented the presence of numerous traditional Hawaiian sites (see Section 3 Previous Archaeological Research).

Moving inland from these limestone flats, soil conditions improve and alluvium deposited from the uplands via a series of gulches—the most prominent being Honouliuli proper—created planting areas for Hawaiian subsistence farmers. The main traditional lo‘i kalo (irrigated taro) and settlement area was once around the mouth of Honouliuli Gulch, several miles north of the project area, where it empties into Pu‘uloa.

Prior to the historic period and drilling for artesian wells, many fresh-water springs were located where the uplands meet the lower flats: at numerous “toe of slope” locations that were once typical pūnāwai (fresh-water springs) on O‘ahu. Dryland (non-irrigated) gardening areas would have been scattered all over the lower uplands above the current H-1 highway (Uyeoka et al. 2018).

Because of its large size, Honouliuli had a vast upland forest that extended 10–12 miles back from the seashore. This mauka (inland) region was a reliable source of native, endemic, and Polynesian-introduced plants including kukui, koa, ‘ōhia, ‘iliahi (sandalwood), hau, kī (ti leaf), bananas, and many others. These resources provided not only food but also medicinal plants, wa‘a (canoe) trees, and other needed items (e.g., for religious practices, hula, and so on) (ibid.). A network of trails once connected the uplands with the lower makai areas. Many named pu‘u (hills and peaks), some with associated heiau (temples), are found throughout the mauka region of Honouliuli (see Figure 7). The well-known depiction of major trails in this region around 1800 by John Papa ‘Ī‘ī (1959:96) shows a an east to west-oriented trail inland (mauka) of Pu‘u o Kapolei. A coastal trail once passed by just makai of the project area.

A famous traditional salt pan area was once located in the Iroquois Point residential neighborhood about a mile to the east of the project area.

Figure 8, a portion of 1825 map by Malden, shows the project area as part of a “low uncultivated plain” south of the main settlement area at the mouth of Honouliuli Stream.

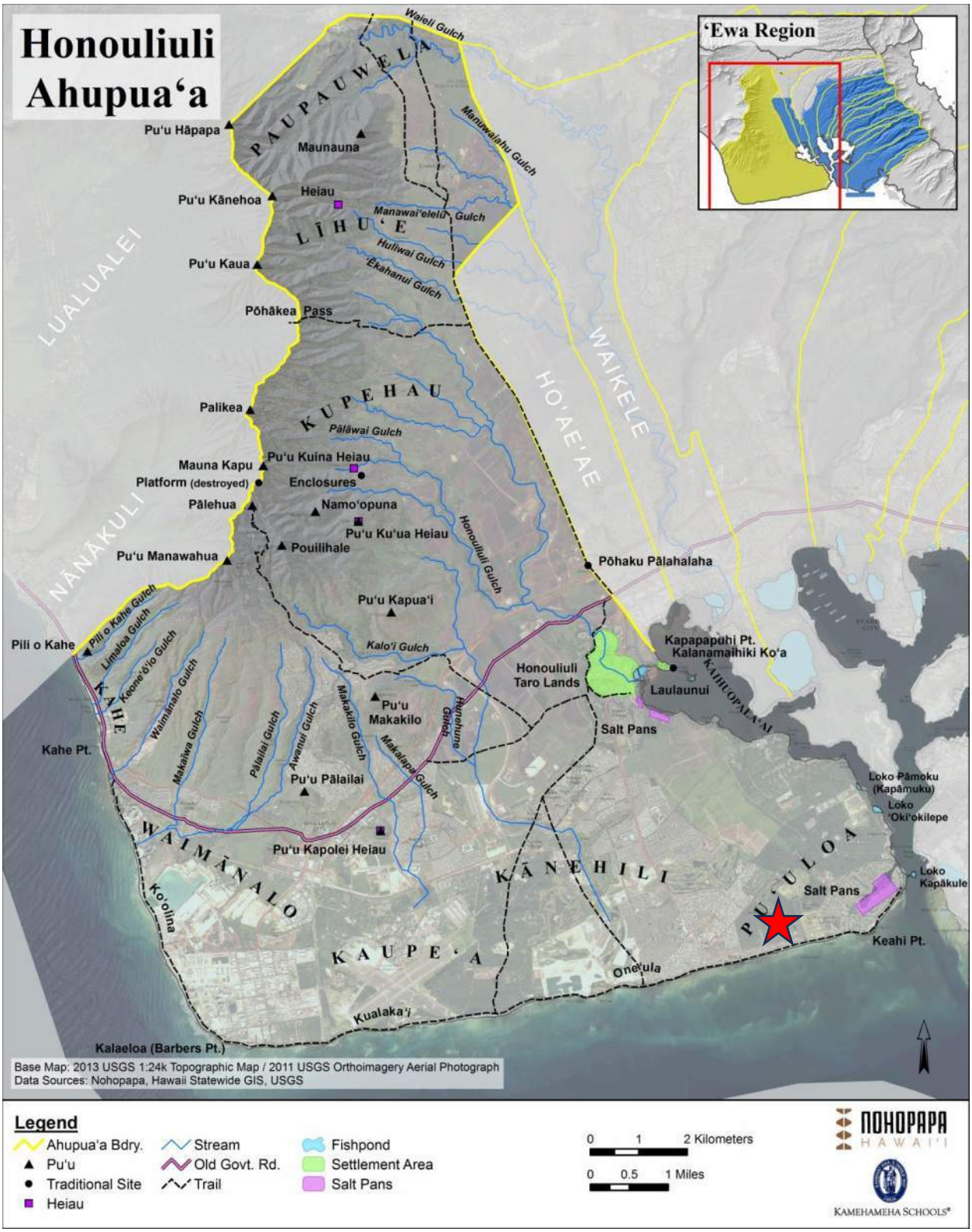

Figure 7. Place names, trails, wahi pana (legendary sites) and other cultural-resource features of Honouliuli; project area depicted as red star (base map source: Uyeoka et al. 2018:255)

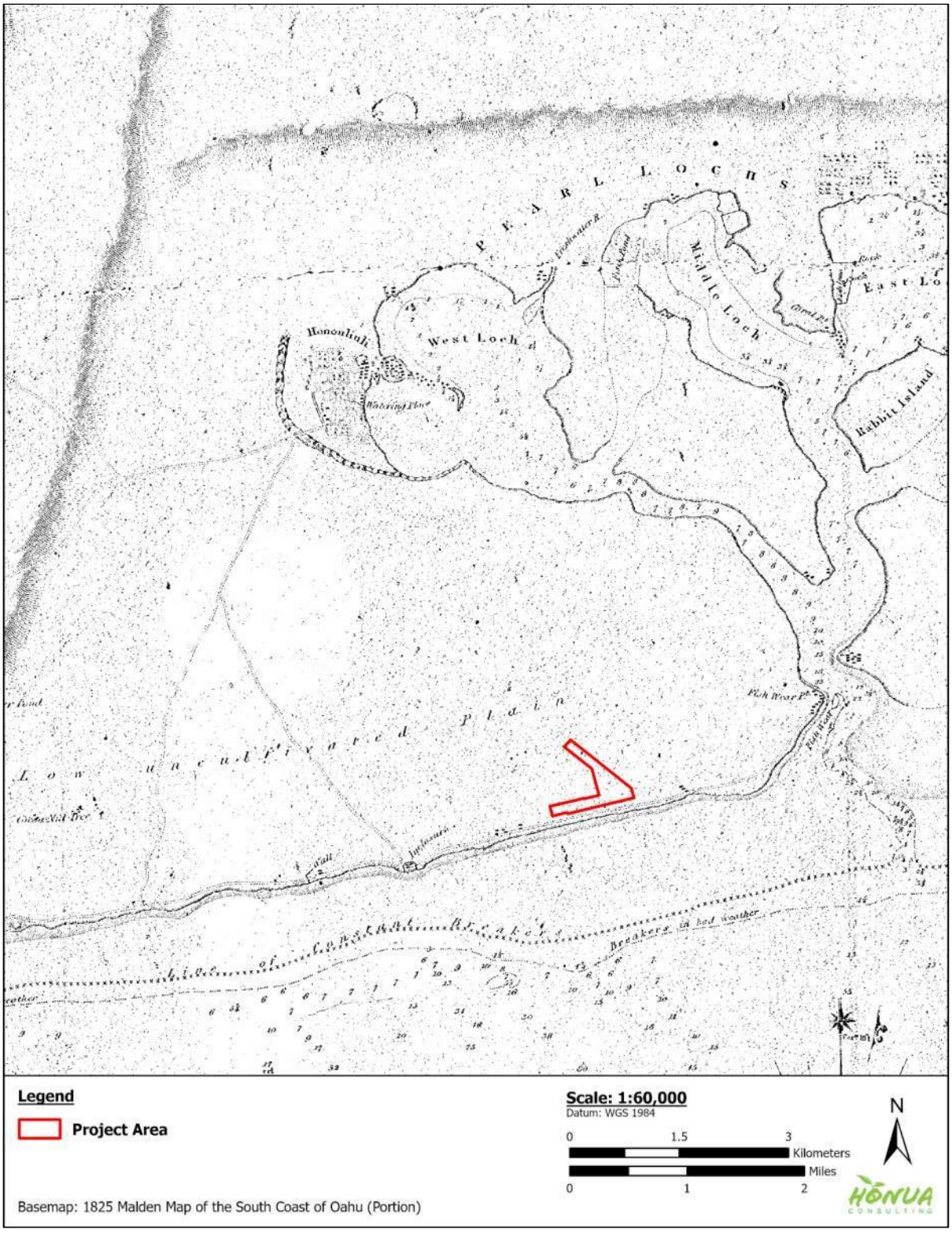

Figure 8. Portion of 1825 map by Malden (Registered Map 437) showing a coastal trail just makai of the project area (base map source: Fitzpatrick 1986:62–3)

2.1.1 Moʻolelo (Oral-historical Accounts)

Kepā Maly, master of the Hawaiian language and chronicler of Hawaiian cultural resources, provided a new translation of the epic saga of the travels of Hiʻiaka-i-ka-oli-o-Pele (Hiʻiaka), the youngest sister of Pele, to and from Kauaʻi (Maly n.d.). Maly's translation of "He Moolelo Kaao no Hiiaka-i-ka-poli-o-Pele" ("A Traditional Tale of Hiʻiaka who is Held in the Bosom of Pele") was originally published in the Hawaiian language newspaper *Ka Hoku o Hawaii* from 1924 to 1928. The following excerpts include descriptions of place names and wahi pana (legendary places) of Honouliuli as well as mele (songs) and ʻoli (chants) with direct relevance to this place. In the excerpt below, references to Honouliuli are in bold:

He Moʻolelo Kaʻao no Hiʻiaka-i-ka-poli-o-Pele

The goddess Hiʻiaka journeyed from the island of Hawaiʻi to Kauaʻi, stopping on Maui, Molokaʻi, and Oʻahu, as she went to fetch the chief Lohiʻau-ipo (Lohi'au) from Hāʻena and return with him to Pele's domain at Kīlauea, Hawaiʻi. The following narratives come from the portion of the legend that describes the return journey to Hawaiʻi.

...Aloha ka hau o Kaʻala	Beloved is the dew of Kaʻala
ʻOia hau halihali ʻaʻala mauʻu nēnē	That dew which bears the fragrance of the nēnē grasses
Honi ai ke kupa o **Puʻuloa**	[fragrant dew which] Kissed the natives of **Puʻuloa**
He loa ka imina e ke aloha e…	One searches far for love... [January 18, 1927]

Preparing to depart from the village of the chiefess, Makua, Hiʻiaka elected to travel overland through Waiʻanae, to the heights of **Pōhākea**, and across the plain of **Honouliuli**. Hiʻiaka made preparations for Lohiʻau and Wahineʻōmaʻo to travel by canoe from Pōkaʻi to the landing at Kou (Honolulu). Before letting them depart, Hiʻiaka instructed her two companions...

> ...As you travel, you will arrive at a place where a point juts out into the sea. That will be **Laeloa** [Barbers Point]; do not land there. Continue your journey forward. As you continue your journey, you will see a place where the ocean lies calmly within the land. That will be **ʻEwa**; do not land there. As you continue your journey, you will reach a place where the mouth [of the land] opens to the sea (hāmama ana ka waha i ke kai). That is **Puʻuloa**, do not land there either. That is the entry way to **ʻEwa**... [January 25, 1927]. (brackets added)

From the heights of **Pōhākea**, Hiʻiaka looked to the shores of **ʻEwa**, where she saw a group of women making their way to the sea. The women were going down to gather pāpaʻi [crabs] and limu [seaweed], and to gather the mahamoe, ʻōkupe [both edible bivalves], and such things as could be obtained along the shore. (brackets added)

. . .

Now, the famous fish of **ʻEwa** in those days when the wind blew because of conversations was the pipi [pearl oyster – It was believed that talking would cause a breeze to blow that would, in turn, frighten the pipi. (cf. Pukui and Elbert 1986)]. Only when it was very calm could one go to catch the pipi. If anyone spoke while going to get the pipi, the breeze would

cause rippling on the water's surface and the pipi would be hidden from sight. In this way, Hi'iaka had instructed Wahine'ōma'o and Lohi'au to be quiet like the women of 'Ewa who were going fishing. If one spoke, the angry winds would blow and bring misfortune... [February 8, 1927]

...Turning her gaze towards the island of Hawai'i, she could see the flames of Pele in the lehua forest of Hōpoe, and she chanted out:

Nani **Pālailai**, he anaina kapu na ka wahine	Beautiful is **Pālailai**, sacred assembly of the woman
Ke kūkulu nei wau i ka pahu kapu ka leo	I set up the drum of the sacred voice
O ka leo o ke kai ka'u e ho'olono e	The voice of the ocean is what I hear
Ua lono aku la ke kupa	The natives hear it[2]
Ua inu iho la nā manu i ke koena the wai noni	The birds drink the water caught in noni leaves[3]
Kūnewanewa a'e la nā 'ōpua i ka mālie	The billowy clouds pass in the calm
Pua o mai ke ahi o Hawai'i ia'u...	The fires of Hawai'i rise above me...

. . .

Hi'iaka then offered a chant to the women who had strung their garlands upon the plain which is burned by the sun.

E lei ana ke kula o **Keahumoa** ma'o i ka ma'o	The plain of **Keahumoa** wears the blossoms as its lei
'Ohu'ohu wale nā wahine kui lei o ke kanahele	Adorning the women who string garlands in the wild
Ua like no a like me ka lehua o Hōpoe	It is like the lehua blossoms of Hōpoe
Me he pua koili lehua ala i ka lā	Lehua blossoms upon which the sun beats down
Ka oni pua koai'a i ka pali	On the nodding koai'a flowers of the cliff
I nā kaupoku hale o **'Āpuku**	On the rooftops of the houses at **'Āpuku**
Ke ku no i ke alo o ka pali o **Pu'uku'ua**	Rising in the presence of the cliff of **Pu'uku'ua**
He ali'i no na'e ka 'āina	The land is indeed a chief
He kauwā no na'e ke kanaka	Man is indeed a slave
I kauwā no na'e wau i ke aloha	I am indeed a slave to aloha—love
Na ke aloha no na'e i kono e haele no māua	It is love which invites us two, come
E hele no wau a–	I come–

['Āpuku and Pu'uku'ua are both places situated on the upland plain of Honouliuli.]

[2] According to some traditions, the stormy ocean of Waialua could reportedly be heard in 'Ewa.
[3] In the past, after storms, forest birds could be seen in the lowlands drinking water in this manner.

. . .

Descending to the flat lands of **Honouliuli**, Hi‘iaka then turned and looked at **Pu‘uokapolei** and Nāwahineokama‘oma‘o who dwelt there in the shelter of the growth of the ‘ōhai [*Sesbania tomentosa*], upon the hill, and where they were comfortably refreshed by the blowing breezes. Hi‘iaka then said, “Pu‘uokapolei and Nāwahineokama‘oma‘o, do not forget me, lest you two go and talk behind my back and without my knowing, so here is my chant of greeting to you:”

Aloha ‘olua e **Pu‘uokapolei** mā	Greetings to you two **Pu‘uokapolei** and companion
E **Nāwahineokama‘oma‘o**	O **Nāwahineokama‘oma‘**o
E nonoho mai la i noho wale la	Set there, and dwelling
I ka malu o ka ‘ōhai	In the shade of the ‘ōhai
I ke kui lei kukui i ka lā	Stringing garlands of kukui in the day,
Lei aku la i ka pua o ka ma‘oma‘o	Adorning yourselves in the garlands of the ma‘oma‘o
Lei kauno‘a i ke kaha o **Ka‘ōlino**	Kauno‘a [*Cuscuta sandwichiana*] is the lei of the shores of **Ka‘ōlino**
He ‘olina hele e	There is joy in traveling

2.1.2 Other Mo‘olelo Related to the Project Area Environs

The level plains of Honouliuli are thought to be the legendary “kula o Kaupe‘a” (plain of Kaupe‘a), the realm of the ao kuewa or ao ‘auwana (homeless or wandering souls). Kaupe‘a was the wandering place of those who died having no rightful place to go; the souls wandered “in the wiliwili grove” (Sterling and Summers 1978:36). According to the 19th century Hawaiian historian Samuel Kamakau (1961:47, 49), the spirits who wandered “on the plain of Kaupe‘a beside Pu’uloa...could go to catch pulelehua (moths or butterflies) and nanana (spiders)” in the hope of finding helpful ‘aumakua (family deities) who could save them.

The prolific Hawaiian language master, Mary Kawena Pukui, shared her personal experience with the ghosts on the plain of Kaupe‘a around 1910:

> A wide plain lies back of Keahi and Pu‘uloa where the homeless, friendless ghosts were said to wander about. These were the ghosts of people who were not found by their family ‘aumakua or gods and taken home with them, or had not found the leaping places where they could leap into the nether world. Here [on the plain of Honouliuli] they wandered, living on the moths and spiders they caught. They were often very hungry for it was not easy to find moths or to catch them when found.
>
> Perhaps I would never have been told of the plain of homeless ghosts if my cousin’s dog had not fainted there one day. My cousin, my aunt and I were walking to Kalaeloa, Barber’s Point, from Pu‘uloa accompanied by Teto, the dog. She was a native dog, not the so-called poi dog of today, with upright ears and body and size of a fox terrier. For no accountable reason, Teto fell into a faint and lay still. My aunt exclaimed and sent me to fetch sea water at once which she sprinkled over the dog saying, “Mai hana ino wale ‘oukou i ka holoholona a ke kaikamahine. Uoki ko ‘oukou makemake ‘ilio.” “Do not harm the girl’s dog. Stop your desire to have it.”

> Then with a prayer to her ʻaumakua for help she rubbed the dog. It revived quickly and, after being carried a short way, was as frisky and lively as ever.
>
> Then it was that my aunt told me of the homeless ghosts and declared that some of them must have wanted Teto that day because she was a real native dog, the kind that were roasted and eaten long before foreigners ever came to our shores (Pukui 1943:60-61).

Along the coast, just in front of the current Kalaeloa Airport, there is a place called Kualakaʻi (see Figure 7), and there used to be a pūnāwai there called Hoakalei. According to Maly (n.d.:15), additional information about this spring and environs is found in the legendary series titled "Nā Wahi Pana o ʻEwa" (The Famous Places of ʻEwa), which ran in the Hawaiian language newspaper *Ka Loea Kalaiaina* (c. 1900). It described two "strange" women who lived on the plain called Puukaua, beyond Puʻukapolei, toward Waiʻanae. Once, after going down to Kualakaʻi on the coast to gather ʻaʻama crabs, pipipi (a type of univalve marine shell), and limu (seaweed), they failed to return home before morning light, and were turned into a single pillar of stone (Sterling and Summers 1978:39).

2.2 Historic Period

2.2.1 Overview

In general, starting around the turn of the 18th to 19th century, and continuing throughout the 19th century, life on Oʻahu was drastically changed with the arrival and increasing influence of foreign political, economic, and ideological systems. As a result, traditional Hawaiian settlement patterns, subsistence, and religious institutions were largely abandoned. By the late 1800s, nearly the entire ahupuaʻa of Honouliuli had been purchased by a few large landowners and developed into cattle ranches, sugar cane fields, sisal farms, and other agricultural concerns (Tuggle and Tomonari-Tuggle 1997; Gosser et al. 2011). Military development of the region began in the late 1800s with the construction of the Barbers Point Lighthouse and accelerated significantly in the early 1900s with the creation of several large bases including Naval Air Station Barbers Point (NAS-BP), Hickam Field, and Pearl Harbor. Since the closing of NAS-BP in the 1990s, small industry and other commercial, government, and residential development have replaced military infrastructure (Gosser et al. 2011).

2.2.2 Early 1800s

As stated above, ʻĪʻī's well-known description and mapping of the old, traditional Hawaiian trails of leeward Oʻahu (ʻĪʻī 1959:96) shows a major trail passing by Puʻuokapolei several miles northwest of the project area (see Figure 7). Malden's 1825 map (see Figure 8) shows a coastal trail just makai (south of) the project area. Other information, such as the location and distribution of prime loʻi kalo (irrigated taro) lands (several miles to the northwest of the current project area), suggest the project area vicinity—which lacked potable water but likely contained abundant brackish water in sinkholes and was extremely arid—was not a prime location for Hawaiian settlement or activity (Hammatt and Shideler 2012:22–3). This is not to say the area was abandoned or lacked human occupation, because there is evidence in the vicinity of the project area that Hawaiians were using this area in traditional times (ibid.).

With the arrival of foreigners in the area, the landscape of Honouliuli, the ʻEwa plains, and other adjacent areas (e.g., the Waiʻanae Mountain slopes) was largely denuded by the removal of sandalwood trees (for the Chinese market) and other trees (for construction in Honolulu), and by the introduction of large domesticated ungulates (e.g., goats, sheep and cattle) that destroyed native vegetation, replacing it with exotic, pest species such as haole koa (*Leucaena leucocephala*), guava (*Psidium guajava*), lantana (*Lantana camara*), and many invasive and aggressive grasses (ibid.).

2.2.3 Middle 1800s

Beginning in the 1840s, private property was introduced via formation of the Board of Commissioners to Quiet Land Titles, and the adoption of the Māhele (i.e., the division of Hawaiian lands). In 1845, King Kamehameha III waived his right to full authority over all lands; he portioned out some for his personal use (crown lands), and divided the rest into government land, land for the aliʻi (chiefs) and konohiki (land overseers), and land for commoners (kuleana land) (Alexander 1891; Board of Commissioners 1929; Moffat and Fitzpatrick 1995). After this time, Land Commission Awards (LCAs) were granted to commoners as kuleana parcels for fee ownership. LCAs record who resided on the land and how the land was used. There are no kuleana (commoner) parcels, nor claims, in or near the project area. About 100 claims were made in the ahupuaʻa of Honouliuli, but these were all located several miles northwest of the project area (near the mouth of Honouliuli Stream and other locations along the shore of Puʻuloa [Pearl Harbor]). The project area was part of Aliʻi Nui (highly-ranked elite) Land Commission Award 11216:8 (Royal Patent 6071) to Kekauʻōnohi (great granddaughter of Kekaulike, King of Maui, and a close relative of Kamehameha I), which means there are no records or surveys of middle 19th century land use in or near the project area (because such documentation was not required of Aliʻi Nui awards). Kekauʻōnohi's deed to all unclaimed land within the ahupuaʻa was for a total of 43,250 acres (Board of Commissioners 1929).

When Kekauʻōnohi died in 1851, her holdings passed on to her husband (Haʻalelea) and his family. Upon her death on June 2, 1851, all her property was passed on to her husband and his heirs. When Haʻalelea died, the property went to his surviving wife, who then leased it to James Dowsett and John Meek in 1871 for ranching operations (Hammatt and Shideler 2012).

In 1877, James Campbell purchased most of the Honouliuli Ahupuaʻa. He soon began drilling for potable water in Honouliuli, and, within about a decade, was supplying water to Honolulu. By 1881, Campbell also ran a successful cattle ranching operation in Honouliuli (ibid.).

In 1889, Campbell leased his property to Benjamin Dillingham, who founded the Oʻahu Railway & Land Co. (O.R. & L.) in 1890. Dillingham then subleased all land below 200 feet elevation to William Castle, who started the ʻEwa Plantation Co. for sugar cane cultivation. Other of Dillingham's lands at higher elevation was used by another sugar cane operation, Oʻahu Sugar Co. (ibid.). ʻEwa Plantation Co. was incorporated in 1890 and continued in operation into modern times. The ʻEwa Plantation Co.'s farming practices caused soil erosion from the uplands onto the coral plain (ibid.).

An 1880 Hawaiian Government map (see Figure 9) shows no development in the project area but the nearby coastal trail is depicted. Salt pans and various buildings and structures are shown to the east at the mouth of Puʻuloa (Pearl Harbor).

2.2.4 Early 1900s to Modern Times

Figure 10, a portion of 1902 map, shows an old wall extending from the makai (southern) edge of the project area east towards Pearl Harbor. A road connecting the salt works to the east with the main Honouliuli settlement to the north is also depicted. Other major changes and agricultural commercial operations (e.g., O.R. & L. railroad, Ewa Plantation [sugar cane] and a sisal plantation, which refers to Dillingham's Hawaiian Fiber Company) are several miles away from the project area to the northwest. This map also depicts the U.S. Coast & Geodetic Survey (USC & GS) magnetic observatory station to west in Kalaeloa. No structures are depicted within the project parcel at this time.

Figure 11, a portion of 1927 map, shows either a rock wall or road extending into the northern portion of the project area. A windmill is shown in the south central part of the project area. Some early streets of 'Ewa Beach are shown along the coast to the south of the project area.

Figure 12, a portion of 1933 map, shows what appear to be planned or proposed roads through the project area that were never actually completed or implemented. Such depictions are common in this area (e.g., including Kalaeloa to the west). Otherwise, the project area at this time appears to have remained largely undeveloped (the windmill is still shown from the 1927 map).

Figure 13 is a portion of 1939 map of the Ewa (sugar cane) Plantation Company's fields. This map shows that the project area was not included in the commercial sugar cane development of Honouliuli. By the early 1940s, sugar cane field portions that extended south (makai) of the O.R. & L. railway line had been developed over by the U.S. military. Hammatt and Shideler (2012:25, 28) describe the changes that took place around this time in the area:

> Major land use changes came to western Honouliuli when the U.S. Military began development in the area. Military installations were constructed both near the coast and in the foothills and upland areas. Barbers Point Military Reservation (a.k.a. Battery Barbers Point from 1937–1944) was located at Barbers Point Beach, and used beginning in 1921 as a training area for firing 155 mm guns . . . Also within the vicinity was the Camp Malakole Military Reservation (a.k.a. Honouliuli Military Reservation), used from 1939, and the Gilbert Military Reservation, used from 1922–1944. The largest and most significant base built in the area was the Barbers Point NAS, which operated from 1942 into the 1990s. It housed numerous naval and defense organizations, including maritime surveillance and anti-submarine warfare aircraft squadrons, a U.S. Coast Guard Air Station, and the U.S. Pacific Fleet.
>
> In 1930, the U.S. Navy leased 206 acres of land on the 'Ewa Plain from the Campbell Estate for the purpose of building a mooring mast for the dirigible *Akron*. At the expiration of the lease in late 1939 or early 1940, the Navy acquired over 3,500 acres of land from the Estate. In 1941, the Marine Corps Ewa strip was completed on a portion of the land to serve as an auxiliary airfield for the Navy's Ford Island Facility. The Ewa Marine Corps Air Station was extensively damaged during the Japanese attack on Pearl Harbor on December 4, [sic] 1941. During World War II, the design capacity of the station was changed. The major construction of Barbers Point was completed from 1941 to 1945.

Figure 14, a 1951 map, shows the project area as part of the USC & GS's "Honolulu Observatory." Figure 15, an aerial image from 1962, and Figure 16, a 1968 topographic map, show an expansion of the structures depicted on the 1951 map towards the mauka (inland) direction.

2.2.5 History of Development in the Project Area

Historical background information compiled by the General Services Administration (GSA) in support of consultation with the SHPD (see Appendix A) provides the following relevant summary:

> The site was originally occupied by the U.S. Navy, upon condemnation in 1944. On November 24, 1959, the U.S. Navy transferred the Ewa Beach property to the U.S. Department of Commerce (DOC), for operation of the Honolulu Magnetic Observatory, which has been in operation since that time. No structures are existing from the Navy's occupation of the site. In 1968, the Intergovernmental Oceanographic Commission established the Intergovernmental Coordination Group for the Pacific Tsunami Warning System (ICG/PTWS). Since the DOC already had this sizable piece of property in Ewa Beach for the USGS's Honolulu Geomagnetic Observatory, it was agreed that the ICG would use the same site for the operational headquarters of the PTWS. The PTWS has been at this site since that time. In 2014, NOAA's National Weather Service (NWS) who now operates the PTWS, relocated personnel to NOAA's new Pacific Regional Center at another location in Honolulu, and has declared this property surplus to its operational needs.

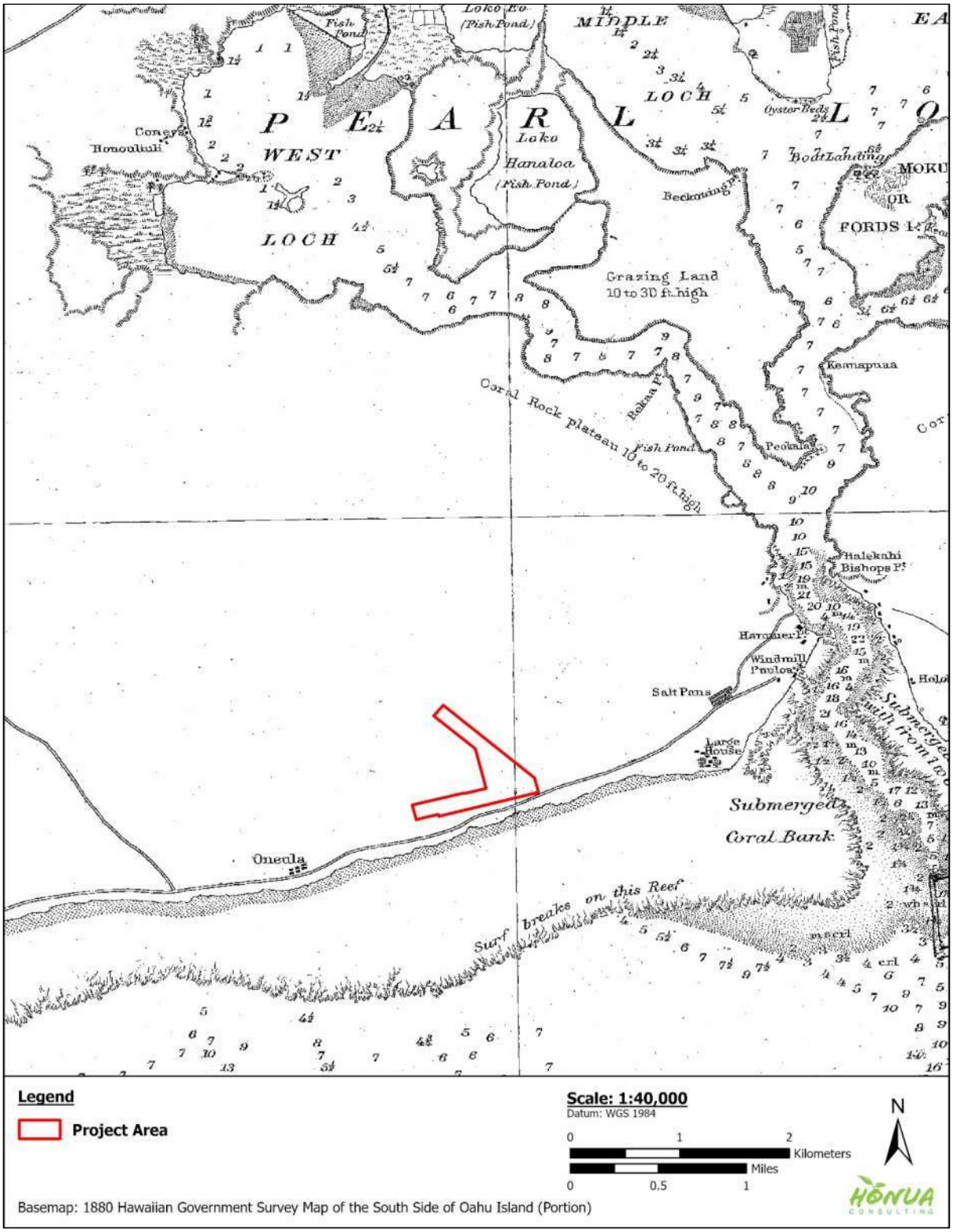

Figure 9. Portion of 1880 Hawaiian Government map showing project area location (base map source: DAGS Land Survey Map Search, http://ags. hawaii.gov/survey/map-search/)

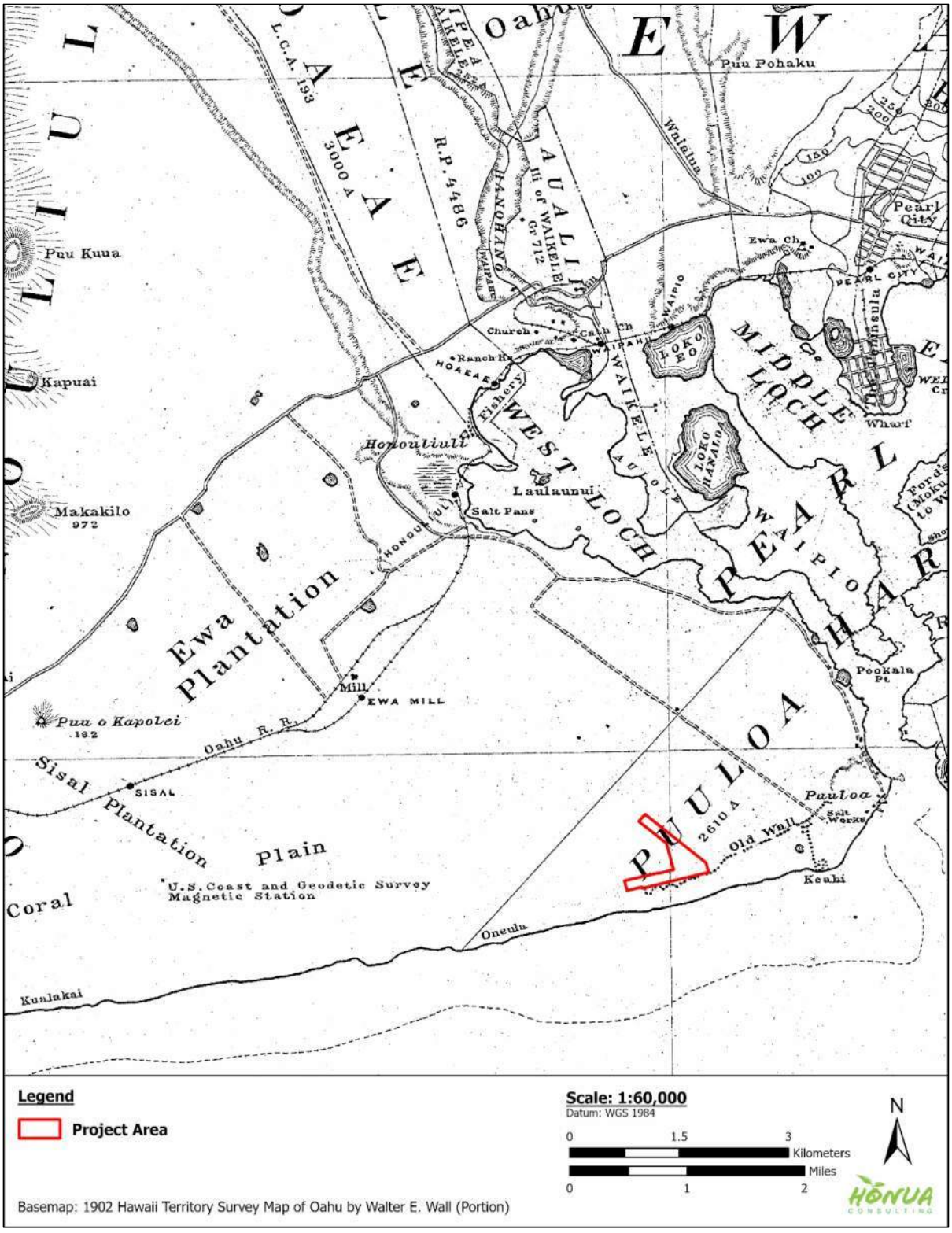

Figure 10. Portion of 1902 map by Wall/Donn (Registered Map 2374) showing turn-of-the-century" developments near project area (base map source: DAGS Land Survey Map Search, http://ags. hawaii.gov/survey/map-search/)

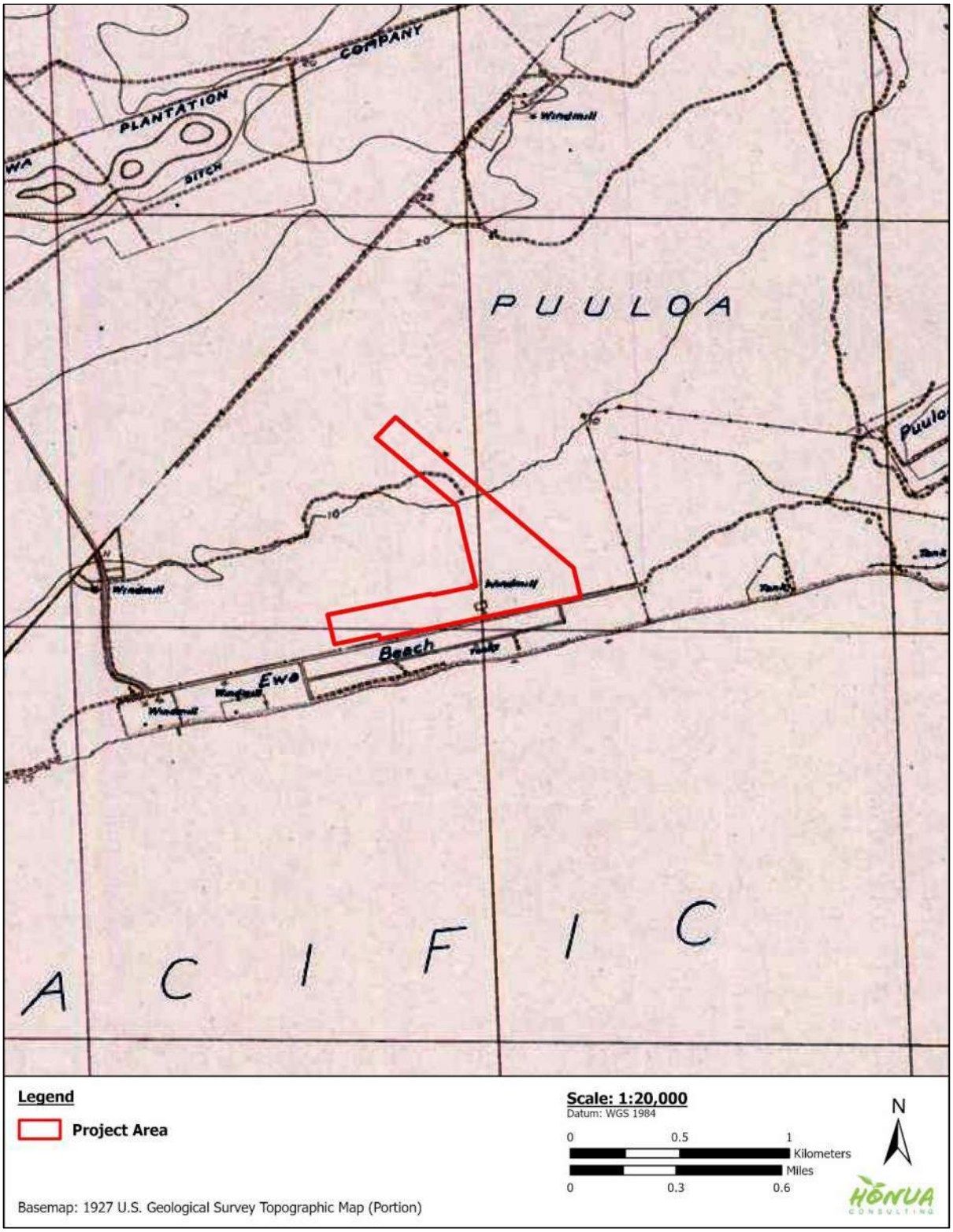

Figure 11. Portion of 1927 topographic map with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

Figure 12. Portion of 1933 topographic map with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

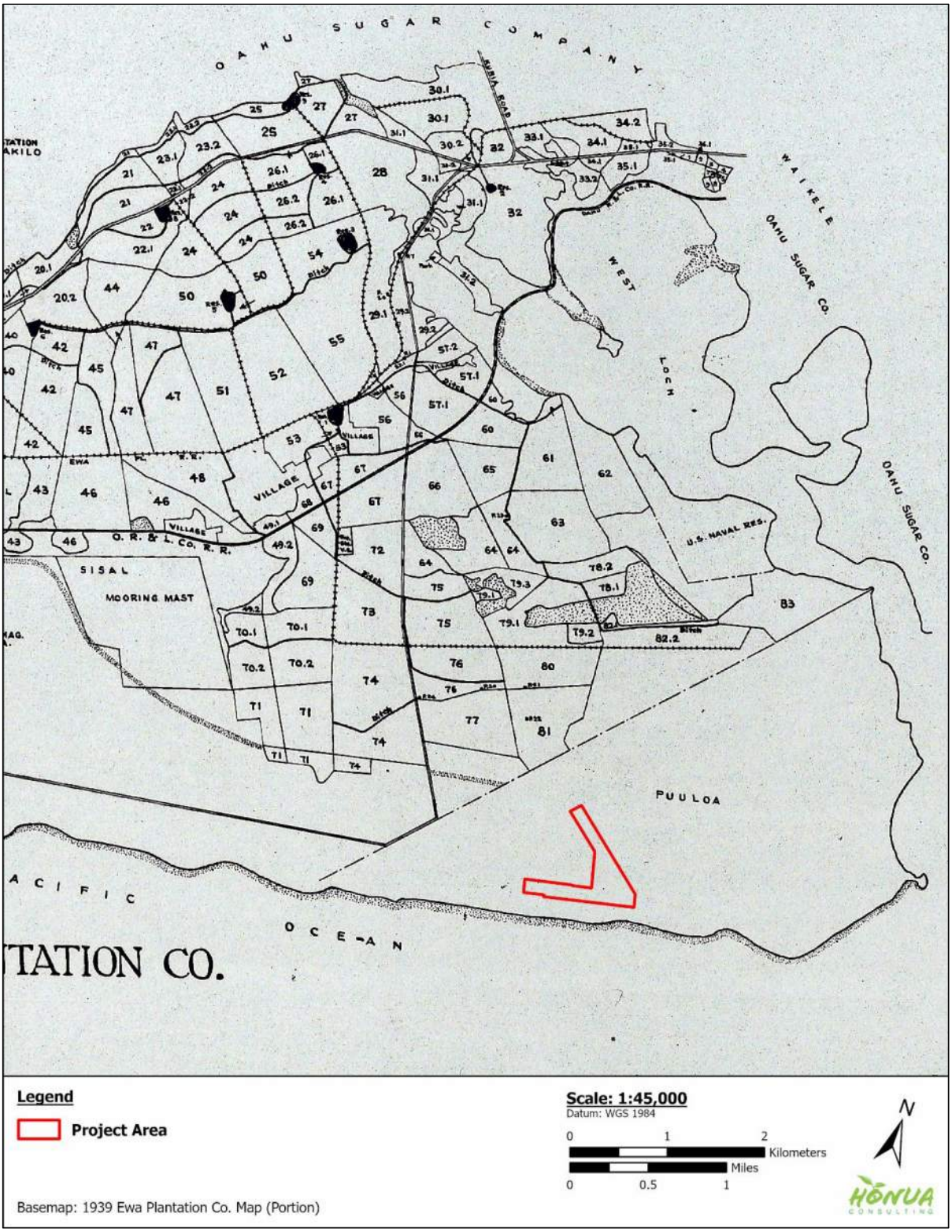

Figure 13. Portion of 1939 Ewa Plantation Co. map showing project area location southeast (and outside) of plantation boundaries (base map source: (Condé and Best 1973:285)

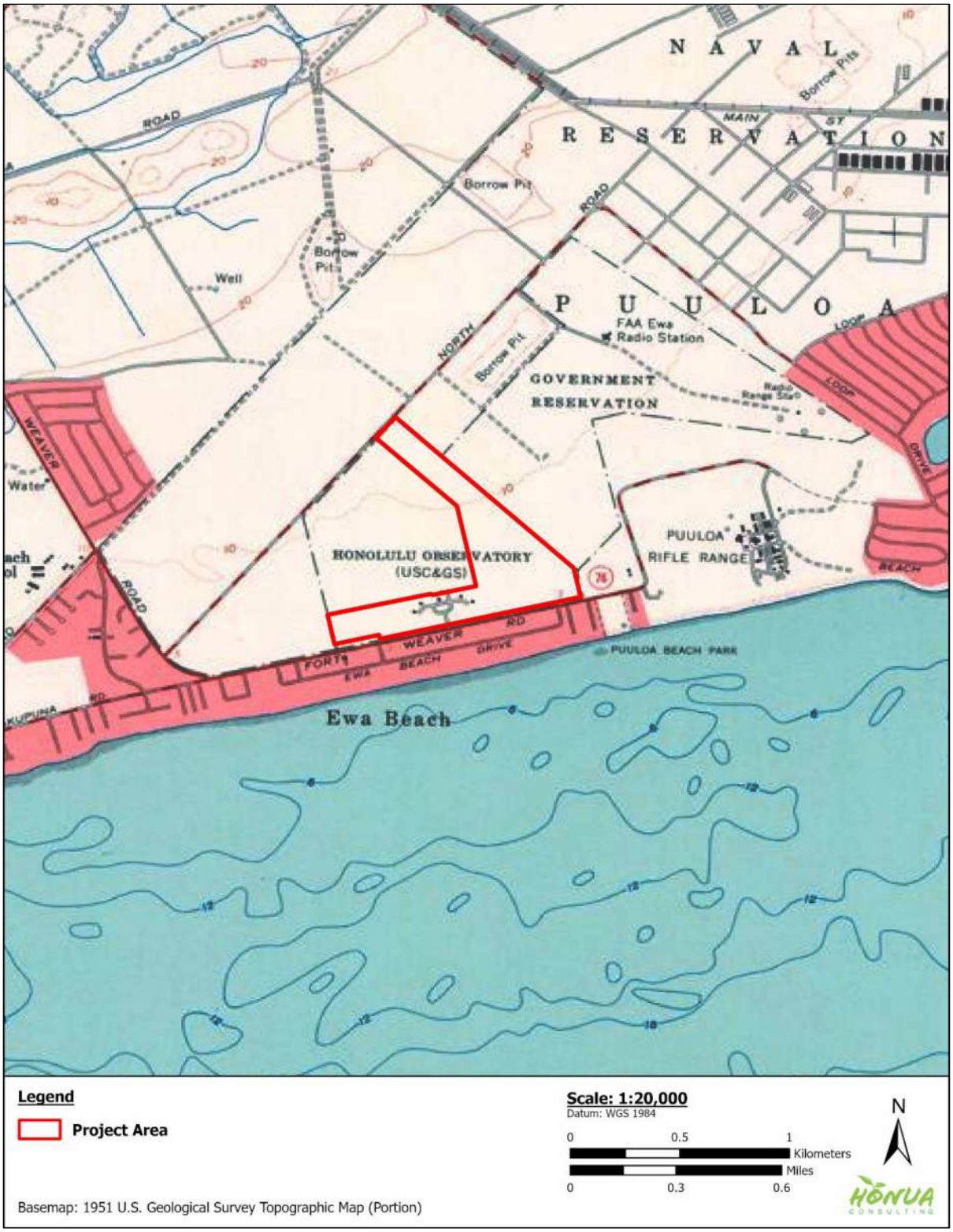

Figure 14. Portion of 1951 topographic map with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

Figure 15. Portion of 1962 aerial image with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/ index.html)

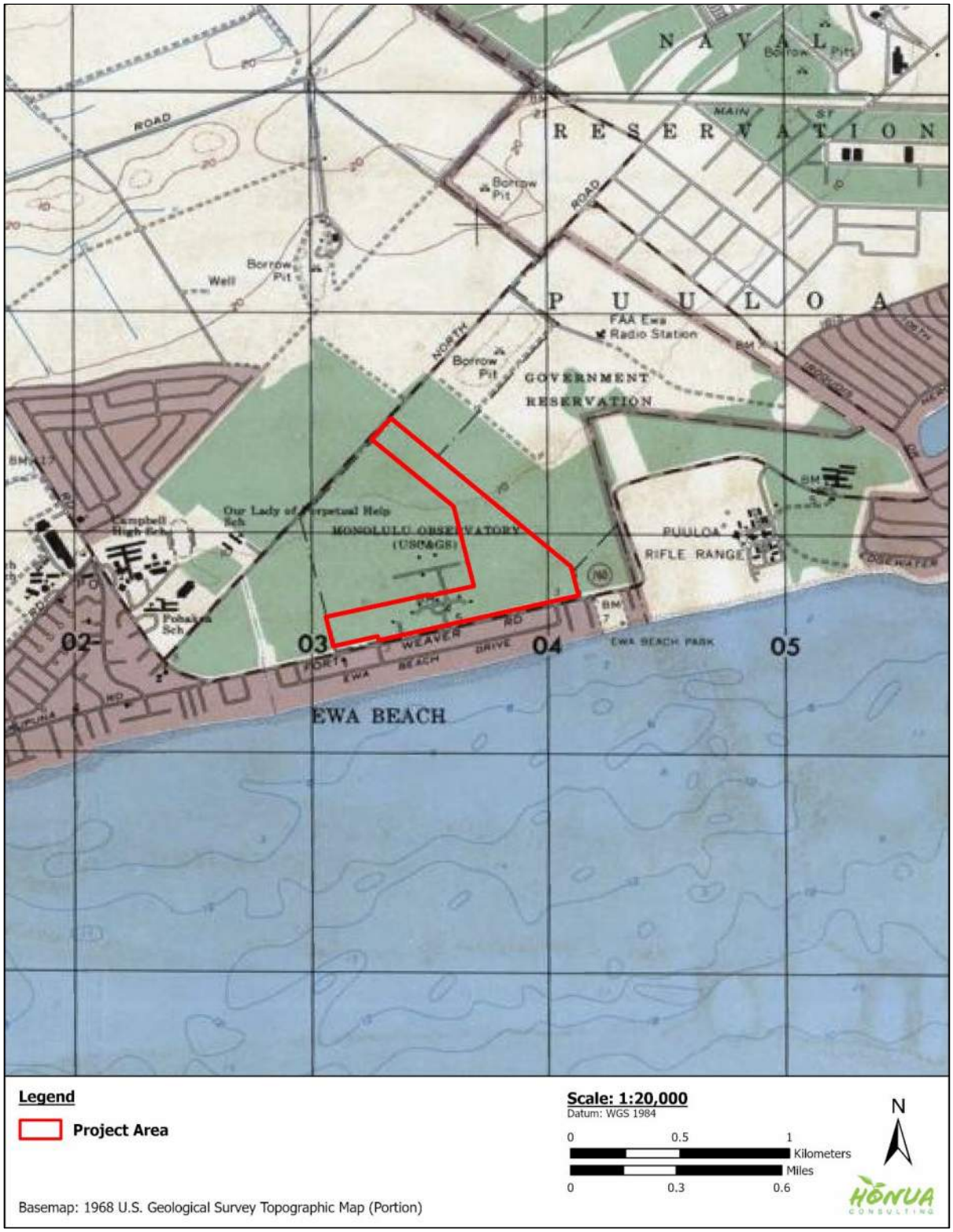

Figure 16. Portion of 1968 topographic map with project area location (base map source: University of Hawai‘i-Mānoa’s digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

Section 3 Previous Archaeological Studies

In this section, we summarize relevant previous archaeological studies near the project area in order to reconstruct human use and modification of the land in both pre-Contact and historic-period times. The main purpose of presenting this information is to develop predictive data about the types and distribution of historic properties and their component features we expected to encounter; and to assist interpretation of any new findings.

Table 1 and Figure 17 summarize and depict previous archaeological studies near the project area.

3.1 Overview

To the best of our knowledge, no previous archaeological studies have been conducted in the current project area.[4]

The most relevant previous archaeological research was conducted in the adjacent (to the east) golf course property, once known as the Pu‘uloa Golf Course, currently the Ewa Beach Country Club) (Kennedy et al. 1992; Kennedy and Denham 1992; Denham and Kennedy 1992). These studies identified several dozen sites, including traditional Hawaiian above-ground structures as well as sinkholes with cultural material (see details below). Pre-contact radiocarbon dates were obtained from some of these sites.

3.2 Previous Archaeology within ½-Mile of the Project Area

Following up on archaeological reconnaissance by Davis (1988), Kennedy et al.’s (1992) archaeological inventory survey (AIS) of the (then named) Pu‘uloa Golf Course (today known as Ewa Beach Country Club) identified 72 sites in four distinct clusters (see Figure 17), including 15 walls, 17 mounds, 17 enclosures, 16 C- or L-shapes, 13 sinkholes, two platforms and one site composed of upright stones. Forty-seven of these sites were interpreted as traditional Hawaiian (i.e., dating from pre-Contact to early historic-period times) temporary and permanent habitations, religious structures, agricultural features and other functions. Both modified and unmodified sinkholes were documented. Test excavations of traditional Hawaiian sites yielded calibrated radiocarbon dates ranging from AD 1090–1695. The remaining 25 sites were interpreted as late historic to early modern constructions. Mitigation measures completed as a result of this AIS include Kennedy and Denham’s (1992) data recovery of a sample of 10 of these sites; and Denham and Kennedy’s (1992) preservation plan for a sample of 12 of these sites.

North of the current project area, Jensen and Head (1997) conducted an archaeological reconnaissance survey (ARS) of a 1,483-acre project area (Naval Magazine Lualualei NAVMAG-West Loch). The southern end of their project area is about 0.5 miles north of the

[4] In 2018, the above-ground buildings and structures of the National Oceanic and Atmospheric Administration’s (NOAA) National Weather Station, Pacific Tsunami Warning Center site were determined not eligible for listing on the National Register of Historic Places (NRHP) by the U.S. General Services Administration (GSA). In a Section 106 letter (LOG: 2018.02473, DOC: 1810KN16) dated October 23, 2018, the State Historic Preservation Division (SHPD) concurred with the GSA’s determination of “no historic properties affected.”

current project area. In total, Jensen and Head (1997) identified 281 sites identified, 111 of which were interpreted as traditional Hawaiian dating from pre-Contact to early historic times. Unfortunately, site location data from the original report are missing from available pdf copies (given the old practice of including large site maps as inserts at the back of reports). Thus, the specific locations of sites within about 0.5 miles of the current project area are unknown at this time.

West of the current project area, McCoy (1972) conducted an ARS of the (then) proposed Pu‘uloa Elementary School (now the grounds of Kaimiloa Elementary School). McCoy identified numerous coral-stacked walls, enclosures and mounds, as well as modified depressions (small sinkholes). Most of the sites were interpreted as historic-period ranching remnants; the mounds were interpreted as likely pre-Contact. To the best of our knowledge, no State Inventory of Historic Places (SIHP) #s were assigned as a result of this work.

Adjacent to McCoy’s (1972) study, Stoat et al. (2010) conducted a field inspection (ground surface only, no archaeological excavation) of Campbell High School. The only potential historic properties identified were two filled in sinkholes that were not investigated further.

Several other studies in the near vicinity of the current project area (e.g., Davis and Burtchard 1991; Hammatt and Borthwick 1997; O’Neill and Spear 2017) did not identify any significant archaeological historic properties (see Table 1).

Table 1. Summary of Previous Archaeological Studies and Results near the Project Area

Previous Study	Formal Type	Location	Results & Comments
McAllister 1933	Earliest survey / compilation of sites on Oʻahu	Oʻahu Island-wide	Citing oral-historic accounts, identified general area near current project area as Site 145 = ". . . site where the first breadfruit tree in Hawaii is said to have been planted."
McCoy 1972	ARS	(Then) proposed Puʻuloa Elementary School – grounds of current Kaimiloa Elementary School	Identified numerous coral-stacked walls, enclosures & mounds; as well as modified depressions (small sinkholes); most sites were interpreted as historic-period ranching remnants; mounds were interpreted as likely pre-Contact; no SIHP #s assigned
Davis 1988	ARS	Puʻuloa Golf Course (currently Ewa Beach Country Club)	Identified 25 above-ground rock structures, including 1 habitation enclosure, 11 temporary shelters, 5 mounds, 2 wall-enclosed sinkholes and 1 remnant wall; no SIHP #s assigned
Denham & Kennedy 1992	PP		Preservation plan for 12 sites
Kennedy et al. 1992	AIS		Identified 72 sites, including 15 walls, 17 mounds, 17 enclosures, 16 C- or L-shapes, 13 sinkholes, 2 platforms and 1 site composed of upright stones; sites were in 4 clusters (see Figure 17); test excavations yielded pre-Contact radiocarbon dates
Kennedy & Denham 1992	DR		Data recovery work on 10 sites
Davis & Burtchard 1991	ARS w. 1 subsurface test unit	PPV Housing Area, West Loch of Lualualei Naval Ammunition Depot	No historic properties identified
Hammatt & Borthwick 1997	AIS	Ewa High Frequency Transmitter Station	No historic properties identified
Jensen & Head 1997	ARS	1,483-acre project area (Naval Magazine Lualualei NAVMAG-West Loch)	281 sites identified, 111 of which were interpreted as traditional Hawaiian from pre-Contact to early historic times; site location data from original report missing from available pdf copies
Sroat et al. 2010	ALRFI	Campbell High School campus	Above-ground finds were limited to 2 filled-in sinkholes
Hazlett 2016	AM (plan)	Solar Electric Installation at Ewa Beach Country Club)	Provided background information near current project area
O'Neill & Spear 2017	AM (report)		No historic properties identified

Abbreviations: AIS = archaeological inventory survey, ALRFI = archaeological literature review and field inspection, AM = archaeological monitoring, ARS = archaeological reconnaissance survey, DR = data recovery, PP = preservation plan.

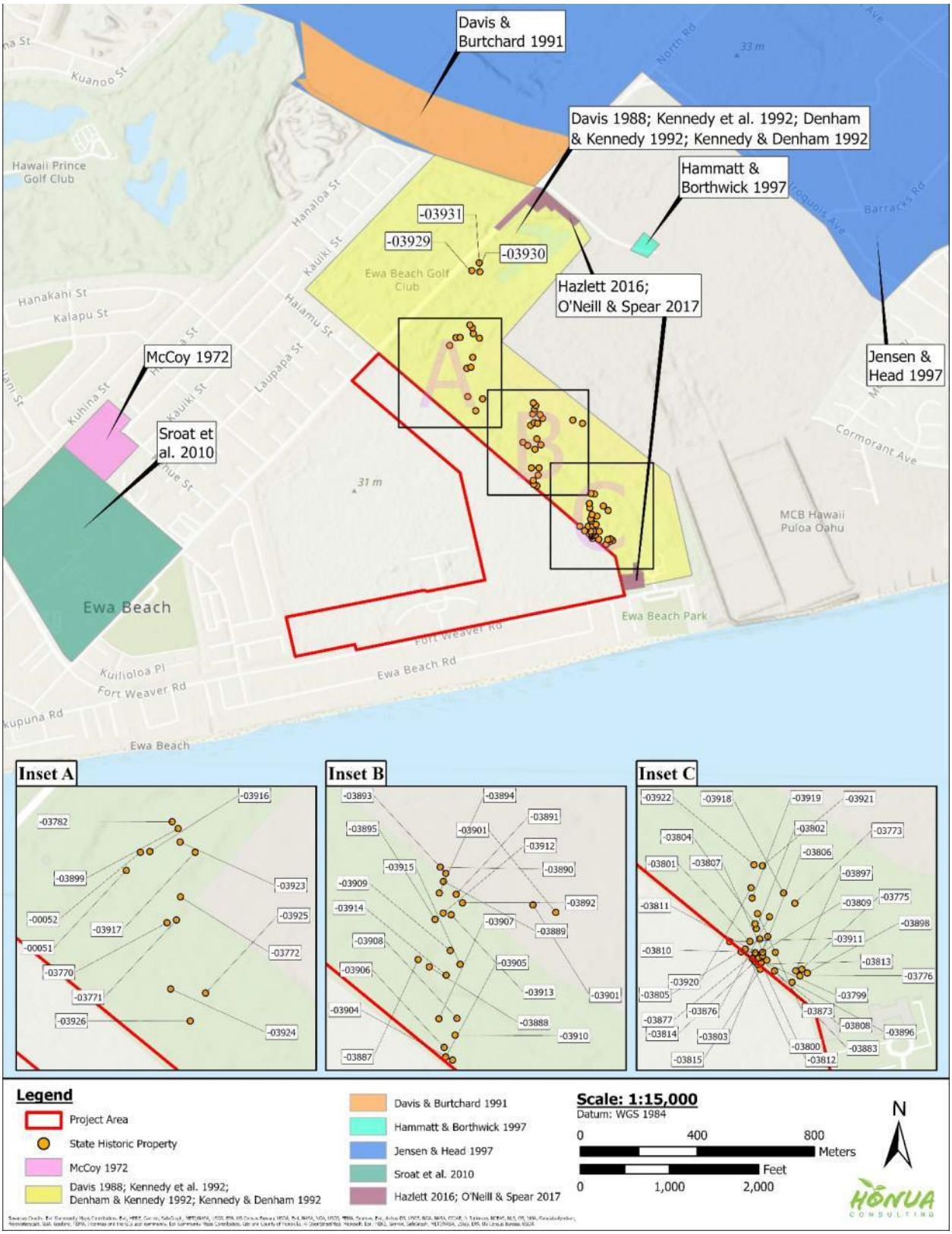

Figure 17. Previous archaeological studies and results in and near the project area (see table and text above for details)

Section 4 Results of Field Inspection

Fieldwork for this project was conducted on March 16 and 17, 2023, by Fred LaChance, B.A., and Cassandra Pascua, B.A., under the supervision of Christopher M. Monahan, Ph.D. (principal investigator). Fieldwork required approximately four (4) person days to complete. Fieldwork for this project was performed under the archaeological permit number 23-23 issued to Honua Consulting by the SHPD/DLNR in accordance with HAR Chapter 13-282.

4.1 Methodology

The archaeological field inspection consisted of a pedestrian survey of portions of the project area in order to obtain a sample of the site types present and to understand conditions (e.g., vegetation, ground surface visibility, level of prior disturbance).

Figure 18 depicts the survey transects walked by two Honua archaeologists, which were recorded using a hand-held Trimble GeoXT device that maintained an accuracy ranging between 1 to 3 meters (3–10 feet). In addition, field notes were recorded, photographs were taken, and a detailed photo log (captions) was created. All data are stored and backed-up in Honua's database.

Sinkholes were observed from the ground surface but were not entered or explored in detail. Thorough assessment and documentation of sinkholes to determine whether they contain cultural material, and are, therefore, historic properties, will require additional work.

4.2 Survey Results

Table 2 is a summary of sites identified in the project area during the field inspection. Figure 20 to Figure 32 are photographs of a sample of the identified sites.

4.2.1 General Observations

Before describing the sites identified during the field inspection, the following general observations are relevant:

1. The entire eastern boundary of the project area contains a discontinuous berm of bulldozed debris, including rocks, uprooted trees and trash, which extends into the project area by as much as 20 or 30 meters in places; this berm was mostly likely the result of bulldozing in the adjacent, golf-course parcel when it was first developed in the 1990s;
2. The 14 sinkhole sites (see Table 2)—which still need to be investigated in more detail to determine whether they are cultural, rather than natural, features (and, therefore, historic properties)—represent only a sample of the potential sinkholes that were observed during the field inspection; furthermore, based on our field observations and the relative percentage of the project area that was subject to pedestrian survey, there may be hundreds of additional (as yet unidentified) sinkholes;
3. Based on the high number of sinkholes and the relatively dense vegetation (ground) cover, surveying in the project area was slowed by health and safety concern (e.g., for slips, trips and falls into sinkholes).

4.2.2 Site Descriptions

As stated above, the identified sites are likely only a small sample of the total number of sites in the project area. As such, the following number of different site types is not as significant as their patterning in the project area:

- 15 sinkholes (one of which is filled in with rocks and sediment), which may or may not represent historic properties (see Figure 20 through Figure 22, Figure 24 and Figure 25);
- Three (3) coral rock piles / mounds (see Figure 23, Figure 28 and Figure 29);
- Nine (9) push piles (i.e., created by bulldozing or other mechanized ground disturbance) (see Figure 26, Figure 30 and Figure 32);
- One (1) crushed coral road bed associated with the abandoned PTWS-NWS facility (see Figure 31); and,
- One (1) small shed, also associated with the PTWS-NWS facility (see Figure 27).

Patterning of sites in the project area demonstrates substantial previous ground disturbance (e.g., bulldozing) in three main areas: (1) along the entire eastern boundary, extending into the project area by some 20 to 30 meters; (2) along the lower (makai or southern) portion adjacent to Fort Weaver Road; and (3) in and near the abandoned PTWC-NWS facilities in the lower, central portion of the project area.

It is likely that previous ground disturbance (e.g., bulldozing) covered up and/or filled in sinkholes in the lower (makai or southern) portion of the project area; and that sinkholes (whether visible from the ground surface or not) extend throughout the entire project area.

Figure 18. Aerial image showing pedestrian survey tracks completed by Honua archaeologists for this ALRFI

Table 2. Sites Identified in the Project Area

Site #	Formal Type	Comments
Honua 1	Sinkhole	Opening is ~2.0 m wide
Honua 2	Sinkhole	Opening is ~4.5 m wide
Honua 3	Sinkhole	Complex of at least 5 openings; openings are ~2.0 m wide
Honua 4	Sinkhole	Complex of at least 5 openings; openings are ~1.5 m wide
Honua 5	Sinkhole	Opening is ~3.0 m wide
Honua 6	Sinkhole	Opening is ~3.0 m wide
Honua 7	Sinkhole	Opening is ~3.0 m wide; banyan tree in hole
Honua 8	Coral rock pile	~2.0 m long, several courses high, informal construction
Honua 9	Sinkhole	Opening is ~1.0 m wide
Honua 10	Sinkhole	Opening is ~1.5 m wide
Honua 11	Sinkhole	Multiple openings; openings are ~2.0 m wide
Honua 12	Sinkhole	Opening is ~1.5 m wide
Honua 13	Sinkhole	Complex w. several openings; site area is ~10 m diameter
Honua 14	Push pile	Evidence of past land disturbance (bulldozing)
Honua 15	Sinkhole	Opening is ~0.4 m wide
Honua 16	Sinkhole	Opening is ~2.0 m wide
Honua 17	Filled sinkhole	Complex, at least 3 filled openings
Honua 18	Coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 19	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 20	Push pile	Evidence of past land disturbance (bulldozing)
Honua 21	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 22	Small shed	64 sq. ft. shed constructed of concrete block walls, concrete floor, wood door & corrugated sheet metal roof; part of PTWC-NWS; this site is possibly a fresh-water well[5]
Honua 23	Push pile	Evidence of past land disturbance (bulldozing)
Honua 24	Push pile	Evidence of past land disturbance (bulldozing)
Honua 25	Coral rock mound	--
Honua 26	Coral rock mound	--
Honua 27	Basalt and coral rock push pile	Evidence of past land disturbance (bulldozing)
Honua 28	Crushed coral road bed	Associated with 1960s build out of PTWC-NWS facility
Honua 29	Push pile	Evidence of past land disturbance (bulldozing)

[5] A reviewer (client) comment suggests this structure is or may be a well; we were unable to enter the structure, which was locked, during the survey; other documents (e.g., the GSA letter quoted elsewhere in this report [see Appendix A]) did not mention the possible well function.

Figure 19. Sites identified in the project area; these are temporary site numbers pending additional survey work in the project area (see table and text above for details)

Figure 20. Honua 1, sinkhole, facing west

Figure 21. Honua 2, sinkhole, facing east

Figure 22. Honua 5, sinkhole (plan view)

Figure 23. Honua 8, coral rock pile, facing west

Figure 24. Honua 12, sinkhole, facing east

Figure 25. Honua 17, filled sinkholes, facing south

Figure 26. Honua 20, push pile, facing north

Figure 27. Honua 22, small shed (possible fresh-water well), facing south

Figure 28. Honua 25, coral rock mound, facing north

Figure 29. Honua 26, coral rock mound, facing northeast

Figure 30. Honua 27, basalt and coral push pile, facing northwest

Figure 31. Honua 28, crushed coral road bed, facing west

Figure 32. Honua 29, push pile, facing north

Section 5 Conclusion

This report was completed for SSFM International in support of an Environmental Assessment (EA) for the future development of sustainable homestead lots by the Department of Hawaiian Homelands (DHHL). The project area, which is a portion of TMK (1) 9-1-001:001, consists of 80.33 acres in Pu‘uloa ‘Ili, Honouliuli Ahupua‘a, ‘Ewa District, Island of O‘ahu. The project area is within the boundaries of the former location of the Pacific Tsunami Warning Center and National Weather Station PTWC-NWS), which includes 16 abandoned buildings/structures. This report is focused on archaeological resources and does not include consideration of architectural buildings and structures. The landowner, which was previously the U.S. federal government, is now the state of Hawai‘i.

The objectives of this study included: (1) documentation and description of the parcel’s land-use history in the context of both its traditional Hawaiian character as well as its historic-period changes; (2) identification of any potential above-ground historic properties or component features; and (3) providing information relevant to the likelihood of encountering historically-significant cultural deposits in subsurface context during construction.

This study is not an archaeological inventory survey (AIS) and did not include subsurface testing (excavation). The document may be used, however, to consult with the State Historic Preservation Division (SHPD) in compliance with Hawai‘i Revised Statutes (HRS) Chapter 6E-8 and Hawai‘i Administrative Rules (HAR) Chapter 13-275.

A small portion of the project area—consisting of above-ground, architectural resources associated with the PTWC-NWS—has been the subject of previous Section 106 (National Historic Preservation Act [NHPA]) historic-preservation consultation. In 2018, the above-ground buildings and structures of the PTWS-NWS were determined not eligible for listing on the National Register of Historic Places (NRHP) by the U.S. General Services Administration (GSA). In a “NHPA Section 106 Historic Preservation Review” letter (LOG: 2018.02473, DOC: 1810KN16) dated October 23, 2018, the State Historic Preservation Division (SHPD) concurred with the GSA’s determination of “no historic properties affected” (see Appendix A).

General findings include the following: (1) The entire eastern boundary of the project area contains a discontinuous berm of bulldozed debris, including rocks, uprooted trees and trash, which extends into the project area by as much as 20 or 30 meters in places; this berm was mostly likely the result of bulldozing in the adjacent, golf-course parcel when it was first developed in the 1990s; (2) The 14 sinkhole sites (see Table 2)—which still need to be investigated in more detail to determine whether they are cultural, rather than natural, features (and, therefore, historic properties)—represent only a sample of the potential sinkholes that were observed during the field inspection; furthermore, based on our field observations and the relative percentage of the project area that was subject to pedestrian survey, there may be hundreds of additional (as yet unidentified) sinkholes; (3) Based on the high number of sinkholes and the relatively dense vegetation (ground) cover, surveying in the project area is a health and safety concern (e.g., for slips, trips and falls into sinkholes) that can only be mitigated by relatively slow and cautious walking, which must be taken into account when scoping any future archaeological work in the project area.

Specific findings include: (1) 15 sinkholes (one of which is filled in with rocks and sediment), which may or may not represent historic properties; (2) Three coral rock piles / mounds; (3) Nine

push piles (i.e., created by bulldozing or other mechanized ground disturbance); (4) One crushed coral road bed associated with the abandoned PTWS-NWS facility; and (5) One small shed, also associated with the PTWS-NWS facility.

Patterning of sites in the project area demonstrates substantial previous ground disturbance (e.g., bulldozing) in three main areas: (1) along the entire eastern boundary, extending into the project area by some 20 to 30 meters; (2) along the lower (makai or southern) portion adjacent to Fort Weaver Road; and (3) in and near the abandoned PTWC-NWS facilities in the lower, central portion of the project area.

It is likely that previous ground disturbance (e.g., bulldozing) covered up and/or filled in sinkholes in the lower (makai or southern) portion of the project area; and that sinkholes (whether visible from the ground surface or not) extend throughout the entire project area.

5.1 Recommendations

Since this study has not been conducted in support of any specific proposed project, but rather was designed to be an identification exercise, and since the work described herein covers only a sample of the project area in preliminary fashion, we do not provide formal significance assessments or project effect determinations at this time.

Should the project area be considered for development that includes ground disturbance, we recommend consultation with the SHPD-Archaeology Branch to determine next steps in the assessment process.

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Appendix A Consultation Correspondence

Pacific Rim Region

October 12, 2018

Ms. Pua Aiu
Administrator, State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Suite 555
601 Kamokila Boulevard
Kapolei, HI 96707

Re: Determination of Eligibility for the National Register of Historic Places
National Weather Station, PTWC at 91-270 Fort Weaver Road, Ewa Beach (Honolulu), HI

Dear Ms. Aiu,

The U.S. General Services Administration (GSA) is assisting the National Oceanic and Atmospheric Administration (NOAA) in the disposal of its National Weather Station, Pacific Tsunami Warning Center (PTWC) site at Ewa Beach, Honolulu, Hawaii. NOAA reported the PTWC as excess property to GSA, as it no longer meets its needs as a federal property. At this time GSA understands the property will be transferred to either U.S. Fish and Wildlife Service (USFWS) or U.S. Geological Survey (USGS), who also currently use the facility. Either way, the property will benefit from federal ownership following its disposal. As part of its responsibilities under Sections 106 and 110 of the National Historic Preservation Act, GSA is making a determination of eligibility for the National Register of Historic Places (NRHP) for the Pacific Tsunami Warning Center Site located at Ewa Beach, Hawaii.

Description

The site was originally occupied by the U.S. Navy, upon condemnation in 1944. On November 24, 1959, the U.S. Navy transferred the Ewa Beach property to the U.S. Department of Commerce (DOC), for operation of the Honolulu Magnetic Observatory, which has been in operation since that time. No structures are existing from the Navy's occupation of the site. In 1968, the Intergovernmental Oceanographic Commission established the Intergovernmental Coordination Group for the Pacific Tsunami Warning System (ICG/PTWS). Since the DOC already had this sizable piece of property in Ewa Beach for the USGS's Honolulu Geomagnetic Observatory, it was agreed that the ICG would use the same site for the operational headquarters of the PTWS. The PTWS has been at this site since that time. In 2014, NOAA's National Weather Service (NWS) who now operates the PTWS, relocated personnel to NOAA's new Pacific Regional Center at another location in Honolulu, and has declared this property surplus to its operational needs.

Locally known as the Pacific Tsunami Warning Center (PTWC), this property is part of the National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS). The site is located

US General Services Administration
50 United Nations Plaza
Mailbox 9, Room 3411
San Francisco, CA 94102-3434
www.gsa.gov

at 91-270 Fort Weaver Road, Puulou, Ewa, Oahu, Hawaii, being Lot 784-A-Z, and contains 15 buildings/structures on approximately 175 acres. It is an irregular-shaped flat lot that is primarily bordered by Fort Weaver Road to the south, residential housing to the west, North Road to the northwest, and a golf course along its northeast and east sides. Approximately 11 acres of the property is cleared of vegetation near the front entrance, around buildings and structures, and around antennas and other instrumentation and equipment for accessibility. The remainder of the property is undeveloped and largely inaccessible due to dense vegetation and thick brambles.

The property consists of fifteen buildings and structures, including five single-family residential (employee) housing units, a main office building, and office annex building, and electronics shop, a residence trailer, and six small buildings that contain various instruments and equipment. In addition to these fifteen buildings and structures, a small shed and antenna farm is also located on the property. Original construction drawings show Rothwell & Lester Architects to be the architects of the site's buildings.

Guy Rothwell was a well-known local architect and structural engineer. Rothwell was born in Hawaii, and graduated from the University of Washington with a degree in architectural engineering. He served in the navy's Construction Corps during World War I then returned to Hawaii to work as an engineer for construction contractors. He opened his own firm in 1923. During the 1920s and 30s he was responsible for projects including Griffiths and J.B. Castle Halls at Punahou School, All Saints Episcopal church in Kapaa, Kauai, Roosevelt High School in Honolulu, and Oahu Railway and Land Company Terminal, which is listed on the NRHP. He was also a consulting engineer for the City & County of Honolulu on the King Street, Moanalua, Haleiwa, and Wahiawa bridges, as well as the Honolulu Stadium. As a member of a consortium or architects, Rothwell worked on the design of Honolulu Hale (City Hall) which is also listed on the NRHP. In the 1950s and 60s, the firm grew, becoming first Rothwell & Lester, Architects, then Rothwell, Lester and Phillips, Ltd. Much less is documented of Rothwell and his firms after 1950. During this time, the firm was responsible for the design of Kaimuki High School, and the Waialae Shopping Center (later named Kahala Mall), and the Chapel of the Mystical Rose at Chaminade University. Guy Rothwell retired from his very active and prolific career in 1967. This site is not known as one of his more influential or notable sites.

Listed below are the buildings located at the PTWC and their construction dates:

Building	Construction Date	Size
Employee Housing #1	1961	1,899 sf
Employee Housing #2	1961	1,899 sf
Employee Housing #3	1961	1,899 sf
Employee Housing #4	1961	1,899 sf
Main Office Building	1961	1,603 sf
Electronics Shop	1961	1,438 sf
AWIPS Building	1961	218 sf
Seismicgraph Vault	1961	480 sf
Magnetics Recording Building	1961	370 sf
Geomagnetics Building	1961	370 sf
Magnetic Variation Building	1961	849 sf

HIPS Building	1997	120 sf
Residence Trailer	unkwn	700 sf
Employee Housing #5	1998	2,560 sf
Modular Office Annex Building	2005	1,440 sf
Shed	unkwn	64 sf

Employee Housing #1 – #4 was built in 1961 and is 1,899 square feet. All of the houses are comprised of similar materials and floor plans, and consist of a living room, kitchen, three bedrooms, two bathrooms, a lanai and a garage. Construction materials include: drywall; wood; concrete and tile-covered walls; canec and drywall ceilings; carpet, tile and concrete floors; wood, metal and glass doors; windows; wood siding, fascia and soffits; and asphalt shingle roof. All were renovated in 1999.

The **Main Office Building** was built in 1961, and was renovated in 1995. It is a one-story, 1,603 square foot building, made of coral concrete blocks on concrete slab, with low gable asphalt shingle roofing and overhanging eaves. The building consists of a reception area, two restrooms, six rooms for personnel offices, a monitor room and server room. The building consists of concrete and drywall walls, suspended tile ceiling, linoleum flooring, wood and metal doors, metal windows and florescent lighting.

The **Electronics Shop** was also built in 1961, and renovated in 1995. It is a 1,438 square foot single story structure made of coral concrete blocks on concrete slab, with low gable asphalt shingle roofing and overhanging eaves. The building consists of an office, machinist and woodworking shop, two server rooms, a record storage room, generator storage alcove and a garage. The building consists of concrete walls, canec and structural wood ceilings, concrete flooring, metal doors and windows.

The **Advanced Weather Interactive Processing System (AWIPS) Building** was built in 1961. It is a 218 square foot, single room building used as a server room. It is built of coral concrete blocks on slab, with low gable asphalt shingle roof. It has concrete walls, wood door and ceiling, and linoleum floor.

The **Seismograph Vault** was built in 1961. It is 480 square feet and has four equipment rooms and an entry foyer. The vault is constructed of reinforced concrete in a crushed coral bed. The rooms have drywall walls, canec ceiling, concrete floors, wood doors, and cove-base molding.

Built in 1961 the **Magnetics Recording Building** is 57 years old and consists of two equipment rooms and an entry foyer. The one-story, 370 square foot building is constructed of coral concrete blocks on slab, with low hip aluminum roof with a gabled vent at the roofline. It has drywall and canec ceilings, concrete flooring, wood and metal doors, wood soffits, and cove/base molding.

The **Geomagnetics Building** was built in 1961. It is a 370 square foot, single room building used for storage. It is built of coral concrete blocks on concrete slab with low gable aluminum roofing. It has canec ceiling, concrete walls, linoleum flooring, a metal door and cove-base molding.

The **Magnetic Variation Building**, also built in 1961, is a single storage room of 370 square feet. It is built of coral concrete blocks on slab with low gable aluminum roofing with overhanging eaves. It has a canec ceiling, concrete walls, linoleum flooring, metal door and cove base molding.

The **High Image Processing System (HIPS)** Building was built in 1997 and is 21 years old. It is a single room of 120 square feet. The building consists of concrete walls, linoleum flooring, metal door, suspended tile ceiling, fluorescent lighting and cove-base molding.

Employee Housing #5 was built in 1998, and is 2,560 square feet. It is one story and consists of a living room, kitchen, dining room, three bedrooms, two bathrooms, and a garage. Construction materials are drywall and concrete walls; drywall ceiling; carpet, tile and concrete floors; wood, vinyl and glass doors; windows; wood siding, fascia and soffits; and asphalt shingle roof.

The construction date of the **shed** is unknown. It is 64 square feet and has concrete block walls, concrete floor, wood door and corrugated sheet metal roof.

General Site Conditions: Site features and amenities are limited. In addition to the buildings and structures, the property contains asphalt paved roadways, parking lots, gravel road along the chain link perimeter fence, concrete sidewalks and limited landscaping with indigenous trees, bushes and turf. Site planting is limited to turf surrounding most of the buildings, scattered palm and other native trees and decorative bushes by buildings and along walks. A flagpole rises from the lawn at the center of the buildings. Antennas and satellite dishes are co-located in an antenna field in the center of the site, north of the main grouping of buildings. All existing construction is utilitarian and built for housing personnel and scientific equipment. They are utilitarian in design and lacking in architectural design or detail. These structures were constructed specifically for Department of Commerce (DOC) NWS/PTWS. Additions and modifications have occurred to the site and buildings as equipment, personnel and mission changes have occurred.

Rothwell practiced heavily during Hawaii's "Territorial Period," we can see its influence in the architecture of the Ewa Beach site. With adaptations to the Hawaiian setting, this site as well as others seen across the islands, includes double-pitched hipped roofs, large openings to capture trade winds, open porches, attic louvers for ventilation, and use of local materials, and wide eaves. Materials throughout the buildings are simple and have been updated over time. Exposed CMU block, drywall and canec ceilings of the original construction are evident throughout. Some spaces have been altered, such as some carports have been enclosed to create garages. There are no special purpose spaces or finishes to denote special or public use. Instead, the spaces and buildings are very practical, and functional, revealing an emphasis on economic and efficient construction, outweighing aesthetic considerations. These features are generically Modern, lacking denotative features characteristic of a particular stylistic ideology. These features are more recognizable and common in a local neighborhood and retail development, than in a modern federal facility.

GSA has reviewed the documentation available for this site. We have applied the criteria for eligibility for the NRHP and found the following:

Criterion A: association with events that have made a significant contribution to the broad patterns of our history.

> This site or any singular building is not known to be associated with any events that have contributed to the patterns of our nation's history. These buildings were built for, and continue

to be used for, scientific monitoring of the earth's magnetic field and seismic activity. These activities are not ground breaking, but are among other sites across the Pacific region and globe that monitor similar geologic activities. Although these buildings were built for these specific purposes, they are simplistic buildings that could be used for many industrial, commercial, or scientific activities, should the scientific equipment be removed. Further, research did not indicate that the property is associated with a significant government action, strategy, discovery or event within local, state or national history. No advances in processes or procedures that influenced broad, program-wide changes were identified with this site.

The buildings are simple in design, efficiently constructed and do not display a clear link to a government design program or process. The site is not a significant symbol of Federal presence, nor an integral part or focal point of a city. The site is located within a residential area, outside of the central business district of Honolulu. It does not present the finest features of architectural thought, and was not a part of any master plan. So to, it is not eligible for listing as a historic district. Having been constructed under a program to support nationwide interest in seismic monitoring is not sufficient to demonstrate individual or district eligibility under Criterion A at the local or state level. Significance in the area of Government/Politics is not likely to be relevant at the local or state level as the establishment of the Pacific Tsunami Warning System was a part of a national, federally-executed program that resulted in the construction of such facilities in communities along the west coast and pacific islands. The presence of the federal government in a community does not in and of itself render it eligible for listing in the NRHP under Criterion A, as again PTWCs were constructed in other communities during the period.

Criterion B: association with lives of persons significant in our past.

This site nor individual buildings have no known associations with persons who are significant in the history of Honolulu, Hawaii, or our nation's past. This facility does not meet the requisite stipulations for listing under Criterion B.

Criterion C: embodying the distinctive characteristics of a type, period, or method of construction, or representing the work of a master, possessing high artistic values, or representing a significant and distinguishable entity whose components may lack individual distinction.

The building complex is composed of simple one-story, wood frame and concrete block buildings, with a total of 15,803 gross square feet. The exterior material is wood siding or coral concrete block, painted white. Most buildings have gabled, asphalt shingle roofs with overhanging eaves and wood soffits. These buildings are typical of local utilitarian construction, with features, scale and massing that do not distinguish them from other general purpose, industrial, retail and residential buildings in the area. The buildings lack distinctive features or style, and are not a noteworthy embodiment of a type of architecture. Although the buildings are work of a well-known local architect, Guy Rothwell, these buildings are not considered to be among his more notable or influential projects.

There is no architectural tie between this facility and other PTWCs found in the region. The design and development of this facility is reflective of national trends of standardization employed by the Department of Commerce (DOC), and more broadly the federal government in general, for repetitive property types. This facility design clearly employs an emphasis on function, largely in response to economic factors that necessitated the development of minimalist, efficient and functional forms that met the basic needs of the particular agency for which it was being constructed. This facility did not incorporate distinct, stylized architectural elements of any particular (modern) style. The building and site is holistically functional, its character restricted by the arrangement of buildings. They are constructed of inexpensive materials that met the needs of the DOC for economical construction. Architecturally, the buildings are generically modern, and are not reflective of high-style trends commonly applied to other (singular) federal buildings of the period. The buildings are devoid of distinctive features that would otherwise separate the facility from standard private or government construction of the period. This facility does not meet the requisite stipulations for listing under Criterion C.

Criterion D: potential to yield information important to history or prehistory.

Based upon its location and age, the building is not likely to yield information important in history. The building is not of sufficient age to yield information important to prehistory.

Integrity Analysis: In order for a building to qualify for listing on the NRHP, it must both display significance under one or more of the national Register criteria and retain historical integrity. Since the buildings and site were found to lack significant associations with historical events or persons, and a lack of architectural distinction, an evaluation of the property's physical integrity is unnecessary.

To summarize, the buildings and site have associations with the federal government in Honolulu and Hawaii, but do not rise to the level of being considered significant by this association. No associations could be found to merit consideration under Criteria B and D. These buildings are not a notable example of architecture, local or otherwise. They are not any particular style architecture and they were not developed under any federal building program. They are also not notable examples of the architect's work. These buildings do not rise to the level of being considered significant under any of the four criteria, to be eligible for inclusion in the NRHP. We have enclosed maps and photographs of the site and buildings for your reference.

GSA has determined that the NOAA NWS PTWS Site is not historically significant and we request your concurrence that this site is not eligible for listing in the NRHP. Therefore, the disposal of this site will cause no effect to historic resources. In accordance with Stipulation I.B.2 of the GSA Region 9 Programmatic Agreement, we ask that you reply to our determination with 30 days of receiving this letter; we also ask that the parties cc'd on this letter reply within that same timeframe. If you have any questions regarding this matter, please contact me at (415) 522-3098, or by email at jane.lehman@gsa.gov. We look forward to receiving your reply. Hard copy to follow.

Sincerely,

Jane Lehman
Regional Historic Preservation Officer

Enclosures

CC: Ms. Kirsten Brinker Kulis
Advisory Council on Historic Preservation
National Building Museum
401 F Street NW, Suite 308
Washington DC 20001-2637

Historic Hawai'i Foundation
680 Iwilei Road, Suite 690
Honolulu, HI 96817

Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, HI 96813

Ms. Beth L. Savage
Federal Preservation Officer
Center for Historic Buildings
General Services Administration
1800 F Street, NW, Room 3344
Washington, DC 20405

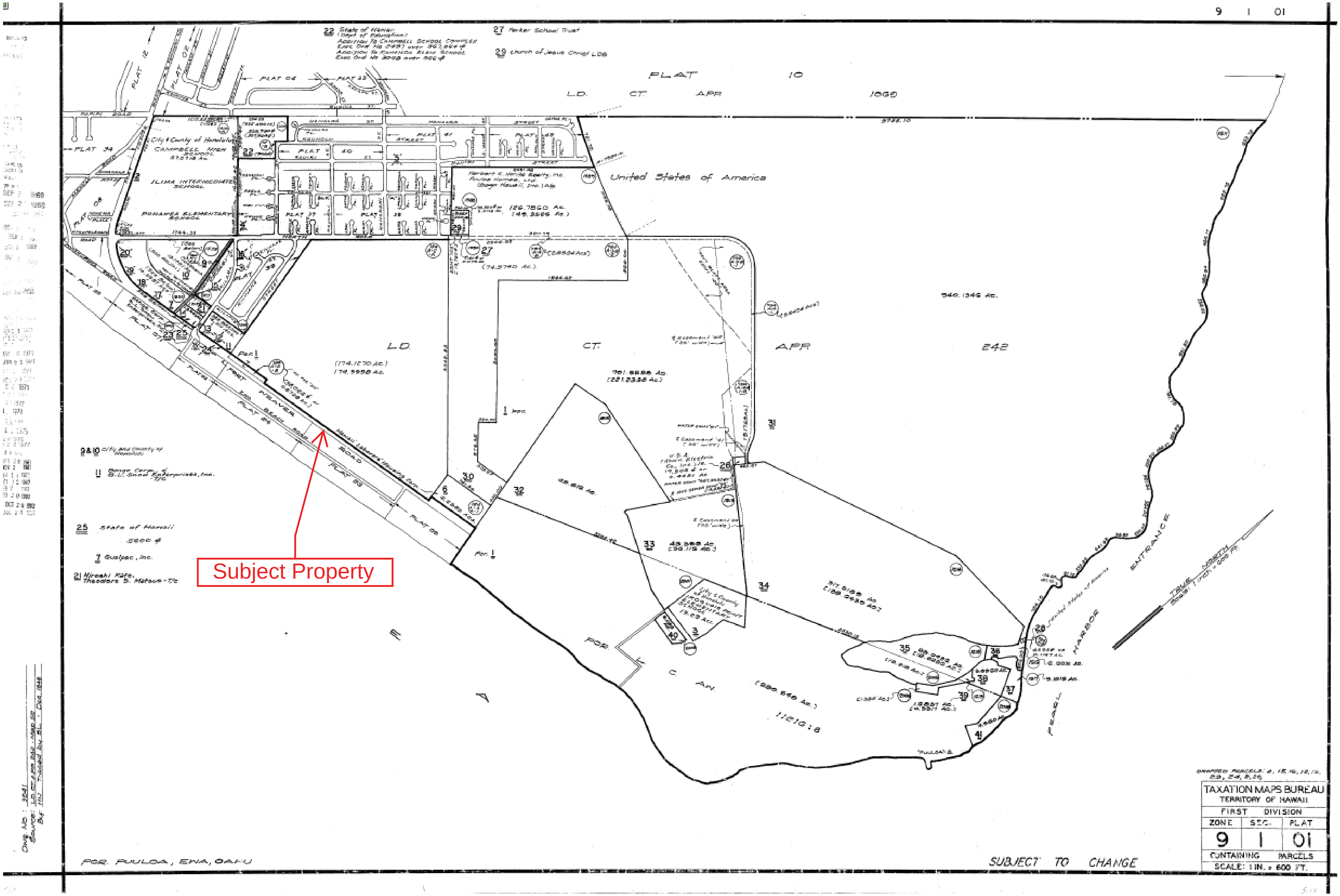
State of Hawaii Department of Hawaiian Homelands
P.O. Box 1879
Honolulu, HI 96805

Bibliography:
7 CFR Chapter III 319.37-25 Appendix A
http://books.google.com/books?id=DgA5AAAAIAAJ&pg=PA461&lpg=PA461&dq=u.s.+custom+house+hilo&source=bl&ots=alZyZce0Tv&sig=Bsup4fRHsXJ8d4-qMhx0E60XOCk&hl=en&sa=X&ei=Nvg-U7DQF6LD2wXxlIGwAg&ved=0CCEQ6AEwAQ#v=onepage&q=u.s.%20custom%20house%20hilo&f=false

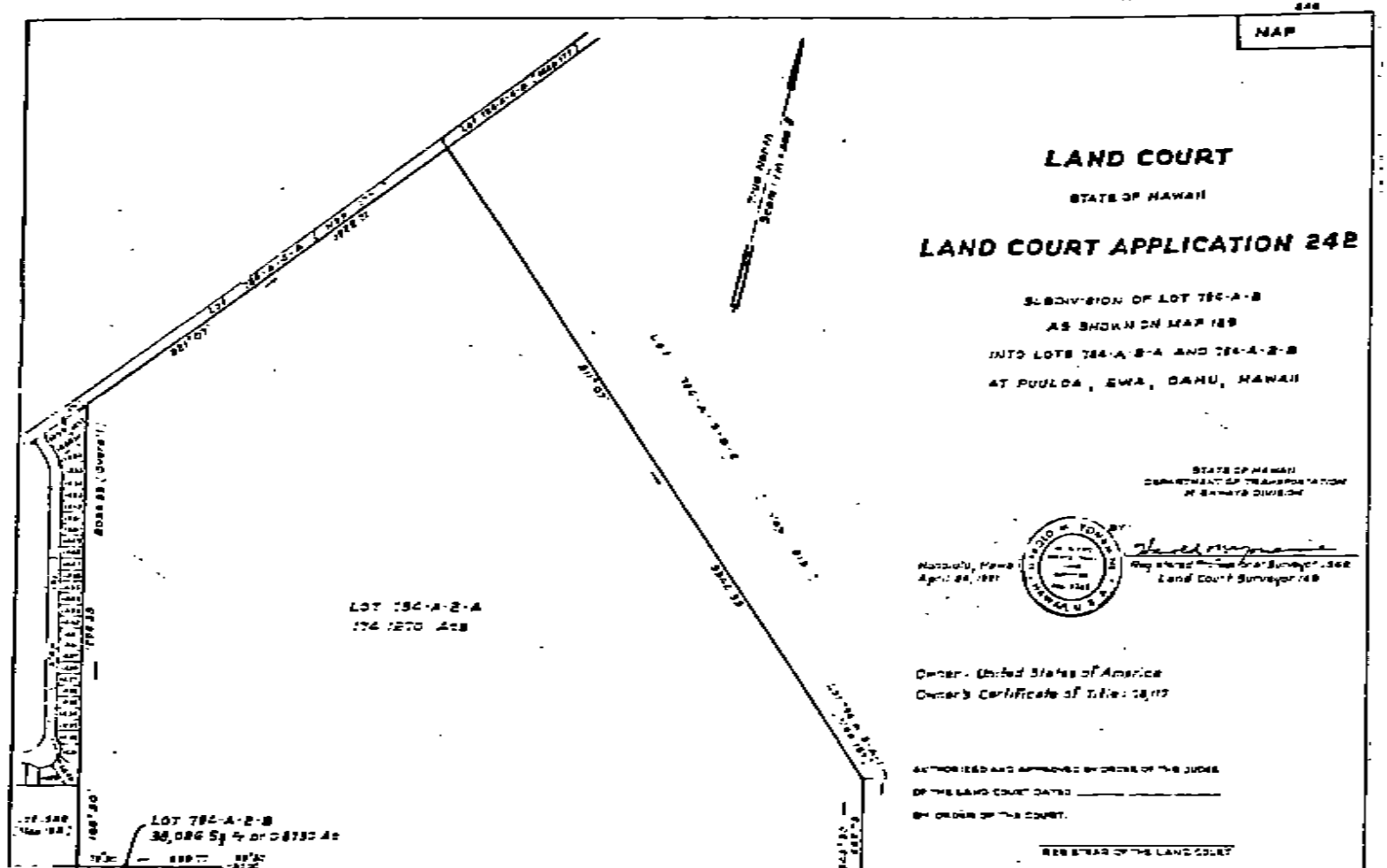
http://hawaii.gov/hawaiiaviation


Property Boundary
Approximate Location
PTWC
Ewa Beach First
Ward Bishop
Ewa Beach
Golf Club
Our Lady of
Perpetual
Help School
Ewa Beach
Community Park
National
Weather
Services
Ewa Beach
Park
Silva's Grocery
& Liquor
Fort Weaver Rd
Ewa Beach Rd
N Rd
76
Kuhina St
Hanaloa St
Kauiki St
Laupapa St
Hanakahi St
Lipaki Pl
Aama Pl
Kaunolu St
Lapine Pl
Alami Pl
Kauwili St
Abai Pl
Keena Pl
Kehue St
Ke Pl
Apoke Pl
Kilinoe St
Kilinahe St
Kilaha St
Kuiana Pl
Kuliololoa Pl
Parish Dr
Poopoi Pl
©2011 Google - Imagery ©2011 DigitalGlobe, USGS, GeoEye, U.S. Geological Survey, Map data ©2011 Google - Terms of Use - Edit in Google

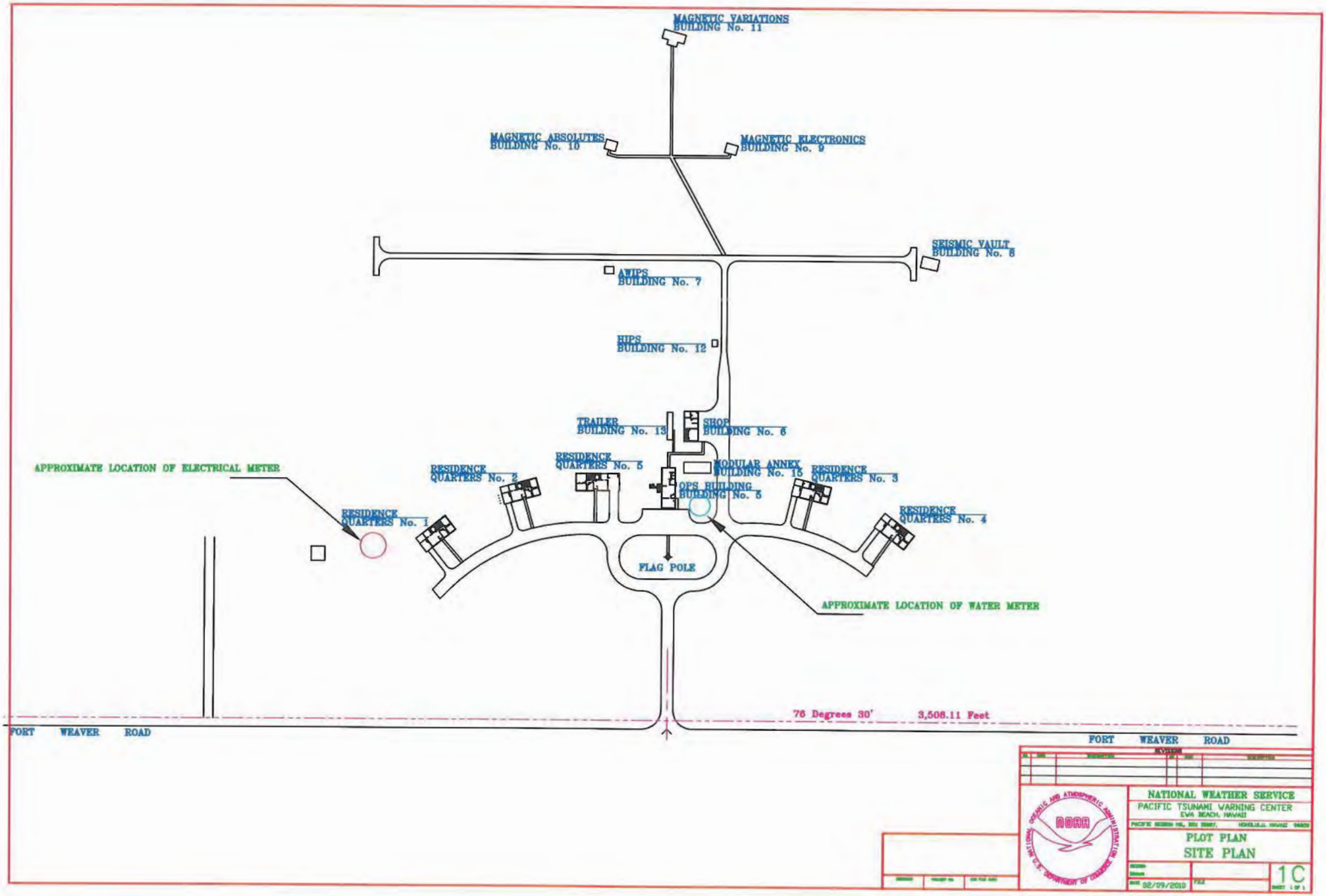

AWIPS Bldg. 7 (Keep)
HIPS Bldg. 12 (Keep)
Antenna Farm (Keep)
National Weather Services
76



9 1 01
PLAT 10
L.D. CT. APP. 1069
United States of America
L.D. CT. APP. 242
City & County of Honolulu CAMPBELL HIGH SCHOOL
ILIMA INTERMEDIATE SCHOOL
POHAKEA ELEMENTARY SCHOOL
22 State of Hawaii (Dept. of Education)
27 Parker School Trust
29 Church of Jesus Christ LDS
9 & 10 City and County of Honolulu
25 State of Hawaii
7 Gualpac, Inc.
21 Hiroshi Kato, Theodore S. Matsuo - T/C
Subject Property
FORT WEAVER ROAD
PEARL HARBOR ENTRANCE
POR. L.C. AW. 11216:8
FOR. PUULOA, EWA, OAHU
SUBJECT TO CHANGE
TAXATION MAPS BUREAU
TERRITORY OF HAWAII
FIRST DIVISION
ZONE 9 SEC. 1 PLAT 01
CONTAINING PARCELS
SCALE: 1 IN. = 600 FT.


MAP
LAND COURT
STATE OF HAWAII
LAND COURT APPLICATION 242
SUBDIVISION OF LOT 784-A-2
AS SHOWN ON MAP 189
INTO LOTS 784-A-2-A AND 784-A-2-B
AT PUULOA, EWA, OAHU, HAWAII
LOT 784-A-2-A
174.1270 Acs
LOT 784-A-2-B
38,086 Sq. Ft. or 0.8743 Ac
FORT WEAVER ROAD
Owner: United States of America
Owner's Certificate of Title: 18,117
AUTHORIZED AND APPROVED BY ORDER OF THE JUDGE
OF THE LAND COURT DATED
BY ORDER OF THE COURT.
REGISTRAR OF THE LAND COURT

SURVEY MAP



REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

NATIONAL WEATHER SERVICE
PACIFIC TSUNAMI WARNING CENTER
EWA BEACH, HAWAII
PACIFIC REGIONAL HQ., 1601 KAPIOLANI BLVD., HONOLULU, HAWAII 96814

PLOT PLAN
SITE PLAN

DESIGNED
DRAWN
DATE 02/09/2010
FILE

1C
SHEET 1 OF 1

Maps & Drawings NWS Ewa Beach, Hawaii HIW007

NOAA’s National Weather Service Former Pacific Tsunami Warning Center Ewa Beach, Hawaii HIW007

NOAA’s National Weather Service Former Pacific Tsunami Warning Center Ewa Beach, Hawaii HIW007

NOAA’s National Weather Service Former Pacific Tsunami Warning Center Ewa Beach, Hawaii HIW007

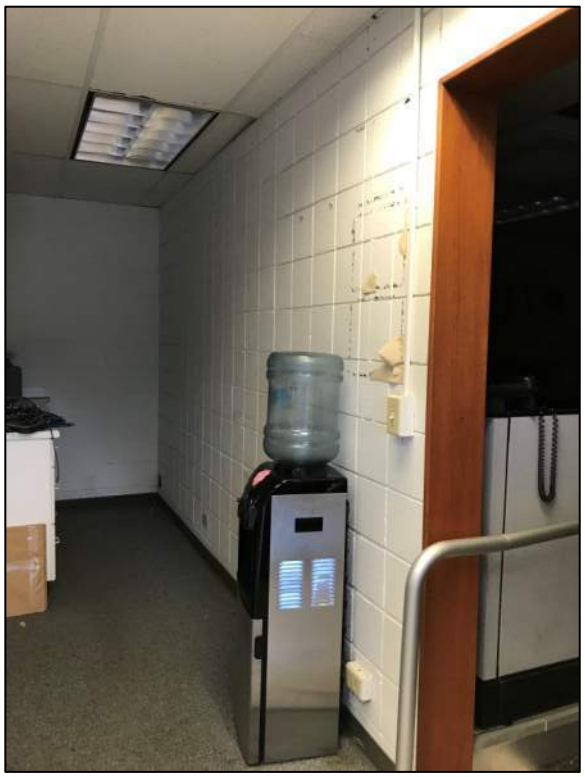
NOAA’s National Weather Service Former Pacific Tsunami Warning Center Ewa Beach, Hawaii HIW007

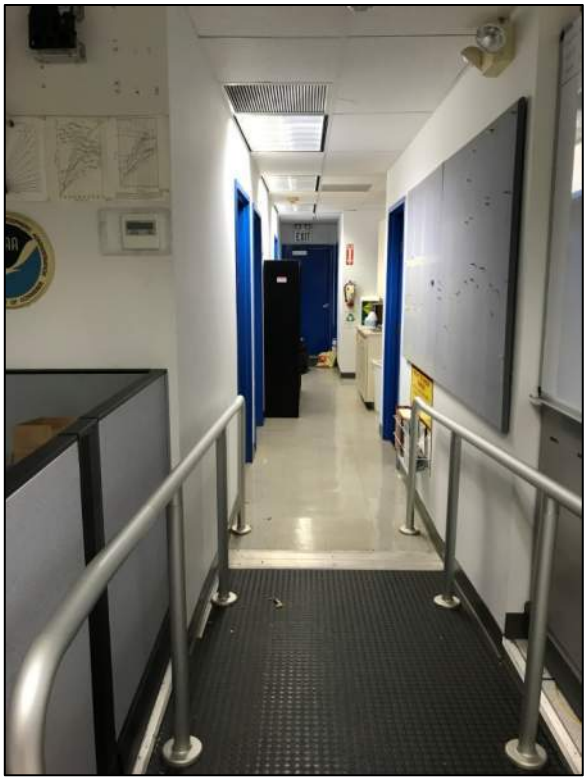
NOAA’s National Weather Service Former Pacific Tsunami Warning Center Ewa Beach, Hawaii HIW007

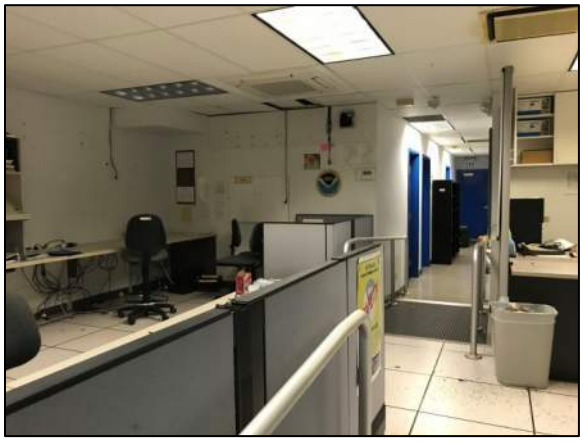
Typical Residence Interiors

Residences

Building 5







Site and Buildings

DAVID Y. IGE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
FIRST DEPUTY

W. ROY HARDY
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING
601 KAMOKILA BLVD, STE 555
KAPOLEI, HAWAII 96707

October 23, 2018

IN REPLY REFER TO:
LOG: 2018.02473
DOC: 1810KN16
Architecture

Jane Lehman, Regional HPO
U.S. General Services Administration
Pacific Rim Region
50 United Nations Plaza
San Francisco, CA 94102
via: jane.lehman@gsa.gov

Dear Ms. Lehman:

RE: **NHPA Section 106 Historic Preservation Review**
National Weather Station - Request for Concurrence
91-270 Fort Weaver Road 'Ewa Beach, HI 96706
Pu'uloa Ahupua'a, 'Ewa District, Island of O'ahu
TMK: (1)-9-9-005:010

Thank you for the opportunity to comment on this request from the U.S. General Services Administration (GSA) Pacific Rim Region for concurrence with GSA's determination of "no historic properties affected" for the proposed project to dispose the National Weather Station, Pacific Tsunami Warning Center (PTWC) site at 'Ewa Beach. The National Oceanic and Atmospheric Administration (NOAA) currently owns the property and reported the PTWC as excess property to GSA. GSA understands that the property will be transferred to either U.S. Fish and Wildlife Service (USFWS) or U.S. Geological Survey (USGS), who also currently use the facility. GSA has determined that this project is an undertaking per 36 CFR 800.16(y) and that the Area of Potential Effects (APE) includes the property boundaries.

GSA has identified and evaluated the potential historic properties. The property consists of fifteen (15) buildings and structures, including five single-family residential (employee) housing units, a main office building, an office annex building, an electronics shop, a residence trailer, and six small storage buildings. In addition to these fifteen buildings and structures, the property includes a small shed and antenna farm.

The buildings lack distinctive features or style and are not a noteworthy embodiment of a type of architecture. Although the buildings are work of a well-known local architect, Guy Rothwell, these buildings are not considered to be among his more notable or influential projects and do not rise to the level of being considered significant under any of the four criteria to be eligible for inclusion in the National Register of Historic Places.

Per 36 CFR 800.4, there are no historic properties present and therefore the State Historic Preservation Officer (SHPO) concurs with GSA's effect determination of **"no historic properties affected"**.

Please contact Kaiwi Yoon, Architecture Branch Chief at (808) 692-8032, or at Kaiwi.N.Yoon@hawaii.gov for questions regarding architectural resources or this letter.

Mahalo,

Alan Downer

Alan Downer, PhD.
Deputy State Historic Preservation Officer
Administrator, State Historic Preservation Division

cc: suzanne.case@hawaii.gov

APPENDIX D
Cultural Impact Assessment Report

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Cultural Impact Assessment Report for the ʻEwa Beach Community Master Plan for the Department of Hawaiian Home Lands, Honouliuli Ahupuaʻa, ʻEwa District, Oʻahu Island

TMK: [1] 9-1-001:001

Prepared by

HONUA CONSULTING

June 2024

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Assistant Authors and Researchers

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Nathan DiVito, M.A.
Frederick LaChance
Kaʻiminaʻauao Kahikina

Note on Hawaiian Language Use

In keeping with other Hawaiian scholars, we do not italicize Hawaiian words. Hawaiian is both the native language of the paeʻāina of Hawaiʻi and an official language of the State of Hawaiʻi. Some authors will leave Hawaiian words italicized if part of a quote; we do not. In the narrative, we use diacritical markings to assist our readers, except in direct quotes, in which we keep the markings used in the original text. We provide translations contextually when appropriate. Unless otherwise noted, all translations are by Honua Consulting authors.

Executive Summary

This cultural impact assessment (CIA) was completed at the request of SSFM for the future development of sustainable homestead lots by the Department of Hawaiian Homelands (DHHL). The project area, which is a portion of TMK (1) 9-1-001:001, consists of 80.33 acres in Puʻuloa ʻIli, Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu (Figure 1, Figure 2 and Figure 3). The parcel is generally bounded by North Rd. to the north, a portion of the Ewa Beach Country Club golf course to the east, undeveloped land and residential neighborhood along Kilipoe St. to the west, and Fort Weaver Rd. to the south.

The project area is within the boundaries of the former location of the Pacific Tsunami Warning Center and National Weather Station PTWC-NWS), just west of the Iroquois Point residential neighborhood. The PTWC-NWS property, which consists of 175 acres, includes 16 abandoned buildings/structures. The PTWS-NWS was located in the subject parcel from 1968 to 2014, when it moved to another location. The landowner, which was previously the U.S. federal government, is now the state of Hawaiʻi.

Research in preparation of this report consisted of a thorough search of Hawaiian language documents, including but not limited to the Bishop Museum Mele Index and Bishop Museum archival documents, including the Hawaiian language archival cache. All Hawaiian language documents were reviewed by Hawaiian language experts to search for relevant information to include in the report. Documents considered relevant to this analysis are included herein, and translations are provided when appropriate to the discussion. Summaries of interviews with lineal and cultural descendants with ties to the project area are included in the study, and information on other past oral testimonies are also provided herein. Data was extrapolated from these sources that provide an unprecedented comprehensive look at the previous cultural resources on this ʻāina.

This survey thoroughly identified valued cultural, historical, and natural resources in the project area, including the extent to which traditional and customary Native Hawaiian rights are exercised in the project area. It also identifies the impacts that may potentially result from the proposed action and identified alternatives. Practitioners primarily expressed general concern about the development of the land, specifically agricultural land for renewable energy use. They also identified plants with cultural significance in the proposed project area. These plants are common and, as such, the project is not anticipated to adversely impact area practioners' ability to gather these plants. Nonetheless, the recommendations from the archaeological review and biological assessment should also be incorporated to minimize and avoid any potential impact to historic or biological resources.

Table of Contents

List of Figures

List of Tables

Abbreviations and Acronyms

AIS: Archaeological Inventory Survey
BMP: Best Management Practice
City: The City and County of Honolulu
ESP: Environmental Review Project, Office of Planning and Sustainable Development
HAR: Hawaii Administrative Rules
HECO: Hawaiian Electric Company, Inc.
HRS: Hawaii Revised Statutes
ILK: Indigenous Local Knowledge
Ka Pa'akai: *Ka Pa'akai O Ka 'Āina v. Land Use Commission*, 94 Haw. 31 (2000)
LRFI: Literature Review and Field Investigation
MW: Megawatt
MWh: Megawatt-hour
NRHP: National Register of Historic Places
OEQC: Office of Enviornmental Quality and Control
PPA: Power Purchase Agreement
Project: 'Ewa Resilence Hub
PUC: Public Utility Commission
ROI: Range of Influence
SHPD: State Historic Preservation Division
SIHP: State Inventory of Historic Places
SLH: Session Laws of Hawaii
TEK: Traditional Ecological Knowledge
TMK: Tax Map Key
USGS: U.S. Geological Survey

1.0 Project Description and Compliance

Honua Consulting prepared this cultural impact assessment (CIA) at the request of SSFM to provide pertinent cultural information for a project to develop a residential community on an approximately 80-acre property in ʻEwa Beach on the island of Oʻahu that was transferred from the federal government to the Department of Hawaiian Home Lands (DHHL) as provided by the Hawaiian Homes Recovery Act of 1995.

1.1 Project Description

This proposed project is for the future development of sustainable homestead lots by the Department of Hawaiian Homelands (DHHL). The project area, a portion of TMK (1) 9-1-001:001, consists of 80.33 acres in Puʻuloa ʻIli, Honouliuli Ahupuaʻa, ʻEwa District, Island of Oʻahu. The project area is within the boundaries of the former location of the Pacific Tsunami Warning Center and National Weather Station PTWC-NWS), which includes 16 abandoned buildings/structures. The landowner is the State of Hawaiʻi.

Figure 1. Aerial image showing location of project area (base image source: ESRI's ArcMap 10.2.2)

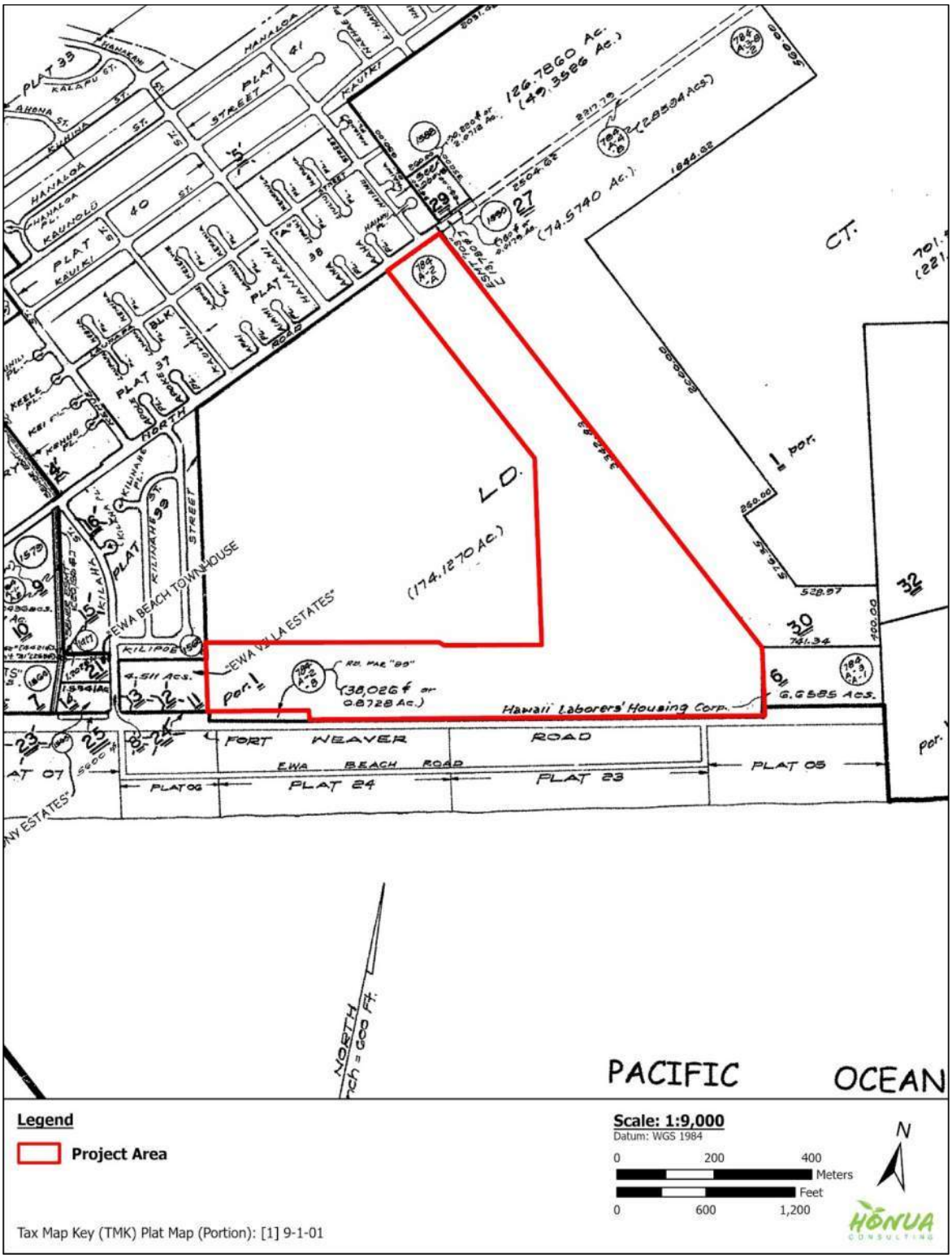

Figure 3. Tax Map Key (TMK) plat [1] 9-1-001 showing project area (portion 001) location (source: Hawai'i TMK Service n.d.)

1.2 Background

The State and its agencies have an affirmative obligation to preserve and protect Native Hawaiians' customarily and traditionally exercised rights to the extent feasible.[1] State law further recognizes that the cultural landscapes provide living and valuable cultural resources where Native Hawaiians have and continue to exercise traditional and customary practices, including hunting, fishing, gathering, and religious practices. In *Ka Pa'akai*, the Hawai'i Supreme Court provided government agencies an analytical framework to ensure the protection and preservation of traditional and customary Native Hawaiian rights while reasonably accommodating competing private development interests. This is accomplished through:

1) The identification of valued cultural, historical, or natural resources in the project area, including the extent to which traditional and customary Native Hawaiian rights are exercised in the project area;
2) The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and
3) The feasible action, if any, to be taken to reasonably protect Native Hawaiian rights if they are found to exist.

The appropriate information concerning the ahupua'a of Honouliuli in the moku of 'Ewa has been collected, focusing on areas near or adjacent to the project area. A thorough analysis of this project and potential impacts to cultural resources, historical resources, and archaeological sites is included in this survey.

This ethnographic survey provides an overview of cultural and historic resources in the project area using thorough literature review, community and cultural practitioner consultation, and high-level, project-specific surveys. This survey focuses on identifying areas in which disturbance should be avoided or minimized to reduce impacts to historic properties or culturally important features. The paramount goal is to prevent impacts through avoidance of sensitive areas and mitigating for impacts only if avoidance is not possible.

1.3 Geographic Extent

The geographic extent for impacts to cultural resources and historic properties includes the project area and localized surroundings. This CIA also reviews some of the resources primarily covered by the regulatory review. It primarily researches and reviews the range of biocultural

[1] Article XII, Section 7 of the Hawai'i State Constitution, *Ka Pa'akai O Ka 'Āina v. Land Use Commission*, 94 Haw. 31 [2000] (Ka Pa'akai), Act 50 SLH 2000.

resources identified through historical documents, traditional knowledge, information found in the Hawaiian language historical cache, and oral histories and knowledge collected from cultural practitioners and experts.

The best practice for ethnographic surveys is to define a geographic extent beyond the identified or typical boundaries of the geographic project area. The recommended area is typically the size of the traditional land area (ahupua‘a) or region (moku), but this can be larger or smaller depending on what best helps to identify the resources appropriately.

The geographic extent of the survey is based on the position that the “Project Area” is part of a cultural landscape or cultural landscapes that therefore it is most appropriate to set and study the proposed alternatives within that cultural context.

1.4 Goal of Ethnographic Survey

This survey, along with the archaeological work, looks to fulfill the requirement of taking into account the Project’s potential impacts on historic and cultural resources and, at a minimum, describe: a) any valued cultural, historic, or natural resources in the area in questions, including the extent to which traditional and customary native Hawaiian rights are exercised in the area, b) the extent to which those resources – including traditional and customary native Hawaiians rights – will be affected or impaired by the Project; and c) the feasible action, if any, to be taken to reasonably protect native Hawaiian rights if they are found to exist.

2.0 Methodology

The approach to developing the ethnographic survey is as follows:

1) Gather Best Information Available
   a) Gather historic cultural information from stories and other oral histories about the affected area to provide cultural foundation for the report;
   b) Inventory as much information as can be identified about as many known cultural, historic, and natural resources, including previous archaeological inventory surveys, CIAs, etc. that may have been completed for the possible range of areas; and
   c) Update the information with interviews with cultural or lineal descendants or other knowledgeable cultural practitioners.
2) Identify Potential Impacts to Cultural Resources
3) Develop Reasonable Mitigation Measures to Reduce Potential Impacts
   a) Involve the community and cultural experts in developing culturally appropriate mitigation measures; and
   b) Develop specific Best Management Practices (BMPs), if any are required, for conducting the project in a culturally appropriate and/or sensitive manner as to mitigation and/or reduce any impacts to cultural practices and/or resources.

While numerous studies have been conducted on this area, very few have effectively utilized Hawaiian language resources and Hawaiian knowledge. This appears to have impacted modern understanding of this location, as many of the relevant documents are native testimonies given by Kanaka Hawai'i (Hawaiians) who lived on this land.

While hundreds of place names and primary source historical accounts (from both Hawaiian and English language narratives) are cited on the following pages, it is impossible to tell the whole story of these lands in any given manuscript. A range of history, spanning the generations, has been covered. Importantly, the resources herein are a means of connecting people with the history of their communities—that they are part of that history. Knowledge of place will, in turn, promote appreciation for place and encourage acts of stewardship for the valued resources that we pass on to the future.

Background research for the literature review was conducted using materials obtained from the State Historic Preservation Division (SHPD) library in Kapolei and the Honua Consulting LLC. report library. On-line materials consulted included the Ulukau Electronic Hawaiian Database (www.ulukau.com), Papakilo Database (www.papakilodatabase.com), the State Library on-line (http://www.librarieshawaii.org/ Serials/databases.html), and Waihona 'Āina

Māhele database (http://www.waihona.com). Hawaiian terms and place names were translated using the on-line Hawaiian dictionaries (Nā Puke Wehewehe ʻŌlelo Hawaiʻi) (www.wehewehe.com), Place *Names of Hawaiʻi* (Pukui et al. 1974), and Hawaiʻi *Place Names* (Clark 2002). Historic maps were obtained from the State Archives, State of Hawaiʻi Land Survey Division website (http://ags.hawaii.gov/survey/map-search/), UH-Mānoa Maps, Aerial Photographs, and GIS (MAGIS)website (http://guides.library.manoa.hawaii.edu/magis). Maps were geo-referenced for this report using ArcGIS 10.3. GIS is not 100% precise and historic maps were created with inherent flaws; therefore, geo-referenced maps should be understood to have some built-in inaccuracy.

While conducting the research, primary references included, but were not limited to: land use records, including the Hawaiian L.C.A. records from the Māhele ʻĀina (Land Division) of 1848; the Boundary Commission Testimonies and Survey records of the Kingdom and Territory of Hawaiʻi; and historical texts authored or compiled by: David Malo (1987); Samuel M. Kamakau (1964, 1991, 1992); records of the American Board of Commissioners of Foreign Missions (A.B.C.F.M.) (1820–1860); Charles Wilkes (1845); Alexander & Preston (1892–1894); Abraham Fornander (1916–1919); and many other native and foreign writers. The study also includes several native accounts from Hawaiian language newspapers (primarily compiled and translated from Hawaiian to English by K. Maly), and historical records authored by nineteenth century visitors, and residents of the region.

Historical and archival resources were located in the collections of the Hawaiʻi State Archives, Survey Division, Land Management Division, Survey Division, and Bureau of Conveyances; the Bishop Museum Library and Archives; the Hawaiian Historical Society and the Hawaiian Mission Children's Society Library; University of Hawaiʻi-Hilo Moʻokini Library; the National Archives and Records Administration (NARA), Maryland; the Library of Congress, Washington D.C.; the National Oceanic and Atmospheric Administration National Library, Maryland; the Smithsonian Institution Natural History and National Anthropological Archives libraries, Washington, D.C.; the Houghton Library at Harvard; the United States Geological Survey (USGS) Library, Denver; the Paniolo Preservation Society and Parker Ranch collections; private family collections; and in the collection of Kumu Pono Associates LLC. This information is generally cited in categories by chronological order of the period depicted in the narratives.

M. P. Nogelmeier (2010) discusses the adverse impacts of methodology that fails to properly research and consider Hawaiian language resources. He strongly cautions against a mono-rhetorical approach that marginalizes important native voices and evidence from consideration, specifically in the field of archaeology. For this reason, Honua Consulting consciously employs a poly-rhetorical approach, whereby all data, regardless of language, is researched and considered. To fail to access these millions of pages of information within the Hawaiian language cache could arguably be a violation of Act 50, as such an approach would fundamentally fail to gather the best information available, especially considering the

voluminous amounts of historical accounts available for native tenants in the Hawaiian language.

Hawaiian culture views natural and cultural resources as largely being one and the same: without the resources provided by nature, cultural resources could and would not be procured. From a Hawaiian perspective, all natural and cultural resources are interrelated, and all natural and cultural resources are culturally significant. Kepā Maly (2001), ethnographer and Hawaiian language scholar, points out, "In any culturally sensitive discussion on land use in Hawai'i, one must understand that Hawaiian culture evolved in close partnership with its natural environment. Thus, Hawaiian culture does not have a clear dividing line of where culture ends and nature begins" (Maly 2001:1).

This study also specifically looks to identify intangible resources. Tangible and intangible heritage are inextricably linked (Bouchenaki 2003). Intangible cultural resources, also identified as intangible cultural heritage (ICH), are critical to the perpetuation of cultures globally. International and human rights law professor Federico Lenzerini notes that, "At present, we are aware on a daily basis of the definitive loss—throughout the world—of language, knowledge, knowhow, customs, and ideas, leading to the progressive impoverishment of human society" (Lenzerini 2011:12). He goes on to warn that:

> the rich cultural variety of humanity is progressively and dangerously tending towards uniformity. In cultural terms, uniformity means not only loss of cultural heritage—conceived as the totality of perceptible manifestations of the different human groups and communities that are exteriorized and put at the others' disposal—but also standardization of the different peoples of the world and of their social and cultural identity into a few stereotyped ways of life, of thinking, and of perceiving the world. Diversity of cultures reflects diversity of peoples; this is particularly linked to ICH, because such a heritage represents the living expression of the idiosyncratic traits of the different communities. Preservation of cultural diversity, as emphasized by Article 1 of the UNESCO Universal Declaration on Cultural Diversity, 'is embodied in the uniqueness and plurality of the identities of the groups and societies making up humankind'. Being a 'source of exchange, innovation and creativity', cultural diversity is vital to humanity and is inextricably linked to the safeguarding of ICH. Mutual recognition and respect for cultural diversity—and, *a fortiori*, appropriate safeguarding of the ICH of the diverse peoples making up the world—is essential for promoting harmony in intercultural relations, through fostering better appreciation and understanding of the differences between human communities. (Lenzarini 2011:103)

Therefore, tradition and practice, as elements of Hawaiian ICH, are essential to the protection of Hawaiian rights and the perpetuation of the Hawaiian culture.

It is within this context that traditional or customary practices are studied. The concept of traditional or customary practices can often be a challenging one for people to grasp. Traditional or customary practices can be defined as follows:

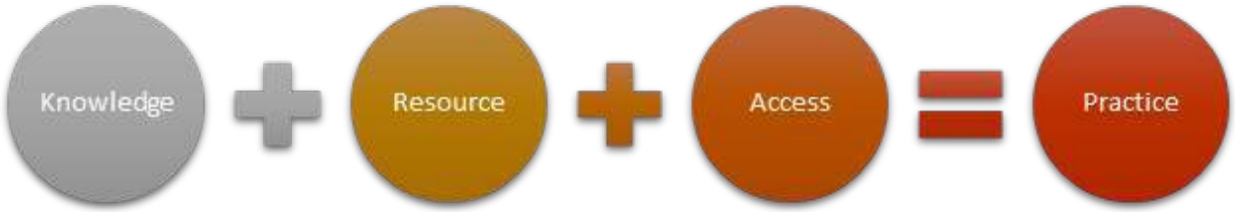

Figure 2. Diagram of elements that contribute to traditional or customary practices (Honua Consulting)

The first element is knowledge. This has been referred to as traditional ecological knowledge (TEK), Indigenous local knowledge (ILK), or ethnoscience. In the context of this study, it is the information, data, knowledge, or expertise Native Hawaiians or local communities possessed or possess about an area's environment. In a traditional context, this would have included information Hawaiians possessed in order to have the skills to utilize the area's resources for a range of purposes, including, but not limited to, travel, food, worship or habitation. This element is largely intangible.

The second element are the resources themselves. These are primarily tangible resources, either archaeological resources (i.e., habitation structures, walls, etc.) or natural resources (i.e., plants, animals, etc.). These can also be places, such as sacred or culturally important sites or wahi pana. Sometimes these wahi pana are general locations; this does not diminish their importance or value. Nonetheless, it is important to recognize that potential eligibility as a "historic site" on the National Register of Historic Places (NRHP) would require identifiable boundaries of a site.

The third element is access. The first two elements alone are not enough to allow for traditional or customary practices to take place. The practitioners must have access to the resource to be able to practice their traditional customs. Access does not just mean the ability to physically access a location, but it also means access to resources. For example, if a particular plant is used for medicinal purposes, there needs to be a sufficient amount of that plant available to practitioners for us. Therefore, an action that would adversely impact the population of a particular plant with cultural properties would impact practitioners' ability to access that plant. By extension, it would adversely impact the traditional or customary practice.

Traditional or customary practices are, therefore, the combination of knowledge(s), resource(s) and access. Each of these individual elements should be researched and identified in assessing any potential practices or impacts on said practices.

2.2 Traditional Knowledge, or Ethnoscience, and the Identification of Cultural Resources

The concept of ethnoscience was first established in the 1960s and has been defined "the field of inquiry concerned with the identification of the conceptual schemata that indigenous peoples use to organize their experience of the environment" (Roth 2019). Ethnoscience includes a wide range of subfields, includes, but is not limited to, ethnoecology, ethnobotany, ethnozoology, ethnoclimatology, ethnomedicine and ethnopedology. All of these fields are important to properly identify traditional knowledge within a certain area.

Traditional Native Hawaiian practitioners were scientists and expert natural resource managers by necessity. Without modern technological conveniences to rely on, Hawaiians developed and maintained prosperous and symbiotic relationships with their natural environment for thousands of years. Their environments were their families, their homes, and their laboratories. They knew the names of every wind and every rain. The elements taught and inspired. The ability of Indigenous people to combine spirituality and science led to the formation of unique land-based methologides that spurred unsurpassed innovation. Therefore, identifying significant places requires a baseline understanding of what made places significant for Hawaiians.

Hawaiians were both settlers and explorers. In *Plants in Hawaiian Culture,* B. Krauss explains: "Exploration of the forests revealed trees, the timber of which was valuable for building houses and making canoes. The forests also yielded plants that could be used for making and dying tapa, for medicine, and for a variety of other artifacts" (Krauss 1993). Analysis of native plants and resource management practices reveals the depth to which Hawaiians excelled in their environmental science practices:

> [Hawaiians] demonstrated great ability in systematic differentiation, identification, and naming of the plants they cultivated and gathered for use. Their knowledge of the gross morphology of plants, their habits of growth, and the requirements for greatest yields is not excelled by expert agriculturists of more complicated cultures. They worked out the procedures of cultivation for every locality, for all altitudes, for different weather conditions and exposures, and for soils of all types. In their close observations of the plants they grew, they noted and selected mutants (spores) and natural hybrids, and so created varieties of the plants they already had. Thus over the years after their arrival in the Islands, the Hawaiians added hundreds of named varietis of taro, sweet

potatoes, sugarcane, and other cultivated plants to those they had brought with them from the central Pacific (Krauss 1993).

Thus, Native Hawaiians reinforced the biodiversity that continues to exist in Hawai‘i today through their customary traditional natural resource management practices.

The present analyses of archival documents, oral traditions (oli or chants, mele or songs, and/or hula dances and ha‘i mo‘olelo or storytelling performances), and Hawaiian language sources including books, manuscripts, and newspaper articles, are focused on identifying recorded cultural resources present on the landscape, including: Hawaiian and non-Hawaiian place names; landscape features (ridges, gulches, cinder cones); archaeological features (kuleana parcel walls, house platforms, shrines, heiau [places of worship], etc.); culturally significant areas (viewsheds, unmodified areas where gathering practices and/or rituals were performed); and significant biological, physiological, or natural resources. This research also looks to document the wide range of Hawaiian science that existed within the geographic extent. Additionally, Matthew Kawaiola Sproat, an author on this report is himself a cultural practitioner from ‘Ewa and contributed his cultural knowledge to the research for this CIA.

2.3 Mo‘olelo ‘Āina: Native Traditions of the Land

Among the most significant sources of native mo‘olelo are the Hawaiian language newspapers which were printed between 1838 and 1948, and the early writings of foreign visitors and residents. Most of the accounts that were submitted to the papers were penned by native residents of areas being described and noted native historians. Over the last 30 years, Kepā Maly has reviewed and compiled an extensive index of articles published in the Hawaiian language newspapers, with particular emphasis on those narratives pertaining to lands, customs, and traditions. Many traditions naming places around Hawai‘i are found in these early writings. Many of these accounts describe native practices, the nature of land use at specific locations, and native mo‘olelo (history, narrative, story). Thus, we are given a means of understanding how people related to their environment and sustained themselves on the land.

2.4 Historic Maps

There are also numerous, informative historic maps for the region. Surveyors of the eighteenth and nineteenth centuries were skilled in traversing land areas and capturing important features and resources throughout Hawai‘i’s rich islands. Historic maps were carefully studied, and the features detailed therein were aggregated and categorized to help identify specific places, names, features, and resources throughout the study area. From these,

among other documents, new maps were created that more thoroughly capture the range of resources in the area.

2.5 Archaeological and Studies

A literature review and field investigation was conducted by Christopher M. Monahan, Ph.D. and Trisha K. Watson, Ph.D. Their findings are further discussed at the end of this section. An extended version of the literature review can be found in (**Section 3.0 Historic Background**) of this CIA.

2.6 Ethnographic Methodology

Information from lineal and cultural descendants is instrumental in procuring information about the project area's transformation over time and its changing uses. The present analyses of archival documents, oral traditions (including oli or chants, mele or songs), and/or hula dance), and Hawaiian language sources including books, manuscripts, and newspaper articles, are focused on identifying recorded cultural and archaeological resources present on the landscape, including: Hawaiian and non-Hawaiian place names; landscape features (ridges, gulches, cinder cones); archaeological features (kuleana parcel walls, house platforms, shrines, heiau or places of worship, etc.); culturally significant areas (viewsheds, unmodified areas where gathering practices and/or rituals were performed); and significant biocultural resources. The information gathered through research helped to focus interview questions on specific features and elements within the project area. Descendants and cultural practitioners from the area were contacted and interviewed for this CIA.

3.0 Historic Background

The project area is located in the ahupua‘a of Honouliui within the moku of ‘Ewa. In one tradition, Honouliuli is named for a chief of the same name, who was the husband of Kapālama. They were the parents of Lepeamoa and Kauilani, two heroes in ancient tradition (Westervelt, 1915). In traditional times, the land area known as Pu‘uloa was an ‘ili of Honouliuli, though it was sold as a separate land during the time of the Māhele. All native tenant claims made for kuleana at Pu‘uloa were given up by the claimants.

3.1 Inoa ‘Āina (Place Names)

Following the Māhele ‘Āina, there was a growing movement to fence off the land areas and control access to resources that native tenants had traditionally used. In the 1860s, foreign landowners and business interests petitioned the Crown to have the boundaries of their respective lands, which became the foundation for plantation and ranching interests, settled. In 1862, the King appointed a Commission of Boundaries (the Boundary Commission) and tasked them with collecting traditional knowledge of place, land boundaries, customary practices, and deciding the most equitable boundaries for each ahupua‘a that had been awarded to Ali‘i, Konohiki, and foreigners during the Māhele.

The commission proceedings were conducted under the courts and as formal actions under law. As the commissioners on the various islands undertook their work, the kingdom hired or contracted surveyors to begin the surveys. In 1874, the commissioners were authorized to certify the boundaries for lands brought before them (Alexander, 1891:117-118).

Records from the ‘Ewa District were recorded between 1868 and 1904, with the proceeding from Honouliuli being held between 1873 and 1874. The records include testimonies of elder kama‘āina who were either recipients of kuleana in the Māhele or were the direct descendants of the original fee-simple title holders. The narratives that follow include several types of documentation such as the preliminary requests for establishing the boundaries, letters from the surveyors in the field, excerpts from surveyor’s field books (Register Books), the record of testimonies given by native residents of the lands, and the entire record of the Commission in certifying the boundaries of each ahupua‘a. The resulting documentation offers descriptions of the land extending from ocean fisheries to the mountain peaks, traditional and customary practices, land use, changes in the landscape witnessed over the informants’ lifetime, and various cultural features.

The native witnesses usually spoke in Hawaiian; in some instances, their testimony was translated into English and transcribed as the proceedings occurred. Other testimonies were transcribed in Hawaiian but have now been translated for inclusion in this study.

The Boundary Commission proceedings documented many traditional place names and features along the boundaries of the ahupua‘a, with locations extending from the sea (including fishponds and fisheries) to the mountain peaks. These names demonstrate Hawaiian familiarity with the resources, topography, sites and features of the entire ahupua‘a. Coulter observed that Hawaiians had place names for all manner of feature, ranging from “outstanding cliffs” to what he described as “trivial land marks” (1931:10). History tells us that named locations were significant in past times: “Names would not have been given to [or remembered if they were] mere worthless pieces of topography” (Handy et al., 1972:412).

In ancient times, named localities signified that a variety of uses and functions occurred, including:

(1) Triangulation points such as ko‘a (land markers for fishing grounds and specific offshore fishing localities);
(2) Residences; areas of planting;
(3) Water sources;
(4) Trails and trail-side resting places (o‘io‘ina), such as a rock shelter or tree shaded spot;
(5) Heiau or other features of ceremonial importance;
(6) May have been the source of a particular natural resource or any number of other features; or
(7) The names may record a particular event or practice (e.g., use for burials, the making of ko‘i or adzes, or designation as a fishery) that occurred in a given area.

Place names called out by witnesses before the commissioners have been compiled and are cited below. A number of the place names remain in use on maps or among some residents, while others are no longer in use. Of particular note are several place names and their associated narratives which document wahi pana (storied or sacred places) on the traditional landscape. The place names cited in the Honouliuli Boundary Proceedings include:

Table 1. Place Names

Apokea	Koolina	Nanakuli
Auiole	Kualakai	Panau
Ekahanui Gulch	Kupali	Papapuhi (Kapapapuhi)
Hanohano	Lae o Halakahi	Pili o Kahe (Pili o Kahi)
Homaikaia	Lae o Kahuka	Pohaku Palahalaha

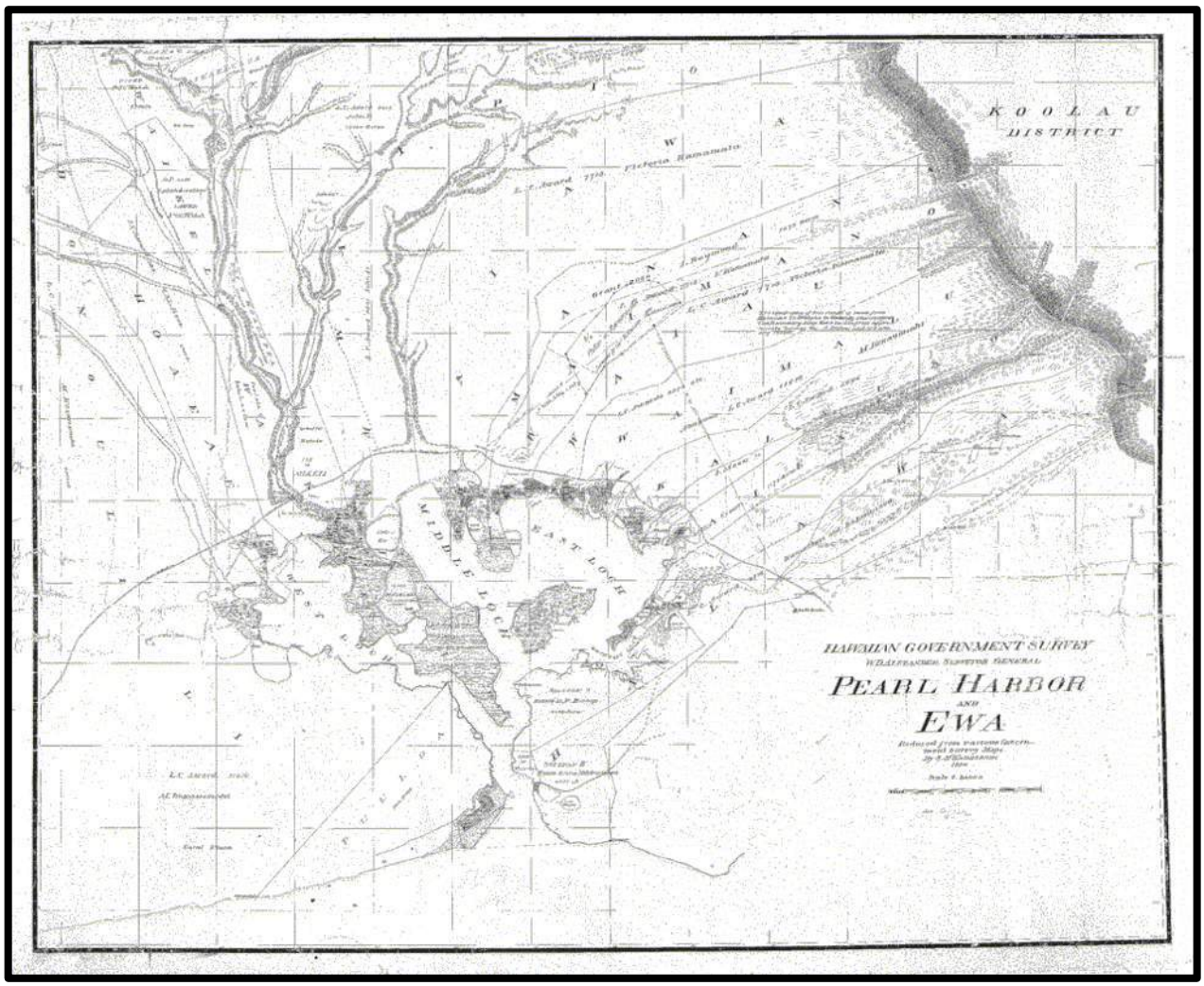

Figure 3. Map of Ahupuaʻa in the ʻEwa Moku (Hawaiian Government Survey, Registered Map No. 1739 by S.M. Kanakanui, 1894)

The moku of ʻEwa consists of 12 ahupuaʻa, listed from easternmost to westernmost: Hālawa, ʻAiea, Kalauao, Waimalu, Waiau, Waimano, Mānana (Iki and Uka), Waiʻawa, Waipiʻo, Waikele, Hōʻaeʻae, and Honouliuli (Figure 5).

3.2 Traditional Period of ʻEwa

ʻEwa is long-standing traditional name that has been retained into the present, while other place names in the the region have largely been lost in the rapid development of mass agricultural plantations at the beginning of the 20th century when Hawaiʻi became a U.S. Territory. ʼEwa has a rich and interesting cultural history, and there are myriad mele, ʻōlelo noʻeau, and moʻolelo associated with this region. Although, much of this history may not be

known to current residents of ʻEwa, as the area has been particularly impacted by development. For example, while the area in which this project takes place is known as ʻEwa, or often ʻEwa Beach, ʻEwa actually refers to the entire, large moku or district in which multiple ahupuaʻa are positioned like Honouliuli (see Figure 5).

The traditional knowledge imbedded in place names reveals the history of place, people, and the depth of their traditions. Although fragmented, the surviving place names describe a rich culture. On these lands are found many place names that have survived the passing of time. The occurrence of place names demonstrates the broad relationship of the natural landscape to the culture and practices of the Hawaiian people. In *A Gazetteer of the Territory of Hawaii*, J. W. Coulter observed that Hawaiians had place names for all manner of features, ranging from "outstanding cliffs" to what he described as "trivial land marks" (1935:10). In 1902, W.D. Alexander, former Surveyor General of the Kingdom (and later Government) of Hawaiʻi, wrote an account of "Hawaiian Geographic Names." Under the heading "Meaning of Hawaiian Geographic Names" he observed:

> It is very difficult, if not impossible, to translate most of these names, on account of their great antiquity and the changes of which many of them have evidently undergone. It often happens that a word may be translated in different ways by dividing it differently. Many names of places in these islands are common to other groups of islands in the South Pacific, and were probably brought here with the earliest colonists. They have been used for centuries without any thought of their original meaning. (Alexander 1902:395)

Moreover, historically named locations were significant in past times and it has been observed that "Names would not have been given to [or remembered if they were] mere[ly] worthless pieces of topography" (Handy et al. 1972:412).

3.2.1 He Māhelehele o Nā Moʻolelo (Excerpts of Traditional Accounts)

Moʻolelo (traditional narratives, stories, history) were once passed down through oral tradition and later recorded in print upon the arrival of the printing press in the 1830s.
One of the beautiful elements of Hawaiian storytelling is that many versions of moʻolelo exist, told from the perspective of storytellers who are native to varying areas. By collecting and celebrating the multiple versions of moʻolelo, the depth and breadth of Native Hawaiian perspective about ʻāina can be understood. Information about culture, language, and places are held within those stories, and can continue to live on through those moʻolelo. Portions of many famous moʻolelo take place in ʻEwa, some sections of which will be presented in this section to demonstrate the cultural significance of this ʻāina.

The following narratives focus on some of the notable traditions and history of Honouliuli ahupua‘a. In following the history of the land from the period of early Hawaiian residency to the modern day, accounts from neighboring ahupua‘a, larger regions, and even cross-island are cited as they connect people, storied places, and land use beyond the boundaries of Honouliuli. In Hawaiian mo‘olelo are found expressions of native beliefs, customs, practices and history. The Hawaiian landscape itself is storied; each place name is associated with a tradition ranging from the presence and interactions between gods and people, to documenting an event or characteristics of a given place. Unfortunately, today, many of those mo‘olelo have been lost. Through the mo‘olelo that have survived we are able to glimpse the history of the land and people of Honouliuli ahupua‘a (Figure 7).

The narratives are generally organized chronologically by time period or events, such as when the gods walked the land, touching the lives of the people, or when chiefs engaged in conflicts on the land. It will be noted that in a number of instances, wahi pana were named in the traditions as a means of commemorating notable events in history. Underlining is used throughout the texts to identify notable place names or references in the quoted narratives as a means of highlighting history of place.

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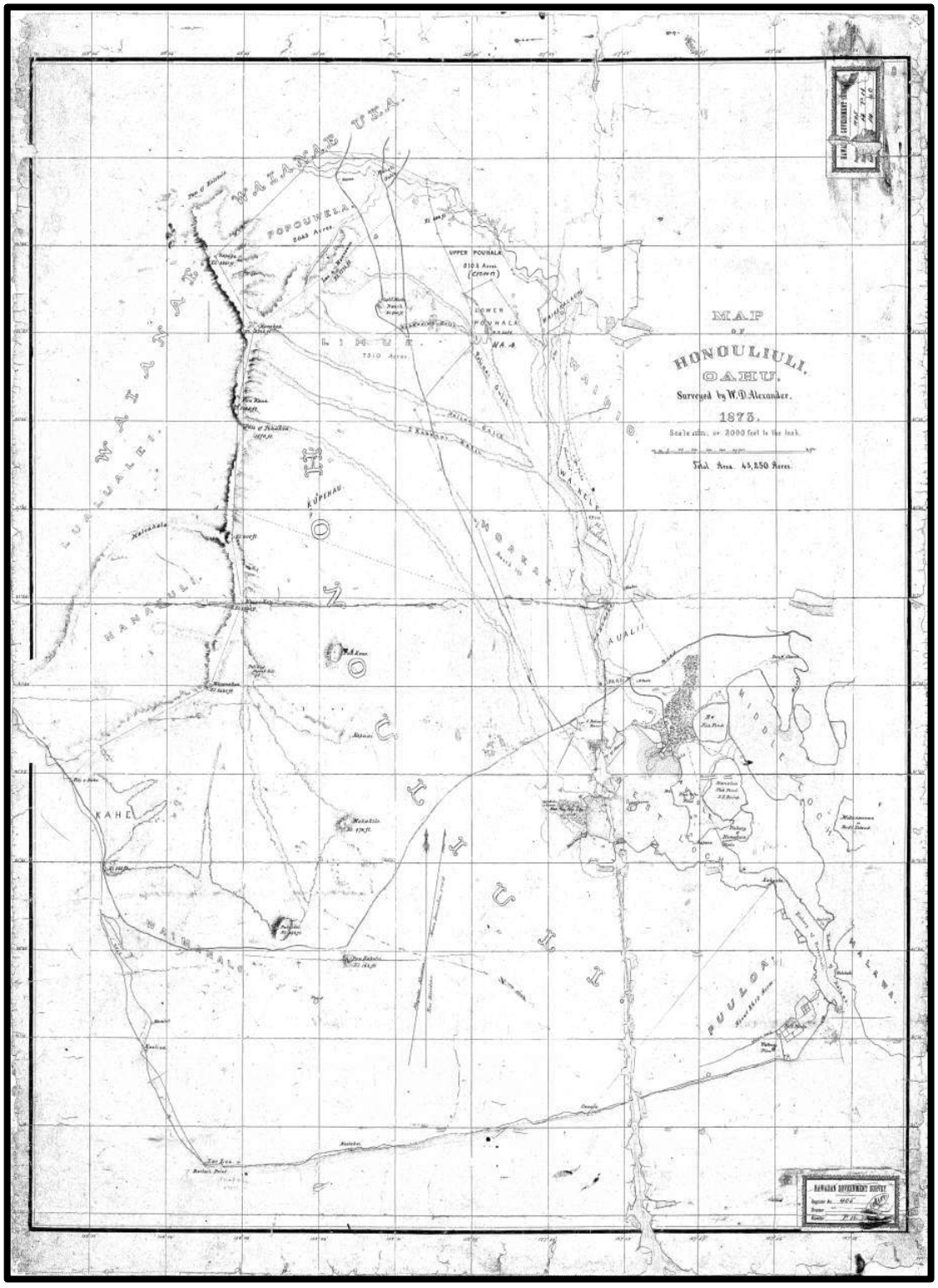

Figure 4. Map of Honouliuli (Hawaiian Government Survey, Registered Map No. 405 by W.D. Alexander, 1873)

3.2.2.1 *He Wahi Kaao a me Kekahi Mele Pu (A Little Story and Some Chants) Traditions of Hi'iaka-i-ka-poli-o-Pele*

The epic tradition of the goddess Pele and her youngest sister, Hi'iaka-i-ka-poli-o-Pele (Hi'iaka), spans the entire Hawaiian Archipelago and beyond to Kahiki, the ancestral home of the gods. The tradition is the source of many descriptions of places, place names, beliefs, traditional knowledge and customary practices. As in the account below, "He Wahi Kaao a me kekahi Mele pu" (1860), portions of the tradition were also cited in excerpts to remind people of various facets of knowledge that was recorded in the larger account. Of particular interest in the narratives below are references to Hi'iaka's travels on O'ahu and descriptions of various places in the 'Ewa and Kona districts. There is also an important reference to the goddess "Kiha," a mo'o (water-spirit) whose mana (power) was called upon in the making of chiefs and whose form was a part of the circuit gods who traveled around the island in the Makahiki celebrations. The name Kiha is commemorated in the place named Ka-puka-o-Kiha in Kalauao Ahupua'a.

> *Ka Hae Hawaii*
> He wahi kaao a me kekahi mele pu.
>
> Iulai 4, 1860 (aoao 60)
>
> O Lohiau me Kaleiopaoa, he mau kanaka no Kauai, o Haena ko laua wahi noho; Ua launa kino wailua wale o Pele me Lohiau, ua ku a aloha loa o Pele ia Lohiau: no ka nui o kona makemake kena'ku la oia ia Hiiaka e kii ia Lohiauipo i Haena a loaa. Eia ka laua Berita, "e kii oe ia Lohiau a loaa mai me oe a laa ia'u, Oia ka aoao 1. Eia hoi ka ka aoao elua, e malama oe i kuu aikane ia Hopoe, a hoi mai au;" alaila, hele o Hiiaka i Kauai.
>
> A hiki o Hiiaka me Wahineomao i Haena, ua make o Lohiau, lapaau oia a ola, hoi mai lakou a ekolu o Lohiau, me Wahineomao, a me Hiiaka, a hiki i Oahu, pae o Hiiaka mauka o Waianae, ma ka waa no o Lohiau a me Wahineomao, a hiki i Puuloa. Ia hele ana o Hiiaka mauka, a hiki oia maluna o Pohakea, i nana'ku ka hana ua make o Hopoe, e ami mai ana i ke kai, alaila hu mai la ke aloha o Hiiaka no ke aikane ana.
>
> A hiki ma Puuloa, kau hou lakou ma ka waa, a hiki i Mamala, halawai me Peleula ma e heenalu ana, hoi lakou i uka i ka hale, hookipa maikai ia po, lealea lakou ia po, he Kilu ka hana ilaila i ike ai o Hiiaka i ka lea o Lohiau.
>
> Haalele ia Honolulu, hiki lakou i Molokai, noho i ke kaha o Palaau, a make i ka make a ka pololi, lohe mai lakou he hale komo ko Olepau ke alii o Maui, manao

aku hoi e ola ka pololi ilaila, i ua la nei i komo ai ka hale o Olepau hiki lakou a ekolu ilaila. I ka ike ana mai o Waihinalo ka wahine a Olepau, ua maopopo ia‘ku kona ano, he ano pi.

Hoohuli ae la, oia ia Olepau iluna ke alo, hukihuki i ka umiumi. Alaila hapai ae la o Hiiaka i keia mele, a pane aku ia Waihinalo.

Mehameha kanaka ole ka hoi Puuomoeawa--e,
O Kaupea i ka aina kanaka ole,
A kulou anei e uwe ana—
E kala ka uwe he keiki makua ole.

(He mau mele kike ana keia wahi, aole nae i loaa ia‘u aka makemake nae o Olepau e ike ia lakou a ekolu aole nae e hiki.) Ua ninau mai o Hiiaka ia Waihinalo i ka wahine a Olepau, Ia wai Maui?

Hai mai o Waihinalo ia Olepau.
O Kalani ke‘lii Kauhilonohonua,
O Kamakea kahiko a Kiha,
O Kiha nui lulu moku,
O Kaulahea nui o ka lani--e;
Ia Maui--a.
Hai mai o Hiiaka, ua makeia. Haha ae ka oe la! O olo ka pihe i ke aumoe, Owawa ka pihe i ke kakahiaka, o ka haka maia a Olepau, ua pau i ka ai ia e ka wahine. Ua make o Olepau, o Olepau Aloha.

Hoole mai o Waihinalo wahine a Kapoipoi, aole e make kuu alii ia oe, ke hai mai nei na kua wahine oia nei. O Walinuu ma laua o Walimaanoanoa, o Papa o Hoohokukalani, e hoole mai ana, aole e make.

Pane mai o Hiiaka i ka hua o ka make.
Ua make ke lii nona nei moku,
He puaa kau ko Molokai,---
He ilio kohekohe Lanai,
He pale ka aaka o Kahaloa,
He puoa kai Molokini,
Huli kaele o na Hono,
Paiauma wale na aina,
Oho ki kepakepa na moku,
Uwe ka wahine, uwe ka hanehane,

Uwe ka leoleo i ke kula, i ke pili la i Kamaomao,
Ia kaa kumakena ia o Maui--e;
Make Olepau, o Olepau aloha.

Pau na mele a laua i paio ai. Iloko o ka Hale komo o Olepau o Kapo, he hoahanau no Hiiaka. Ike oia aole hookipaia kona hoahanau; ku ae la oia a hoi i kona hale, hoolale oia ia Puanui kana kane i mea ai kahu i paha, o Luau. Ua makaukau ka hale o Kapo i na mea ai; (E hoi mai ana o Hiiaka ma a waena o ke Alanui; ua loohia ia o Olepau e ka mai, a aneane e pilikia; Hoounaia ke kanaka e kii ia Hiiaka, me ka puaa pu, hoolohe mai o Hiiaka e alala aku ana ka puaa, ia wa, ua hoaa loa ia ke kanaka me ka puaa, ua ninau ke kanaka ia Hiiaka, ua hoohokaia: pela ko laua loaa ole ana, a hiki lakou ma ka Hale o Kapo, ua makaukau, ua pau i ka ai; a hiki i ke aumoe make iho la o Olepau, nona ka mea i manaoia.)
B. Kalaiohauola. Wailua, Kauai, Iulai 4, 1860.

Summary — A Little Story and Some Chants

Hi‘iaka and her companion Wahine‘ōma‘o traveled to Hā‘ena, Kaua‘i and returned Lohi‘auipo, Pele’s mortal lover to life. Hi‘iaka, Wahine‘ōma‘o and Lohi‘au then departed from Kaua‘i on their journey to the island of Hawai‘i where Lohi‘au would be reunited with Pele. Arriving at Wai‘anae, Hi‘iaka went overland, instructing Lohi‘au Wahine‘ōma‘o to continue by canoe, where she would later rejoin them at Pu‘uloa.

Hi‘iaka walked inland and passed over the summit of Pōhākea, from where she looked to Hawai‘i and saw her beloved friend, Hōpoe dancing on the shore. She then descended (across Honouliuli) and arrived at Pu‘uloa where she boarded their canoe and traveled on to Māmala and then met with the chiefess Pele‘ula (for whom the place in Honolulu is named). They then traveled by canoe on to Moloka‘i and then to Maui…

While on Maui, Hi‘iaka chanted a mele in which she described certain places where she had traveled. One of the lines returns to the plains of Honouliuli in which she said:

> “O Kaupea i ka aina kanaka ole…”
> (Kaupe‘a is a land without people…)

3.2.2.2 *He Moolelo Kaao no Hiiakaikapoliopele…*
(A Hawaiian Tradition of Hi‘iaka who is Held in the Bosom of Pele…)

Between 1860 and 1928, several important Hawaiian language publications provided variations in telling of the Pele and Hiʻiaka epic tradition. The narratives cited below were published in the Hawaiian newspaper *Ka Hoku o Hawaii* from September 18, 1924, to July 17, 1928, through the partnership of Julia Keonaona, Steven L. Desha Sr., Isaac Kihe, and others. They artfully retold this tradition, embellishing it with descriptions of places and events in history, thus bringing the knowledge of place forward to later generations.

The following excerpts offer important details pertaining to wahi pana, traditional and customary practices and the naming of places visited by Hiʻiaka as she traveled into and across lands of the Honouliuli ahupuaʻa.

Ka Hoku o Hawaii
He Moolelo Kaao no Hiiakaikapoliopele...

January 18, 1927 (page 1)

Seeing the beauty of Kaʻala, Hiʻiaka chanted:

> Beloved is the dew of Kaʻala,
> That dew which bears the fragrance of the nene grasses,
> [fragrant dew which] Kissed the natives of Puʻuloa,
> One searches far for love...

January 25, 1927 (page 1)

...As Hiʻiaka and her companions prepared to depart from Pōkaʻī, she told Lohiʻau and Wahineʻōmaʻo, that they would travel by canoe, while she would travel for a while over land. They would meet again at Kou [Honolulu], and she instructed them "As you travel, you will arrive at a place where a point juts out into the sea. That will be Laeloa [Barbers Point]; do not land there. Continue your journey forward, and as you continue your journey, you will see a place where the ocean lies calmly within the land. That will be ʻEwa; do not land there. Continue your journey and you will reach a place where the mouth [of the land] opens to the sea (hamama ana ka waha i ke kai). That is Puʻuloa, do not land there either. That is the entry way to ʻEwa... The travelers then parted and began their journeys.

February 8, 1927 (page 1)

Hiʻiaka continued to the uplands along the trail which passes through Waiʻanae. Now the trail upon which Hiʻiaka chose to travel, is the trail which passes

through the heights of Pōhākea. Hiʻiaka passed along the kula of Māʻili, and then turned to look at the uplands. She saw the dazzling light of the sun on the uplands of Lualualei and Hiʻiaka chanted:

The sun is hot!
The sun is hot!
The heat of the sun is on the plain of Lualualei
The sun chews it up entirely…

Hiʻiaka then continued her ascent on the trail in the stifling heat of the sun, and she chanted:

The path is at Waikonene,
Ascending at Kamoaʻula,
The heat of the sun is upon the breast,
ʻĪlio is born upon the back of Pūhāmaloʻo,
The nāulu winds rage,
Breaking the stream, but the breast of Pūhāwai is quiet,
The kaiaulu breeze seems to fight and rebel against the people,
Striking and causing the noses to rage,
The mucus flows freely,
In the hot sun of Lualualei.

From the heights of Pōhākea, Hiʻiaka looked to the shores of ʻEwa, where she saw a group of women making their way to the sea. The women were going down to gather pāpaʻi [crabs] and limu [seaweeds], and to gather the mahamoe, ʻōkupe [both edible bivalves], and such things as could be obtained along the shore of that land. Hiʻiaka then began to chant about those ladies:

The Kehau breeze is there below Waiʻōpua,
Bearing the fragrance of the kupukupu ferns across the plain,
The coolness is laid upon the grasses,
A coolness laid upon the sea of ʻEwa,
ʻEwa is made cold [unfriendly]
because of the fish which hushes voices,
Be silent in that breeze.

Hiʻiaka saw the women moving ahead to the shoreline, just like the cold Waikoloa wind that blew from the uplands of this place. And this was why Hiʻiaka had chanted to them. Hiʻiaka then turned towards the canoe on which

her companion and the man [Lohiʻau] were traveling. They were paddling and were no longer talking, for Hiʻiaka had admonished them, warning—

ʻEwa is made cold because of the fish
that hushes voices,
Be silent!

Now, the famous fish of ʻEwa in those days when the wind blew because of conversations, was the pipi [pearl oyster]. Only when it was very calm could one go to catch the pipi. If anyone spoke while going to get the pipi, the breeze would cause rippling on the water's surface, and the pipi would be hidden from sight.[2] In this way, Hiʻiaka had instructed Wahineʻōmaʻo and Lohiʻau to be quiet like the women of ʻEwa who were going fishing. If one spoke, the angry winds would blow and bring misfortune…

February 15, 1927 (page 1)

…Turning her gaze towards the island of Hawaiʻi, she could see the flames of Pele in the lehua forest of Hōpoe, and she chanted out—

Beautiful is Pālailai, sacred assembly of the woman,
I set up the drum of the sacred voice,
The voice of the ocean is what I hear,
The natives hear it
[The stormy ocean of Waialua, could reportedly by heard in ʻEwa],
The birds drink the water caught in the noni leaves,
The billowy clouds pass in the calm,
The fires of Hawaiʻi rise above me…

…Hiʻiaka then departed Pōhākea, descending to the plain of Keahumoa [in the uplands between Waipiʻo and Honouliuli]. It was at this place that she saw several women gathering the blossoms of the maʻo [*Gossypium tomentosum*, an endemic, yellow-flowered hibiscus that grows on the dry land plains] with which to string garlands for themselves. She then saw them sit down and begin to string and complete the garlands for themselves, so that they could adorn their necks. These women adorned themselves in the mao garlands and were really quite beautiful. Hiʻiaka then felt her own neck, for she was without a lei. Hiʻiaka then thought about what to say to the women regarding the garlands

[2] It was believed that talking would cause a breeze to blow that would, in turn, frighten the pipi (see Pukui, 1983).

with which they had adorned themselves. She then thought within herself, I am going to ask them for a lei that they had been burdened with making. If they have aloha for me, then there is no kindness which they shall not have, but if they deny me, so it will be. Hiʻiaka then offered a chant to the women who had strung their garlands upon the plain which is burned by the sun.

The plain of Keahumoa wears the maʻo blossoms as its lei
Adorning the women who string garlands in the wild
It is like the lehua blossoms of Hōpoe
Lehua blossoms upon which the sun beats down
On the nodding koaiʻa flowers of the cliff
On the rooftops of the houses at ʻĀpuku
Rising in the presence of the cliff of Puʻukuʻua
The land is indeed a chief
Man is indeed a slave
I am indeed a slave to aloha—love
It is love which invites us two—come
I come–

Then one of the women answered her in a kindly manner, "Wait stranger, before you go on your way, here is your lei." It is true what you have said, "He kauwa ke kanaka na ke aloha, a na ke aloha no e kono, ao ka naue holookoa no ia o ke kino." (Man is a slave of love or compassion, and it is aloha which beckons to us and moves us to come forth). The woman then moved forward and placed her lei upon Hiʻiaka, and the other women did the same as well. The women then saw the true beauty of Hiʻiaka and they urged her to join them for a meal at their home on the shore of ʻEwa.

Hiʻiaka then spoke to them, "I am not hungry, for your kindness has satisfied me. Here are the words which I share with you—In your dwelling, if one of you should meet with trouble, or if one of the people for whom you have aloha is in need, offer the chant which I offered to you, asking without shame for garlands that you had made. The chant is a prayer for the passing of troubles from you or your loved ones. Now come and kiss me, and I will depart from this long open plain."

The women stepped forward to kiss Hiʻiaka, and as they rubbed noses each one of them remembered the chant which Hiʻiaka offered when she asked for their garlands of maʻo. Thus, this chant became a prayer for those women in their days of trouble. Hiʻiaka then departed from those women who strung garlands

of maʻo on the plain and traveled towards the shore of ʻEwa, towards Puʻuloa. Turning towards the ocean of Honouliuli, Hiʻiaka saw the expanse of Leinono[3] and she said within herself:

Say! I have not forgotten you Leinono, though perhaps you think I am no good because I don't know you. Therefore, I call to you Leinono with this chant:

> Bright eye, the rising sun,
> Companion that travels arm-in-arm with the expanse of ʻEwa,
> The Amu wind that causes dust to mound up,
> Is the first born of the Moaʻe wind,
> A child that is embraced by the ʻEwa-loa [expanse of Ewa],
> Hail Leinono,
> Our companion.

Finishing her chant, Hiʻiaka then turned and saw her companion and Lohiʻau paddling their canoe. And her love welled up for her traveling companions. It was also then, that Hiʻiaka came to understand that Lohiʻau would be killed by Pele when they reached Hawaiʻi. Hiʻiaka then turned and continued her journey along the path that crossed this unpeopled plain. While walking along, she saw two women who were busy stringing garlands of ʻilima blossoms. The women were sitting alongside the trail upon which Hiʻiaka was traveling. Now when these two women saw Hiʻiaka, one said to the other, "Say, this is Hiʻiaka who is descending along the path, we must depart with haste, lest she kill us."

The two women hastily departed, and reached a stone that was situated along the side of the trail which continued on to Waiʻanae. It was at this stone that the two women transformed themselves into their supernatural moʻo [lizard] forms.

One of the lizards then went and hid in a little space on the stone, and the other went nearby. One moʻo said to her companion moʻo…

February 22, 1927 (page 1)

…"It is fortunate that we have hidden ourselves at this place, so that we may escape being killed by Hiʻiaka." Now from ancient times till recently, the place at which this stone was situated, was called "Peʻe-kāua" [We two hidden]. Now that the road has been made, the stone at which these two moʻo wahine [lizard

[3] Leinono, also written as Leilono (Kamakau, 1870b).

women] has been destroyed.

When Hiʻiaka saw that these two women had fled and taken their moʻo forms to hide on the stone along the trail, she chanted out to them:

Greetings to you two women of the plain,
It is a barren plain in the sun,
Where the sun bears forcefully down,
Having gone to hide,
We two are hidden at Peʻe-kāua,
Aloha to you two,
Here I am traveling on.

Hiʻiaka then continued walking towards the shore. Hearing Hiʻiaka's chant of affection, these two moʻo women said to one another, "Say, this is truly remarkable, for we will not die, but have been saved by Hiʻiaka. She has given us her aloha as she descends in the heat of the sun, and so it is that we shall remain upon this plain."

Descending to the flat lands of Honouliuli, Hiʻiaka then turned and looked at Puʻuokapolei and Nāwahineokamaʻomaʻo who dwelt there in the shelter of the growth of the ʻōhai [*Sesbania tomentosa*], upon the hill, and where they were comfortably refreshed by the blowing breezes. Hiʻiaka then said, "Puʻuokapolei and Nāwahineokamaʻomaʻo, do not forget me, lest you two go and talk behind my back and without my knowing, so here is my chant of greeting to you:"

Greetings to you two o Puʻuokapolei and companion
O Nāwahineokamaʻomaʻo
Set there, and dwelling
In the shade of the ʻōhai
Stringing garlands of kukui in the day,
Adorning yourselves in the garlands of the maʻomaʻo
Kaunaʻoa [*Cuscuta sandwichiana*] is the lei of the shores of Kaʻōlino[4]
There is joy in traveling.

When Hiʻiaka finished her chant, Puʻuokapolei said, "Greetings. Love to you, o Hiʻiaka! So it is that you pass by without visiting the two of us. Lo, we have no food with which to host you. Indeed, the eyes roll dizzily with hunger. So, you do

[4] Kaolino (the brightness) appears to be a variation of Koolina (interpretively translated as joyous).

not visit us two elderly women who have cultivated the barren and desolate plain. We have planted the ʻuala shoots, that have sprouted and grown, and have been dedicated to you, our lord. Thus, as you travel by, pull the potatoes and make a fire in the imu, so there will be relief from the hunger. For we have no food, we have no fish, and no blanket to keep us warm. We have but one kapa [covering], it is the pilipiliʻula [the grass *Chrysopogon aciculatus*]. When it blossoms, we go and gather the grass and plait it into coverings for us. But in the time when the grasses dry, and none is left on the plain, we two are left to live without clothing. The cold breeze blows in the night, the Kehau and Waikōloa, the cold does not remain though, and when the grasses of the land which give us warmth, begin to grow again, our nakedness is covered, and we are a little better off than the flowers of the maʻo. It is because we are left without our covering of the pilipiliʻula grass, that many people have come to say, "Waiho wale iho ka mauu o Kaiona" [Kaiona is left exposed by the grasses; (Nothing is left to the imagination)]. Aloha to you, and aloha be with you in your travels o Hiʻiaka-i-ka-poli-o-Pele, our lord.

Hiʻiaka then turned and continued her walk in the stifling heat of the sun on the plain of Puuokapolei. Hiiaka saw a mao blossom as she descended, and she picked it in the heat of the sun and chanted out Kona is made dizzy in the long days of Makaliʻi [in the summer]:

The wiliwili [*Erythrina*] trees sway, then comes the calm,
The birds of Kānehili endure,
The sun is exceedingly hot on Puʻuokapolei,
The maʻo growth is stunted on the seaward plain,
The nohu [*Tribulus cistoides*] flowers
    are like a halakea [kapa] covering
The puaʻula [young kūmū] fish seem
    to flash along the shores of Kaupeʻa
A companion [is the] Nāulu wind,
It is a traveling companion for me.

When Hiʻiaka finished her chant, she continued toward the shore, and looking to the ocean, she saw the canoe of her friend and Lohiʻau, and chanted:

My man on the many harbored sea of Puʻuloa,
As seen from the plain of Peʻekāua,
Let us dwell upon the ʻōhai covered shore,
Where the noni blossoms are twisted together,

Descending along Kānehili
I am winding along

Hiʻiaka then turned and looked back to Puʻukuʻua, Kānehoa, and Haleʻauʻau and said, "Do not forget me Puʻukuʻua mā [and companions]. And so, you do not think that I will forget you, here is a chant of endearment for you:"

It is I who travel along the shore of Puʻuloa,
Where the ʻōhai is at Kaupeʻa,
In the awe-inspiring sun,
It is seen,
It has been seen by me,
At the mountain cliffs,
Puʻukuʻua at Haleʻauʻau,
The sprouting of the kukui growth,
Dancing in the sun of Kānehoa,
Love to you my companions.

…Upon finishing her chant, Hiʻiaka continued down the trail and arrived at Kualakaʻi. At Kualakaʻi, the trail took her to a spring of cool water. Looking into the spring, she saw her reflection shining brightly upon the water's surface. Hiʻiaka also saw two lehua trees [*Metrosideros polymorpha*] growing on each side of the spring. Now these two lehua trees are completely covered with blossoms. She then picked the lehua blossoms of these two trees and made garlands for herself.

Hiʻiaka fashioned four strands to her lei, she then removed the garlands of maʻo which she had received when descending from Pōhākea, and set them aside.

She then took the garlands which she had made and adorned herself with them. Hiʻiaka then heard the voice calling out from the area of Kānehili:

Hiʻiaka is the woman
Who picked the flowers of Hoʻākalei,
And with a needle strung and made them into
four garlands, the sectioned lei of the woman,
O my younger sibling.
My younger sibling who came from the place
where the dusty wind rises from below

Overturned in the sea of Hilo-one,
The aloha is for Hilo,
Love for the lei.

That place, Hilo-one, which is mentioned in the mele, is situated on the northern side of Kualakaʻi, towards Kalaeloa. And the name of the spring in which Hiʻiaka looked and saw her reflection was Hoʻākalei [reflection of a lei]. It was at this place that Hiʻiaka saw the two lehua trees growing, from which she picked the blossoms to make her four garlands.

Hearing the chant, Hiʻiaka turned toward where it had come from, and saw her older sister Kapo looking at her. Kapo had arrived at Oʻahu from Maui, where she was teaching the practices of the hula. Seeing Kapo, Hiʻiaka cried out with affection for her older sister…

March 1, 1927 (page 1)

So, it is you o Waialua-iki,
Of the sun darkened cliff of Uli,
Liawahine has gone traveling,
O woman that stands calling from the cliff,
I am adorned with a lei,
Yes, I am wearing garlands of the misty-centered lehua blossoms,
The lehua that grows along the water's edge at Hoʻākalei,
My lehua of Hilo-one,
On the shores of Kaʻōlina and Kaupeʻa,
I am adorned.

The reason that Hiʻiaka presented this chant to her elder sister Kapo, saying, "kui pua lei, o Hoakalei" [stringing flower garlands of Hoʻākalei] was because in her chant, Kapo had inquired about Hiʻiaka's picking the flowers from the spring of Hoʻākalei and making them into four garlands for herself… As it is seen in this mele, Hilo-one is on Oʻahu, there at Kualakaʻi, near Kalaeloa.

Thus it is understood that through traditions like this, we are given direction in knowing about the names of various places of the ancient people, and which are no longer known in this time… Hiʻiaka then continued her journey toward the shore of Puʻuloa, and she thought about the words that she had earlier spoken to Wahineʻōmaʻo and Lohiʻau, and she chanted:

I will not travel to the shore of Kaupeʻa,

To Kaupeʻa where the ʻōhai of Kānehili are found,
I will turn away…

…Hiʻiaka then arrived at a place where many people were gathered together, and she overheard them talking about preparations for a journey to Kou, which is the old name for Honolulu. The people were preparing to go to the court of the chiefess Peleʻula, who was hosting kilu[5] games…

March 8, 1927 (page 1)

…Learning of the contest that was to be held at Kou, Hiʻiaka had reservations about having Lohiʻau stop at the court of the chiefess Peleʻula. So, she chanted, calling to Lohiʻau, telling him to bring the canoe to shore at Puʻuloa. When Hiʻiaka chanted, everyone became quiet, because they were awed by the beauty of her chanting voice. One of the women in the group then called to Hiʻiaka, "You are a stranger to us in appearance, but your chant indicates that you are very familiar with this shore, how is that so?" Hiʻiaka confirmed that she was indeed a visitor, and yet familiar with the places of this land. She then said, "Ua maikai no kau noi e ke kamaaina maikai, aka, i Kou hoi e hui aku ai na maka" [You have asked a good question, kind native, but it is at Kou, that all the faces (eyes) shall meet].

Thus, it is seen that when Hiʻiaka responded to the woman of Puʻuloa, that this famous saying of the people of Oʻahu came about, "Hui aku na maka i Kou" [The faces shall meet at Kou]… Now, Lohiʻau had heard the chant of Hiʻiaka, and he drew the canoe to the shore. When Hiʻiaka boarded the canoe, she bid farewell to the people of Puʻuloa and said, "Hui aku o na maka i Kou" [We will meet again].

They then directed their canoe seaward and went out of opening of Puʻuloa. Hiʻiaka turned and looked towards the land where she saw the dwelling places of Kinimakalehua, Leinono, and Keālia. She called out to them, "So you do not forget me, here is a chant for you" —

Reddish yellow are the rains of Kinimakalehua,
Leinono is the companion above, and Puʻuloa is shoreward,
The journey across the expansive sands of ʻEwa has been made arm-in-arm,

[5] Kilu is a Hawaiian game in which a gourd or halved coconut shell is tossed at an opponent's pob (something like horseshoes). The individual who successfully hit the pob that he or she had selected was the winner and could claim a kiss or some other favor from the opponent (see Malo, 1951:216).

I am at ʻEwa, I greet you o Leinono, we are all companions

In this chant of Hiʻiaka, she spoke the famous saying that is the pride of the descendants of ʻEwa; "Ke one kui-lima laula o Ewa" [The sands of ʻEwa, across which everyone joined hand-in-hand]. These words of Hiʻiaka are a famous saying of this land to this day. As the canoe continued toward Kou, passing the land of Kalihi, Hiʻiaka looked again towards Leinono and Keālia, and she chanted:

Hail to you o Leinono, o Kinimakalehua, o Keālia who is below, aloha,
Here is the supplication, the offering, of the one who has traveled by.
It is a voice or song, only a voice—

She then turned forward and the canoe arrived at Nuʻuanu…

3.2.2.3 *He Moolelo no Kamapuaa (A Tradition of Kamapuaʻa)*

S.W. Kahiolo contributed the tradition of Kamapuaʻa to the native newspaper *Ka Hae Hawaii* in 1861. This is the earliest detailed account of Kamapuaʻa, a multi-formed deity of traditional significance on Oʻahu and all the major islands of the Hawaiian group. Kamapuaʻa is a part of the Lono god-force and possessed many kino lau (body forms), representing both human and various facets of nature. He was born in pig-form to Hina (mother) and Kahikiʻula (father) at Kaluanui in the Koʻolau loa district of Oʻahu.

Excerpts from Kahiolo's "He Moolelo no Kamapuaa" provide details on places of traditional cultural significance in the ʻEwa District. This moʻolelo offers traditions associated with the naming of, or traditional importance and uses of, localities from Honouliuli to Moanalua. Waimānalo, Waikele, Waipiʻo, Waiawa, Waimano, Waimalu, Puʻuokapolei, Keanapuaʻa, Puʻuloa, Moanalua, Waipahu, and Kuolohele are named in the following excerpts.

Ka Hae Hawaii
He Moolelo no Kamapuaa.

July 10, 1861 (page 60)

…When the chief Olopana was killed, the island of Oʻahu became Kamapuaʻa's. He then fetched his people (who he had hidden) from above Kaliuwaʻa and brought them down, and they then returned to their lands. The priest (Lonoawohi) asked Kamapuaʻa if he could be given some lands for his own as well. He asked, "Perhaps the water lands might be mine." Kamapuaʻa agreed. This was something like a riddle that the lands which have the word "water"

[wai] in their names would be his, like: Waialua, Waianae, Waimanalo, Waikele, Waipio, Waiawa, Waimano, Waimalu, Waikiki, Waialae, Wailupe, Waimanalo 2, Waiheʻe, Waiahole and etc.

The parents of Kamapuaʻa (Hina and Kahikiʻula) thought that this amount of land was too great, and they criticized Kamapuaʻa for agreeing to it. But his elder siblings and grandmother did not criticize him, agreeing to the priest's request. The remainder of the lands went to Kamapuaʻa's family…

[Following a journey to Hawaiʻi, where Kamapuaʻa fought with Pele, he returned to Oʻahu. Upon arriving at Oʻahu, Kamapuaʻa learned that the island was under the rule of another chief, that his parents had been chased to Kauaʻi, and that his favorite brother Kekeleiaiku had been killed. The following excerpts include accounts describing sites and activities in ʻEwa.]

August 7, 1861 (page 76)

…Kamapuaʻa walked to Keanapuaʻa, on the shore at Hālawa, and he slept there. When he woke up from his sleep, he urinated in the sea, and that is why the fish of Puʻuloa have a strong smell to them, so say the uninformed.

From there, he went to Honouliuli and saw his grandmother, Kamauluaniho, sitting along the side of a taro pond field. She was looking with desire to the lands below, where some of the men of the king were working and wishing that they would leave even a little bit of taro behind for her to eat. Kamapuaʻa then went and stood next to her and greeted her. She replied, greeting him, but did not recognize him as her grandson. He then asked her why she was sitting there. She told him, "I am looking to the lowlands, where the men of the chief are working, and wishing that they would leave a little behind so that I may have some food." Kamapuaʻa then said to his grandmother, "How did you live before?"

She answered, "What is it to you? My grandchildren have died, one in a battle with Pele, another buried, and one on Kauaʻi." This is how she spoke, not understanding that the one before her was her own grandson. Kamapuaʻa then answered, "I am going to get some food for me." She asked, "Where will you get your food?" He told her, "I will go and perhaps ask for some, and maybe they will give me some of their food."

August 14, 1861 (page 80)

Kamapuaʻa went and said to one of the men who was pulling taro, "Let the two of us pull taro for us." The man agreed, and the two of them pulled taro, some for the man and some for Kamapuaʻa. Kamapuaʻa pulled a large quantity and then carried it up to his grandmother. Because of the large load that he carried, Kamauluaniho suspected that the man was indeed her own grandson, Kamapuaʻa. She chanted a name song to Kamapuaʻa and he chanted to her as well. Together, they carried the taro to the house she shared with another old woman, at Puʻuokapolei. Setting down their bundles of taro, Kamauluaniho placed Kamapuaʻa on her lap and wept over him. The two were joined by the other old woman and she was introduced to Kamapuaʻa, who she thought had been lost. Preparations were made for a meal, and Kamapuaʻa and the old woman went out to her garden to collect sweet potatoes. They then returned to the house and ate…

August 21, 1861 (page 84) – August 28, 1861 (page 88)

…Kamapuaʻa went to Nuʻuanu and performed a ceremony, bringing his brother, Kekeleiaiku, back to life. He then traveled to Kou where he killed the chiefs and people who had killed his brother and forced his family into their lives of despair… Returning from Kou, Kamapuaʻa met his friend Kuolohele and the two of them walked from Moanalua. They reached Waiawa and continued on to Waipahu. Standing on the edge of the stream there, Kuolohele went to bath in the stream. Kamapuaʻa noticed that Kuolohele had a large lump [puʻu] on his back. Picking up a stone, Kamapuaʻa struck the lump on Kuolohele's back.

Kuolohele cried out, thinking that he was about to be killed. Kamapuaʻa reassured him that he was not going to die, but that instead, he would be healed. He then instructed Kuolohele to touch his back. In doing so, Kuolohele found that the lump was gone.

Kamapuaʻa then picked up the stone and set it on the cliff-side. That stone remains there at this time, and it is a stone which many travelers visit [the stone is named Kuolohele]… Kuolohele and Kamapuaʻa continued traveling together for a short distance, until Kuolohele reached his destination. Kamapuaʻa continued to **Puʻuokapolei**, where he met with his grandmother and brother. He told them what had transpired, and he then set off for Kauaʻi, to bring his parents back to Oʻahu…

3.2.2.4 *He Kaao no Pikoiakaalala (The Tradition of Pīkoiakaʻalalā)*

The tradition of Pīkoi-a-ka-ʻalalā (Pīkoi-son-of-the-crow) was printed in the Hawaiian language

newspaper *Ka Nupepa Kuokoa* between December 16, 1865, and March 10, 1866, and was contributed by S.M. Kaui.

Pīkoi-a-ka-ʻalalā was born to ʻAlalā and Koukou on the island of Kauaʻi and his family were kūpua (beings with supernatural powers and multiple body-forms). Pīkoi-a-ka-ʻalalā possessed exceptional sight and excelled in the Hawaiian art of pana pua (shooting with bow and arrow). In the tradition of Pīkoi-a-ka-ʻalalā, many localities throughout the islands are named for places where he competed in matches with archers, shooting ʻiole (rats) and manu (birds) from great distances. The tradition is set in the late 1500s when Keawe-nui-a-ʻUmi is the king of Hawaiʻi Island.

> *Ka Nupepa Kuokoa*
> He Kaao no Pikoiakaalala.
>
> December 23, 1865 (page 1)
>
> [While describing Pīkoiakaʻalalāʼ s travels around Oʻahu, readers are told]:
>
> …The districts of Oʻahu are thus known… The land from Piliokahe to Kapukakī makes up the district of ʻEwa…

3.2.2.5 *Moolelo no Puapualenalena (The Tradition of Puapualenalena)*

Puapualenalena was a supernatural dog who lived during the time of Hakau, the half-brother of Hawaiʻi's ʻUmi-a-Līloa (ca. AD 1525). His primary residence and adventures occurred on Hawaiʻi, but he also traveled across the islands. While on Oʻahu, the heights of Pōhākea where the mountain trail descends into Honouliuli were mentioned. From there he traveled to the shore of Puʻuloa.

> *Ka Nupepa Kuokoa*
> He Kaao no Pikoiakaalala.
>
> February 24, 1866 (page 1)
>
> …While sailing from Kauaʻi, Puapualenalena and his companions reached the Waiʻanae coast. Puapualenalena leapt to shore and traveled across the land to Pōhākea from where he looked upon the lands of ʻEwa and Waialua… He then went down to the shore of Puʻuloa where the canoes had landed and joined the travelers to continue the journey to Hawaiʻi…

3.2.2.6 *Ka Amaama o Kaihuopalaai (Tradition of the Mullet of Kaihuopalaʻai)*

One of the famous traditions of Honouliuli centers on the importance of the ahupua‘a as the source of the ‘anae holo, the annual mullet migration around the island of O‘ahu. The tradition was originally published in 1866 under the title “Ka Amaama o Kaihuopalaai” (*Ke Au Okoa*, September 17, 1866, page 3). In 1896 it was published again under the title “He Moolelo Kaao no ka Puhi o Laumeki” in a major account that cited numerous locations, resources and residents of the Honouliuli ahupua‘a. Both traditions are cited below; the earlier one is provided in the original Hawaiian language as it sets the foundation for the more detailed account of 1896.

Ke Au Okoa
Ka Amaama o Kaihuopalaai.

Kepakemapa 17, 1866 (aoao 3)

Ma ka auina la o ka Poalua o ka pule i hala iho nei, ua olioli makou i ka ike ana‘ku i ka lehulehu e hoi ae ana me na puolo anae, he ewalu, a he umi o ka hapawalu. Ua hauoli nui no ko ke kulanakauhale nei i keia mea, ka hoea hou ana mai o ka anae holo, a ua iho nui ka lehulehu e kuai, a o ko makou Hale Pai holookoa nei no hoi kahi i iho pu i ka makeke e kuai ia ai. He wa no aia iloko o ka makahikiki e holo mau ai keia i-a. O Kapapaapuhi ma Ewa, a me Kaipapau ma Koolauloa, oia na wahi i oleloia e kahiko, na wahi hoolulu ia o ua i-a nei, he anae. O kona home mau nae o Kapapaapuhi.

Eia malalo nei he wahi kaao mai kekahi elemakule mai, e pili ana i ka ano o ke kaapuni ana o ka anae a puni keia mokupuni.

He Kaao no Kaanae.

Aia ma Kapapaapuhi, ma Ewa, kahi i noho ai kekahi ohana nui. Na ka makuakane o keia ohana kekahi kaikamahine maikai, a na makua i aloha nui ai. Ua oi ae paha ke aloha o na makua i keia kaikamahine mamua o na keiki e ae. Ua pii ae ua kaikamahine, a aneane paha he umikumamalima ona mau makahiki, hoohaumia ia iho la oia e kekahi mea. I ka ike ia ana o ke ano hoohaumia ia o ua kaikamahine nei e na makua, ninau aku la na makua ia ia me ke ano e hai mai la hoi ke keiki i ka hua o ka lokomaikai; aohe nae wahi mea a hai mai. Huna eleele loa nohoi ke kaikamahine.

Ninau pinepine aku la na makua e hai mai, aohe wahi mea a hai mai; a no keia mea, kipaku haalele aku la na makua me ka hoohuakaeo, a i aku i ke kaikamahine, “O hele e imi i kau loaa, a mai manao mai oe he hale!” Ku ae la

ua kaikamahine nei o ka hupe o na waimaka, haalele iho la oia i ka ohana.

Hele aku la keia a hiki i Kaipapau, makemake ia mai la keia e kekahi kanaka, no ko ia nei ano wahine ui no hoi paha, a *hoao* ia ae la laua nei he kane a he wahine, a noho iho la ia he wahine no ka pali hauliuli. O ka hana nui a ua kane nei o ka mahiai i kela makahiki keia makahiki. Oi mahi ai aku ua kanaka nei a piha ka aina i ka ai, ka uala, ka maia, ke ko, a me kela mea keia mea. I ka piha ana o ka aina i kela mea ai keia mea ai, a i kekahi la, olelo mai la ke kane i ka wahine, "Kanu aku nei kaua i ka aina a piha i ka ai, a me kela mea keia mea, a eia la auanei i hea ka inai e pono ai o keia ai!"

Kulou ka wahine ilalo, a pane mai la, "Ua i-a! Ina ke mau la no ke aloha o kuu mau makua ia'u, alaila ka hoi loaa ka inai o ka ai a kaua i luhi ai. Hele no ka hoi oe la, a hala mai ke Ahupuaa mea la, o mea ia, a hele aku no oe. Pela no ka hoi oe e hele ai, a hiki oe i ka aina e kapa ia ana la o Ewa, alaila, ninau iho no oe ia Kapapaapuhi. Aia ka hoi ilaila ko'u nui kahi i noho ai. Hele no oe la, a ilaila, kolea iho oe i o'u mau makua; a i ninau mai ia oe i kau huakai ea, alaila, hai aku oe he i-a kau huakai i hiki aku ai ilaila. I haawi ia mai anei oe i ka ia iloko o ka hale, mai lawe anei oe. Olelo aku oe i ka ia iloko o ke kai." Ae mai la ua kanaka nei.

He anahulu mahope iho, kaapuni iho la ua kanaka nei, e hele ana i ka hale pa leo he makuahonowai. Ninau hele aku la no hoi keia a hiki wale i ua aina hanau nei o ka wahine, a hai ia mai la no hoi keia i ka hale, kahi i noho ai o kona mau makuahonowai. Hele aku la no hoi keia a hiki ilaila, kolea iho la.
Uwe mai la ka ohana holookoa, me he mea la o ke kaikamahine okoa no, ua hoi aku. Uwe iho la a pau, hiowai a luana iho la, ninau mai ka makuahonowai kane, "Kau huakai o ka hiki ana mai?" Olelo aku no hoi keia, "I hoouna ia mai nei au i i-a." "Ae," wahi a ka makuahonowai; "eia ae no ka i-a la, he umi halau i piha, a hoi [l]awe ia i elima." Hai aku la no hoi keia, e like me ka olelo a ka wahine, o ka ia iloko o ke kai. Kulou iho'la ka makuahonowai ilalo a pau, olelo mai la, "O ka i-a ia, lawe ia, aia a hoi oe lawe pu me ka ia!"

He mau la mahope mai, hoi mai la ua kanaka nei, a Kapuukolo i Honolulu nei moe, a i ala ae ka hana o ka hiamoe i kakahiaka ae, e kuu mai ana kanaka i ka anae. Manao iho la keia, he i-a no la no ia wahi, noho ilaila ai i-a. Pela aku ana a hiki i ka Luahole i Waikiki. Mai laila aku keia a Maunalua, o ka hana no ka na kanaka o ke kuu i ka i-a. Pela wale a hiki keia i Kaipapau i ke ahiahi o kekahi la, a i ala ae ka hana a ka wahine a nana aku i ke kai e ula mai ana ke kai i ka i-a, a i aku keia i ke kane, "Ai aka i-a au i hele aku nei." Akahi no keia a

hoomanao ae, o ka ia no ka ia e kuu mau ia ana ma na wahi a pau ana e moe ai.

O keia iho la ka ke kumu i holo ai a puni keia moku, pela la ka olelo a kahiko, aka, pela paha, aole paha, he anoninoni loa ko makou mau manao ma ia mea, e like me ka kahiko e olelo nei.

3.2.2.7 *He Moolelo Kaao Hawaii no ka Puhi o Laumeki (A Tradition of Pūhi Laumeki [A Deified Eel] and how the 'Anae-holo came to Travel around O'ahu)*

"He Moolelo Kaao Hawaii no ka Puhi o Laumeki, Ka Mea I Like Me Ka Ilio Puaapualenalena" was published in *Nupepa Ka Oiaio* between November 8, 1895, and February 14, 1896. The mo'olelo was submitted to the paper by native historian, Moses Manu. The mo'olelo primarily focuses on wahi pana and features associated with the lands of 'Ewa, O'ahu, recounting events associated with the birth and deification of an eel (pūhi) guardian of fisheries and his siblings, among whom was Mokumeha. The narratives include important descriptions of Honouliuli as the source of the 'anae holo and fisheries around the island of O'ahu. The following installments are summaries, not direct translations of these primary resource documents.

Nupepa Ka Oiaio

November 8, 1895 (page 4)

...It is perhaps not unusual for the Hawaiian people to see this type of long fish, an eel, about all the shores and points, and in the rough seas, and shallow reefs and coral beds of the sea. There is not only one type of eel that is written about, but numerous ones that were named, describing their character and the type of skin which they had. In the ancient times of our ancestors, some of the people of old, worshipped eels as Gods, and restrictions were placed upon certain types of eels. There are many traditions pertaining to eels. It is for this fish that the famous saying "An eel of the sea caverns, whose chin sags."[6]

Indeed, this is the fish that was desired by Keinoho'omanawanui, the eels of the fishpond of Hanaloa, when he was living with his friend, Kalelealuaka, above Kahalepō'ai at Waipi'o uka, when Kākuhihewa was the king of O'ahu. It was necessary for us to speak of the stories above, as we now begin our tradition.

[6] 'Ōlelo No'eau #1545, "Ka pūhi o ke ale, ahu ke 'olo." According to Pukui, this 'ōlelo no'eau is an expression that was used to describe a prosperous person (1983:167).

It is said in this account of Laumeki, that his true form was that of an eel. His island was Oʻahu, the district was ʻEwa, Honouliuli was the land. Within this land division, in its sheltered bay, there is a place called Kaihuopalaai. It is the place of the ʻanae, which are known about Honolulu, and asked for by the people, with great desire.

Kaihuopalaʻai was human by birth, but he was also a kūpua [dual-formed being], who was born at Honouliuli. His youngest sister was known by the name of Kaihukuʻuna. In the days that her body matured and filled out, she and some of her elders left ʻEwa and went to dwell in the uplands of Lāʻiemaloʻo, at Koʻolauloa, where she met her husband. The place known by the name Kaihukuʻuna, at Lāʻiemaloʻo, is the boundary of the lands to which the ʻanae of Honouliuli travel.

At the time that Kaihukuʻuna was separated from her elder brother and parents, Kaihuopalaʻai had matured and was well known for his fine features, and his red-hued cheeks. He was known as the favorite of his parents and all the family. There was a young woman, who like Kaihuopalaʻai, was also favored by her family. Her name was Kaʻōhai, and she lived at the place where the coconut grove stands at the estuary of Waikele and Waipiʻo. Thus, these two fine children of the land of the fish that quiet voices [ka ia hamau leo], that is ʻEwa, were married in the traditional manner.

In their youth, the two lived as husband and wife in peace. And after a time, Kaʻōhai showed signs of carrying a child. This brought great joy to the parents and elders of these two youths. When the time came for Kaʻōhai to give birth, her child was born, a beautiful daughter, who also had the same red-hued nature as her father. While Kaʻōhai was cleaning the child and caring for the afterbirth, she looked carefully at her daughter and saw a deep, red-spotted mark that looked like an eel, encircling the infant. Everyone was looking at the mark, contemplating its meaning, and Kaʻōhai was once again taken with birth pains. It was then understood that perhaps there would be a twin born as well. But when the birth occurred, an eel was seen moving about in the blood, on the side of Kaʻōhai's thigh. This greatly frightened the family and attendants, they fled, taking the child who had been born in a human-form, with them. Kaihuopalaʻai also separated himself from his wife. Kaʻōhai remained with blood stains upon her, and no one was left to help her.

It was the eel which had been born to her, that helped to clean Kaʻōhai. He worked like a human, and Kaʻōhai looked at the fish child which had been born

to her, and she could find no reason to criticize or revile him. Kaʻōhai then called to her husband, Kaihuopalaʻai, telling him not to be afraid, and he returned. They both realized the wondrous nature of this child and cared for him at a good place, in the calm bay of Honouliuli. They named this eel child, Laumeki, and his elder sister, born in human-form, was named Kapapūhi. This eel became a cherished child and was cared for as a God. Laumeki, the one who had been consecrated, asked that the first-born, his sister, also be cared for in the same manner, and a great affection was shared between the children born from the loins of one mother.

November 15, 1895 (page 4)

Thus, it is told in this tradition, that this is the eel Laumeki. It is he who caused the ʻanae to remain at Honouliuli, and why they are known as "Ka Anae o Kaihuopalaai" [The mullet of Kaihuopalaʻa]. With the passing of time, the forms of this eel changed. At one time, he was red with spots, like the eel called pūhi Paka, at other times he was like the Laumilo eel.

A while after the birth of Laumeki, another child was born to Kaʻōhai, a son. He was named Mokumeha, and he was given to Wanue, an elder relative of Kaihuopalaʻai's, to be raised. There are at Honouliuli, Ewa, places named for all of these people. The natives of that land are familiar with these places. For this Wanue, it is recalled in a song:

> The thoughts are set upon the sea at Wanue,
> I am cold in the task done here...

...The eel-child Laumeki, followed the fish around in the expanse of the sea, and on the waves of this place. This was a work of love and care, done for his parents and family, so that they would have no difficulties. In those days, this eel lived in the sea at a place where a stone islet is seen in the bay of Honouliuli, and he would not eat the fish which passed before him. He did these things for his parents and sister Kapapapūhi.

Laumeki was very watchful of his family, protecting them from sharks, barracudas, and the long-billed marlin of the sea which entered into the sheltered bay of Honouliuli, the land of his birth. Because of his nature, Laumeki did many wondrous things. It was Laumeki who trapped the Pūhilala that had lived out in the sea, in the pond of Hanaloa. This Pūhilala was the one who bragged about his deeds, and when he was trapped his eyes glowed red like the flames of an earthen oven.

It is perhaps worthy here, my readers, that we leave Laumeki and speak of Mokumeha and his journey around Oʻahu. At the time when the sun rested atop the head [describing Mokumeha's maturity], and his fine features developed. He was very distinguished looking. At that time, he was determined to travel around the island of Oʻahu. He asked his parents and guardian permission, and it was agreed that he could make the journey.

Mokumeha departed from Honouliuli and traveled to Waiʻanae, and then went on to Lāʻiemaloʻo, at Koʻolauloa, the place where the youngest sister of his father dwelt. She [Kaihukuʻuna] was pounding kapa with her beater and thinking about her elder brother. She rose and went to the door of her house and saw a youth walking along the trail. Seeing the youth, her thoughts returned once again to her brother Kaihuopalaʻai and his wife Kaʻōhai. The features of this youth in every way, looked like those of his father, and upon seeing him, tears welled up in Kaihukuʻuna's eyes. She called to the youth inquiring about his journey, and he responded, answering each of the questions. The moment the youth said the name of his parents, and the land from which he came, Kaihukuʻuna wept and greeted her nephew in the custom of the people of old.

This greatly startled her husband who was out in the cultivated gardens tending to his crops. He thought that perhaps one of his own family members had arrived at the house. When he reached their house, he saw the strange youth and he quickly went to prepare food for their guest. In no time, everything was prepared, and he then went to his wife asking her to stop her crying and invite the visitor to eat of the food that had been prepared. He told his wife, "Then, the talking and crying can resume." She agreed and they sat down together and ate and had a pleasant time talking.

Kaihukuʻuna then asked Mokumeha about the nature of his trip, and he explained that he was traveling around Oʻahu on a sight-seeing trip. Kaihukuʻuna told him, "It is wonderful that we have met you and can host you here." She then asked him to consider staying with her and her husband at Lāʻiemaloʻo, where all of his needs would be met. "We have plenty of food and if you desire a wife, we can arrange that as well." Mokumeha declined the invitation, explaining his desire to continue the journey and then return to Honouliuli.

November 22, 1895 (page 4)

Now it is true that at this place, Laiemaloo, there was grown great quantities of

plant foods, but the one thing that it was lacking was fish. Mokumeha, his aunt, and her husband, Pueo, spoke about this, and it was determined that Pueo should go to Ewa. Mokumeha instructed him to seek out Kaihuopalaai, Kaohai, Kapapaapuhi, and Laumeki, and to ask for fish. He told them that "Laumeki will be able to lead the fish to you here at Laiemaloo."

Pueo departed for Honouliuli [various sites and features are described along the way]... and he met with Kaihuopalaʻai. Kaihuopalaʻai's love for his sister welled up within him, and it was agreed that fish would be given to her and her family. But rather than sending fish home with Pueo in a calabash—fish which would be quickly consumed, causing Pueo to continually need to make the journey between Lāʻiemaloʻo and Honouliuli—Kaihuopalaʻai said that he would "give the fish year-round."

November 29, 1895 (page 4)

When Kaihuopalaai finished speaking, Pueo exclaimed, "This is just what your son said you would do!" Kaihuopalaai and Pueo then went to the house of Kapapapūhi, who, when she learned that Pueo was her uncle, leapt up and greeted him. They discussed the request for fish and ate while speaking further. Kaihuopalaʻai then asked, "Where do you come from?" Pueo answered, "Lāʻiemaloʻo," and he described the land to her.

The next day, Kapapapūhi and Pueo went on a canoe out to the stone islet where Laumeki lived. They took with them food, and as they drew near the stone, the water turned choppy like the water of the stormy winter season. The head of Laumeki rose out of his pit and remained on the surface of the water. Kapapapūhi offered him the ʻawa and food she had brought with her. This eel was cared for just as a chief was cared for. When he had eaten his food and was satisfied, he rested on the surface. Kapapapūhi explained to Pueo that he too would need to care for and feed Laumeki, in order to obtain the fish he needed. Kapapapūhi then called out to Laumeki, "Here is an elder of ours, tomorrow you will go with him and take the fish of our parents with you."

December 6, 1895 (page 4)

...The next day, Pueo rose while it was still dark, and the stars, Aea, Kapawa and Kauopae were still in the heavens. He prepared the foods needed for

Laumeki, and prepared the canoes. He and his wife's family and attendants then went towards Laumeki's house, where he was resting. When Laumeki saw the canoes coming toward him from Lae o Kahuka, he rose up before them. Together, they passed Kapākule, the place where the sharks were placed in ancient times as playthings of the natives of Puʻuloa. When the canoes and people aboard reached the place where the waves of Keaʻaliʻi break, Laumeki cared for them, to ensure that no harm would befall them. This place is right at the entrance of Puʻuloa.

As the rays of the sun scattered out upon the water's surface, the people on the canoes saw the red hues upon the water and upon those who paddled the double-hulled canoes. Pueo then saw something reflecting red, beyond the paddlers, and below the water's surface. Pueo realized that it was Laumeki with the ʻanae fish. The ʻanae traveled with Laumeki outside of Kumumau, and past Āhua. They continued on past the Harbor of Kalihi at Kahakaʻaulana, with the fish being urged on, by the people back at Kalaekao, Puʻuloa, and Laumeki was at the front, leading the fish at Māmala… They continued on around Kawaihoa, Makapuʻu, and traveled passed Koʻolaupoko, and on past Laniloa at Lāʻiemaloʻo, Koʻolauloa…

December 27, 1895 (page 4)

…This is how the mullet came to regularly travel between the place called Kaihukuʻuna at Lāʻiemaloʻo and Honouliuli at ʻEwa…

January 10, 1896 (page 1) and January 17, 1896 (page 1)

…Mokumeha and Laumeki returned to Honouliuli, and Mokumeha offered a prayer chant to his elder brother:

O eel,
O Laumeki,
Who passed before the point,
Dwelling in the pit,
Eel of the cavern,
You of the kauila (body) form,
That is the form of the Laumilo,
Your wooden body,
It is Laumeki.
Amen, it is freed…

> …While Laumeki was resting at Honouliuli, Mokumeha set off once again to visit various locations around the island of Oʻahu. He bid aloha to his family and walked across the broad plain of ʻEwa. He arrived at Kapūkakī, which is the boundary of the land of the streaked seas, that land in the calm, reddened by the dirt carried upon the wind. This is where ʻEwa ends and Kona begins…

3.2.2.8 *He Kaao no Kauilani (A Tradition of Kauʻilani)*

The tradition of Kauʻilani spans various islands of the Hawaiian Archipelago and follows the children of chiefly parents with a godly lineage. The parents of Kauʻilani and Lepeamoa were Keāhua and Kauhao, both of whose names are commemorated as places in the Mānana-Waimano vicinity of ʻEwa. Kauhao's parents were Honouliuli (k.) and Kapālama (w.); the lands which are known by those names honor them. The daughter, Lepeamoa, was born in a supernatural form possessed of both nature and human body-forms. She participated in histories of great importance during the reign of Kākuhihewa as king of Oʻahu. This account, published in *Ka Nupepa Kuokoa* between September 18, 1869 and October 30, 1869, was submitted by S. Kapohu and offers richer details to place, practices and history than those cited later by Westervelt (1915:204-245) and Beckwith (1970:428-429). The Hawaiian language resources have been summarized rather than directly translated.

> *Ka Nupepa Kuokoa*
>
> September 18, 1869 (page 1)
>
> Kauʻilani was the son of Keāhua (k) and Kauhao (w), and he was the younger brother of Lepeamoa (w). The family resided at Wailua Kauaʻi, where Keāhua was the high chief. Kauʻilani was descended from high chiefs of Kahiki and Hawaiʻi, and both Kauʻilani and his elder sister, Lepeamoa, were possessed of supernatural powers.
>
> The elders of Kauhao were Kapālama (w) and Honouliuli (k), and the lands on which they lived are now named for them. When Lepeamoa was born, she was born in the form of a hen's egg. Discerning the supernatural nature of her granddaughter, Kapālama and Honouliuli sailed to Kauaʻi on their canoe, Pōhakuokauaʻi, and retrieved the egg. With the egg, they then returned to Kapālama, where they cared for the egg until it hatched. While sailing from Kauaʻi to Oʻahu, the canoe passed by Pōkaʻī, Waiʻanae, and sailed along the fine shore of Kualakaʻi, ʻEwa. From there, they sailed to the many harbored bay of Puʻuloa, and entered into the opening of Puʻuloa where they landed their canoe on the side of the bay. From there, they traveled along the plain to

Kapālama…

[The story continues, describing the care given to the egg-grandchild, Lepeamoa. When she hatched, she was in the form of a beautiful bird with many brightly colored feathers.]

September 25, 1869 (page 1)

After Lepeamoa was taken to Oahu, her younger brother, Kauilani was born. He was taken and reared by his paternal grandparents, Laukaʻieʻie [k] and Kaniaʻula [w], in the uplands of Wailua. Kauʻilani was bathed in a sacred pool, which caused him to mature quickly, and his grandparents instructed him in various skills and forms of Hawaiian combat. During this time, a god Akua-pehu-ʻale rise up and fought against Keāhua and his people, capturing them and holding them prisoner. Following the instructions of his grandparents, Kauʻilani fought against the god, and vanquished him, returning the rule of Kauaʻi to Keāhua…

October 9, 1869 (page 4)

After the battle, Kauʻilani and his father were reunited, and in this way, the youth learned that he had a sister who was being raised on Oʻahu, by the elders of Kauhao. Kauʻilani determined to go and seek out his sister, and Kauhao instructed him about the lands he would pass and how he would know his sister.

She told him that he must sail from Wailua and along the coast of Waiʻanae, and along the shore of Puʻuloa, where he would find a landing and the path to Kapālama. Before his departure, Kauhao also gave Kauʻilani a supernatural spear named Koawī Koawā, which would help him along his journey, and lead him to his elders on Oʻahu.

Departing from Wailua, Kauʻilani traveled to the shore at Nukoliʻi. He threw the spear, and then took off after it, across Kaʻieʻiewaho channel, sailing to Oʻahu. In his canoe, Kauʻilani passed the coastline of Waiʻanae, and he then drew near the shore of Kualakaʻi where the spear had landed. While Kauʻilani was traveling from Kauaʻi to Oʻahu, two sisters, Kamalulena and Keawalau, who had been surfing at Kualakaʻi, returned to the shore and found the spear. Seeing the spear, and recognizing its excellent quality, the sisters hid it, seeing no man who could claim it.

Shortly thereafter, Kauʻilani passed the coast of Waiʻanae and landed on the shore of Kualakaʻi to retrieve his spear. Upon landing, Kauʻilani saw the two sisters and noted that his spear was nowhere to be seen. Kauʻilani inquired of the sisters if they had seen the spear, which they denied. Kauʻilani discerned that they were lying, and told them so, and he then called out to his traveling companion, the spear, Koawī Koawā. The spear answered from where the sisters had hidden it, and Kauʻilani picked it up and threw it again. It landed near the entry way to Puʻuloa.

October 23, 1869 (page 4)

Arriving where the spear landed, the spear then told Kauʻilani to climb a wiliwili tree that was growing nearby. From there, he would see a rainbow at the shore, and a person picking limpets, octopus, and other things. That person would be Lepeamoa, Kauʻilani's sister. Kauʻilani climbed the wiliwili tree and saw a red patch of a rainbow upon the water near the shore. He asked Koawī Koawā about this, and learned that it was the rainbow shroud of his sister, who was in her bird form near the shore…

3.2.2.9 *Ka Moolelo o Kalelealuaka (The Tradition of Kalelealuaka)*

The tradition of Kalelealuakā touches on places throughout the Hawaiian Islands. Kalelealuakā and his father, Kaʻōpele, possessed supernatural attributes and their story describes several places in Honouliuli and the larger ʻEwa District. The tradition was published in *Ka Nupepa Kuokoa* and was submitted by J.W.K. Kaualilinoe between April 9, 1870 and June 4, 1870. The original account offers a richer narrative of places and practices than those cited Fornander (Vol. IV, 1916:464-471) and Beckwith (1970:415-418). There are several wahi pana named in the tradition with descriptions of place and how the names were given.

Ka Nupepa Kuokoa

April 9, 1870 (page 1) and April 23, 1870 (page 1)

Kaʻōpele (k) and Makalani (w) were the parents of Kalelealuaka (k). Kalelealuaka was born on Kauaʻi, the native land of his mother. His father had been born at Waipiʻo, Hawaiʻi, and possessed certain supernatural powers. Kaʻōpele was a great cultivator of the land, and he is credited with the planting of large fields on Hawaiʻi, Maui, Oʻahu, and Kauaʻi. On Oʻahu, it was at Kapapakōlea in Moanalua, and at Līhuʻe (Honouliuli), in the district of ʻEwa that Kaʻōpele had cultivated large tracts of land. While Kaʻōpele worked the land with great speed, he was also overcome by a deep sleep that lasted for six months at a time. On many occasions, it was thought that Kaʻōpele had died,

and then he would reawaken and resume his tilling of the land. When Makalani became pregnant, Kaʻōpele gave her certain items to identify the child as his own, and shortly before giving birth, Kaʻōpele went to sleep.

April 30, 1870 (page 1)

Kalelealuaka was born and grew quickly. When Kaʻōpele woke up from his sleep, he instructed his son in various techniques of fighting, and Kalelealuaka became known as an exceptional warrior, who moved so swiftly, that no one could even see him… One day, when looking out across the ocean, Kalelealuaka saw a land in the distance, and he inquired of Kaʻōpele, "What land is that?" Kaʻōpele told him that it was "Kaʻena on the island of Oʻahu. Kalelealuaka then asked, "What is the village that is there beyond the point?" Kaʻōpele answered, telling him that it was "Waiʻanae." When Kalelealuaka expressed a desire to travel and see that land more closely, Kaʻōpele made a canoe for his son to travel on.

When preparations were being made for Kalelealuaka's departure, he befriended a youth named Kaluhe, and it was agreed that Kaluhe would travel with Kalelealuaka. When everything was made ready, Kaʻōpele told Kalelealuaka:

Sail until you reach the point outside of the village of Waiʻanae, then travel across the plain to a place where there is a pool of water. That will be the pool of Lualualei. Then you will ascend the pass of Pōhākea, from where you will see the flat lands spread out before you. You may also see the expansive cultivated fields of Keahumoe which I planted before coming to Kauaʻi…

May 7, 1870 (page 4)

Kalelealuaka and Kaluhe sailed to Oʻahu and passed the heiau of Kānepūniu and landed on the shore. There Kalelealuaka was met by a group of youth who were surfing. One of the youths inquired about the journey of the two travelers, and one asked if he might accompany Kalelealuaka and his companion. Kalelealuaka agreed, and the group walked across the plain and found the pool of Lualualei. From there, they then ascended the mountain, to the pass at Pōhākea, from where they looked out across the broad flat lands of Keahumoe. Descending the slope, they found a large banana patch that had been planted by Kaʻōpele.

Kalelealuaka then shot his supernatural arrow, and it flew down slope, passing

the plains of Puʻunahawele and Kekuaʻōlelo, and it landed at Kekuapōʻai, awaiting Kalelealuaka's arrival. This was at Waipiʻo, above ʻEwa. The people of the area saw the flight of the arrow and cried out "Ka pua lele hoi e!" ["How the arrow flies!"] That is why the place is called "Lele-pua" [Flying-arrow], to this day…

Kalelealuaka stayed in the uplands above Lelepua, at Kahalepōʻai, and asked his companions to go and fetch the arrow. He also told them to gather some clumps of ʻawa [*Piper methysticum]* and sedges for straining it. The two companions went and arrived at the edge of the stream called Kaniukūlou, where they saw some women bathing. They asked, "Have you perhaps seen our arrow?" The women denied having seen it, hoping that they might keep it for themselves. Because they had found it and greatly admired its beauty. Sensing that they were lying, Kaluhe called out to the arrow, and it leapt from the place at which it had been hidden, into his hands. The women were frightened by this and fled away.

Kaluhe and his companion left the stream and arrived at a large house with clumps of ʻawa planted all about it. Looking around, they found no one in the house or in the surrounding lands, so they began to gather some of the ʻawa. While picking the ʻawa, they heard a voice call out to them, "Set aside that which you have taken, or I shall return." Startled by this command, they dropped the ʻawa and fled, returning to Kalelealuaka, and describing the house, its surroundings, and events to him. They noted that the house was an excellent one, and only lacked sleeping mats inside.

Kalelealuaka had them gather rolled sleeping mats and kapa and they then traveled to the house. Entering the house, they found that all was in order, and they prepared food, ate, and drank ʻawa, with no other voices calling to them. The next day, Kalelealuaka arose, and he and his companions planted large fields with various crops. The field planted by Kalelealuaka extended from the uplands of Kahalepōʻai to the lowlands of Puʻunahawele. When the work was completed, they returned to the house and prepared pōpolo [*Solanum nigrum*], ʻāheahea [*Chenopodium oahuense*], and ʻinamona (kukui nut relish) as their food. These were the only things which presently grew around the house that could be eaten until their own gardens matured. While they were eating, the youth from Oʻahu, ate with great haste and ferocity, and Kalelealuaka called to him, urging him to eat with patience. Because of this, the youth from Oʻahu, came to be called "Keinohoomanawanui."

One of the problems in living in the uplands was that there were plenty of plant foods to be had, but there was no fish. One day, while preparing their food, Keinohoomanawanui was making ʻinamona. When he struck a broiled kukui nut, the shell flew up and struck him in the eye, blinding him in that eye. Kalelealuaka then took up the task of preparing the food…

May 14, 1870 (page 1)

Kalelealuaka told Keinohoʻomanawanui, "I will prepare that food which we two desire." Keinohoʻomanawanui said, "That which I desire are the sweet potatoes of the planted fields below, and the eels of the pond at Hanaloa." Kalelealuaka told Keinohoʻomanawanui, that "in time, you will have your desire." Now these foods were the property of the king Kākuhihewa, and they were kapu to all but him and his people. Kalelealuaka told Keinohoʻomanawanui, "Tomorrow, Kākuhihewa and his people will arrive here in the uplands of Waipiʻo, to gather wood with which to make new houses in the lowlands."

Now while Kalelealuaka and Keinohoʻomanawanui were discussing these things, Kākuhihewa himself had come to the uplands to gather some of the ʻawa that grew at Kahauone. Seeing the large house in which Kalelealuaka and his companions dwelled, he quietly drew near and overheard the conversation, curious about who these men were. He set a wooden image in the ground near the house to mark the area, and then departed, returning to Puʻuloa. Kākuhihewa thought about what he had heard, and the bold remarks that they would soon eat the favored eels of Hanaloa. Kākuhihewa spoke of this with his advisors and war leaders, some of whom suggested that a party go to the uplands to kill the impertinent youth.

Instead, Kākuhihewa sent to Waimānalo [ʻEwa] for his priest, Nāpuaikamao. Nāpuaikamao traveled to Koʻolina where Kākuhihewa was staying, and listened to the words of his chief, describing the youth and their conversation. Nāpuaikamao thought about their words, and the symbolism of the desire for the eels of Hanaloa, and discerned that one of the youths was the great warrior, Kalelealuaka, of Kauaʻi. Now at this time, Kākuhihewa was at war with a chief named Kūaliʻi, the two kings seeking to rule all of Oʻahu. Nāpuaikamao told Kākuhihewa, that it was Kalelealuaka who would bring victory to his side, and that he should prepare a house for the youth and allow them to fulfill their desires.

Kākuhihewa agreed and ordered preparations to be made. He then had his

counselor, Maliuhaʻaino go to the uplands of Waipiʻo and invite Kalelealuaka and his companions to the shore…

May 21, 1870 (page 1)

Maliuhaʻaino arrived before the youth, and following a discussion, it was agreed that they would meet with Kākuhihewa… Descending to the coast, they passed the plain of Puʻunahawele. They then passed below Puʻukuʻua which is near the mountain ridge and descended to the shore of Puʻuloa. Kalelealuaka and his companions were shown the houses and foods that had been prepared for them, and they took up residence at Puʻuloa…

[During this time, the identity of Kalelealuaka remained hidden from Kākuhihewa and his people. Because the king had heard Keinohoʻomanawanui speaking about his desire for the eels of Hanaloa, and because Keinohoʻomanawanui told people that he had been blinded in one eye by a spear, it was assumed that Keinohoʻomanawanui was the great warrior that they sought.]

With the passing of several periods of ten days [anahulu], a messenger from the king, Kūaliʻi, arrived bearing the message that Kūaliʻi challenged Kākuhihewa to a battle on the field at Kanalua [Kauālua], in Moanalua… The warriors met, and a great battle took place in which the champion of Kūaliʻi was killed. It was thought that Keinohoʻomanawanui [mistaken as being Kalelealuaka] had secured the victory for Kākuhihewa… During this battle, Kalelealuaka had stayed behind at Puʻuloa, and after the battle began, ran secretly with great speed to the battle ground, and killed Kūaliʻi's champion…

May 28, 1870 (page 1)

At each of the subsequent battles between the warriors of Kākuhihewa and Kūaliʻi, Keinohoʻomanawanui was credited with, and accepted the honor of having defeated Kūaliʻi's champions. Because Kalelealuaka moved so swiftly, no one even saw him enter the battlefield. Kalelealuaka had stayed behind at Puʻuloa, and secretly entered into the battle, killing Kūaliʻi's champions, and taking their capes and feather helmets, with which he returned to Puʻuloa, hiding the items in his house.

June 4, 1870 (page 4)

At the last battle between Kākuhihewa and Kūaliʻi's champions, the forces met

near Waolani, and Kalelealuaka killed all of the warriors of Kūaliʻi. Great honor was to be bestowed upon Keinohoʻomanawanui, but Kalelealuaka arrived before the assemblage and claimed the privilege. Kalelealuaka accused Keinohoʻomanawanui of deception and challenged him to a fight to prove it. As quickly as the battle began, Keinohoʻomanawanui was killed, and Kalelealuaka took his head to Maliuhaʻaino.

Seeing that all of his warriors had been killed, Kūaliʻi, thought that his life too was forfeit, but Kalelealuaka invited him to live under Kākuhihewa, to which Kūaliʻi agreed. The head of Keinohoʻomanawanui was taken to Puʻuloa and then set atop an ʻaʻā hillock above Kalauao… Kalelealuaka, Kākuhihewa and Kūaliʻi, and their people lived out their days in peace…

3.2.2.10 *Na Wahi Pana o Ewa i Hoonalowaleia i Keia Wa a Hiki Ole ke Ikeia (Storied Places of ʻEwa, That are now Lost and Cannot be Seen)*

Between June 3, 1899 and January 13, 1900, the Hawaiian newspaper *Ka Loea Kalaiaina* published a series of articles titled "Na Wahi Pana o Ewa i Hoonalowaleia i Keia Wa a Hiki Ole ke Ikeia," which can be translated to "The noted places of ʻEwa that have been forgotten at this time and can no longer be seen." The author of the series is not identified, but it is a rich resource of traditions, named places and history of the district. Excerpts pertaining to Honouliuli as published in various issues are presented below. A careful review of the original Hawaiian texts has been made and the translations compiled with reference to notes developed by Mary Kawena Pukui.

Ka Loea Kalaiaina
Na Wahi Pana o Ewa i Hoonalowaleia i Keia Wa a Hiki Ole ke Ikeia

Ianuali 13, 1900 (aoao 1)	January 13, 1900 (page 1)
Aia no i keia aina kekahi puu kaulana o Puuokapolei, i keia wahi i noho ai o Kamauluaniho me kana moopuna me Kekeleaiku, kaikuaana o Kamapuaa. Mahope iho oko lakou haalele ana ia Kaliuwaa Kaluanui Koolauloa. Aole nae au e kamailio iki ae a e hoi au no Puuokaplei.	[Honouliuli] There is on the land a famous hill, Puuokapolei. It was at this place that Kamauluaniho lived with her grandson, Kekeleaiku, the older brother of Kamapuaa. This was after they left Kaliuwaa, Kaluanui at Koolauloa. I did not speak much earlier about it so I will return to Puuokapolei.
Ina e hele ana kamahele ma ke alanui aupuni no Waianae, aia a haalele ia Honoulluli ke kulanakauhale o ke Gula, e	If a traveler should go along the government road to Waianae when he leaves Honouliuli, the city of Gold, he will first come to the plain

loaa mua mai ana ia ia ke kula o Puuainako, a hala ia, hele mai o Keoneae, alaila, pii aku no i ka piina o ka Puuokapolei, a ilaila, haliu ae oe a nana makai o ke alanui aupuni e ku ana ua wahi puu ala ia, oia hoi o Puuokapolei, na keia wahi puu i alai ia Ewa, ke huliaku hoi oe ma kela aoao o Waimanalo pau kou ike ana ia hope nei, hele aku he mau hoalu liilii a holo aku oe he kula, o keia kula, oia ke kula o Pukaua [Pu'ukaua], aia mauka io ke alanui e ike ai oe he pohaku nui e ku ana i ke kula. Eia kahi moolelo i kaulana ai kela kula.	of Puuainako (Mounds of cane debris), and passing from there, arrive at Keoneae (The fine soil or cinder), and then from there shall go straight the ascent to Puuokapolei (Hill of Kapolei). Then when you look around, towards the shore side of the government road, this is the hill. It is Puuokapolei. When you go to the side towards Waimanalo, you see no more of the sight back here. This hill shields/blocks Ewa from view. When you are done, you go down a little on the plain. This plain is the kula of Puukaua. It is there above the government road that you will see a large stone situated on the plain. Here is a famous story of this plain land.
He wahi luahine kupua, a i ole ia he mau luahine hooehaa, he mau wahi luahine hahapaiea paha, no laua o Puukaua; ia laua i kai o Kualakai i ka lawaia i ke ahiahl, i kai no laua a i ka lawaia a wanaao hoi mai. Eia ka laua mau wahi i'a, he Aama ua i'a, he Pipipl ua i'a, a me na ano i'a like ole apau e loaa aku ana i ko laua nei mau lima. Ia laua nei e hoi ana i ke kula mai kahakai mai, me ko laua manao ana la e hiki poeleele aku ana la laua i kauhale, aole nae pela. Ua halawai laua me ka maka paa, oiai, laua e hookokoke aku ana i ua kula ala, ua malamalama loa ae la,a ua hiki ke ike ia aku na kanaka ke hele ae, a eia no nae laua nei ma kai o ke alanui e hoi nei, a no ko laua nei makau o ike ia laua e na kanaka	There were some supernatural women, or peculiar women who possessed strange powers, they were of Puukaua; they would regularly go down to the shore of Kualakai to go fishing in the evening. They would stay at the shore fishing until early morning. Here are the things they would catch, Aama crabs, pipipi shellfish, and all manner of fish, whatever they could catch with their hands. As they were returning to the plain from the shore and thinking of getting home before morning came, it would still be dark. But it was not so. They met a blind person as they were getting close to the plain and it was getting light, and they could be seen by the people that were traveling by. They were still on the shoreward side of the trail, and they were afraid of being seen by people.
Ia wa ua hoomaka mai la laua e holo, oia holo ko laua nei, oia lele, a hina a palaha eia no nae, ala no holo no, a helelei aku la ka Aama a me ka limu, aohe nae he nana ia iho. Aia ka pono o ke kaa aku mauka o ke alanui, eia nae ua pale pono, oiai, ua ao	They then started running, and as they ran, they leapt, fell and sprawled out, and their Aama, and limu all scattered about, but they took no care. Then one old woman said to the other of them:

loa ae la. I kela wa olelo aku la kahi luahine i kahi luahine o laua:	
"E pee kaua, o ike ia mai auanei kaua e na kanaka?" a o ko laua nei pee iho la no ia. Lilo koke ae la ko laua kino i kino pohaku. A oia ke kaulana o keia kula i keia kino pohaku a hiki loa mai i keia wa.	"Let us hide, unless were be seen by the people." And so, they hid. Their bodies were then turned into a stone body. Their stone body is one of the famous things on this plain to the present day.
O keia ka pau ana o ko laua moolelo. O ke kaahele malahini ana a hiki ia kula, aole no he hewa ke alawa ae mauka o ke alanui i ike ia laua i ke ku mai a i ke kula.	This is the end of their story. So, when one visits the plain, there is nothing wrong with glancing above th etrail to see them standing there on the plain.
E nee mai kakou i Puuokapolei. O keia pu kekahi puu kaulana loa i ka wa kahiko. Mai keia puu mai i haku ia ai kekahi mele i kamaaina i ka poe lealea o ka wa kahiko, ua haku ia apuni Oahu nei, a ma ia mele e oli ai ka poe Pukaula a me ka poe Ukeke laau, ka poe kimo pohaku, hua Noni, hua kukui paha.	Let us go on to Puu-o-Kapolei. This was one of the most famous hills in ancient times. It is from this hill that chant was composed by the natives, and those who were skilled in the games of olden times. It was composed to go around Oahu. It was with this chant that the people who played pukaula (a guessing game) and those who played the wooden ukeke (a native bow string instrument), and those who juggeled stones, noni fruit or kukui nuts.
Ua helu ia ka inoa o keia mele ma kainoa o ka aina, a oia ka'u e panee aku nei imua o ka poe aole i loaa a paa naau i neia mele. E like me na mele kahiko i loaa ole i kekahi poe, a loaa hoi kahi i kekahi poe:	This was a chant to recount land names, and I present it before the people, who may not have it memorized. It is like the old chants that are not known by some people, though it is familiar to other people [the chant is presented in a riddle style, stating a question and answering it by speaking the place name]:
E Kawelo e, e Kawelo — e E Kawelo mainui o Puuokapolei O Puuokapolei— Uliuli ka Poi a kaua e ai nei – O Honouliuli	O Kawelo, o Kawelo — e Kawelo with the large genitals, of Puu-o-Kapolei, It is Puuokapolei. The poi that we eat dark — It is Honouliuli

Aeae ono—a Paakai e hoaeae	Fine and delicious is the salt of Hoaeae
O Hoaeaee	It is Hoaeae
Pikele, Pikele ka i‘a e Waikele—	Tiny and numerous are the fish of Waikele —
O Waikele	It is Waikele
Ka Hale pio ka hua moa —	A House arched like an egg —
O Waipio	It is Waipio
E ku a ai kaua i ka la loko awa —	Stop and eat of the awa fish —
O Waiawa	It is Waiawa
Mai hoomanana ia kua —	Let us not spread out the limbs —
O Manana	It is Manana
Kini kahawi he lau he mano —	Many streams, hundreds and thousands —
O Waimano	It is Waimano
Ko ia kaua e ke au —	We two are drawn in by the currents
O Waiau	It is Waiau
Kukui malumalu o kaaua [kaua] —	We two are in the shade of the kukui trees —
O Waimalu	It is Waimalu
E ala kaua ua ao —	Let us get up for it is day —
O Kalauao	It is Kalauao
E kipa kaua e ai —	Let be hosted to eat —

O Aiea	It is Aiea
Mai hao halawa ia kaua —	We two were almost plundered —
O Halawa	It is Halawa
E hoi kaua e noho i ka lua —	Let us two go and dwell in a pit —
O Moanalua	It is Moanalua
Hooipoipo hau kaua —	We make love in the hau —
O Kahauiki	It is Kahauiki
E pii kaua i ka lama —	Let us go up to the lama trees —
O Kapalama	It is Kapalama
E nunu a haawe kaua —	Let us two make a bundle and carry it—
O Honolulu	It is Honolulu
Kiki kuoha ilaila —	Spurting there —
O Waikiki	It is Waikiki
Kike ka hua a kaalae —	Cracked is the egg of the mud hen
O Waialae	It is Waialae
He wahine hoolupe keia —	This is a woman who flies a kite —
O Wailupe	It is Wailupe
Mauna kuu hoa i ka lua —	My companion bruised in a pit —
O Maunalua	It is Maunalua
He wahine heekoko keia —	This is menstruating woman —
O Koko	It is Koko

Puo ka lau o ka niu — O Niu Pauma na waa i ke kai — O Hanauma He wahine makapuu keia — O Makapuu	Gathered are the leaves of the coconut It is Niu Plying the canoes in the sea — It is Hanauma A pop-eyed woman is she It is Makapuu.
E na hoa e kala mai oukou ia'u. O keia ae la kahi i paa ia'u o keia mele, a he mea nui no hoi i na hanaua hou, ka loaa ole ana o na mea kahiko…	My friends, pardon me for this is. This is that is known to me of the chant. This may be an important thing for the new generation who may not receive the things of old.
E waiho kakou i na wahi pana o Honoluliuli i koe aku a hiki i ka kupono.	Let us not leave the other storied places of Honouliuli until a time when it is appropriate.
E nee mai ana kakou i Hoaeae, aia ilaila o Waihi a aia no ma ia wahi i ka huli e nana iho ana i ke alahao he wahi Owawa, ua pili loa i ke alahao. Oia kahi i make ai o ka Moi Oahu nei, oia o Kahahana.	We are now moving to Hoaeae, Waihi is there. This place is found by looking down towards the rail line, it is a gulch adjoining the railway track. It is the place where the King of Oahu, Kahahana, died.
Ua olelo ia o Kahahana he keiki hookama na Kahekili, ke alii o Maui, a i ole he keiki no paha na Kahekili. O ka nohoalii ana o Kahahana he nohoalii ino, he hookuli, a hoopale i na olelo ao a ke kahuna, na kakaolelo, a me na kuhikuhi puuone…	It is said that Kahahana was an adopted son of Kahekili, the King of Maui, or perhaps the own son of Kahekili. The rule of Kahahana was an evil rule. He ignored and rebuked the advice of his priests, counselors, and those who interpreted the nature of the land…

3.2.2.11 *Ka Moolelo Hawaii – O kekahi mau mea i manao nui ia o ke kupapau (Hawaiian History – Some Things which are of Importance Pertaining to the Dead)*

Care for the dead (kupapa'u), respect of the graves (ilina) and traditions associated with the spirit after death are subjects of great significance to Hawaiians – past and present. In his history of the Hawaiian people, Samuel M. Kamakau shares a collection of traditions and practices pertaining to the dead and identifies some of the places of importance in these

practices. These narratives are of particular importance to lands and specific wahi pana of Honouliuli and are connected across the landscape to Moanalua.

Ke Au Okoa
O kekahi mau mea i manao nui ia o ke kupapau.

'Okakopa 6, 1870 (aoao 1, helu 43)

...Hookahi anahuna kaulana ma Oahu. O Pohukaina ka inoa, aia ma ka pali o Kanehoalani mawaena of Kualoa a me Kaaawa, aia ka puka i manao ia ma ka pali o Kaoio e huli la i Kaaawa, a o ka lua o ka puka, aia ma ka punawai o Kaahuula-punawai. He anahuna alii keia, a he nui ka waiwai huna iloko a me na'lii kahiko. O Hailikulamanu, oia kekahi puka, aia a kokoke makai o ke ana Koluana i Moanalua, aia ma Kalihi, ma Puiwa, oia na puka ekolu o Pohukaina ma Kona, a o Waipahu ma Ewa, aia ma Kahuku i Koolauloa kekahi puka, a o kauhuhu o kaupaku o keia hale anahuna, oia no ka mauna o Konahuanui a iho i Kahuku. Ua olelo ia ma ka moolelo a kanaka, ua nui ka poe i komo iloko me na ihoiho kukui, mai Kona aku nei a puka i Kahuku...

A maloko o keia anahuna, he mau halokowai, he mau muliwai a mau kahawai, ua hana kinohinohi ia, a ma kauwahi aku, he mau aina palahalaha...

Na uhane mahope o ka make ana o ke kino.

...O ke ao kuewa; a o ke ao auana kekahi inoa; I ka make ana o ke kanaka kuleana ole, ua auana kuewa hele kona uhane me ka lalau hele i ka nahelehele, a ua hele wale i [Kamaomao], a i ka wiliwili o Kaupea, a hiki kona uhane i Leilono, aia malaila ka Uluolaiowalo; a i loaa ole kona uhane aumakua i maa mau ia ia, a aumakua kokua hoi, alaila, e lele kona uhane ma ka lala ulu popopo a haule ilalo lilo i ka po pau ole i o Milu la...

O Leiolono; Oia kekahi wahi e make ai na uhane i ka po pau ole. Aia o Leiolono kokoke i ka pohaku o Kapukaki a ma nae aku, e kupono ana i puu hoilina kupapau o Aliamanu, a huli i ka aoao akau o Hokupaa, aia ma ke kapaluna o ke alanui kahiko, aia he hapapa pahoehoe pohaku, aia maluna he wahi ponaha, he alua paha kapuai ke anapuni, oia ka puka e iho ai ilalo, o ka nuu ia o Papa-ia-Leka he ao aumakua ia wahi, aia ma ka puka e iho ai o ka puka o Leiolono, he ulu o Leiwalo, elua lala ma ka hikna kekahi a ma ke komohana kekahi, he mau lala ulu hoopunipuni keia, a o kekahi lala niu, he lala e lele ai i ka po pauole, a o ka lua o ka lala ulu, aia a kokua ia mai e ka uhane aumakua kokua, alaila, e ike auanie maia ao aumakua, i na kupuna i olelo ia o Wakea a

me ka huina kupuna a pau, a me ko ke ao holookoa e hele nei, i ka lakou huakai; a o kekahi hapa, aia ma kela lala ulu hoopunipuni i ka po pauole. O ka palena o Leilono, o Kapapa-kolea ka palena hikina, he peelua nui launa ke kiai hikina o Koleana; a o Napeha ka palena komohana, a he moo ke kiai malaila, a i makai i keia mau kiai, alaila hoi hou i hope, a i kokua hou ia e na uhane aumakua, alaila, ua hou, a ua alakai ia i ke ao aumakua.

A i makau i ka peelua e alai ana i ke alanui mai kela aoao mai o Alia, kiei ke poo ma ka pali o Kapakolea, alaila makau ke uhane a auwana, a pili aoao ma ke kahawai ma ka hale hana ili, aole he alanui aupuni mamua, aka, he alanui kamaaina no Kauhilaele, a ua oleloia aia a komo ka auwana maloko o na palena, he make wale no kona uhane, a o ke lele i ka po pau ole; aka, ua oleloia ua ola mai no kekahi poe uhane auwana ke loaa i na uhane aumakua kokua, a o ka poe kokuaole, e make no i ka po pauole, a i o Milu la. Aia ma ke kula o Kaupea, ma ke kaha o Puuloa, e hele ai na uhane auwana e poipoi pulelehua, a e poipoi nanana, oiai aole e hele loa na uhane auwana i na wahi i olelo ia mamua, a i loaa paha i na uhane aumakua e poipoi nanana ana, a ua hoopakeleia, a o ka poe uhane kokua ole, he poe uhane haukae lakou, a mai ka wiliwili i Kaupea, i Kanehili, he nui no na wahi i oleloia ma keia inoa. O Kaleia-a-kauhane [Ka-leina-a-ka-uhane], a me ka Ulu o Leiwalo, aia ma Hawaii, ma Maui, ma Molokai, ma Lanai, ma Kauai a me Niihau, hookahi no moolelo like no keia mau wahi…

Translation — Hawaiian History:
Some things which are of importance pertaining to the dead.

There is only one famous hiding cave [ana huna] on Oahu. It is Pohukaina. The opening on Kalaeoka‘o‘io that faces toward Ka‘a‘awa is believed to be in the pali of Kanehoalani, between Kualoa and Ka‘a‘awa, and the second opening is at the spring Ka‘ahu‘ula-punawai. This is a burial cave for chiefs, and much wealth was hidden away there with the chiefs of old. On the Kona side of the island the cave had three openings, one at Hailikulamanu—near the lower side of the cave of Keleana in Moanalua—another in Kalihi, and another in Pu‘iwa. There was an opening at Waipahu, in Ewa, and another at Kahuku in Ko‘olauloa. The mountain peak of Konahuanui was the highest point of the ridgepole of this burial cave house, which sloped down toward Kahuku. Many stories tell of people going into it with kukui-nut torches in Kona and coming out at Kahuku. Within this cave are pools of water, streams, creeks, and decorations by the hand of man (hana kinohinohi‘ia), and in some places there is level land (Kamakau, 1964:38).

The leina a ka ʻuhane on Oahu was close to the cape of Kaʻena, on its right (or north, ʻakau) side, as it turns toward Waialua, and near the cutoff (alanui ʻoki) that goes down to Keaokuʻukuʻu. The boundaries of this leina a ka ʻuhane, it is said, were Kahoʻihoʻina-Wakea, a little below Kakaheʻe, and the leaping place (kawa-kai) of Kilauea at Keawaʻula. At these places would be found helpful ʻaumakua souls who might bring back the spirit and restore life to the body, or if not, might welcome it to the realm of the ʻaumakua. Places within the boundaries mentioned were where souls went to death in the po pau ʻole, endless night.

Leilono at Moanalua, Oahu, was close to the rock Kapukaki and easterly of it (a ma ka naʻe aku), directly in line with the burial mound of Aliamanu and facing toward the right side of the North Star (a huli i ka ʻaoʻao ʻakau o ka Hokupaʻa). On the bank above the old trail there was a flat bed of pahoehoe lava, and on it there was a circular place about two feet in circumference. This was the entrance to go down; this was the topmost height (nuʻu) of Kapapaialaka, a place in the ʻaumakua realm. Here at the entrance, ka puka o Leilono, was a breadfruit tree of Leiwalo, he ʻulu o Leiwalo. It had two branches, one on the east side and one on the west.

These branches were deceiving. From one of them, the soul leaped into the po pau ʻole; if he climbed the other, it would bring aid from helpful ʻaumakua (ʻaumakua kokua). From that branch the soul would see the ʻaumakua realm and the ancestors spoken of, Wakea and all the rest, and those of the entire world who had traveled on this same journey.

The boundaries of Leilono were, Kapapakolea on the east, [with] a huge caterpillar (peʻelua nui) called Koleana as its eastern watchman, and the pool Napeha on the west, with a moʻo the watchman there. If the soul was afraid of these watchmen and retreated, it was urged on by the ʻaumakua spirits, then it would go forward again and be guided to the ʻaumakua realm. If a soul coming from the Alia (Aliapaʻakai) side was afraid of the caterpillar, whose head peered over the hill Kapapakolea, and who blocked the way, it would wander about close to the stream by the harness shop. This was not the government road (alanui aupuni) of former times, but was a trail customarily used by “those of Kauhilaʻele” [figuratively, the common people; the laʻele, old taro leaves, as contrasted with the liko, the new and choicer leaves—that is, the chiefs]. It was said that if a [page 48] wandering soul entered within these boundaries it would die by leaping into the po pau ʻole; but if they were found by helpful ʻaumakua

> souls, some wandering souls were saved. Those who had no such help perished in the po pau ʻole of Milu.
>
> On the plain of Kaupeʻa beside Puʻuloa, wandering souls could go to catch moths (pulelehua) and spiders (nanana). However, wandering souls would not go far in the places mentioned earlier before they would be found catching spiders by ʻaumakua souls, and be helped to escape. Those souls who had no such help were indeed friendless (he poʻe ʻuhane haukaʻe lakou), and there were many who were called by this name, poʻe ʻuhane haukaʻe.
>
> There were Leina-a-ka-ʻuhane and ʻUlu-o-Leiwalo on Hawaii, Maui, Molokai, Lanai, Kauai, and Niihau as well as on Oahu. The traditions about these places were the same. They were where spirits were divided (mahele ana) to go into the realm of wandering spirits, the ao kuewa or ao ʻauwana; or to the ancestral spirit realm, the ao ʻaumakua; or to the realm of endless night, the po pau ʻole.
>
> The places said to be for wandering spirits were: Kamaʻomaʻo for Maui; Uhana [Mahana] at Kahokunui for Lanai; Maʻohelaia for Molokai; Mana for Kauai; Halaliʻi for Niihau; in addition to Kaupeʻa for Oahu. In these places the friendless souls (ʻuhane makamaka ʻole) wandered (Kamakau, 1964:48-49, M.K. Pukui, translator).

3.2.2.12 *Alahula Puʻuloa, he Alahele na Kaʻahupāhau (The Swimming Trails of Puʻuloa [Pearl Harbor], are the Trails Traveled by Kaʻahupāhau)*

In 1870, Kamakau wrote about several practices and beliefs pertaining to manō (sharks) in ancient life. One practice of note in the Puʻuloa region was the practice of transforming deceased family members into manō as ʻaumākua (family gods/guardians). These family ʻaumākua would help their relatives when in danger on the sea—if a canoe capsized or a man-eating shark was threatening attack. Hawaiians also worked with and tamed manō so that one could ride them like a horse, steering them to where one wished to go (S.M. Kamakau, 1976). Kupuna Mary Kawena Pukui shared that there were two basic classes of sharks — manō kānaka (sharks with human affiliations) and manō iʻa (wild sharks of the sea–man eaters). The manō kānaka were revered and cared for, while the manō iʻa were at times hunted and killed following ceremonial observances (M.K. Pukui, pers. comm., 1976). The practice of chiefs hunting sharks using the flesh of defeated enemies or sacrificial victims as kūpalu manō (shark fishing chum) and of commoners using rotted fish as kūpalu manō are further described in several historical narratives.

Ke Awalau o Puʻuloa (the many bays of Puʻuloa) are famed in traditional and historical accounts of manō. The traditions center around the several deified sharks, foremost of whom

is the goddess, Kaʻahupāhau, then followed several others, including but not limited to Kahiʻukā, Kūhaimoana, Komoawa, Kaʻehuikimanōopuʻuloa, Keliʻikau-o-Kaʻū (Kealiikauaokaʻū) and Mikololou. With the exception of Mikololou, all these shark gods were friendly to people, and dedicated to keeping manō iʻa out of the Puʻuloa-ʻEwa waters and protecting people.

Traditions of Ke Awalau o Puʻuloa tell us that one of the most important kānāwai (laws) governing manō was that they would not attack humans. This kānāwai was created by the shark gods themselves. Kamakau wrote about the establishment of this kānāwai stating that:

> Oahu was made a kapu land by this kanawai placed by [the shark gods] Kanehunamoku and Kamohoaliʻi. But their sister Kaʻahupahau broke the law and devoured the chiefess Papio. She was taken and "tried" (hoʻokolokolo) at Ulukaʻa [the realm of these gods], but she escaped the punishment of death. It was her woman kahu who paid the penalty of the law because it was her fault—she reviled Papio. The trouble arose over a papahi lei of ʻilima flowers which belonged to Kaʻahupahau that her kahu was wearing. [The kahu refused to give it to Papio, and] Papio said, "I am going bathing, but when I come back you shall be burned with fire." But Kaʻahupahau devoured Papio before she could carry out her threat, and she was punished for this. That is how Puʻuloa became a [safe] thoroughfare (alahula). After her confinement ended several years later, Kaʻahupahau was very weak. She went on a sightseeing trip, got into trouble, and was almost killed. But she received great help from Kupiapia and Laukahiʻu, sons of Kuhaimoana, and when their enemies were all slain, the kanawai was firmly established. This law—that no shark must bite or attempt to eat a person in Oahu waters—is well known from Puʻuloa to the Ewas. Anyone who doubts my words must be a malihini there. Only in recent times have sharks been known to bite people in Oahu waters or to have devoured them; it was not so in old times (Kamakau, 1964:73, M.K. Pukui, translator).

Several place names commemorate the shark gods of Puʻuloa. Among them are three recorded in the *Saturday Press* of December 29, 1883 (page 6):

Keaalii	A cave in the sea at the entrance to Puuloa harbor and known by the natives to have been formerly the home of a large shark called Komoawa, who has been generally credited as the watchman on guard at the entrance of Kaaahupahau's waters. The latter's royal cave-dwelling was in the Honouliuli lagoon.
Kuhia loko	Waiawa. Named for one of the attendants/purveyors of the shark goddess, Kaahupahau.

Kuhia waho	Waiawa. Named for one of the attendants/purveyors of the shark goddess, Kaahupahau.

In a separate source found in the newspaper *Ka Loea Kalaiaina* (1897-1900), Nahu-Papio or Ka-nahuna-Papio (The biting or shredding of Papio) is found along the shore of the Waipiʻo Peninsula, southeast of Hōmaikaiʻa or Walker Bay (Register Map No. 322) (Figure 8). This place name identifies the location where Kaʻahupāhau killed Papio.

The role of Kaʻahupāhau as a goddess and guardian in the waters of the Puʻuloa bays remains alive in the minds of natives in the ʻEwa District. Her brother Kahiʻukā (The smiting tail) is also remembered and it is said that with his great tail, Kahiʻukā was responsible for destroying any foreign sharks "that offended his sister" Kaʻahupāhau (Pukui, 1943:57-58). His cave is reported in several locations, including Drydock No. 1, between Mokuʻumeʻume and Keanapuaʻa, and another in the Waiawa Estuary. The cave, destroyed in the construction of Drydock No. 1, was once his home.

Another locational reference to a cave, and the home of Kaʻahupāhau, is found in the cartographic records of the Kingdom, cited on Register Map No. 322 (J. Lidgate/Lydgate, surveyor, 1873). On the map, the cave is dentified as "Shark's Den" along the Honouliuli shoreline of the West Loch, a short distance inland from the old boundary wall between the ʻili of Puʻuloa and the larger ahupuaʻa of Honouliuli. These storied places are a part of the fabric of Hawaiian history and breathe life into the traditions of old.

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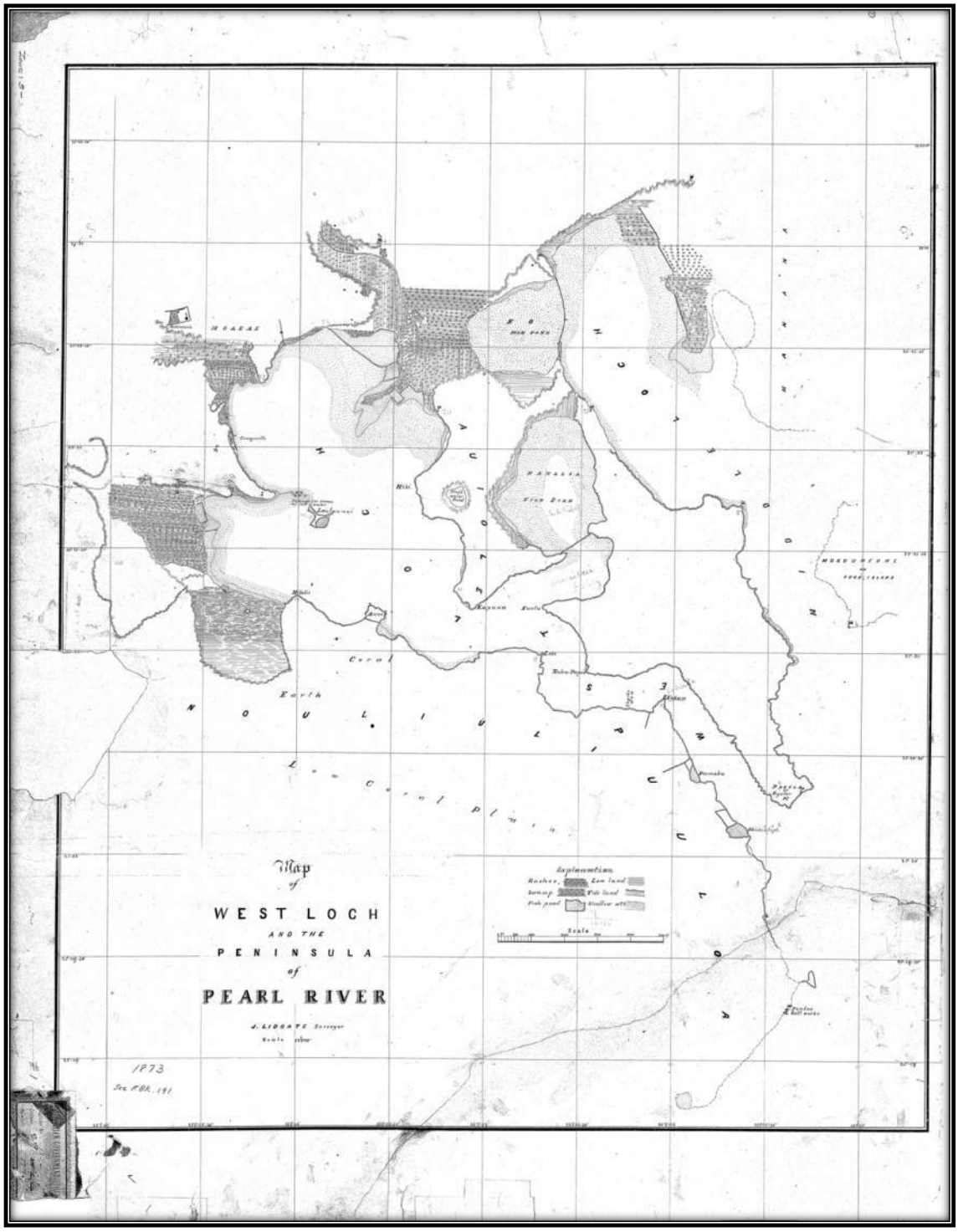

Figure 5. Map of the West Loch and the Peninsula of Pearl River (Hawaiian Government Survey, Registered Map No. 322 by J. Lidgate, 1873)

In addition to the traditions of Ka‘ahupāhau, two other accounts center around the nature of sharks in the ‘Ewa District and battles that were fought to kill offending sharks. In the early 1820s, members of the Protestant mission station traveled to the ‘Ewa District and learned something about the shark gods of Pu‘uloa.

Hiram Bingham accompanied King Kamehameha II (Liholiho), the royal family and attendants to ‘Ewa in 1823, where they stayed near the shore of Pu‘uloa. During the visit, the King and party, along with Bingham, visited the dwelling place of a noted shark god. The name of the god was not recorded in Bingham’s journal, though one must infer that it was either the goddess Ka‘ahupāhau or her brother, Kahi‘ukā. Bingham wrote:

> I one day accompanied the King [Liholiho] and others by boat to see the reputed habitation of a Hawaiian deity, on the bank of the lagoon of Ewa. It was a cavern or fissure in a rock, chiefly under water, where, as some then affirmed, a god, once in human form, taking the form of a shark, had his subterraqueous abode. Sharks were regarded by the Hawaiians as gods capable of being influenced by prayers and sacrifices, either to kill those who hate and despise them or to spare those who respect and worship them. It had been held that, when a mother gave her offspring to a shark, the spirit of the child dwelt in it, and the shark becoming an akua, would afterwards recognize and befriend the mother on meeting her, though ready to devour others… (Bingham, 1969:177)

Later in January 1825, Elisha Loomis also traveled to ‘Ewa and stayed along the Pu‘uloa shore (Loomis Journals, Jan. 18, 1823, in Westervelt, 1937). During his visit, Loomis learned the name of the shark goddess who protected the waters of the Pearl Harbor region and also reported hearing about a war between the good sharks and those who sought to eat human flesh. It will be noted that due to his limited Hawaiian language skills, Loomis apparently transposed she for “he” in his journal.

> After supper I conversed with them a long time on the subject of religion… during the conversation one of them mentioned that in former times there dwelt at Puuloa a famous shark named Ahupahau. He had a house in the hole of a rock. He was one their gods. On one occasion a strong shark 3 or 4 fathoms long came into the channel to make war upon the sharks and upon the natives that dwelt there. Ahupahau immediately communicated to the natives information advising them to get a net out and secure him. They took the hint and spread their nets, and in a little time the stranger was captured.

Loomis’s reference to a “war” between an invading shark coincides with the traditions of Ka-‘ehu-iki-manō-o-Pu‘uloa (Uaua, 1870-1871), Mikololou and Keali‘ikauaoka‘ū (*Home Rula*

Repubalika, 1902), in which battles between sharks are fought in order to protect the people of the ʻEwa region from attacks by manō iʻa.

J.S. presented a paper titled "The Lesser Hawaiian Gods" before the Hawaiian Historical Society on April 7, 1892. In this report are details of Kaʻahupāhau, Kahiʻukā and Mikololou in the history of ʻEwa and the waters of Puʻuloa:

> One reason for the affection shown to the shark aumakua was the fact that so many of them claimed human parentage, and were related by ties of kinship to their kahus. Such was the case with Kaahupahau and her brother Kahiʻuka, the two famous shark-gods of the Ewa Lagoon on this island. Their birth and childhood differed in no essential features from that of other Hawaiian children up to the time when, leaving the home of their parents, they wandered away one day and mysteriously disappeared. After a fruitless search, their parents were informed that they had been transformed into sharks. As such, they became special objects of worship for the people of the districts of Ewa and Waianae, with whom they maintained pleasant relations, and were henceforth regarded as their friends and benefactors. After a time the man-eating shark, Mikololou, from the coast of the island of Maui, paid them a visit and enjoyed their hospitality until he reproached them for not providing him with his favorite human flesh. This they indignantly refused to give, whereupon, in spite of their protest, he made a raid [page 10] on his own account upon the natives, and secured one or more of their number to satisfy his appetite. Kaahupahau and her brother promptly gave warning to their friends on shore of the character of this monster that had invaded their waters. To ensure his destruction they invited their unsuspecting guest to a feast made in his honor at their favorite resort up the Waipahu river. Here they fed him sumptuously, and at length stupefied him with the unusual amount of awa which they supplied him. While he was in this condition, their friends, who had come in great numbers from the surrounding country, were directed to close up the Waipahu river, which empties into the Ewa Lagoon, with their fish nets, brought for the purpose, while they attacked him in the rear. In his attempt to escape to the open sea he broke through one net after another, but was finally entangled and secured. His body was then dragged by the victorious people on shore and burned to ashes, but a certain dog got hold of his tongue, and, after eating a portion, dropped the remainder into the river. The spirit of the man-eater revived again, and, as a tongue, now restored and alive, made his way to the coasts of Maui and Hawaii, pleading with the sharks of those waters for vengeance upon the sharks of the Ewa Lagoon. They meantime secured the aid of Kuhaimoana and other notable sharks from the islands of Kaula, Niihau, Kauai, and Oahu. A grand sight it was

> to the numerous spectators on the shore when these mighty hosts joined in combat and began the great shark-war. It was a contest of gods and heroes whose exploits and deeds of valor have long been the theme of the bards of the Hawaiian Islands… [I]n the first great battle the friends and allies of the cruel man-eater were touted by the superior force of their opponents, which the good Kaahupahau and her brother long continued to enjoy the affectionate worship of their grateful people. It is said that she is now dead, while her brother Kahiʻuka still lived in his old cave in the sea, where he was visited from time to time by his faithful kahu, Kimona, now deceased. Sometimes Kimona missed his fish nets, when he was pretty sure to find that Kahiʻuka had carried them to a place of safety, to preserve them from destruction by hostile sharks (Emerson, 1892:10-11).

Mary Kawena Pukui wrote about visits she made to ʻEwa and the Puʻuloa region in 1907. She observed that the name "Kaʻahupāhau" could be translated as "Cloak well cared for;" her place in the history of the land is commemorated in the saying, "Alahula Puʻuloa he alahele na Kaʻahupahau, Everywhere in Puʻuloa is the trail of Kaʻahupahau" (Pukui, 1943:57).

3.2.2.13 *He Moolelo Kaao no Kaehuikimanoopuuloa: Ke Keiki Mano a Kapukapu ma Laua o Holei – A Moolelo Kaao for Kaehuikimanoopuuloa: The Child of Kapukapu and Holei*

This Moʻolelo, penned by William Henry Uaua, ran in the newspaper *Ke Ao Okoa from* November 1870 until January 1871. The moʻolelo is a story of the manō (shark), Kaehuikimanoopuuloa, named for the red hair of the shark goddess Kaahupahau of Puʻuloa. Born to two humans, Kapukapu and Holei, in Panau, Puna, Kaehuikimanoopuuloa was reared to be the guardian of Puna's waters. Despite his human parentage, the young shark, with his spiritual abilities, could only communicate with his parents in their sleep. One night, as his human parents were fast asleep, Kaehuikimanoopuuloa came to his father in the dream world and shared his courageous desire to go on a huakaʻi mākaʻikaʻi (a sight-seeing excursion) across the archipelago and beyond Kaʻula in the West to Tahiti in the South Pacific.

Recognizing that this journey was not just a mere sight-seeing excursion but a crucial step for the young shark to gain the wisdom needed to be a kiaʻi (guardian) of his waters, his father and mother agreed. After a solemn anointing ceremony conducted using the ʻawa, the niu hiwa, the moa hiwa, and the iʻa ʻula, the young shark was ready for his travels, his purpose now imbued with the sacredness of the ceremony.

In the month of Nana (March), he journeyed from Puna through Hilo, Kaʻū, Kona, Kohala, and Hāmākua, connecting along the way with the guardians of these coasts. These guardians

would agree to go along with Kaehuikimanoopuuloa as far as Nuʻumealani. These sharks are named Kepanila (Hilo), Kaneilehia (Kaʻū), Kua (Kona), Manokini (Kohala), and Kapulena (Hāmākua). From there, they journeyed to Maui, where the young Kaehuikimanoopuuloa battled the fierce war-hungry shark, Kauhuhu. After his victory, the entourage traveled to Kahoʻolawe, where they received their blessing from the shark god Kamohoaliʻi to pass through Molokaʻi and then Oʻahu.

Once on Oʻahu, they arrive at the point where Honouliuli meets Hālawa. There, they venture into Keaalii and move on to Kapakule, where they met the guardian of these caves named Komoawa. Knowing that ʻEwa is the home of his namesake, Kaehuikimanoopuuloa requests from Komoawa a visit with Kaahupahau. Komoawa obliges and seeks the blessing of her [Kaahupahau's] brother, Kahiuka, who lived inland from Waiawa. After receiving his blessing, the five sharks and Komoawa entered Puʻuloa. From there, they visited Kaahupahau's general, Honuiki, in Kepookala on the ocean side of Waipiʻo. Then, they all journeyed to Honouliuli, where the goddess Kaahupahau dwelled, in a cave called Kaahupahau Lua.

At Kaahupahau lua, they meet Kaahupahau, who is genealogically related to the young shark through her grandmother, Kanihopapawali, a chiefess of ʻEwa born at Kūkaniloko. In the court of Kaahupahau, they meet two more sharks named Kuhia and Palea, of which two beaches in ʻEwa are named.

While the sharks become acquainted, Kaahupahau insists they bathe in the waterfalls in the uplands. From Kaahupahau lua, the group swims inland, making their way to Waipahū, Waikele, and Ulepuhi in Waimanō. From Ulepuhi, they venture further to Puhikane in Waiau and finish their trip at Kahuawai, a waterfall at Kalauao.

Upon returning to Honouliuli after their bathing excursion, and under the command of Kaahupahau, Honuiki sends his child, Kamalolo, to fetch forty niu haohao (young coconuts) from pōkaʻī for a feast in honor of her guests. After the feast, Kaahupahau retires to her cave, while the sharks from Hawaiʻi celebrate by singing, telling kaʻao, dancing hula, and playing kilu.

During the celbration, Kepanila stirs the goddess Kaahupahau from her sleep by chanting a song of Hilo. Kaahupahau took an interest in Kepanila while they were bathing inland and became utterly mesmerized by the shark of Hilo and his voice. Honuiki is taken aback by the melody and confesses that he had never heard a chant before, having been raised in the waters of the iʻa hāmau leo (the fish that silences the voice). Kaahupahau, who enjoys the art of chanting, recites back the song from beginning to end without flaw, as it is revealed that she is a skilled chanter.

The libations continue until Kaehuikimanoopuuloa commands that the celebration must end as he does not want to bother the chiefess during her sleep. However, this perturbs Kaahupahau, as she enjoyed hearing their voices in the night.

The sharks stay for ten days in ʻEwa, preparing for the rest of their journey. Kaahupahau gifts Kaehuikimanoopuuloa her lei niho palaoa to symbolize her affection and as the key to their journey to Kauaʻi, Niʻihau, Kaʻula. From Kaula, they journey to Nuuhiwa, Fatuuhu, Tahiti, Eimeo, Huahine, Raiatea, Tahaa, Bolabola, Tabuaemanu, Tabai, Maurua, and Nuumealani.

Upon returning to the Hawaiian archipelago, the sharks pass through Kaʻula, Niʻihau, and Kauaʻi and re-enter Honouliuli to visit Kaahupahau and her court. There, they share the story of their journey to Tahiti and Nuuemealani from beginning to end. Having almost completed their journey, the sharks decide they are ready to return home. However, they are denied by Kaahupahau, who wishes they would stay in her court longer. Because of her hospitality and love, the sharks agree and stay for five more days.

When they are released, they move Southeast toward Molokaʻi. While on the outskirts of Wakīkī, they notice a shark named Pehu from Honokohau, Maui, secretly preying on surfers at Kalehuawehe. Knowing the kānāwai of the goddess Kaahupahau, that no shark shall attack a human on Oʻahu, the entourage strikes and kills Pehu. The battle was observed by onlookers ashore, and the body of Pehu was taken inland and burned. Following this last showcase of affection toward Kaahupahau and her kānāwai, the group returned to Hawaiʻi Island. Thus, the huakaʻi mākaʻikaʻi ends with Kaehuikimanoopuuloa being united with his waters at Panau, Puna having become a warrior and aliʻi worthy of his position.

This moʻolelo tracks the migratory movement of sharks from Hawaiʻi Island into the Northwestern Hawaiian Islands and the South Pacific. Further, it captures the historic importance of Honouliuli as an ecological breeding ground and meeting place for sharks during migratory processes. Honouliuli is culturally significant in the traditions of manō because it is the site where Kaahupahau and her court reside and where her kānāwai that no shark shall kill a human on Oʻahu emanates.

Place names from this moʻolelo significant to sharks in the ʻEwa Moku:

Table 2. Place Names Associated with Sharks

Honouliuli	Palea
Kaahupahau lua	Puhikane
Kahuawai	Puuloa
Kalauao	Ulepuhi

Kapakule	Waiau
Keaalii	Waikele
Kepookala	Waimanō
Kuhia	Waipahū

3.2.2.14 *He Moolelo Hawaii – No na Aumakua Moo (Hawaiian History – About the Mo‘o Guardians/Ancestral Gods)*

This excerpt from “A History of Hawai‘i” introduces the mo‘o (water spirit) goddess, Kānekua‘ana. It was to her that the heiau waihau (heiau specifically for mo‘o spirits) were established along the Pu‘uloa lochs to ensure the abundance of various fisheries, particularly the pipi, nahawele, mahamoe and other bivalve species for which ‘Ewa’s inland fisheries were famed. Among the kapu (restrictions) of Kānekua‘ana was that fisher-people needed to be very quiet when going to sea to gather the pipi (pearl oysters) and bivalves. The slightest voice would cause the wind to blow, thus making the pipi and other bivalves sink deep into the sands where they would be difficult to find.

It is because of this kapu associated with Kānekua‘ana that the famous saying of ‘Ewa, “ka i-a hamau leo o Ewa,” came into being.

Ka Nupepa Kuoakoa
No Na Aumanua Moo – About the Moo Guardians/Ancestral Gods

He Moolelo Hawaii (Mokuna VII.) Mei 20, 1893 (aoao 1)	Hawaiian History (Chapter VII) May 20, 1893 (page 1)
…Kanekuaana ko Ewa moo kiai, hilinai nui ko Ewa poe kamaaina iaia, mai Halawa a Honouliuli. Ina e pilikia i ka ia, hoeu like na kanaka i na waihau e pili ana iaia, a o ka ho-a no ia o ke ahi e hoala i ka pomaikai o ka aiona. O ka Pipi ka ia kaulana o Ewa. Aole e hala na mahina eono e ku ai ka lala hau ua piha ka aina i ka Pipi, mai Namakaohalawa a na pali o Honouliuli, mai na kua-pa o uka a na pa akule [Pākule]; mai ka hohonu a ka papa nahawele o kula; mai kaliawa a ka pohaku ona loko a pela aku.	…Kānekua‘ana is the mo‘o [water spirit] guardian of ‘Ewa; many of the natives of ‘Ewa, from Hālawa to Honouliuli followed [believed] in her. If there was trouble with the fishing, the people dedicated her temple [Waihau] with the lighting of a fire to bring about blessings upon the land. The pipi [pearl oyster] is the famous fish of ‘Ewa. Before six months would pass the hau branches would take hold, and the land would be filled with the pipi, from Nā-maka-o-Hālawa to Honouliuli, from the inland pond walls to the Pā-akule. From the depths to the nahawele reefs and flats. From the

	channel inlet to the stone-lined ponds, and so forth.
Aia maloko o ka io o ka Pipi momi nani, e like ka nunui me ka onohi ia; he onohinohi keokeo kekahi, ua kapaia he muhee kea; onohinohi ulaula kekahi me he anuenue la, he muhee makoko ia. He liilii a nunui kekahi; a he waiwai kumukuai nui ko ia mea.	There is within the flesh of the pipi a beautiful pearl, its size is similar to the eyeball of a fish. Some are like the shiny white of an eye, and are called mūheʻe kea. Others are shiny red, like a rainbow, and are called mūheʻe mākoko. Some are small and others are larger, and they are highly valued.
O ka Opaehuna a Opaekala kekahi ia; paapu mailoko o ke kai a na loko kua-pa a no loko puuone.	The ʻōpae huna and ʻōpae kala [types of shrimps] are other fish, that are in the sea, the walled ponds, and dune banked ponds.
O ka nehu pala kekahi ia; piha mai ka nuku o Puuloa a uka o na Ewa, pela me na nuku awalau a pau; no laila ka olelo ia ana:	The nehu pala is another fish which fills the waters from the entrance of Puʻuloa to the coastal flats of ʻEwa. It is the same with all of the lochs (awalau). This is why the saying is told:
"He kai puhi nehu puhi lala Ke kai o Ewa—e. E noho i ka lai o Ewanui— A Laakona—a."	"Nehu appears to be blown upon the sea, causing the water to shine It is the sea of ʻEwa, Dwelling in the calm of great ʻEwa, of Laʻakona"
He Mahamoe kekahi ia kaulana, a he Okupe a mau ia e ae no kekahi. A ina i ike ia keia mau ia a pau alaila, eia ka olelo a na pulapula:	The mahamoe is another famous fish, and the ʻōkupe, another, and there are others. And if all these fish are seen there, here are the words of the natives of the land:
"Hoi mai nei ua luahine nei mai na kukulu mai o Kahiki; noho mai la paha a aloha i na moomoo ana."	"The old woman (Kānekuaʻana) has returned from the foundations of Kahiki; she dwells here perhaps for the love of her descendants…"
O lakou no kekahi i hai mai i ke ano o na pae aina o Kahiki a me na aina e ae i ike ole ia…	They are the ones spoken of coming from the Kahiki and the other lands which have not been seen…
…O Hauwahine, he kiai ia no na loko o Kawainui a me Kaelepulu. O Laukupu ko Moanalua; he malama lakou i ka pomaikaʻi, e pale ana i na pilikia maluna o ke kina a me ka ohana…	…Hauwahine is the guardian of the ponds of Kawainui and Kaelepulu. Laukupu is of Moanalua; it is they who tend to the blessings, protecting the lands and people from trouble…

In a *Ka Leo Hawai'i* interview on October 24, 1972, with Sara Keli'iolena Lum Konia Nākoa of 'Ewa, the radio show's host, Larry Kauanoe Kimura asked Sara about the i'a hāmau leo of 'Ewa. The following is a transcription and translation from that interview:

LK: Kēia 'ōlelo 'ana a'u i lohe ai e pili ana iā 'Ewa, o ia nō ka i'a hāmau leo o ka 'āina. 'O wai kēia i'a? He aha kēia i'a?	LK: There is this saying that I have heard about 'Ewa that is the fish that causes the voice to be quiet. Who is this fish? What is this fish?
SN: Kēlā pūpū kaulana nō, me ka momi o loko, momi waiwai nui. Loa'a kēlā. I ku'u wā kamali'i, 'ae 'ia nō mākou e hele ma waho i laila. No ka mea, i kēlā wahi 'āina—puka akula i Wahi, 'o Pu'uloa, kāhea 'ia he Peninsula. A, ma waho ilaila kēia pūpū Kaulana. 'A'ole i 'ae 'ia i nā manawa a pau. I ka wā nō e…	SN: That is a famous oyster that has a pearl inside, a very precious pearl. In my childhood, we were given permission to go out there. Because in that place you exit out of the place called Pu'uloa which is called a Peninsula. Right out there are these famous oysters. We weren't always given permission to go anytime. When it was time…
LK: He 'ano pā kēia? SK: 'Ae	LK: Is it a kind of mother-of-pearl shell? SK: Yes
SK:…ke hele. Ke hele e ki'i, me ka mālie loa helei. 'A'ole hana kuli, A'ole ho'opāpā i ke kai. Ke mea, ke wala'au, a ke hana kuli, a pa'a a'ela kēlā ua pūpū nei. 'A'ohe hiki iā 'oe ke 'ike iā ia.	SK: to go. To go and fetch [the oyster] one would have to go quietly straddle. One could not be noisy or touch the ocean. Should you talk or be noisy, the oyster would disappear. You wouldn't be able to see it.
LK: Hūnā SK: Hūnā 'o ia SK: A hele nō au me ko'u kupunahine ma kēia wahi. LK: A, o ia ke kumu i kāhea 'ia ka i'a hāmau leo o ka 'āina. SK: 'Ae, 'a'ole hiki ke wala'au ke hele ma laila. Ke wala'au, 'ōlino a'ela ke kai…pi'i. Pā maila ka makani. 'A'ole hiki ke 'ike.	LK: Hidden SK: It hides SK: I would go with my grandmother to this place. LK: That is the reason why it is called the fish that makes the voice quiet of the land. SK: Yes, you cannot talk should you go. If you talk, the ocean would be enticed to rise. The wind would blow. You wouldn't be able to see [the oyster]. [Kahikina, transcriber and translator]

3.2.2.15 *He Moolelo Kaao Hawaii no Laukaieie… (A Hawaiian Tradition of Lauka‘ie‘ie…)*

Hawaiian historian Moses (Mose) Manu penned several lengthy traditions for *Nupepa Ka Oiaio*, in which he included detailed accounts of a wide range of practices, including those associated with fisheries and deified guardians of the ocean and fresh-water fisheries. This account, “He Moolelo Kaao Hawaii no Laukaieie…,” was published between January 5, 1894, and September 13, 1895. The tradition is a rich and complex account with island-wide place name references and details for Honouliuli and the larger ‘Ewa District. The tradition also includes descriptions of fisheries and aquatic resources, history, and mele, interspersed with accounts from other traditions and references to nineteenth century events.

The following excerpts of Manu’s account were translated by Maly and include an overview of the mo‘olelo while referencing narratives which recount the travels of Makanike‘oe, one of the main figures in the account. During his travels, Makanike‘oe sought out caves and tunnels that served as underground trails. Through the description of his travels, we learn about some of the wahi pana and resources of the lands through which he traveled.

The following accounts, describing places of the ‘Ewa District and neighboring lands, are excerpted from the longer narratives which describe the travels of Lauka‘ie‘ie, her younger brother Makanike‘oe, and their companions. The lei momi (pearl garlands) of ‘Ewa were described while Lauka‘ie‘ie and her companions were at Ka‘ana, Moloka‘i:

> March 9, 1894 (page 4)
>
> Leiomanu (a youth of Ka‘ala, O‘ahu) gave Ka‘ana of Moloka‘i, and Kawelonaakalāilehua, the prized lei momi of ‘Ewa as gifts. The characteristics of these pearls (momi) included those with a fine yellowish tint, others had bumps like diamonds, and some were bluish-yellow. There were many types of pearls, and they were once regularly seen in the sheltered bays of ‘Ewa at O‘ahu. They came from the Pipi (oysters), and the pearls were found near the edges of the Pipi shell. They were a thing greatly cherished by the chiefs of old and worn in lei (necklaces). This is why it is said:
>
> My fish which quiets the voices,
> You mustn’t speak or the wind will blow.
>
> This is the famous thing of ‘Ewa, where the fish quiet the voices, to these new

times.[7] This is the type of lei which had been given to the aliʻi of Lehua, the island which snatches the sun…

April 19, 1895 (page 1)

…Laukaʻieʻie and her companions, Hinahelelani and Koʻiahi arrived at Honouliuli and were greeted by the natives of that land. Koʻiahi, a chiefess from Mākua, Waiʻanae, was related to Kahoʻonani (w), ʻUlalena (w), and Kauakiʻowao (k), the aliʻi of Honouliuli. It is for these aliʻi that the chant is sung:

> Kahoʻonani resides upon the plain,
> ʻUlalena is completely surrounded by the Kauakiʻowao rains…

While they were being hosted at the house of these natives, they saw the beginnings of a red-hued rainbow form near the shore and knew that Kauakiʻowao, the elder brother of the two beautiful sisters, was crossing the flat lands, drawing near to house. When he arrived, Hinahelelani asked Koʻiahi to invite Kauakiʻowao to accompany them on their journey to Kauaʻi… The party departed from the residence at Honouliuli and traveled to Puʻuokapolei, where the met the young maidens Nāwahineokamaʻo and Peʻekāua, the beauties who dwelt upon the lowlands of Puʻuloa. These two maidens accompanied the travelers to Waimānalo and Kaiona, for which the song writer of the late chiefess Bernice Pauahi Bishop wrote:

> Respond o woman,
> Who travels the plain of Kaiona,
> Pursuing the mirages,
> On the plain covered with ʻōhai blossoms.

Thus, all these beautiful residents of the land of Honouliuli were gathered together, by the famous beauty of Waiʻanae (Koʻiahi), who is there on the resonating and fine sands of Mākua…

April 26, 1895 (page 1)

…While Laukaʻieʻie and her companions were traveling through Waiʻanae, Makanikeʻoe was following behind. Having landed on the shores of Māmala, he then traveled to Kahakaʻaulana and the landing at Kalihi. He then looked down

[7] Tradition has it that the pipi (mother of pearl oysters) were very sensitive to any sounds and those who were noisy would scare the shellfish into hiding. Thus, when going to catch pipi and other similar oysters, no one spoke (see Pukui, 1983 No.'s 493, 1357 & 1377).

along the glistening sands and waters where the mullet are found, outside of Keāhua, at the place called Keawakalai. There he saw a crevasse open in the sea. In this place, were sleeping many sharks and turtles, almost as if under the sand. Makanikeʻoe quickly entered into the cave with the turtles and sharks, to see them more closely. Because of his great speed, they didn't know that he had entered their house. Makanikeʻoe crawled along one of the crevasses in the sea, and going beneath the land, he exited out at Āliapaʻakai, at the place called Manawainuikeoʻo. That is the entrance of the sea into that great salt-water pond of Moanalua…

Let the author explain here, that this channel was first made when Pele traveled along the islands making craters here and there. This crater is something like the crater of Kauhakō, at Kalaupapa, Molokaʻi.

By this little explanation my readers, you may also know that the remaining crater is there above Āliamanu, the hiding cave of the chief Kahahana, his companion, Alapaʻi, and his beautiful wife, Kekuapoʻi. He (Kahahana) is the one who killed the priest Kaʻōpulupulu and his son Kahulupue, at Waiʻanae. This is how the famous words of the priest came to be spoken:

> Strive for the sea my son,
> for from the sea shall come (others of) another land.
>
> And this cave has been given the name "Pililua" from the time of the death of the chief Kahahana.
>
> Pililua, the two of you shall go to ʻEwa,
> You are like a canoe,
> Pulled by the rope,
> To the cliff of Keālia,
> At Kamaʻomaʻo,
> There at Kinimakalehua.

After seeing these places, Makanikeʻoe then went to the top of Leilono, one of the deities of ancient times. There is a pit dug there in which the foul-smelling bodies of the dead and the defiled matter of the dead are thrown.

Makanikeʻoe left that place and went to a place that was covered with something like a rough pahoehoe surface, below the present-day 5-mile marker on the road at Kapūkakī. There he saw the spirit of a woman moving swiftly over

a portion of the pāhoehoe. Makanikeʻoe recognized that this was a spirit form rather than that of a living woman, and he felt compassion for her. He then saw that there was a deep pit there, filled with the spirits of dead people, swaying back and forth, and crying out, with moaning and wailing. This is the pit which in ancient traditions is called Kaleinaakaʻuhane. The spirits of the dead go there and can only be freed if their ʻaumakua (ancestral family god) fetches them. They might even be returned back to life again…

Now you may be wondering my readers, what was the name of this woman that Makanikeʻoe took up in his hands. Well the writer will tell you the name of this beautiful young woman of Kaiʻahāmauleo o ʻEwa-nui-a-Laʻakona [The fish that quiets the voice of Great-ʻEwa-of-Laʻakona], it was Kawailiʻulā. She was a native of two lands of ʻEwa, Waiau and Waimano. And it is for this woman that Kawailiʻulā, between the 9 and 10-mile markers from Waiau and Mānana 2nd is named; it is near the present-day courthouse of ʻEwa…

At this place, Kaleinaakaʻuhane, hundreds and thousands of spirits have been lost…

May 3, 1895 (page 1)

…Makanikeʻoe then went to the uplands, atop the cliffs and ridges of Koʻolau, where he looked down and chanted:

> Beautiful is Hālawa in the Waʻahila rains,
> Which visits also, the heights of Aiea,
> The heat and warmth travels across the plain of Kalauao.

It is true, that he then went to Kalauao, where he saw the pool of Kahuawai. He turned to the uplands and saw the source of the water coming out of the earth, near the top of the cliff of Waimalu. The source of this water, from where it flows, cannot be easily seen because it comes out from the ground in an area where there are many deep holes hidden on the side of the cliff of Waimano. It is from one of these pits that the water flows. It is also at one of these places that the body of David Malo[8] was laid to rest.

This place, between Waiau and Waimano, called Waipuhia, is the place of Kawailiʻulā, who was brought back to life at Kaleinaakaʻuhane, at Kapūkakī…

[8] This is not David Malo of Lahaina Luna, but a namesake, who was also a historian and active church member.

Kawailiʻulā invited Makanikeʻoe to her home where food was prepared, the ʻanae (mullet) from the pond of Welokā and the famous foods of the land. Kawailiʻulā invited Makanikeʻoe to stay with her, but he declined, explaining that his elder sister and her companions were waiting for him at Waiʻanae… Kawailiʻulā bid farewell to Makanikeʻoe and he disappeared from sight, born by the wind, Moaʻekū of ʻEwa.

Makanikeʻoe then traveled to Mānana, now the 10-mile marker, and the place where the courthouse of ʻEwa stands. This is the place where ʻOulu, the famous warrior of Kahekili, king of Maui, was surrounded by warriors who thought to take him prisoner. It is there that ʻOulu fought like the eel, Palahūwana, and with great strength and skill, overcame those who fought against him. The place where this fight occurred is called Kaoinaomakaiʻoulu to this day.

Makanikeʻoe then followed the trail to a place where he saw a large gathering of youth along the trail, at the place called Nāpōhakuhelu. The activity of the children at this place was the shooting of arrows, something that was always done by the youth of those times.

There was among this gathering of youth from Waiawa, a handsome boy named Kanukuokamanu (not to be confused with a place of the same name in Hilo, Hawaii). His place of residence was on the shoreward side of the government road, a place something like a hillock from where one can look to the estuary of Waiawa. It is about at the ten-and-a-half-mile point, and the place is known by the name of this youth today.

When Makanikeʻoe arrived at the place where the youth were playing, he was saddened at seeing the young boy crying. This was because the older children had taken all the arrows and left none for the younger child to play with. Makanikeʻoe took the young boy away from the group to a place off to the side. He told the boy “Stop crying and I will give you an arrow of your own. This arrow will fly farther than any of the arrow of your friends.” Makanikeʻoe then gave the boy an arrow like none other he’d seen.

Now Kanukuokamanu was the son of the chief of Waiawa…When he returned to the group of other children who were still playing, he prepared to compete as well. He chanted first to his arrow:

Kaʻailehua flies,
Kaʻiniki flies,

Ahuahu flies…

May 8, 1895 (page 1)

Kanukuokamanu shot his arrow, and it flew beyond all the other arrows of the competitors. It flew all the way to "the end of the nose of the pig" at Waimano, and then returned to the youth who had shot it…

Makanikeʻoe then departed and was lost from sight. Looking seaward, Makanikeʻoe saw the fin of a shark passing by, in front of a stone in the estuary of Waiawa, on the west side of Kanukuokamanu, next to Piliaumoa. Seeing the shark, Makanikeʻoe drew nearer, and he saw that it was Kahiʻukā, a native of this estuary. His cave was comfortably situated on the side of the stone. Kahiʻukā was a good shark, and in his story, he is the guardian of Mānana and Waiawa.

The author has met a man at Mānana who was known by the name, Kahiʻukā. He learned the traditions of this shark in his youth and was taken by this shark for a period of time and returned again to the land in good health. The man has since died, but his daughter is still alive, and his story is an amazing one.

After seeing the house of this hero of the sea [Kahiʻukā], Makanikeʻoe turned and walked along the place where the waters flow from the land at Piliaumoa, Mokaʻalina, Pānaio, Kapuaihalulu, Kapāpaʻu, and Manuea. The trail then turned and went to the top of Hāʻupu, where the foundation of the Luakini [Church] of ʻEwa was later situated. Near there, was a large pond in which awa [milkfish], ʻanae [mullet], and āholehole [*Kuhlia sanvicensis*] fish were found.

Oh readers, let the author explain something here. At the time Lūʻau came from Maui to dwell on Oʻahu, he arrived at Waiawa, ʻEwa. He saw some men thatching dried tī leaves on the Luakini [Church] that was being built there. Lūʻau asked some people, "Who is the one that is having this important house built?" They answered, "Kānepāiki." Lūʻau then stated, "The house shall not be finished to its ridge pole before the one who is having it built dies." The people asked, "Why?" Lūʻau answered, "The house is atop the Heiau [temple] and the fishpond is below, it is because the waters [life and wealth] are flowing out from this place. [So too shall the life flow out.]" These words of Lūʻau were true, the Luakini of Waiawa was not completed before Kānepāiki died. His body was buried in the uplands of Waimalu.

These were the words of Lūʻau. The one who discerned the nature of the land

[kuhikuhi puʻuone], in the time of the King Kauikeaouli K. III. And his descendants are still living at Kanaio, Honuaʻula, Maui…

From this place, Makanikeʻoe then turned and looked to the calm waters of Kuhia Loko and Kuhia Waho. He went to the ponds and saw water bubbling out, and in the pond were many fish of the sea. It was of this pond, that Kāne and Kanaloa spoke, while in Kahiki, as heard by the prophet Makuakaumana, who crossed the sea and traveled to Hawaiʻi:

The mullet are at Kuhia-loko,
The seaweed is at Kuhia-waho,
The salt is at Nīnauele,
The nehu pala are at Muliwai
The lone coconut tree stands at Hape,
The taro leaves are at Mokaʻalika,
The water is at Kaʻaimalu,
The ʻawa is gathered at Kalāhikiola.
Behold the land.

All of these places named by the gods can be seen, extending from the sea of Waiawa to Halalena at Waiawa uka.

From this place, Makanikeʻoe then went to a large deep spring which flows from waters beneath Waipiʻo and Waiawa. At a place where the priests discard their offerings. He then came upon another spring at the entrance of the estuary of Waiawa. The trail then turned towards Palea and Pipiloa, where there grew groves of kou and hau in ancient times, and it was the residence of the rulers of Oʻahu. This is the place where the king of Oʻahu, Kūaliʻi-a-Kauakahiakahoʻowaha, found his first wife, Kawelaokauhuki, who was of the uplands of Waimano. It is this Kūaliʻi who built the long house called Makanaʻole, on the inland plains of Mānana 2nd. It is near the place now called Kūlanakauhale Momi [Pearl City].

Makanikeʻoe then traveled to the fishponds of Hanaloa and ʻEo, the great ponds of ʻEwa. It is for these ponds that the lines of the song say:

The water of ʻEo is not fetched,
It is the sea of Hanaloa that ripples forth.

At this pond, Makanikeʻoe saw a deep crevasse and inside, there was a giant

eel sleeping. The name Hanaloa was given because of the great amount of work that was done by the chief and the people in carrying the stones with which to surround the crevasse and build the pond wall. Thus, the pond was built. And it is a famous pond for it is rich with fish, and for the eels which Keinohoʻomanawanui desired to eat.

From the pond, Makanikeʻoe then walked to a place where there were several small points of land, near where Pāpio was bitten and where the sea enters Honouliuli. He noticed how very calm the surface of the water was here, but he also saw that it was agitated in its depths. Looking more closely, he saw in the depths some very large fish, as if guarding the entrance to the harbor. One of these two large fish was like a marlin with a long bill and rows of teeth. The other one was a barracuda whose teeth protruded out of both sides of its mouth. These two fish of the bays of ʻEwa, had ears with which to hear. They leapt in the ocean like flying fish and are spoken of in some of the traditions of Hawaii.

The marlin is the one, who with his sharp bill, divided the waters that enter into ʻEwa. Thus, Makanikeʻoe understood the nature of these fish, and what their work was. They were the guardians of the place. It is true also, that in a short while Makanikeʻoe saw a procession of many sharks arrive. There was in this group, the famous chiefess, Kaʻahupāhau, of Puʻuloa, and the messengers of the king shark [Kamohoaliʻi] of Kahoʻolawe. She was taking them on a tour and to drink the waters of Waipahu and Waiʻāhualele, and to drink the awa from Kahauone, in Waipiʻo uka…

Makanikeʻoe then turned again to the place where Pāpio had been bitten as a result of her asking for the ʻilima garlands of the old woman, Koihala. This is what the old woman told Pāpio:

> The beautiful girl asks,
> That the garlands of the old woman be given to her.
> Heed my words dirt of the dog, dirt of the pig,
> String your own garland and let it wilt.

Makanikeʻoe then departed from this place, turning to the plain of Puʻuloa. He passed many pits in this place where the bones of men have been left. He then followed the trail to the breadfruit tree, Leiwalo, at Honouliuli. This is the breadfruit tree of the expert sailor, Kahaʻi (Kaʻuluakahaʻi), so told in his story.

There are also many pits in which were planted sugarcane and bananas, and planting mounds. He also saw manu ʻōʻō (honey creepers) sipping the nectar of noni blossoms. There were also two ducks that had gone into a pit, and with a great strength, they were trying to push a stone over, to hide the pit. This Makanikeʻoe knew what the ducks were trying to do. They wanted to hide a spring of water which flowed underground there. It is this spring which in calm times could be heard, but not found by the people who passed through this area. It was a secret spring, known only to certain native residents of the area, and its name is recorded in the last line of the song:

The ʻōʻū is the joyful bird of Kaupeʻa,
The joyful voiced ʻōʻō is of Puʻuloa,
Softening the blossoms of the wiliwili,
Drinking the drops of nectar from the noni,
The birds drink and pass time,
The eyes cast about seeking,
The water of the natives,
The eyes seek the water of Kaiona.

This hidden spring, known only to the natives, was not hidden to Makanikeʻoe. From there, Makanikeʻoe then turned back towards Honouliuli and saw the pit of the native eel, Kapapaʻapuhi, the elder of Laumeki, whose stone-form body is there at the base of Kaʻuiki, Hāna, Maui. He was an eel of Oʻahu who traveled to Hāna where he stayed and was turned into stone.

There is also at this place, Kaihuopalaʻai, where the ʻanae (mullet) begin their journey from Honouliuli to Kaihukuʻuna at Lāʻiemaloʻo, Koʻolauloa.

Seeing this pit, Makanikeʻoe swiftly ran back to Waipahu, where he looked at the source of the water, where it came out of the earth, and flowed to the estuary of Waikele. Makanikeʻoe dove into the water to determine its hidden source. He swam underground, and first arrived at Kahuaiki, at Waipiʻo, for which the song is sung:

Return to the coolness of Waipiʻo,
The cold water of Kahuaiki…

He then dove under and came out on the plain of Puʻunahawele, that barren and peopleless plain. There he saw the source of the water of Kahuaiki. It is

near a hidden stone [shaped like a hook pendant] and close to Kekuaʻōlelo, along the trail which ascends straight up to Waipiʻo uka. Makanikeʻoe then turned and followed the water path, and with great strength, he arrived at Kawaipūʻolo, at Waialua. There, he saw the pool of Laniwahine in the famous pond of ʻUkoʻa. He then quickly went from Waialua to Kawela, and from there, to Punahoʻolapa, a deep spring on the plain of Kahuku. There he found the water source that the kapa anvil fell into and was carried to Waipahu, at ʻEwa. Makanikeʻoe the crawled along another path and arrived at Punamano, also at Kahuku…

[Makanikeʻoe continued his journey through the various springs of Oʻahu, until he rejoined his sister and companions at Waiʻanae. The group then continued on their journey to Kauaʻi…]

3.2.2.16 *He Moolelo Kaao Hawaii no Keliikau o Kau (A Hawaiian Tradition of Keliikau o Kau)*

Keliʻikau-o-Kaʻū was a shark god who traveled to Puʻuloa, ʻEwa from the island of Hawaiʻi. The tradition appears only in the short-run Hawaiian language newspaper Home Rula Repubalika and is incomplete. The following narratives are different in relation to the events and their outcome than those found in more widely reported narratives. There is no specific reference to the source of the account, and only two articles in the series are available. These narratives offer some details on named localities and events that are of significance in the history of Puʻuloa at Honouliuli.

Home Rula Repubalika
He Moolelo Kaao Hawaii no Keliikau o Kau.

January 6, 1902 (pages 7-8) & March 15, 1902 (page 7)

Summary — A Hawaiian Tradition of Keliʻikau-o-Kaʻū

Keliʻikau-o-Kaʻū was born to his mother as the result of her relationship with the spirit form of Kalani, a king of the sharks. He was a favorite of Kalani, and transformed into a shark, whose body was almost three fathoms long.

At this point in our story, we now look to another mysterious formed shark, and his death at the entrance of Puʻuloa at ʻEwa. His name was Mikololou, it was him who was killed at Puʻuloa, and this is why Keliʻikau-o-Kaʻū went there. The background of this shark, Mikololou is given in the traditions Kāneialehia, and

Pāpa‘i and Paukūpahu of Puna, Hawai‘i. Kāneialehia, protected the lands from Leleiwi and Makaokū, near the low islet of Mokuola, and all the way to Makahanaloa of Hilo Palikū. Under the law of Kāneialehia, it was forbidden to kill any human. Kāneialehia saw swimming past the cliffs, and discerned Mikololou's nature as an spirit-transformed shark, he also recognized that Mikololou was a man-eater.

Kāneialehia decided to take Mikololou as an attendant, perhaps even as a foster-son, and to teach him how to live under the law of not killing humans…

[We know from various accounts, as cited earlier in this section of the study, that Mikololou departed from Hawai‘i, in the company of other man-eaters, and traveled to Pu‘uloa, where he was eventually killed by Ka‘ahupāhau, Kahi‘ukā and the people of ‘Ewa. Based on other accounts, Mikololou was restored to life, and returned to Hawai‘i, where he enlisted the aid of Keli‘ikau-o-Ka‘ū and other sharks to avenge his treatment by the sharks and people of Pu‘uloa. The issues of the paper with this portion of the tradition are missing, and the account is picked up again on March 15, 1902.]

Keli‘ikau-o-Ka‘ū fought with and killed Ka‘ahupāhau, and it is because of this event, that the famous saying, “Mehameha Pu‘uloa, ua make o Ka‘ahupāhau” (Pu‘uloa is alone, for Ka‘ahupāhau is dead), came about. Keli‘ikau-o-Ka‘ū assumed various body forms he possessed and attacked Ka‘ahupāhau from within, and outside her body. Ka‘ahupāhau went in spirit form to her attendant, Koihala, calling to her, saying that she was dying. Upon her death, Keli‘ikau-o-Ka‘ū called out to Kamoana and Kahi‘ukā, taunting them. He then proceeded to swim through Pu‘uloa, biting and tearing at the native sharks of the region, throwing their bodies up onto the dry land from Kalaekao, Kapua‘ikāula, Keanapua‘a, Kamoku‘ume‘ume, Aiea, Kalauao, Waimalu, Waiau, Waimano, the two lands of Mānana, Waiawa, Hanapōuli, Waipi‘o, Waikele, Hō‘ae‘ae, Honouliuli, Kalaeokahuka, Kanahunaopāpio, Kepo‘okala and Pu‘uloa.

Keli‘ikau-o-Ka‘ū destroyed all the sharks of ‘Ewa, and the stench rose upon the land. Thus came about the saying, “Pu‘uloa is alone, for Ka‘ahupāhau is dead.” Upon her death, Ka‘ahupāhau's body became a coral formation near the place called Pāpio, and that place is still seen on the side of Honouliuli to this day.

Following the death of Ka‘ahupāhau in this war between the sharks, the shark chiefs of both sides met in council and agreed to no further wars should be fought between them…

It should be noted here, the elder kamaʻāina of the ʻEwa District still claim that Kaʻahupāhau was seen and cared for during their lifetime.

3.2.2.17 *Kaao no Namakaokapaoo (Tradition of Nāmakaokapāoʻo [Eyes of the Goby Fish])*

There are several traditions pertaining to a youth named Nāmakaokapāoʻo that have been published in the Hawaiian language newspapers, with lengthy accounts in print between the 1877 to 1917. The March 1877 account, published in the newspaper, *Ka Lahui Hawaii*, references the sweet potato fields of Nāmakaokapāoʻo, observing that Nāmakaokapāoʻo was the skilled fighter of the cliffs of Līhuʻe.

Later accounts of the tradition provide detailed narratives of events on Maui and Kauaʻi, with passing, poetic references to Oʻahu, Hawaiʻi, Niʻihau, and other locations. It is in Abraham Fornander's "Collection of Hawaiian Antiquities" (Vol. V, 1918:274-283) that we find events in the life and deeds of Nāmakaokapāoʻo taking place on Oʻahu. A summary of the Oʻahu version of the tradition of Nāmakaokapāoʻo follows below and cites several names and features of the ʻEwa District:

> Nāmakaokapāoʻo was born at Hōʻaeʻae. His father was named Kaʻuluakāhaʻi (descended from gods of Kahiki) and his mother was Pōkaʻī. After Pōkaʻī became pregnant, Kaʻuluakāhaʻi traveled to Kahiki. Thus, when Pōkaʻī gave birth to Nāmakaokapāoʻo, the two of them lived with little to sustain them. One day, Pūaliʻi, a man who lived in the uplands at Keahumoa, situated just below Kīpapa, went to the shore of Līhuʻe to fish. While on his way, he passed the place where Pōkaʻī and Nāmakaokapāoʻo lived. Seeing Pōkaʻī, Pūaliʻi fell in love with her, and asked her to be his wife. Agreeing, Pōkaʻī and Nāmakaokapāoʻo went to live at Keahumoa. There, Pūaliʻi tended two large māla ʻuala [fields of sweet potatoes].
>
> In his work, Pūaliʻi had made an oath that none of the potatoes would be eaten until he had made an offering of an ulua fish, and then eaten of the produce first, himself. When the māla were ready to harvest, Pūaliʻi went down to Līhuʻe to catch his ulua. While Pūaliʻi was on the shore fishing, Nāmakaokapāoʻo and a group of his friends went to the māla ʻuala and pulled up all the potatoes and began to cook them. Pūaliʻi returned, saw what had been done, and went with a large koʻilipi [stone adze] to kill the boy. As the koʻilipi fell, Nāmakaokapāoʻo offered a prayer to his deified ancestors, and the adze turned and cut off Pūaliʻi's head.
>
> "Nāmakaokapāoʻo picked up Pūaliʻi's head and threw it towards Waipōuli, a

> cave situated on the beach at Honouliuli [a distance of about five miles]" (Fornander, 1918:278).[9]

The māla ʻuala where this occurred has been called "Nāmakaokapāoʻo" since that time and are found on the plains of Keahumoa.

Word of this event reached Amau, king of Oʻahu, who was dwelling at Waikīkī. The king wanted to challenge the youth and proceeded to Keahumoa for the contest. Learning of this, Nāmakaokapāoʻo went to his mother and took her down to a cave situated at Waipōuli, where he hid her for a while. He then returned to Keahumoa and met with Amau and his warriors and killed them all. Nāmakaokapāoʻo then established his mother, Pōkaʻī, as ruler over Oʻahu.

3.2.2.18 *Kaʻuluakāhaʻi (The Breadfruit Tree of Kāhaʻi) at Kūalakaʻi*

As cited in the tradition of Nāmakaokapāoʻo, Kaʻuluakāhaʻi was the true father of Nāmakaokapāoʻo. In Fornander's account, following his victory over the king of Oʻahu, Nāmakaokapāoʻo traveled to Kūalakaʻi where a supernatural breadfruit tree grew in a sink hole-cave, in which had been hidden the royal gifts left to him by his father. Retrieving the items from Kūalakaʻi, Nāmakaokapāoʻo then traveled to Hawaiʻi:

> After the complete possession of Oahu by Namakaokapaoo, he was desirous of visiting Hawaii for observation. He then went and got a small gourd wherein to place his garments which his father had left him. This gourd was deposited at Kualakai, where a breadfruit tree is standing to this day. This is the breadfruit impersonation of his father, Kahaiulu. When the real person went home the breadfruit tree remained, being in the supernatural state.
>
> Inside of the gourd was a garment, a girdle and a royal cloak (feather cloak). After he had obtained the gourd he journeyed on till he reached Hanauma, in Maunalua. There he found a canoe which was preparing to sail for Hawaii… (Fornander, Vol. V 1918:278)

3.2.2.19 *He Wānana — A Prophecy and the Death of Kahanana*

Puʻuloa at Honouliuli has a significant place in the traditions of Oʻahu, based on events which took place between 1825 to 1785. As a part of his plan to take control of Oʻahu, Kahekili,

[9] While the exact location of the cave named Waipōuli is not known in the present-day, the narrative provides readers with several reference points that help us determine that it is not in the area of the rail corridor. The location being five miles makai and on the shore from the Keahumoa-Kīpapa vicinity would place Waipōuli near the Honouliuli-Hōʻaeʻae boundary, and likely near the shoreward ʻili of Līhuʻe (cf. oral history interview with Shad Kāne dated August 26, 2011).

then king of the Maui group of islands, tricked his nephew, Kahahana, King of Oʻahu, into killing his high priest, Kaʻōpulupulu. Kahekili had raised Kahahana, and he desired to make Oʻahu a part of his kingdom. It was Kaʻōpulupulu who instructed Kahahana and warned him against certain actions proposed by Kahekili. In January 1862, J.H. Kanepuu, a frequent contributer of island history to native newspapers, penned in the Newspaper *Ka Hoku o ka Pakipika,* one of the earliest native accounts pertaining to the death of Kaʻōpulupulu and his son Kahulupuʻe and the prophecy uttered at their deaths.

Ianuari 23, 1862 (aoao 2)	January 23, 1862 (page 2)
...Ua hooko mai ke Akua ia wanana ma o Kaopulupulu la, kekahi kaula mana Oahu nei, e haawi mua ana no i ka aina no na mamo a Sapeta, penei kana olelo i kana keiki, i nui ke aho a make i ke kai, no ke kai ka hoi ua aina, aia la, lilo ka aina ia kai. Mai kai mai no o Kahekili maluna mai o ka waa, a pae ana i Oahu nei, kaua me Kahahana, a holo o Kahahana i ka nahelehele, lilo ka aina ia kai. Mai kai mai no o Kamehameha, a kaua me Kalanikupule ma Nuuanu nei, a hee o Kalanikupule, lilo ka aina ia kai. Mai kai mai nei no ka haole maluna mai nei o ka moku a noho ana i uka nei, he oluolu wale no ka lakou la hana ana mai i na'lii o kakou, aohe i eha ka ili, lilo no ia lakou la na hooponopono aupuni, na aina, na kuleana ma ka hoolimalima, ma ke kuai, ma ka hoaie i kahi awelu lole, i ka rama, ia mea ae ia mea ae, ua lilo ia lakou la, o kau no ia o ka hoaa aku ma ka palekai.	...God has fulfilled the prophecy of Kaʻōpulupulu, one of the powerful prophets of Oʻahu—giving the land to the descendants of Japheth [cf. Genesis 9:27]—who spoke thus to his son, "Strive to die in the sea, for those of another land shall come from across sea, and the land shall belong to them from across the ocean." Kahekili came from across the sea on a canoe and landed on Oʻahu. He then engaged in war with Kahahana, who fled to the forests. Thus, the land was taken by the sea. Kamehameha then came from across the sea and engaged in war with Kalanikūpule at Nuʻuanu. Kalanikūpule was defeated, and the land was taken by the sea. Then the foreigners came from the across the sea on ships and now reside on the land. Their deeds for our chiefs were kindly, and they took on the work of setting the nations right, the land, the properties and leasing, selling, creating debt for new clothing, rum, this thing and that, it is all thiers now. And built up on a breakwater... [Maly, translator]

S.M. Kamakau (1867) elaborated that about eight years into Kahahana's reign as king of Oʻahu, Kahekili succeeded in tricking Kahahana into killing Kaʻōpulupulu.

Kahahana ordered that Ka‘ōpulupulu and his son, Kahulupu‘e to be brought before him at Wai‘anae. The call was made from Pu‘ukāhea [Hill of calling]. Upon the summons, Ka‘ōpulupulu prayed to his gods and discerned that he and his son would be killed once in the presence of the chief. Arriving at the place now called Nānākuli, Ka‘ōpulupulu called out to Kahahana who looked at him but made as if he didn’t hear the call [nānā kuli]. Ka‘opulupulu then knew for certain that he and his son were to be killed, and he told Kahulupu‘e:

> “I nui ke aho a moe i ke kai! No ke kai ka hoi ua aina!”
> Strive to lie down in the ocean! For our revenge will come from other lands across the sea (Kamakau, 1867).

Kahulupu‘e ran into the water near Pu‘uohulu where he was killed. Ka‘ōpulupulu continued his flight across the Honouliuli plain to the shore of Pu‘uloa, where he was then killed (Kamakau, 1867). Kamakau also wrote about the last years of Kahahana’s life and his death at the command of Kahekili, placed by some native writers at Hō‘ae‘ae:

> For two years and six months Ka-hahana and his wife and Ka-hahana’s friend, Alapa‘i, hid in the mountains and were fed and clothed by the commoners, who had compassion upon them. Thus, were the misdeeds of Ka-hahana justly repaid. They were finally betrayed by Ke-ku-manoha’, father of Ka-lani-moku and half-brother of Ke-kua-po‘i, Ha‘alo‘u being the mother of both. Their last place of hiding was near Wailele at Waikele in ‘Ewa. Alapa‘i said to Ka-hahana, “Let us kill our wife and then we shall be able to escape.” Ka-hahana was more merciful, perhaps because he could not endure to lose Ke-kua-po‘i, who was an incomparable beauty. He said, “Why kill our wife who has been so faithful a companion to us while we have dodged death in cold and wet, wandering here in the mountains, in the thickets of Wahiawa, in this ocean of Ka‘ie‘iea? Perhaps she can persuade her kinsmen to help us some day.” Learning that Ke-ku-manoha‘ was at Waikele and Ka-lani-ku-pule and Koa-lau-kani at Kapapapuhi [on the Hō‘ae‘ae-Waikele boundary], Ke-kua-po‘i made herself known to her brother, hoping that he would save them all three for her sake. “Where are Ka-hahana and his friend?” asked her brother. “Will you spare us three?” asked the woman. “Why should you die? are we not all chiefs?” he answered; but his words were false; he intended to give up his brother-in-law to Ka-hekili. Alapa‘i urged, “O heavenly one! let us flee. We shall die if we stay here; only Ke-kua-po‘i will be saved.” “If Kekua-po‘i is saved, we shall be also.” “You will not be saved; you are a chief, a ruler by descent.” Then Ke-ku-manoha‘ sent men to Ka-hekili at Waikiki to tell him that Ka-hahana was at Waikele. Ka-hekili ordered him to be killed and brought to Waikiki and he sent double

> canoes to Halaulani at Waipiʻo in ʻEwa. Ke-ku-manohaʻ killed Ka-hahana and his friend Alapaʻi, wrapped them in coconut leaves, placed them on the platform of the canoes, and took them to Kahekili at Waikiki… (Kamakau, 1961:136-137)

The words of Kaʻōpulupulu's prophecy remained fresh in the minds of elder kamaʻāina through time and were often the subject of writings. As noted above in the account of Kānepuʻu (1862), many considered that the priest's words were fulfilled a short time later with the arrival of Kahekili and his forces on the shores of Oʻahu. This was followed by the arrival of foreigners, Hawaiians' loss of their land and kingdom, and military control over a large area of the ʻEwa District.

In 1900, the native leadership of the Independent Hawaiian party conducted a tour of Oʻahu to advocate for restoration of Queen Liliʻuokalani to the throne. David Kaluokalani, president of Hui Kalaiʻāina, spoke to district residents while in Waiʻanae, recalling the power of the prophecy. His talk was described in *The Pacific Commercial Advertiser* (1900a:5). While some facts differ from the earlier account, the connection between events is significant:

> Kalauokalani waxed reminiscent in his speech at Waianae and referred to an incident of the early days of Oahu which he said was applicable to the present situation of affairs as the natives were concerned with relation to their political status. He referred to the time when Kahahana was chief of the island of Oahu. There was then living in Waianae a famous kahuna named Kaopulupulu whose son Kahulupue had committed a crime for which he fled the district. When he was being closely pursued the old kahuna called after his son, saying: "My child, bear up until you reach the water, for when you touch the water, then the land shall belong to those who come over the sea."
>
> The speaker said this prophecy had been fulfilled, and had culminated in the overthrow of the monarchy. He appealed to the people to rectify the evil which the old kahuna had brought upon them.

Similar recollections of the meaning and fulfillment of Kaʻōpulupulu's prophecy were shared by Samuel Hoapili Lono (1973, pers. comm.) and Sister Thelma Genevieve (Dowsett) Parish (1997, pers. com.).

Native historian Moke Manu wrote further on these events in 1907. Following his defeat at the hands of Kahekili in ca. 1783, Kahahana went into hiding in the ʻEwa District. In 1785, while Kahahana was at Honouliuli, Kahekili sent his warriors to kill him, and they landed their canoes at Kūpahu at the estuary of Hanapouli. The warriors killed the Oʻahu chief on the plains

of Hō‘ae‘ae (west of Waipi‘o) and brought his body back to Hālaulani at Waipi‘o. From there the body was taken to be offered on a temple in Waikīkī (Thrum, 1907b:213-214).

3.3 Modern History

In general, starting around the turn of the 18th to 19th century, and continuing throughout the 19th century, life on O‘ahu was drastically changed with the arrival and increasing influence of foreign political, economic, and ideological systems. As a result, traditional Hawaiian settlement patterns, subsistence, and religious institutions were largely abandoned. By the late 1800s, nearly the entire ahupua‘a of Honouliuli had been purchased by a few large landowners and developed into cattle ranches, sugar cane fields, sisal farms, and other agricultural concerns (Tuggle and Tomonari-Tuggle 1997; Gosser et al. 2011). Military development of the region began in the late 1800s with the construction of the Barbers Point Lighthouse and accelerated significantly in the early 1900s with the creation of several large bases including Naval Air Station Barbers Point (NAS-BP), Hickam Field, and Pearl Harbor. Since the closing of NAS-BP in the 1990s, small industry and other commercial, government, and residential development have replaced military infrastructure (Gosser et al. 2011).

3.3.1 Early 1800s

‘Ī‘ī’s well-known description and mapping of the old, traditional Hawaiian trails of leeward O‘ahu (‘Ī‘ī 1959:96) shows a major trail passing by Pu‘uokapolei several miles northwest of the project area (see Figure 7). Malden’s 1825 map (see Figure 8) shows a coastal trail just makai (south of) the project area. Other information, such as the location and distribution of prime lo‘i kalo (irrigated taro) lands (several miles to the northwest of the current project area), suggest the project area vicinity—which lacked potable water but likely contained abundant brackish water in sinkholes and was extremely arid—was not a prime location for Hawaiian settlement or activity (Hammatt and Shideler 2012:22–3). This is not to say the area was abandoned or lacked human occupation, because there is evidence in the vicinity of the project area that Hawaiians were using this area in traditional times (ibid.).

With the arrival of foreigners in the area, the landscape of Honouliuli, the ‘Ewa plains, and other adjacent areas (e.g., the Wai‘anae Mountain slopes) was largely denuded by the removal of sandalwood trees (for the Chinese market) and other trees (for construction in Honolulu), and by the introduction of large domesticated ungulates (e.g., goats, sheep and cattle) that destroyed native vegetation, replacing it with exotic, pest species such as haole koa (*Leucaena leucocephala*), guava (*Psidium guajava*), lantana (*Lantana camara*), and many invasive and aggressive grasses (ibid.).

3.3.2 Middle 1800s

Beginning in the 1840s, private property was introduced via formation of the Board of Commissioners to Quiet Land Titles, and the adoption of the Māhele (i.e., the division of Hawaiian lands). In 1845, King Kamehameha III waived his right to full authority over all lands; he portioned out some for his personal use (crown lands), and divided the rest into government land, land for the ali‘i (chiefs) and konohiki (land overseers), and land for commoners (kuleana land) (Alexander 1891; Board of Commissioners 1929; Moffat and Fitzpatrick 1995). After this time, Land Commission Awards (LCAs) were granted to commoners as kuleana parcels for fee ownership. LCAs record who resided on the land and how the land was used. There are no kuleana (commoner) parcels, nor claims, in or near the project area. About 100 claims were made in the ahupua‘a of Honouliuli, but these were all located several miles northwest of the project area (near the mouth of Honouliuli Stream and other locations along the shore of Pu‘uloa [Pearl Harbor]). The project area was part of Ali‘i Nui (highly-ranked elite) Land Commission Award 11216:8 (Royal Patent 6071) to Kekau‘ōnohi (great granddaughter of Kekaulike, King of Maui, and a close relative of Kamehameha I), which means there are no records or surveys of middle 19th century land use in or near the project area (because such documentation was not required of Ali‘i Nui awards). Kekau‘ōnohi’s deed to all unclaimed land within the ahupua‘a was for a total of 43,250 acres (Board of Commissioners 1929).

When Kekau‘ōnohi died in 1851, her holdings passed on to her husband (Ha‘alelea) and his family. Upon her death on June 2, 1851, all her property was passed on to her husband and his heirs. When Ha‘alelea died, the property went to his surviving wife, who then leased it to James Dowsett and John Meek in 1871 for ranching operations (Hammatt and Shideler 2012).

In 1877, James Campbell purchased most of the Honouliuli Ahupua‘a. He soon began drilling for potable water in Honouliuli, and, within about a decade, was supplying water to Honolulu. By 1881, Campbell also ran a successful cattle ranching operation in Honouliuli (ibid.).

In 1889, Campbell leased his property to Benjamin Dillingham, who founded the O‘ahu Railway & Land Co. (O.R. & L.) in 1890. Dillingham then subleased all land below 200 feet elevation to William Castle, who started the ‘Ewa Plantation Co. for sugar cane cultivation. Other of Dillingham’s lands at higher elevation was used by another sugar cane operation, O‘ahu Sugar Co. (ibid.). ‘Ewa Plantation Co. was incorporated in 1890 and continued in operation into modern times. The ‘Ewa Plantation Co.’s farming practices caused soil erosion from the uplands onto the coral plain (ibid.).

An 1880 Hawaiian Government map (see Figure 9) shows no development in the project area, but the nearby coastal trail is depicted. Salt pans and various buildings and structures are shown to the east at the mouth of Pu‘uloa (Pearl Harbor).

3.3.3 Early 1900s to Modern Times

A portion of 1902 map, shows an old wall extending from the makai (southern) edge of the project area east towards Pearl Harbor. A road connecting the salt works to the east with the main Honouliuli settlement to the north is also depicted. Other major changes and agricultural commercial operations (e.g., O.R. & L. railroad, Ewa Plantation [sugar cane] and a sisal plantation, which refers to Dillingham's Hawaiian Fiber Company) are several miles away from the project area to the northwest. This map also depicts the U.S. Coast & Geodetic Survey (USC & GS) magnetic observatory station to west in Kalaeloa. No structures are depicted within the project parcel at this time.

A portion of 1927 map, shows either a rock wall or road extending into the northern portion of the project area. A windmill is shown in the south-central part of the project area. Some early streets of ʻEwa Beach are shown along the coast to the south of the project area.

A portion of 1933 map, shows what appear to be planned or proposed roads through the project area that were never actually completed or implemented. Such depictions are common in this area (e.g., including Kalaeloa to the west). Otherwise, the project area at this time appears to have remained largely undeveloped (the windmill is still shown from the 1927 map).

A portion of 1939 map of the Ewa (sugar cane) Plantation Company's fields. This map shows that the project area was not included in the commercial sugar cane development of Honouliuli. By the early 1940s, sugar cane field portions that extended south (makai) of the O.R. & L. railway line had been developed over by the U.S. military. Hammatt and Shideler (2012:25, 28) describe the changes that took place around this time in the area:

> Major land use changes came to western Honouliuli when the U.S. Military began development in the area. Military installations were constructed both near the coast and in the foothills and upland areas. Barbers Point Military Reservation (a.k.a. Battery Barbers Point from 1937–1944) was located at Barbers Point Beach, and used beginning in 1921 as a training area for firing 155 mm guns . . . Also within the vicinity was the Camp Malakole Military Reservation (a.k.a. Honouliuli Military Reservation), used from 1939, and the Gilbert Military Reservation, used from 1922–1944. The largest and most significant base built in the area was the Barbers Point NAS, which operated from 1942 into the 1990s. It housed numerous naval and defense organizations, including maritime surveillance and anti-submarine warfare aircraft squadrons, a U.S. Coast Guard Air Station, and the U.S. Pacific Fleet.
>
> In 1930, the U.S. Navy leased 206 acres of land on the ʻEwa Plain from the

> Campbell Estate for the purpose of building a mooring mast for the dirigible *Akron*. At the expiration of the lease in late 1939 or early 1940, the Navy acquired over 3,500 acres of land from the Estate. In 1941, the Marine Corps Ewa strip was completed on a portion of the land to serve as an auxiliary airfield for the Navy's Ford Island Facility. The Ewa Marine Corps Air Station was extensively damaged during the Japanese attack on Pearl Harbor on December 4, [sic] 1941. During World War II, the design capacity of the station was changed. The major construction of Barbers Point was completed from 1941 to 1945.

A 1951 map, shows the project area as part of the USC & GS's "Honolulu Observatory." Other historic maps show an expansion of the structures depicted on the 1951 map towards the mauka (inland) direction.

3.3.4 History of Development in the Project Area

Historical background information compiled by the General Services Administration (GSA) in support of consultation with the SHPD provides the following relevant summary:

> The site was originally occupied by the U.S. Navy, upon condemnation in 1944. On November 24, 1959, the U.S. Navy transferred the Ewa Beach property to the U.S. Department of Commerce (DOC), for operation of the Honolulu Magnetic Observatory, which has been in operation since that time. No structures are existing from the Navy's occupation of the site. In 1968, the Intergovernmental Oceanographic Commission established the Intergovernmental Coordination Group for the Pacific Tsunami Warning System (ICG/PTWS). Since the DOC already had this sizable piece of property in Ewa Beach for the USGS's Honolulu Geomagnetic Observatory, it was agreed that the ICG would use the same site for the operational headquarters of the PTWS. The PTWS has been at this site since that time. In 2014, NOAA's National Weather Service (NWS) who now operates the PTWS, relocated personnel to NOAA's new Pacific Regional Center at another location in Honolulu, and has declared this property surplus to its operational needs.

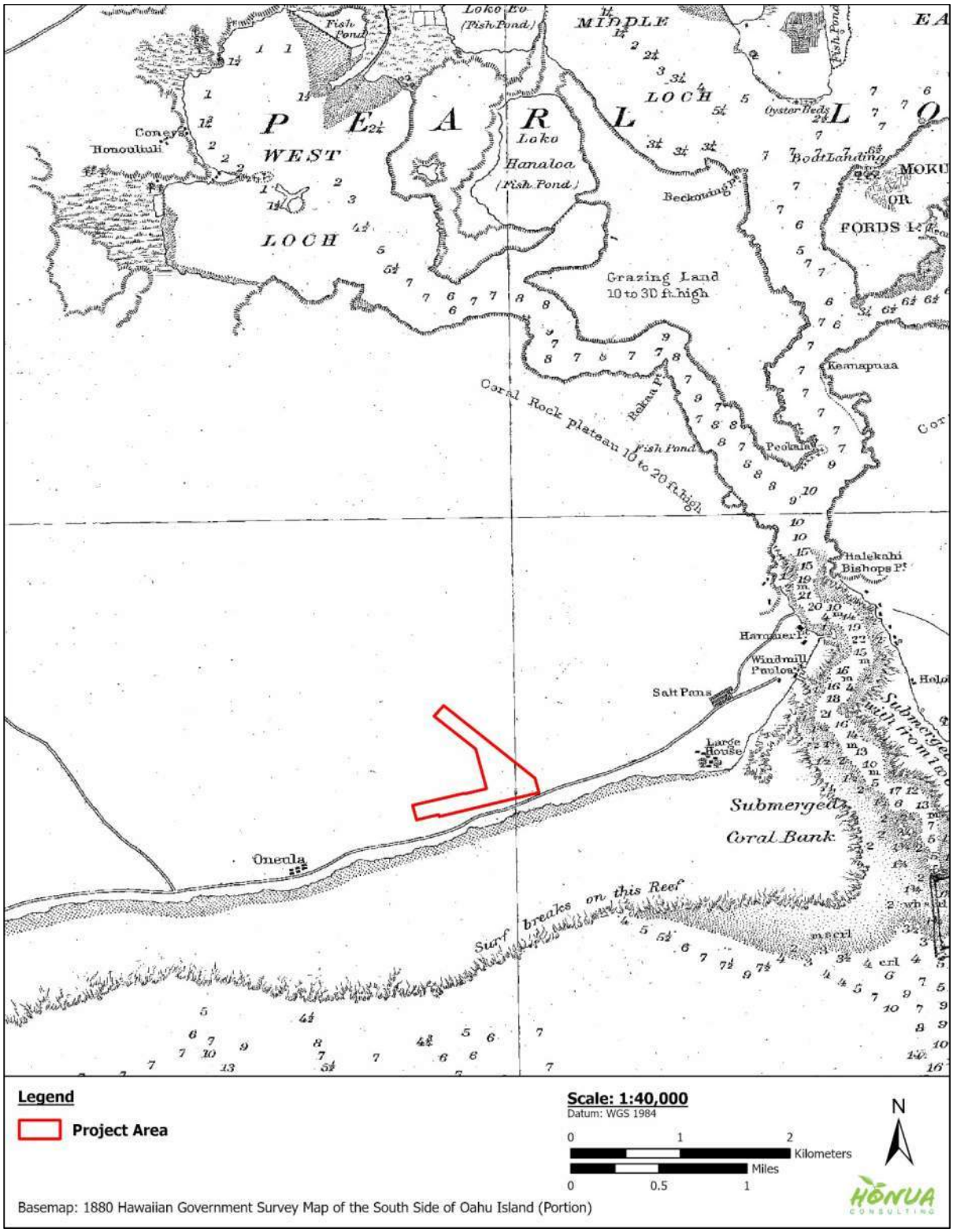

Figure 6. Portion of 1880 Hawaiian Government map showing project area location (base map source: DAGS Land Survey Map Search, http://ags. hawaii.gov/survey/map-search/)

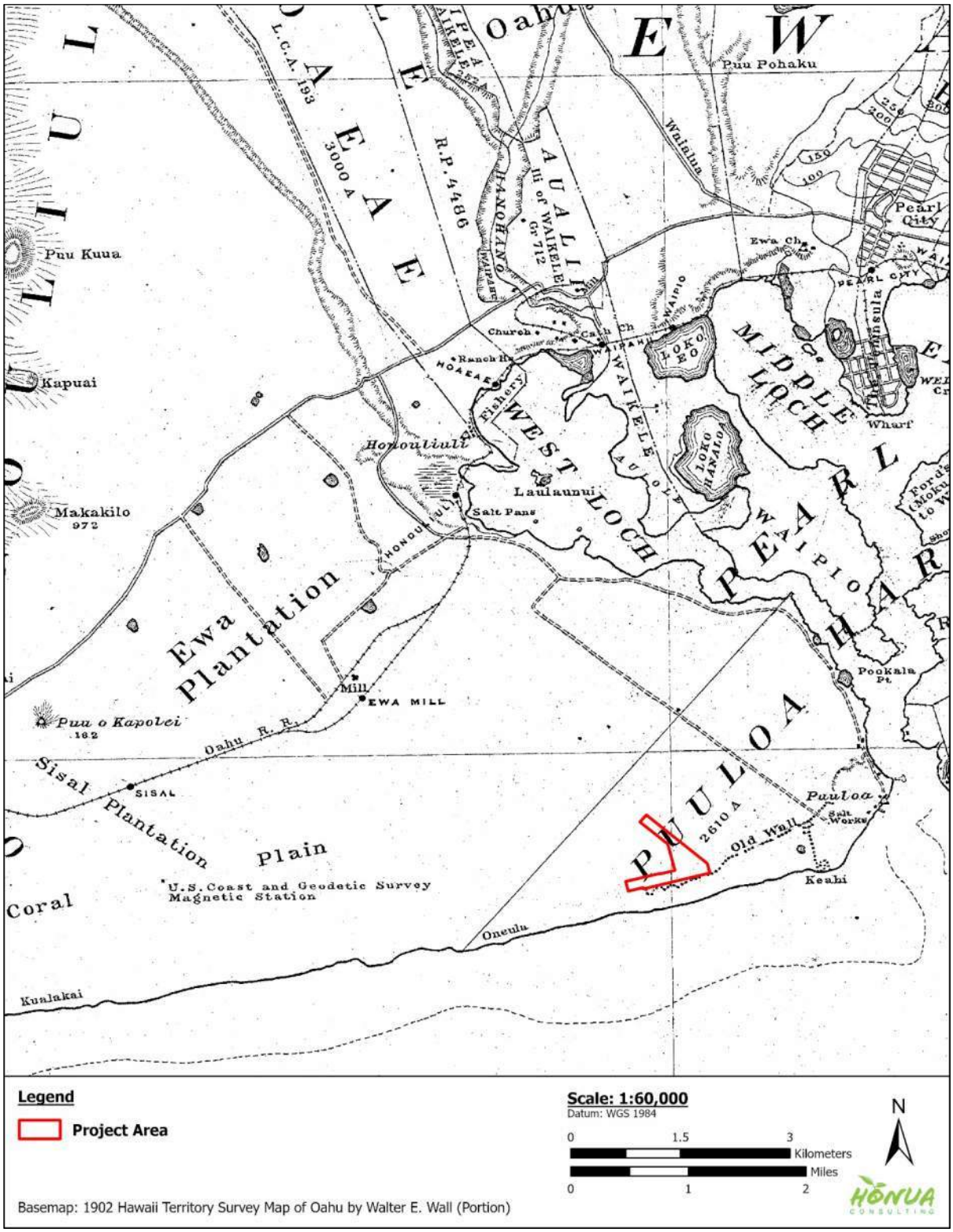

Figure 7. Portion of 1902 map by Wall/Donn (Registered Map 2374) showing turn-of-the century" developments near project area (base map source: DAGS Land Survey Map Search, http://ags. hawaii.gov/survey/map-search/)

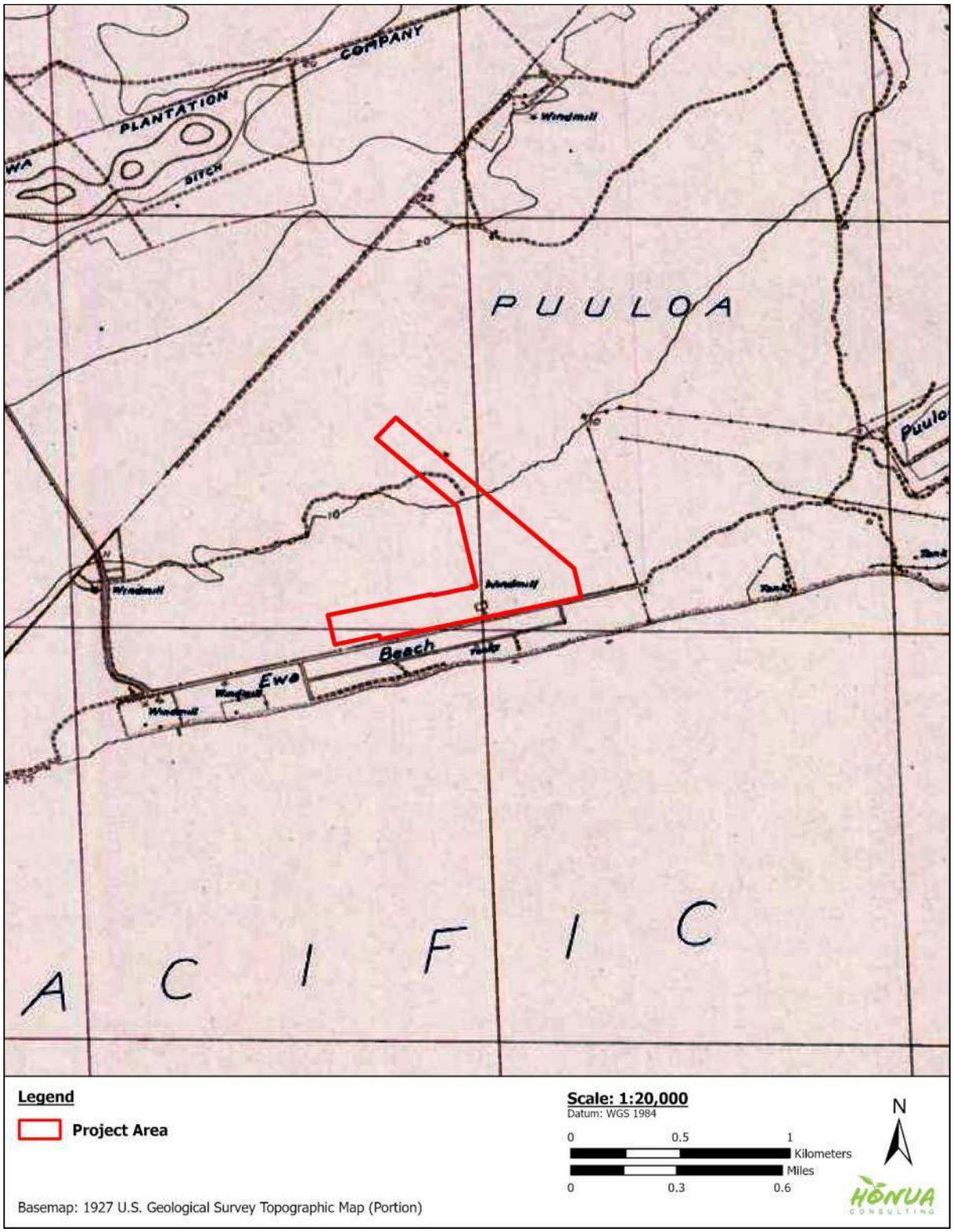

Figure 8. Portion of 1927 topographic map with project area location (base map source: University of Hawai'i-Mānoa's digital maps, http://magis.manoa.hawaii.edu/maps/ index.html)

Figure 9. Portion of 1933 topographic map with project area location (base map source: University of Hawai'i-Mānoa's digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

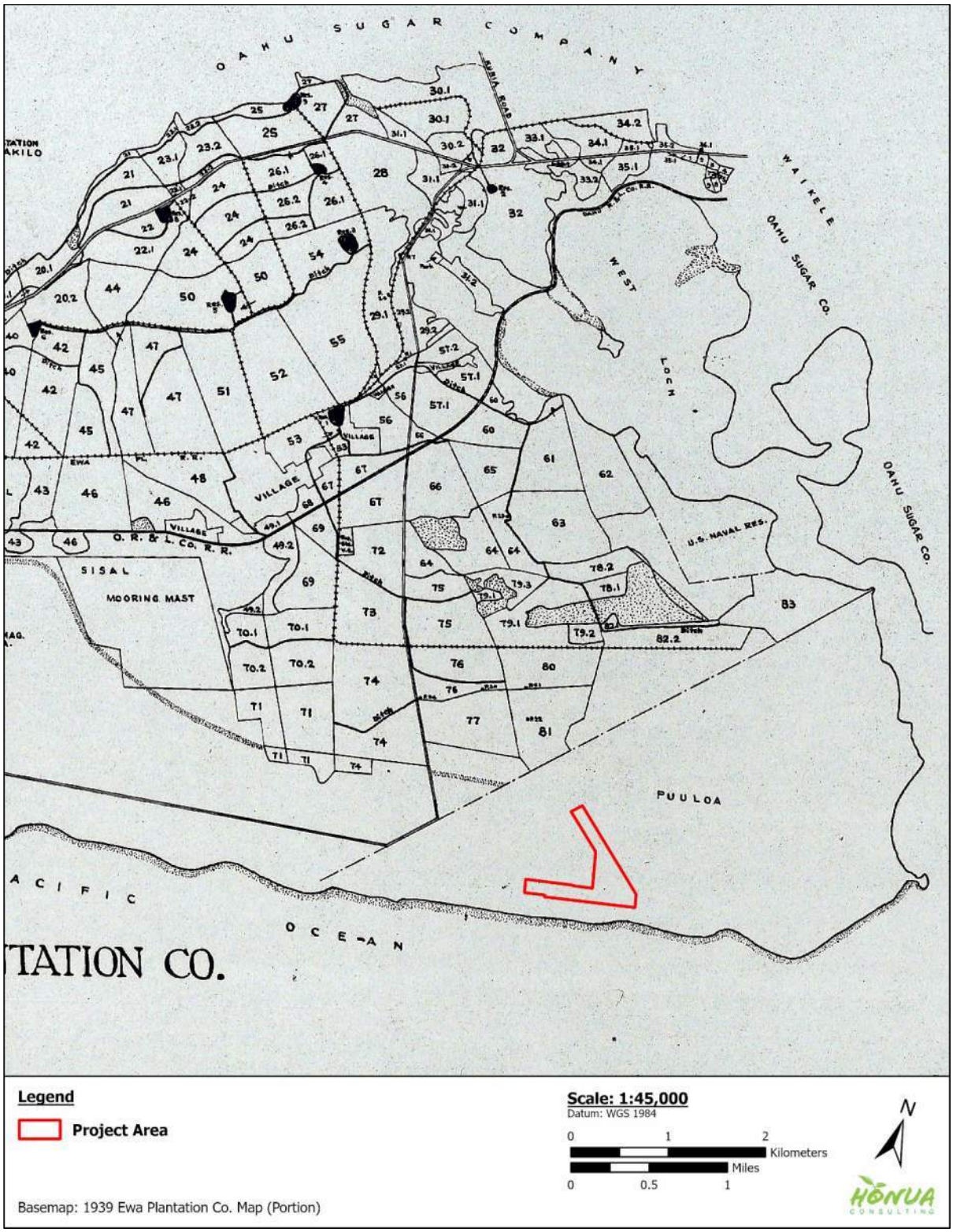

Figure 10. Portion of 1939 Ewa Plantation Co. map showing project area location southeast (and outside) of plantation boundaries (base map source: (Condé and Best 1973:285)

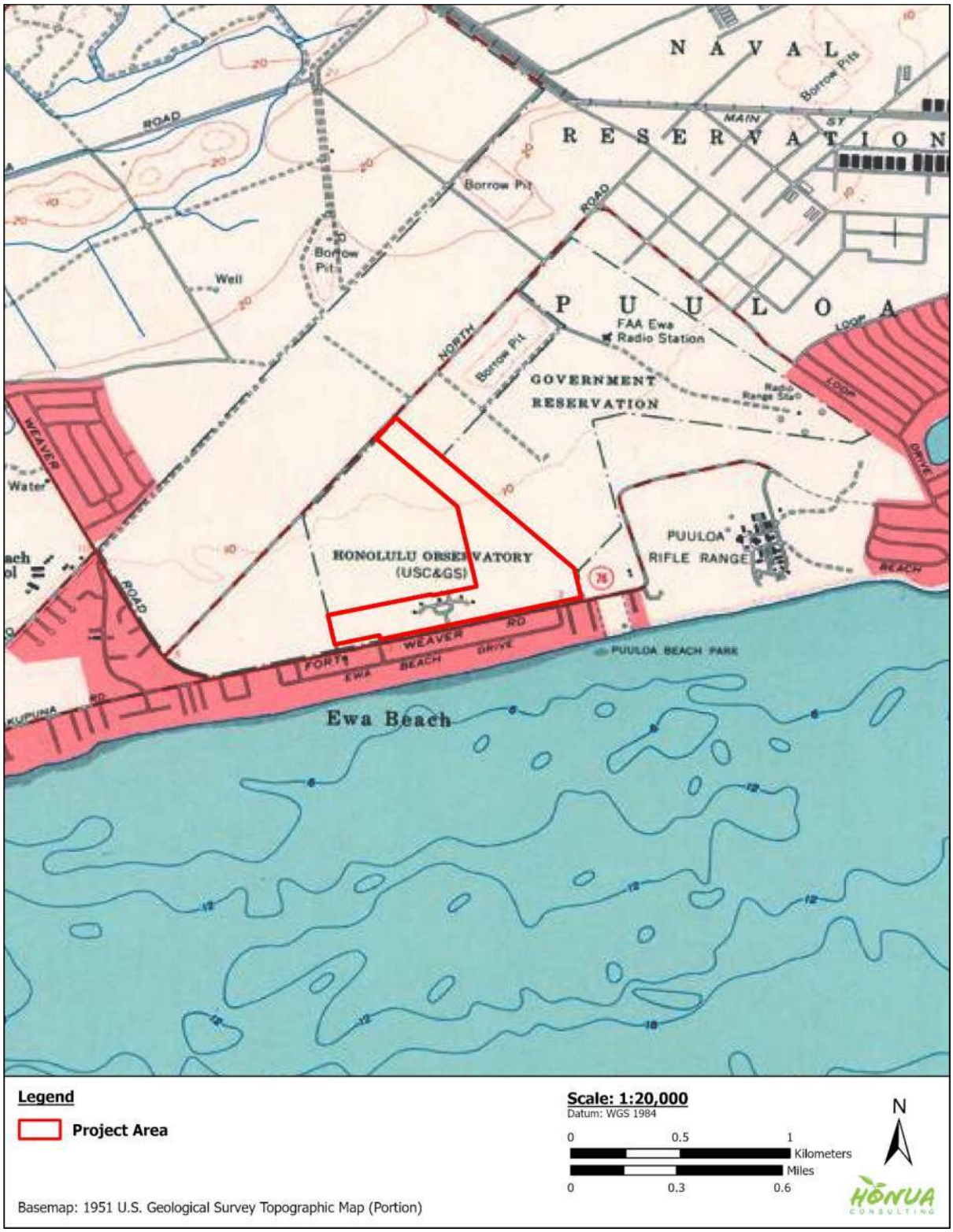

Figure 11. Portion of 1951 topographic map with project area location (base map source: University of Hawai'i-Mānoa's digital maps, http://magis.manoa.hawaii.edu/maps/index.html)

Figure 12. Portion of 1962 aerial image with project area location (base map source: University of Hawai'i-Mānoa's digital maps, http://magis.manoa.hawaii.edu/maps/ index.html)

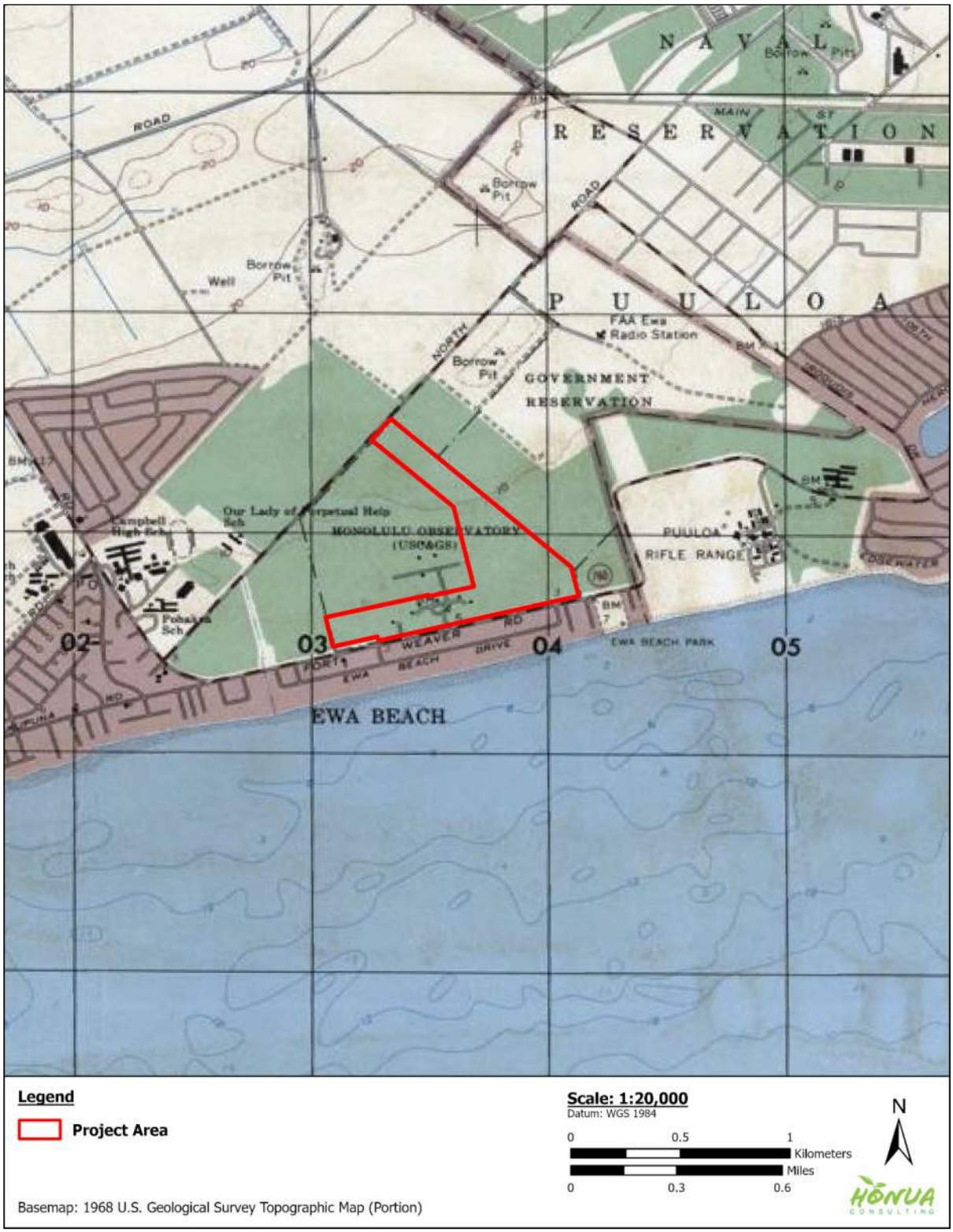

Figure 13. Portion of 1968 topographic map with project area location (base map source: University of Hawai'i-Mānoa's digital maps, http://magis.manoa.hawaii.edu/maps/ index.html

4.0 Cultural Resources

Cultural resources can be natural, tangible or intangible. They are most commonly considered phyasical evidence of past human activitity site, object, landscape, structure; or a site, structure, landscape, object or natural feature of significance to a group of people traditionally associated with it. A more comprehensive definition also considers places of cultural importance and biological resources of cultural importance. There are also intangible cultural resources, which may have not have physical form, but contribute to the cultural identify of a group.

4.1 Historic and Cultural Site

The Honua Consulting, LLC, LRFI found multiple archaeological studies have been conducted throughout ‘Ewa Ahupua‘a. See **(Section 2.5 Archaeological and Studies)**.

4.2 Natural Resources with Cultural Significance

According to the biological assessment, the most extensive vegetation type in the subject area – which is present everywhere that has not been disturbed for structures and clearings – is kiawe forest. An open to closed canopy forest of medium-size (15-25-foot tall) kiawe trees along with highly variable numbers of koa haole, *Ficus* sp., ‘opiuma (*Pithecellobium dulce*), octopus tree (*Schefflera actinophylla*) and other trees overtops an understory dominated by buffelgrass (*Cenchrus ciliaris*), marsh fleabane (*Pluchea indica*), Chinese violet (*Asystasia gangetica*), Guinea grass (*Megathyrsus maximus*), love-in-a-mist (*Passiflora foetida*) and other herbs, vines and shrubs. Two natives – especially ‘uhaloa (*Waltheria indica*) but also kauna‘oa pehu (*Cassytha filiformis*) and koali (*Ipomoea indica*) – are also widespread. Small sinkholes are very common throughout the forest. They are often hazardously obscured by non-native vegetation but do not seem to support any distinct vegetation or native species. ‘Uhaloa has medicinal uses, as does koali. Kauna‘oa is often used for lei and other adornment.

The remainder of the area has been cleared to accommodate structures, roads and trails, or open space activities. Buffel grass, fingergrass (*Chloris* spp.*),* lovegrass (*Eragrostis tenella*) and many other grasses dominate the ground layer, which also contains a variety of mostly weedy species, especially Australian saltbush (*Atriplex semibaccata*) and various euphorbiaceous, chenopode and malvaceous weeds. There are occasional natives as well, especially ‘uhaloa but also akulikuli (*Sesuvium portulacastrum*), nena (*Heliotropium currasavicum*), ‘ilima (*Sida fallax*) and naio (*Myoporum sandwicense*). Some areas have been landscaped with a great variety of ornamental species such as mango (*Mangifera indica*), coconut trees (*Cocos nucifera*), pink tecoma (*Tabebuia* managed for various purposes but are now reverting to kiawe forest.

pentaphylla), agave (*Agavesisalana*) and coral tree (*Erythrina*sp.). Many areas were disturbed and then managed for various purposes but are now reverting to kiawe forest.

Flora

All plant species found in the subject area during the survey are listed in the assessment. Of the 89 species detected, 11 were indigenous (native to the Hawaiian Islands and elsewhere) and one was endemic (found only in the Hawaiian Islands). Two Polynesian introduced plants – coconut and noni (*Morinda citrifolia*) – were present. These two plants were used as food sources traditionally.

The one endemic plant is maiapilo (*Capparis sandwichiana*). This hardy, attractive, fragrant shrub in the caper family is found on all the main islands but is usually considered rare because its coastal leeward habitat has been mostly lost to development. Maiapilo was found in various places on the property but extensively in one particular location, as shown in the biological assessment. Maiapilo has traditional medicinal uses.

Threatened or Endangered Plants

With the exception of maiapilo, all native plants found in the subject area are fairly to very common throughout the island of O‘ahu and the State. The botanical survey involved an extensive search for individuals of the endangered *Euphorbia skottsbergii*var*skottsbergii* or ‘akoko and *Achyranthesspendens* var. *rotundata*, informed by a visit to the Kalaeloa Heritage Center, where numerous specimens are present. None were observed in the subject area.

Online maps from the U.S. Fish and Wildlife Service(USFWS) depict no critical habitat on or near the subject area (http://ecos.fws.gov/ecp/report/table/critical-habitat.html), as shown in Figure 3. Small areas of critical habitat for *Euphorbia skottsbergii*var*skottsbergii* or ‘akoko and *Achyranthesspendens* var. r*otundata* exist a few miles to the west of the subject area.

Birds

The 12 species of birds detected within the boundaries of the subject area during the survey were allnon-native and typical of those found in similar areas of low land disturbed habitat in O‘ahu(Table 2). Most common were myna (*Acridotheres tristis*), spotted dove (*Streptopelia chinensis*), red-crested cardinal (*Paroaria coronata*) and Japanese white-eye (*Zosterops japonicus*)... The area of observation extended beyond the subject area to the adjacent ‘Ewa Beach Golf Course. The open grass and ponds of the golf course attracted three native birds: black-crowned night heron or auku‘u (*Nycticorax nycticorax hoactli*), the Pacific golden-plover or kolea (*Pluvialis fulva*), and the endangered Hawaiian stilt or ae‘o (*Himantopus mexicanus knudseni*). The subject area itself is poor habitat for these species, and although they may fly over they are not likely to utilize it frequently.

The survey methods for the Hawaiian short-eared owl or pueo (*Asio flammeus* subsp. *sandwichensis*)followed generally the Pueo Project Survey Protocol (Price and Cotin 2018), but were adjusted for the specifics of the study. A morning survey was conducted from civil twilight to approximately 120 minutes after sunrise and the evening survey was conducted approximately 60 minutes before sunset until civil twilight. For most of this time, two observers were continually scanning with binoculars and the naked eye along the margin of the golf course and Fort Weaver Road, broadcasting pueo calls with a portable speaker every 15 minutes. The larger open areas and several small clearings were also sampled. No pueo were heard or observed. The subject area appears to be poor pueo habitat because of surrounding land uses and extremely dense, thorny vegetation in the upper and middle canopy layers.

Hawaiian Hoary Bat

Based on published and unpublished data on Hawaiian hoary bats, they likely utilize the subject area at least occasionally, as they have been observed in surrounding and similar areas. Although the survey includes dawn and dusk observations, it did not use any detection equipment, and was not designed to detect bats. However, the Hawaiian hoary bat should be presumed to be present. Bats may forage for flying insects within the subject area on a seasonal basis, and they could find some of the larger shrubs and trees suitable nesting habitat.

Introduced Mammals, Reptiles, and Amphibians

The only live mammals seen during the survey were a number of small Indian mongooses (*Herpestes a. auropunctatus*). It is likely that feral cats (*Felis catus*), mice (*Mus* spp.), rats (*Rattus* spp.) and domestic dogs, (*Canis f. familiaris*) are occasionally present. There are no native terrestrial reptiles or amphibians in Hawai‘i. None were observed, but various anoles (*Anolia* sp.), geckoes (Family: Gekkonidae) and skinks (Family: Scincidae) are probably present at times. No non-native mammals, reptiles or amphibians have conservation value and all are deleterious to native flora and fauna.

4.2.1 Wind

Winds, like rains, can be unique and distinctive to an individual location. The most famed of Hawaiian mo‘olelo about winds is by Moses Kuaea Nakuina, *Moolelo Hawaii o Pakaa a me Ku-a-Pakaa, na Kahu Iwikuamoo o Keawenuiaumi, ke Alii o Hawaii, a o na Moopuna hoi a Laamaomao* (The Hawaiian Story of Paka‘a and Kuapaka‘a, the Personal Attendants of Keawenuia‘umi, the Chief of Hawai‘i, and the Descendants of La‘amaomao), published in Hawaiian in 1901. This mo‘olelo was later translated into English as *The Wind Gourd of La‘amaomao* by Sarah Nākoa and Esther T. Mookini (1992). Thus, this important mo‘olelo has remained in print for over a century, and is an important cultural source text within the discourse on Hawaiian history and natural resource management. Many have written about the gourd’s mythical properties, which is believed to contain all the winds of Hawai‘i. More

than myth, the gourd itself exists in physical form and was last owned by King David Kalākaua. Today, it is held in the collection of the Bishop Museum

According to this moʻolelo, the descendants of Laʻamaomao, the wind god, used the wind gourd, Ka Ipu Makani o Laʻamaomao, to control the winds and cause the demise of their enemies. Pākaʻa and his son Kūapākaʻa, Laʻamaomao's descendants, control the winds by chanting the wind name, which recalls that particular wind from the gourd. Each wind name is associated with a specific ahupuaʻa or ʻāina. Pākaʻa passed on his knowledge of the wind names and the gourd to Kūapākaʻa, who called on all of the winds to destroy the canoe fleet of Pākaʻa's enemies in the Kaiwi Channel separating Oʻahu and Molokaʻi.

The following is an excerpt from the chant naming the winds of Oʻahu, focusing particularly on the wind names of ʻEwa:

Moaʻe-ku is of ʻEwaloa, Kēhau is of Waiʻōpua, Waikōloa is of Līhuʻe, Kona is of Puʻuokapolei, Māunuunu is of Puʻuloa… (Nakuina, 1901)

According to this account, Moaʻe kū, Kona, and Māunuunu are the winds typically found in the ʻEwa moku, particularly Honouliuli. Moaʻe kū is considered to be a foreign wind that blows from another land (He makani mai Kahiki mai). Moaʻe are trade winds and the Moaʻe kū is considered to be a very strong trade wind. Kona is the name of the wind associated with Puʻuokapolei and this a famous leeward wind. Māunuunu is the name of a strong, blustering wind typically associated with Waiʻalae and Puʻuloa.

In the epic tale, "Ka Moʻolelo o Hiʻiakaikapoliopele," Hiʻiaka offers a mele while traveling through the hot plains of Kaupeʻa in ʻEwa:

ʻAʻole au e hele i ke kaha o Kaupeʻa	*I shall not tread Kaupeʻa's expanse*
Kēlā kaha kūpā koili a ka lā i ke kula	*That stretch where the sun beats down on the plain*
Ua kūpono aʻela ka lā i ka piko o Wākea	*The sun is right overhead, at the navel of Wākea*
Ola i ke ahe a ka makani māunuunu	*I am spared by the Māunuunu wind*
I ka hapahapai mai a ka makani ʻAoʻaoa	*By the uplifting ʻAoʻaoa breeze*
Ke koi lā i ke ao o ka Nāulu e hanini i ka wai	*Urging the Nāulu storm clouds to pour down their waters*
Ola ihola nā kupa kamaʻāina i ka wai a ka ʻōpua	*The natives here survive on water from the clouds*
Ke halihali aʻela nā ʻōpua i ke awa lau	

	Which billowing clouds carry along to the branching lochs *(Akana and Gonzalez, 2015)*

This mele mentions the Māunuunu wind and the ʻAoʻaoa breeze which spare her from the intense heat of the Kaupeʻa plains in ʻEwa. ʻAoʻaoa, or ʻaoa, is references as a sea breeze.

4.2.2 Rain

In *Hānau Ka Ua: Hawaiian Rain Name*s (2015), C.L. Akana and K. Gonzalez explain the significance of the wind and rain in Native Hawaiian culture:

> In the mind…of our Hawaiian kūpuna [ancestors], every being and everything in the universe was born. Our kūpuna respected nature because we, as kānaka, are related to all that surrounds us—to plants and creatures, to rocks and sea, to sky and earth, and to natural phenomena, including rain and wind. This worldview is evident in a birth chant for Queen Emma, "Hānau ke aliʻi, hānau ka ua me ka makani" (The chiefess was born, the rain and wind, too, were born). Our kūpuna had an intimate relationship with the elements. They were keen observers of their environment, with all of its life-giving and life-taking forces. They had a nuanced understanding of the rains of their home. They knew that one place could have several different rains, and that each rain was distinguishable from another. They knew when a particular rain would fall, its color, duration, intensity, the path it would take, the sound it made on the trees, the scent it carried, and the effect it had on people. (Akana and Gonzalez 2015:xv)

To Native Hawaiians, no two rains are ever the same. Rain can be distinguished based on its intensity, the way it falls, and its duration, among other things. This section contains a selection of known rains associated with the ʻEwa moku. While some of these rains are more generally associated with the larger moku, the Nāulu rain described below is directly assocaited with Puʻuloa, the ʻili in which this homestead project takes place.

Waʻahila Rain

Waʻahila rain is associated with Nuʻuanu, Oʻahu and is also found on other parts of Oʻahu, including ʻEwa. Waʻahila is also the name of a wind and ridge between Mānoa and Pālolo.

Rain of Hālawa, Oʻahu

No laila, ʻo mākou o ka Ahahui Hooikaika Kristiano holoʻokoʻa o ka ua Waʻahila o	Therefore, we, on behalf of the entire Ahahui Hooikaika Kristiano of the

Hālawa, ʻEwa, ma o ko mākou kōmike lā, ke komo pū aku nei e kaʻana pū i nā ʻīnea o kēia mau lā ʻehaʻeha me nā mākua i hoʻonele ʻia i ka lei ʻole, ka ʻohana a me nā pilikana me ke kau nui aku i maluhia mai ko kākou puʻuhonua a me ka ikaika mai.	Waʻahila rain of Hālawa, ʻEwa, through our committee, join in sharing the hardships of these tragic days with the parents, family, and relatives who have been deprived of their children, with hopes for peace and strength from our refuge.

From a message of condolence from members of the Christian Endeavor Society. Note: "Puʻuhonua" or "refuge" probably refers to Jesus Christ (Akana and Gonzalez, 2015:272).

Nani Hālawa i ka ua Waʻahila Ke kīpū maila i luna o ʻAiea	Hālawa is beautiful in the Waʻahila rain Remaining above ʻAiea

From George M. K. Aekai o Kuloloia's response to a name, or riddle, printed in the newspaper *Kuokoa Home Rula* (Akana and Gonzalez, 2015:272).

Kuahina Rain

Kuahine or Tuahine is the rain primarily associated with Mānoa, Oʻahu. However, it is also found in other parts of Oʻahu, including ʻEwa.

Rain of Kahui, Central Oʻahu

He aha lā ka mea lena i uka o Kahui? He Kuahine lāua me ke Kiʻowao.	What is expanding in the uplands of Kahui? The Kuahine and the Kiʻowao.

From a mele inoa, or name chant, for chiefs (Akana and Gonzalez, 2015:114).

The Kiʻowao is a cool mountain rain that also brings wind and fog with it. Kahui, the place name mentioned in the mele inoa above, is located in Kalauao, ʻEwa.

Nāulu Rain

Nāulu is a sudden shower that is associated with places throughout Hawaiʻi, including Kaupeʻa, ʻEwa. Nāulu is also the name of a shower cloud and a wind. In Hawaiian epistemology, sudden showers are associated with the akua Lono, whose domain is that of agriculture.

Rain of Kaupeʻa, Oʻahu

ʻAʻole au e hele i ke kaha o Kaupeʻa Kēlā kaha kūpā koili a ka lā i ke kula Ua kūpono aʻela ka lā i ka piko o Wākea Ola i ke ahe a ka makani māunuunu I ka hapahapai mai a ka makani ʻAoʻaoa Ke koi lā i ke ao o ka Nāulu e hanini i ka wai Ola ihola nā kupa kamaʻāina i ka wai a ka ʻōpua Ke halihali aʻela nā ʻōpua i ke awa lau	I shall not tread Kaupeʻa's expanse That stretch where the sun beats down on the plain The sun is right overhead, at the navel of Wākea I am spared by the Māunuunu wind By the uplifting ʻAoʻaoa breeze Urging the Nāulu storm clouds to pour down their waters The natives here survive on water from the clouds Which billowing clouds carry along to the branching lochs

From a mele by Hiʻiakaikapoliopele as she traveled over the hot stretch of land near Puʻuloa, Oʻahu (Akana and Gonzalez, 2015:195).

4.2.3 Water

Fresh water (wai) is of tremendous significance to Native Hawaiians. It is closely associated with many Hawaiian gods. According to traditional accounts, Kāne and Kanaloa were the "water finders:" "Ka-ne and Kanaloa were the water-finders, opening springs and pools over all the islands, each pool known now as Ka-Wai-a-ke-Akua (The water provided by a god)" (Westervelt 1915:38). Kāne is widely known to be closely associated with all forms of water, as outlined in the mele "He Mele No Kane."

There was no element more important or precious than water. There was no god more powerful than Kāne. Pua Kanahele recounts the oli "ʻO Kāne, ʻo wai ia aliʻi o Hawaiʻi?" and notes of the oli: "The chant begins with Kāne and focuses on this deity as the connective force of all the poʻe akua, or god family. All the entities mentioned in each paukū, or verse, are a manifestation of Kāne" (Kanahele 2011:24). The association between water and Kāne is logical considering certain interpretations of Hawaiian mythology identify Kāne as the most powerful of all the Hawaiian gods.

Further investigation into the relationship between Kāne and Pele would be appropriate and helpful. Some interpretations identify Kāne as Pele's father (Westervelt 1915). A full analysis of the different perspectives on Pele and Kāne would be helpful to refining an approach in developing community education programs for geothermal energy and culture. A brief analysis is provided below.

He Mele No Kāne	A Chant for Kāne
E ui aku ana au iā ʻoe, Aia i hea ka Wai a Kāne? Aia i lalo, i ka honua, i ka Wai hū, I ka wai kau a Kāne me Kanaloa- He waipuna, he wai e inu, He wai e mana, he wai e ola, E ola no, ʻea!	One question I ask of you: Where flows the water of Kane? Deep in the ground, in the gushing spring, In the ducts of Kane and Kanaloa, A well spring of water, to quaff, A water of magic power- The water of life! Life! O give us this life!

This mele and other moʻolelo are clear: Kāne is water. It is deeply valued among the Hawaiian people. The only exceptions may be mist, known to be associated with Lilinoe, and snow, associated with Poliʻahu. There is an extensive body of traditional knowledge about the expeditions of Kāne and Kanaloa during which Kāne drove his ʻōʻō (digging stick) into the earth in search of water.

4.2.4 Biological Resources

A biological assessment of the parcel was completed by Ron Terry, Ph.D. and Patrick J. Hart, Ph.D. out of Geometrician Associates, LLC in January of 2023. The recommendations in the report are incorporated into this CIA by reference. For more information on flora, animal species, impact, and recommendations, please see **(section 4.2 Natural Resources with Cultural Significance)**.

4.3 Intangible Cultural Resources

It is important to note that Honua Consulting's unique methodology divides cultural resources into two categories: biocultural resources and built environment resources. We define biocultural resources as elements that exist naturally in Hawaiʻi without human contact. These resources and their significance can be shown, proven, and observed through oral histories and literature. We define built environment resources as elements that exist through human interaction with biocultural resources whose existence and history can be defined, examined, and proven through anthropological and archaeological observation. Utilizing this

methodology is critical in the preparation of a CIA as many resources, such as those related to akua, do not necessarily result in material evidence, but nonetheless are significant to members of the Native Hawaiian community.

Hawaiian culture views natural and cultural resources as being one and the same: without the resources provided by nature, cultural resources could and would not be procured. From a Hawaiian perspective, all natural and cultural resources are interrelated, and all natural and cultural resources are culturally significant. Kepā Maly, ethnographer and Hawaiian language scholar, points out, "In any culturally sensitive discussion on land use in Hawaii, one must understand that Hawaiian culture evolved in close partnership with its natural environment. Thus, Hawaiian culture does not have a clear dividing line of where culture ends and nature begins" (Maly 2001:1).

4.3.1 ʻŌlelo Noʻeau

ʻŌlelo noʻeau are another source of cultural information about the area. ʻŌlelo noʻeau literally means "wise saying," and they encompass a wide variety of literary techniques and multiple layers of meaning common in the Hawaiian language. Considered to be the highest form of cultural expression in old Hawaiʻi, ʻōlelo noʻeau bring us closer to understanding the everyday thoughts, customs, and lives of those that created them.

The ʻōlelo noʻeau presented here relates to Honouliuli, Puʻuloa, and the larger moku, ʻEwa. These ʻōlelo noʻeau are found in Pukui's *ʻŌlelo Noʻeau: Hawaiian Proverbs & Poetical Sayings* (1983). The number preceding each saying is provided.

Helu/ NO.	Nā ʻŌlelo Noʻeau no ʻEwa	Proverb Sayings for ʻEwa
80	**ʻĀina koi ʻula i ka lepo**	***Land reddened by the rising dust.*** Said of ʻEwa, Oʻahu.
105	**Alahula Puʻuloa, he alahele na Kaʻahupāhau.**	***Everywhere in Puʻuloa is the trail of Kaʻahupāhau.*** Said of a person who goes everywhere, looking, peering, seeing all, or of a person familiar with every nook and corner of a place. Kaʻahupāhau is the shark goddess of Puʻuloa (Pearl Harbor) who guarded the people from being molested by sharks. She moved about, constantly watching.
123	**Anu o ʻEwa i ka iʻa hāmau leo e. E hāmau!**	***ʻEwa is made cold by the fish that silences the voice. Hush!*** A warning to keep still. First uttered by Hiʻiaka to her friend Wahineʻomaʻo to warn

		her not to speak to Lohiʻau while they were in a canoe near ʻEwa.
274	E hāmau o makani mai auaneʻi.	***Hush, lest the wind arise.*** Hold your silence or trouble will come to us. When the people went to gather pearl oysters at Puʻuloa, they did so in silence, for they believed that if they spoke, a gust of wind would ripple the water and the pysters would vanish
493	Haunāele ʻEwa i ka Moaʻe.	***ʻEwa is disturbed by the Moaʻe wind.*** Used about something disturbing, like a violent argument. When the people of ʻEwa went to gather *pipi* (pearl oyster), they did so in silence, for if they spoke, the Moaʻe breeze would suddenly blow across the water, rippling it, and the oysters would disappear.
1014	Hoʻahewa na niuhi ia Kaʻahupāhau.	***The man-eating sharks blamed Kaʻahupāhau.*** Evil-doers blame the person who safeguards the rights of others. Kaʻahupāhau was the guardian shark goddess of Puʻuloa (Pearl Harbor) who drove out or destroyed all the man-eating sharks.
1023	Hoʻi aku la ka ʻōpua i ke awa lau o Puʻuloa.	***The horizon cloud has gone back to the lochs of Puʻuloa.*** He has gone home to stay, like the horizon clouds that settle in their customary places.
1126	Huhui na ʻōpua i Awalau.	***The clouds met at Pearl Harbor.*** Said of the mating of two people.
1330	Ka iʻa hali a ka makani.	***The fish fetched by the wind.*** The *ʻanaeholo*, a fish that travels from Honouliuli, where it breeds, to Kaipāpaʻu on the windward side of Oʻahu. It then turns about and returns to its original home. It is driven closer to shore when the wind is strong
1331	Ka iʻa hāmau leo o ʻEwa.	***The fish of ʻEwa that silences the voice.*** The pearl oyster, which has to be gathered in silence.
1686	Ke awa lau o Puʻuloa.	***The many-harbored sea of Puʻuloa.***

		Puʻuloa is an early name for Pearl Harbor.
1698	**Ke hoʻi aʻe la ka ʻōpua i Awalau.**	***The rain clouds are returning to Awalau.*** Said of a return to the source.
1721	**Ke kai heʻe nehu o ʻEwa.**	***The sea where the* nehu *come in schools to ʻEwa.*** *Nehu* (anchovy) come by the millions into Pearl Harbor. They are used as bait for fishing, or eaten dried or fresh.
2152	**Mehameha wale no o Puʻuloa, i ka hele a Kaʻahupāhau.**	***Puʻuloa became lonely when Kaʻahupāhau went away.*** The home is lonely when a loved one has gone. Kaʻahupāhau, guardian shark of Puʻuloa (Pearl Harbor), was dearly loved by the people.

4.3.2 Mele (Songs)

There are numerous mele composed for ʻEwa in more contemporary times, some of which are included below.

The *Buke Mele Lahui* (Hawaiian National Songbook), published in 1895, is "the largest number of political and patriotic Hawaiian songs ever printed in one place," featuring mele that "echo the steadfast resilience of Hawaiians of that time as they weathered the political turbulence of the 1880s and 1890s that completely altered their world" through the overthrow and establishment of a foreign-led provisional goverment and subsequent annexation to the U.S. (Nogelmeier and Stillman 2003:xii).

4.3.2.1 Paʻahana

The following is a traditional mele and hula that tells the story of a young girl mistreated by her stepmother. She ran away from home to the hills above Waihawā where she lived on river shrimp and guava until she was found by a cowboy. She was taken to Mānana, the present site of Pearl City, located within the moku of ʻEwa (Elbert and Mahoe, 1970).

Paʻahana (Busy) – Traditional

He inoa kēīa nō Paʻahana	This is a name song for Paʻahana
Kaikamahine noho kuahiwi	The girl who lived in the hills
Mele he inoa no Paʻahana	Namesong for Paʻahana
Naʻu i noho aku ia wao kele	I lived in the rain forests in
Ia uka ʻiuʻiu Waiawā	The distant uplands of Waiawā

Mele he inoa no Paʻahana	Namesong for Paʻahana
ʻŌpae ʻoehaʻa o ke kahawai ʻO ka hua o ke kuawa kaʻu ʻai ia Mele he inoa no Paʻahana	Clawed shrimps of the streams and Guava fruits my food Namesong for Paʻahana
Mai kuhi mai ʻoe ka makuahine A he pono kēia e noho nei Mele he inoa no Paʻahana ʻO kahi muʻumuʻu pili i ka ʻili ʻO ka lau lāʻī koʻu kapa ia Mele he inoa no Paʻahana	Don't think about the mother I live here and am glad Namesong for Paʻahana A single muʻumuʻu clings to my skin My blankets are ti leaves Namesong for Paʻahana
Pīlali kukui kau lāʻau Lau o ke pili koʻu hale ia Mele he inoa no Paʻahana	Kukui gum on the trees And pili grass my home Namesong for Paʻahana
I hume iho au ma ka pūhaka I nalo iho hoʻi kahi hilahila Mele he inoa no Paʻahana	I bind my loins And hide my private parts Namesong for Paʻahana
I hoʻi iho hoʻi au e peʻe ʻIke ʻē ʻia mai e ka ʻenemi Mele he inoa no Paʻahana	I came and hid but was Seen by the enemy Namesong for Paʻahana
Lawe ʻia aku au a i Mānana Mākaʻikaʻi ʻia e ka malihini Mele he inoa no Paʻahana	I was taken to Mānana And visited by strangers Namesong for Paʻahana
Haʻina ʻia mai ana ka puana He mele he inoa no Paʻahana Mele he inoa no Paʻahana	Tell the refrain A song, a name for Paʻahana Namesong for Paʻahana

4.3.2.2 Pāʻauʻau Hula

This mele was written by John U. Iosepa (lyrics) and Charles King (music) and dedicated to Hon. John F. Colburn, cousin of Lahilahi Webb, whose home was called Pāʻauʻau in remembrance of the pool in ʻEwa. Kūliaikanuʻu is the motto of Queen Kapiʻolani and the name of Mrs. Colburn. According to scholar Mary Kawena Pukui, the "neck lei" referred to in Verse 8, Stanza 2 means a "beloved child" (King, 1942).

Pāʻauʻau Hula – by John U. Iosepa (Words) and Charles King (Music)

Aia i ka iʻa ha mau leo Ka ʻiʻini, ka haliʻa, ka haʻupu ʻana ka	There, where the silent fish is found The desire, the interest, the remembrance
Haʻupu aʻe ana ka manaʻo e ʻike E ʻike i ka nani o Pāʻauʻau o, Pāʻauʻau	I yearn once more to see To see the beauty of Pāʻauʻau, of Pāʻauʻau
E ʻauʻau ia wai kamahaʻo Ia wai hoʻoheno a ka malihini	To bathe in that wondrous pool The pool that delights visitors
Malihini hoʻi kuʻu ʻike ia ʻoe Kamaʻāina no naʻe i ke aloha	I was a stranger when I first saw it But became acquainted through friendliness
ʻO mai ka wahine nona ka lei Kūliaikanuʻu e ō mai	Answer, o lady whose lei song this is Kūliaikanuʻu, answer
A Pāʻauʻau au ʻike i ka nani Ka waiho kāhela mai i ka laʻi	At Pāʻauʻau I saw the beauty Lying before me in the calm
I laila hoʻolaʻi ai nā manu la Mikiʻala i ka nani o nā pua	There the birds paused Enthralled by the beauty of the flowers
He ua no ʻoe ua ona ia He lei ʻāʻī no ke kūpuna	You are a very attractive flower A neck lei for your ancestors
Haʻina ʻia mai ana ka puana Kūlia ka wahine noho i ke kapu	This is the end of our song Kūlia is a woman who swells with kapu

4.3.2.3 Pāʻauʻau Waltz

The following mele, written by John U. Iosepa, is also dedicated to Pāʻauʻau in reference to the home and pond on the Pearl City peninsula. "Moaʻe," which appears in Verse 1, Stanza 2, is the ancient name for the trade winds; "iʻa hāmau leo" (Stanza 4) was the way ancient Hawaiians searched for and harvested oysters (King, 1923).

Pāʻauʻau Waltz – by John U. Iosepa

Haʻaheo Pāʻauʻau i ka nani Kilikila i ka pai a ka Moaʻe E walea ana paha i ka ʻolu	Proud is Pāʻauʻau in its beauty Majestic is the stirring of the trade winds Delighting in the pleasant comfort

I ka hoʻoheno a ka iʻa hāmau leo Pau ʻole koʻu hoʻohihi I ka nani o Pāʻauʻau Na wai e ʻole ka ʻiʻini Ua noho a kupa i laila Uluwehi wale ia home Makaʻala i ke kai o Pōlea Hoʻolale aʻe ana e ike i ka nani O Pāʻauʻau	Cherished for the pearl oyster sought in silence My delight is boundless For the beauty of Pāʻauʻau Who would not be desirous Having lived as a familiar of that place That home is verdant and lush Surrounded by the sea of Pōlea Urging one to witness the beauty Of Pāʻauʻau

4.3.2.4 Pūpū o ʻEwa

This mele was written in honor of ʻEwa by an unknown composer. The mele was described in Elbert and Mahoe's *Nā Mele o Hawai'i Nei*:

> ...[it] is said to have been composed as part of a fund-raising campaign for the Ka-hiku-o-ka-lani Church (the seventh of the kings) at Pearl City. Ka-lā-kaua, the seventh monarch, for whom the church was named, helped build it.
>
> The "news of the land" is the discovery of pearl oysters at Puʻu-loa, the Hawaiian name for Pearl Harbor. Ka-ʻahu-pāhau is the shark goddess who protected Pearl Harbor. Kaʻala, in the Wai-ʻanae range, is the highest mountain on Oahu. Polea is a place at ʻEwa. In the chorus, *nuʻa* and *naue* are sometimes replaced by *nuku* (mouth) and *lawe* (bring) (1970:87-88).

Pūpū o ʻEwa (Shells of ʻEwa) – Traditional

Hui:	**Chorus:**
Pūpū (aʻo ʻEwa) i ka nuʻa (nā kānaka) E naue mai (a e ʻike) I ka mea hou (o ka ʻāina) Ahe ʻāina (ua kaulana) Mai nā kūpuna mai Alahula Puʻuloa he ala hele nō Kaʻahupāhau, (Kaʻahupāhau) Alahula Puʻuloa he ala hele nō Kaʻahupāhau, Kaʻahupāhau	Shells of ʻEwa throngs of people Coming to learn The news of the land A land famous From the ancient times All of Puʻuloa, the path trod upon by Kaʻahupāhau All of Puʻuloa, the path trod upon by Kaʻahupāhau

Nani Kaʻala hemolele i ka mālie	Beautiful Kaʻala, sublime in the calm
Kuahiwi kaulana aʻo ʻEwa	Famous mountain of ʻEwa
E kiʻi ana i ka makani o ka ʻāina	That fetches the wind of the land
Hea ka Moaʻe eia au e ke aloha	The tradewind calls, “here I am, beloved”
Kilakila ʻo Polea noho i ka ʻolu	Majestic Polea in the coolness
Ia home hoʻohihi a ka malihini	Home delighted to visitors
E walea ana i ka ʻolu o ke kiawe	Relaxing in the coolness of the kiawe
I ka pā kolonahe a ke Kiu	And the soft blowing of the Kiu wind

4.3.2.5 ʻO Wau e Hele i ke Kaha o Puʻuloa

This mele was offered by Hiʻiakaikapoliopele as she traveled through Puʻuloa in the story of Hiʻiakaikapoliopele. This chant is used today by different organizations in ʻEwa in order to honor the traditions and places of Puʻuloa (*Ka Hoku o Hawaii*, 1927; translated by Kepā Maly).

O wau e hele i ke kaha o Puuloa	t is I who travel across the lowlands of Puʻuloa,
I ka ohai o Kaupea la	Where the ʻōhai plants grow at Kaupeʻa.
I ka la hoanoano-e, ua ike	A day of solitude, when one sees,
Ua ike aku la ka hoi au	I have indeed seen,
I ke kuahiwi mauna pali	The mountains and the cliff sides
O Puukuua i Halehau	Of Puʻukuʻua at Halehau
O ke oho o ke kukui ehu	With the reddish budding leaves of kukui trees
I haa i ka la o Kanehoa	Dancing in the sun of Kānehoa
Aloha wale na hoa-e	Aloha to you, my companions.

4.3.2.6 Nani Oʻahu

Nani Oʻahu - Words by Mary Pukui, Music by Maddy Lam

Nani wale ʻoe e Oʻahu	Beautiful are you Oʻahu
Ka heke o na ailana	Greatest of islands
E lei ohuohu nei	You are now bedecked
I ka pua a o ka ʻilima	With the blossom of the ʻilima
Aia no i ka poli	There in the bosom
Kapu ihi o Ewa	Sacred (bosom) of Ewa
Ke awa lau o Puʻuloa	Rests Pearl Harbor
Me ka iʻa hamau leo	And the fish that silences the voice

Ua nani no na Koʻolau	Beautiful are the Koʻolau districts
Ike koʻa o Heʻeia	With the reefs at Heʻeia
Ka laʻi olu o Kahana	The peaceful calm of Kahana
Kai holu a o Laniloa	The swaying surf of Laniloa
Kaulana o Honolulu	
I ka ua Kukalahale	Famed is Honolulu
Ke ka ona hanohano	In the Kukalahale rain
O na moku o Hawaiʻi	A town that is honored
	In the islands of Hawaiʻi
Haʻina mai ka puana	
No ka nani o Oʻahu	Thus ends my song
E lei ohuohu nei	Of the beauty of Oʻahu
I ka pua a o ka ilima	Who is bedecked
	With the blossom of the ilima

Source: Pamai Tenn Collection

5.0 Traditional or Customary Practices

In traditional (pre-western contact) culture, named localities served a variety of functions, informing people about: (1) places where the gods walked the earth and changed the lives of people for good or worse; (2) heiau or other features of ceremonial importance; (3) triangulation points such as koʻa (fishing markers) for fishing grounds and fishing sites (4) residences and burial sites; (5) areas of planting; (6) water sources; (7) trails and trail side resting places (oʻioʻina), such as a rock shelter or tree shaded spot; (8) the sources of particular natural resources/resource collections areas, or any number of other features; or (9) notable events which occurred at a given area. Through place names, knowledge of the past and places of significance was handed down across countless generations. There is an extensive collection of native place names recorded in the moʻolelo (traditions and historical accounts) published in Hawaiian newspapers.

Hawaiian environmental resilience was a regular part of traditional life. Famed anthropologist Marion Kelly wrote:

> Changes made by Hawaiians, as in the case of fishpond building, enhance the food productivity for the people as they modify or adapt some elements of the environment, without creating unplanned, extensive and irreversible destructions of other important elements of the original environment. … The dedication of Hawaiian society to the concept of *malama* (caring) is basically a conservation value. Sometimes it is explained as a belief that the land and sea in the last analysis "belonged" to the gods. Permission for the use of the gods' domain was continually asked of them through religous ceremonies, large and small. Works of Hawaiians, both on land and in the sea, were so carefully planned, engineered and executed that they enhanced productively without massive environmental degregation following as a result… (Kelly 2000).

This is not intended to be a comprehensive list of all the practices that historically or contemporaneously occur in ʻEwa. This is meant to show the range of traditional or customary practices that took place in the larger geographic extent.

5.1 Moʻolelo

Moʻolelo is the practice of storytelling and developing oral histories for the purpose of transmitting knowledge information and values intergenerationally. Moʻolelo are particularly critical in protecting and preserving traditional culture in that they are the primary form through which information was transmitted over many generations in the Hawaiian Islands and particularly in the Native Hawaiian community.

Storytelling, oral histories, and oration are widely practiced throughout Polynesia and important in compiling the ethnohistory of the area. The Native Hawaiian newspapers were particularly valued for their regular publication of different moʻolelo about native Hawaiian history. Were it not for the newspapers having the foresight to allow for the printing and publication of moʻolelo, far less information about the cultural history of the Hawaiian people would be available today.

There are numerous moʻolelo about ʻEwa and the geographic extent. These moʻolelo are provided in **Sections 3.2 (Traditional Period)** and in **Section 4.0 (Cultural Resources)**.

5.2 Habitation

Hawaiians lived extensively throughout the islands. Handy, Handy, and Pukui (1991) identify how different kānaka and their ʻohana lived in accordance with what the authors termed "occupational contrasts" (286), meaning that based on occupation (i.e., planter or fisherman, for example), habitation systems differed. They describe, "The typical homestead or *kauhale*… consisted of the sleeping or common house, the men's house, women's eating house, and storehouse, and generally stood in relative isolation in dispersed communities. It was only when topography or the physical character of an area required close proximity of homes that villages existed. There was no term for village. *Kauhale* meant homestead, and when there were a number of *kauhale* close together the same term was used. The old Hawaiians, in other words, had no conception of village or town as a corporate social entity. The terrain and the subsistence economy natural created the dispersed community of scattered homesteads" (284).

The previous archaeology for the Project Area shows that habitation sites have been identified in the area. Such usage would be consistent with the project location, which enjoys proximitity to the ocean. Previously identified archaeological sites in the surrounding area include temporary and permanent habitations, religious structures, agricultural features and other sites of varying functions.

5.3 Travel and Trail Usage

The ability to travel was essential to Hawaiians and enabled their sustainability. Travel, and the freedom to move throughout different areas, had different names, including huakaʻi, kaʻapuni, or kaʻahele. Traveling by sea had distinct names as well, like ʻaumoana. Traveling through the mountains was sometimes referred to as hele mauna. Travel, and moving

throughout various places and regions was an essential practice and way of life in traditional Hawai‘i.

The freedom to travel safely was so important that Kamehameha I would come to pass a well-known law protecting travelers, Ke Kānāwai Māmalahoe (The Law of the Splintered Paddle). It is explained by the William S. Richardson School of Law as follows:

> As a young warrior chief, Kamehameha the Great came upon commoners fishing along the shoreline. He attacked the fishermen, but during the struggle caught his foot in a lava crevice. One of the fleeing fishermen turned and broke a canoe paddle over the young chief's head. The fisherman's act reminded Kamehameha that human life was precious and deserved respect, and that it is wrong for the powerful to mistreat those who may be weaker.
>
> Years later when Kamehameha became ruler of Hawai‘i, he declared one of his first laws, *Ke Kānāwai Māmalahoe* (the Law of the Splintered Paddle), which guaranteed the safety of the highways to all. This royal edict was law over the entire Hawaiian kingdom during the reign of Kamehameha the Great. Considered one of the most important *kānāwai* (royal edict), the law gave the Hawaiian people an era of freedom from violent assault (William S. Richardson School of Law 2021).

The kānāwai (law) reads:

E nā kānaka	O my people
E mālama ‘oukou i ke akua	Honor thy god
A e mālama ho‘i	Respect alike, the rights of
Ke kānaka nui a me kānaka iki	All men great and humble
E hele ka ‘elemakule	See to it that our aged,
Ka luahine, a me ke kama	Our women, and children
A moe i ke ala	Lie down to sleep by the roadside
A‘ohe mea nana e ho‘opilikia	Without fear of harm
Hewa no, make	Disobey, and die

The law would have such long-lasting resonance that it would be expressly incorporated into the Hawai‘i State Constitution.[10]

As traveling through traditional trails was the primary means by which people traveled on land throughout most of Hawaiian history, the traditional trail system is particularly important

[10] Article IX. Section 10 of the Hawaii State Constitution reads: "The law of the splintered paddle, mamala-hoe kanawai, decreed by Kamehameha I--Let every elderly person, woman and child lie by the roadside in safety--shall be a unique and living symbol of the State's concern for public safety."

throughout the Hawaiian Islands. Throughout the islands, there were numerous trails that allowed people to access different locations. This trail system was critical not only for maintaining a healthy population and managing this population, but it was also important for the traditional economic system of bartering. The trail system allowed for different localized communities to engage and interact. This also allowed for the trade of goods throughout island communities.

5.3 1 The Path Traveled by Kamehameha I from Honolulu to Pu‘uloa

When Kahekili died in ca. 1794, his son Kalanikūpule succeeded in rule. By May 1795, however, Kamehameha I and his forces invaded O‘ahu and killed Kalanikūpule, taking control of all the islands except for Kaua‘i and Ni‘ihau (Chronology in *The Friend*, January 1878). The article below, published in 1883, describes events around a visit of Kamehameha I to Pu‘uloa.

> *The Daily Bulletin*
> **Treason & Magnanimity, An anecdote of Kamehameha the Great.**
>
> **September 3, 1883 (page 2)**
> When Kamehameha conquered Oahu though he had firmly established himself all the chiefs had not reconciled themselves to his rule. Kamehameha however adopted the plan of making the women chiefs and not allowing their husbands to receive the taxes. He also selected the handsomest and smartest women as spies who used to report to him all that went on in their districts. One of these female spies reported to him that the chiefs of *Ewa*, *Waianae*, and *Waialua*, were conspiring against him and were to meet on a given night at *Puuloa* (Pearl River), then the favorite spot with the chiefs of those districts, to finally settle on their plans.
>
> Kamehameha was then living at *Pulaholaho*, afterwards known as Charlton Square, the block now bounded by Merchant, Kaahumanu, Queen, and Nuuanu Street. It was then supper-time and he excused himself from supper and, taking his famous spear of peculiar make, *Ka ihe o Kamehameha*, the like of which no other Hawaiian had, he started off striking across the harbor at *Kapuukolo* (near Emmes boat-building establishment,) to *Koholaloa*, along a fishpond wall to *Kulaokaiwiula*, (the plains near Kalihi), then swimming the *Kalihi* passage and wading till he came to *Ahua* (the sand beach below *Moanalua*), then to the Pearl River and swimming across to *Puuloa*, He thus made a bee-line from E. to W. over land and sea alone without a single attendant. Nothing stopped him. Here he went from *halau* to *halau*, (the *halau* is a large meeting house), until he came to the place where all the Chiefs were inside plotting treason against him. After listening long enough to learn all their plans he stuck his spear point downwards, in the sand about 4 feet from the door and returned as he came

alone.

> When the chiefs awoke next morning and went out they saw the spear. Said they, "The great chief has been here. Here is his spear. He knows all." So in accordance with the ancient Hawaiian custom of those who feared for their lives, they went to Honolulu and crawled in on their hands and knees into the presence of Kamehameha saying "*E ola au*." (Let me live.) And Kamehameha granted their prayer and had the satisfaction of knowing ever after that they were faithful to him.

5.4 Fishing, Spearfishing, and Limu Picking

ʻEwa is a fishing community. The nearshore reef environment provides a rich biodiversity that has helped to sustain this community for generations. The ʻEwa area is known for fishing and diving, especially for heʻe (octopus). This area is also known historically for limu picking, although limu has become more scarce in recent times, likely from development and environmental degradation. In ʻEwa, there is an active limu restoration program led by the Hoakalei Cultural Foundation that aims to restore the native limu in the coastal areas.

This ocean expertise was critical to traditional Hawaiian practices. In *Hawaiian Fishing Traditions*, Moses Manu and Others write,

> With a knowledge of fishing areas and seasons and an array of implements that included hooks and lines, lures, nets, basket traps, poisonous plants, and spears, a fisher supplied his family or his aliʻi with fish and shellsih from streams, fishponds, reefs, and ocean. Sometimes the catch was so huge, fish could be fed to teh pigs and dogs, with some left over to dry as food or fuel for fire; some was left to rot. Those fishers that could supply large amounts of fish from ponds or catches at sea were belieed to possess mana kupua, or supernatural power, to attract fish at will or make them multiply. Successful fishing implements, such as hooks or cowry shell lures became famous and were prised, passed on to heirs, and sometimes fought over (Manu 2006, ix).

The practice of gathering limu in the ahupuaʻa of Honouliuli is long-standing and continues today. As discussed in section 3.2.2.2 of this CIA, Hiʻika observes from Pōhākea women gathering pāpaʻi and limu at the shores of ʻEwa.

Today, the tradition of gathering limu in ʻEwa is intimately intertwined with a growing concern for the preservation of limu. ʻEwa Beach is home to the ʻEwa Limu Management Area, which extends from the western edge of the gunnery to Muʻumuʻu place. Permits are required there

to pick limu, with the exception of native Hawaiian gatherers practicing gathering rights authorized by law or permitted by the Department of Land and Natural Resources.

In 2014, The ʻEwa Limu Project, in a powerful partnership with Kuaʻāina Ulu ʻAuamo (KUA), initiated the Limu Hui, a collective effort to 'gather the gatherers.' This project, which has now expanded to encompass multiple locales across the archipelago, including ʻEwa, Heʻeia, Kahoʻolawe, Kahana, Kīpahulu, Kōloa, Kuliʻouʻou, Lānaʻi, Molokaʻi, Waiʻanae, Waiheʻe, and Wailuku, is a shining example of community-driven conservation.

5.4.1 Fishing Right of Honouliuli in Pearl Loch

The following is excerpted from the Boundary Commission testimonies regarding the boundaries of the Honouliuli and Hōʻaeʻae ahupuaʻa (Volume 1, 1873-1874). This passage details the Fishing Right within Honouliuli.

> For reasons set forth at large in the record of the Commissioner, the Fishing Right is not awarded in the body of the Certificate of boundaries, but the finding of the Commissioner on the testimony presented, as well as by the assent of parties adjacent and in interest is set forth in this Supplement as follows, to wit.
>
> The Fishing Right of Honouliuli covers the whole of "West Loch," with the reservation to Hoaeae, Waikele (Exhibit the Ili of Auiole) and Waipio of the fishing opposite each to where the water is "chin deep" to a man, say five and one half feet deep, also cutting off the bight or inlet where the boundary of Waipio and Waikele cuts across from to **Kaulu** constituting the "Fishery of **Hoomakaia**." The channel at the entrance of the Loch, as far up as **Pookela** point is divided equally between Honouliuli & Halawa.
>
> Note: The map of survey presented [page 250] by the petitioner is the one executed by Prof. W.D. Alexander in the year 1873, and the award made conforms to said map.
>
> In witness whereof I have hereunto set my hand at Honolulu, this 22d day of January A.D. 1874.
>
> Lawrence McCully
> Commissioner of Boundaries, Oahu.
>
> Honolulu, November 5th 1874

The petitioner in this case further asking that "Puuloa" a part or ili of this land, sold from it to Isaac Montgomery be included in this certificate and the proofs for this purpose being already of record, and this original certificate not yet issued.

I do hereby supplement the same, as follows

viz. Instead of Course 31 as above, read thus
31. Oneula to Puuloa trig Station, at windmill N. 69° 41' E. 18720 ft; thence along shore to stone pillar at Kahuka N. 22° 20' W. 10010 ft.

Area of Puuloa 2610 acres
Total area of Honouliuli 43,250 acres

Lawrence McCully
Comr. of Boundaries. [page 251]

Hō'ae'ae Ahupua'a (with Honouliuli)
[From boundary of Honouliuli]
1. The boundary between this land and Hoaeae was first surveyed by J. Metcalf May 29, 1848, and the "Kula" of Hoaeae was awarded to L. Rees by this survey.

See Award 193, Volume 1, p. 536.

...Fishery of Hoaeae. The testimony of the kamaainas is that the fishery extends to the depth of a man's chin, opposite this land. Mr. Robinson & Mr. Coney agree to this and that outside of that the fishery belongs to Honouliuli. The award of Hoaeae does not include the Kai. The makai, cultivated part of Hoaeae and the Kai or fishery were granted to Namauu by R.P. 4490 for M. Kekuanaoa. The survey by A. Bishop is not copied into the R. Patent; the Patent being without metes & bounds. [page 244]

The red line indicating the fishery of Hoaeae, conforms to Mr. Bishop's survey, and is agreed to by Mr. Robinson as representing their rights of fishing... [page 245]

[From Boundary of Waikele]

Ap. 1 – he aina Kalo me ke kula ma Apokaa. Aia i ke kihi Komohana o keia aina pili ana me "**Hoaeae**", ma ka 4 o na pohaku e waiho lalani ana ma kahakai ua hoailona mua ia pea X. Alaila e kuhikuhi i ka palena kai hema 66° 3/4 Hikina e au iho ana i kai ma **Aole i pau kuu loa** me ka palena kai o Honouliuli a hiki i kahi i kapa ia o **Pau Kuu Loa** e pili ana me ka palena kai o Honouliuli. Alaila, ma kela pohaku X, Akau Kom. kaulahao ma Hoaeae a hiki i ka **poh. Moko-moko** ma ke alanui Aupuni. … [page 156]	Par. 1. – a Taro land on the flats of Apokaa. The Western corner of this land is there adjoining with "Hoaeae," where four stones form a line situated on the shore, with the first boundary marked X. Then the boundaries are pointed out from the shoreline South 66 ° 3/4 East jutting out in the fishery of Honouliuli to the place called Pau Kuu Loa, adjoining with the shore boundary of Honouliuli. Then from that stone marked X, North West xx chains along Hoaeae to the stone Mokomoko along the Government road…

5.4.2 Honouliuli-Pu‘uloa Fisheries

The fisheries—those along the shore of the open ocean and in Keawalau o Pu‘uloa (now Pearl Harbor) and along the shoreline—were among the highly valued resources of Honouliuli Ahupua‘a. With the transition in land tenure and land use that occurred following 1848, native residents of Honouliuli were steadily denied access to the traditional fisheries. Conflicts arose between Hawaiians seeking to maintain customary practices and the restricted access imposed by new landowners.

5.4.2.1 Poino! (Distress!) – Hawaiians Denied Access to the Honouliuli-Pu‘uloa Fisheries

Mose, a native of Honouliuli, presented a public account of the distress that he, Isaaka and Makahanohano endured in being denied access to the shore along Ke Awalau o Pu‘uloa by a foreign tenant of the land, and ask the King if this action was authorized by him.

> *Ka Hae Hawaii*
>
> Nowemapa 25, 1857 (aoao 139)
> E ka Hae Hawaii e. Aloha oe:— Ka mea e holo ana ma na kihi eha o ke aupuni Hawaii, he hoa kuili oe o ka poe imi noonoo, he ipo manuahi oe o ka poe ike. He wahi mea ka‘u e hai aku nei ia oe, a nau ia e hai aku i ka poe imi noonoo a pau o ke aupuni Hawaii.
>
> Eia ua wahi mea la. Ia makou i hoomaka ai e holo maluna o ka waapa mai

Honouliuli aku a hiki i kahi i kapaia o Keawalau o Puuloa, pa mai la kahi makani ma kai mai, he maunuunu ko ke kaha, he olauniu ko Waikiki, he kukalahale ko Honolulu, hoohuli pono ae la makou i ka ihu o ka waapa me ka manao e holo aku i Honolulu i ke kuai ia, loaa iho la makou i ka poino. Eia no ia, ninau mai la kekahi haole ia makou, o Aigate kona inoa, Owai keia waapa? Hai aku la makou, O makou no. Ninau hou kela ia makou, Owai ka inoa? Hai hou aku la makou, O Mose, Isaaka, Makahanohano. Pane hou mai kela ia makou, Go way; be off kanaka. O ke kani koke mai la no ia o ka pu, a pee iho la makou i ka waha o ka waapa, helelei iho la ka lu iluna o makou, kani hou mai la ka pu, helelei hou iho la ka lu. Kena aku la au i koʻu mau hoa e hoe aku i ka waapa, aka, aole e hiki; no ka mea, ua loaa makou i ka pilikia; aka, no ka ikaika ana mai o ka makani ma kai mai, huki pono mai la makou i ke kaula, pei mai la i ka pei, poho aku la ka pea i ka makani, o ka holo aku la no ia o makou, a pakele makou i keia pilikia.

E! nani ke aloha o ko kakou Haku i ka lani, ka mea kokua i ka poe poino, nana no i hoopakele mai ia makou mai loko mai o keia popilikia.

Ninau.
Ina ua ae ia e ka Moi a me kona lalo iho, a i ole ia, e na makaainana paha e noho ana malalo iho o ka Moi, kona ki wale ana aku i kela kanaka keia kanaka, alaila ua pono; aka, ina aole, e hiki no iaʻu ke hoopii e like me ke kanawai o ka aina.

Mose.

Honouliuli, Ewa, 18 Nov., 1857

Summary – Poino! (Distress)

We departed from Honouliuli in our boat and arrived at the place called Keawalau o Puʻuloa, when a wind arose from the shore. It was the māunuunu of the coastal region — the ʻōlauniu is of Waikīkī, and the kūkalahale is of Honolulu. We turned the bow of our boat, intending to go to Honolulu to sell our fish, that is when we ran into trouble. A foreigner came up to us and asked whose boat is this, his name was Isaac[11]. We told him it was ours. He then asked our names and we told him, Mose, Isaaka and Makahanohano. He then told us, “Go away, be off, Hawaiians. He then shot at us, and we quickly tried to

[11] Isaac Montgomery purchased the ʻili of Puʻuloa from chiefess M. Kekauʻōnohi in 1849. Later in 1858, Levi Haʻalelea brought suit against Daniel Montgomery (brother of Isaac) in the matter of fishery rights at Honouliuli (Hawaiian Supreme Court Report, 1857-1865:62).

hide in the bow of our boat. We tried to push off, but because of the wind from the sea, we had a difficult time. We finally got the sail up and we were able to get away from the trouble.

Say, the love of our Lord is beautiful, the one who helps those in need, and who rescues us from our troubles.

Question.
Did the King agree to this being done by those below him, or not. The commoners live below the King, and it is he who determines what is right for each man. I will seek to prosecute this pursuant to the law of the land.

Mose.
Honouliuli, ‘Ewa. Nov. 18, 1857.

5.4.2.2 Supreme Court Proceedings (1858)

The Puuloa Fishery of Honouliuli
Supreme Court—In Banco
January Term—1858
Levi Haalelea vs. Daniel Montgomery

By the laws of 1839, as subsequently amended by the organic acts of 1846, the entire fishing ground, lying between low water mark and the outer edge of the coral reef, or kuanalu, along the seaward front of an ahupuaa of land, is the private property of the landlord or konohiki, subject always to certain piscatorial rights of the tenants or hoaainas.

The defendant’s brother having received from the konohiki a conveyance of a portion of land of the ahupuaa of Honouliuli, by metes and bounds, but not including any portion of the fishing ground adjacent; it was held, that he acquired a common right of piscary as a tenant or occupant of the ahupuaa, appurtenant to the land purchased, and subject always to the rights of the grantor.

It would not have been in the power of the landlord to grant an exclusive right of fishery in the fishing ground, adjoining the land in question, and it [page 62] was doubtful said landlord could, convey her rights therein, so as to divide the fishery into two or more parts. without infringing on the rights of the tenants.

Where the exact legal signification of the terms of a deed could not be

expressed in Hawaiian without great deal of difficulty, recourse was had to the English original.

Justice Robertson delivered the decision of the Court as follows:

The plaintiff brings his action for the purpose, of determining certain rights of fishery, now in dispute between him and the defendant, and also to recover damages from the defendant for having prohibited and prevented the plaintiff and his people, and others occupying certain lands under him, from taking fish on the fishing ground lying to seaward of defendant's land, at Puuloa, on this island.

It appears, from the evidence presented to the Court, that the land now held by the defendant, is a portion of the large ahupuaa of "Honouliuli," and was purchased, in the year 1849, by defendant's brother, Isaac Montgomery, from the late high chief, M. Kekauonohi, then a widow, who died in the year 1851, leaving the land of "Honouliuli," together with other property by will, to her second husband, the plaintiff in this action. The conveyance from M. Kekauonohi to Isaac Montgomery, was executed in the Hawaiian and English languages, and reads as follows in English:

"Warranty Deed."

Know all men, by these presents, that I, Kekauonohi, of Honolulu, Island of Oahu, for and in consideration of the sum of eleven thousand dollars, to me this day paid in hand by Isaac Montgomery, also of Honolulu, Island of Oahu, the receipt of which is hereby acknowledged, do grant, bargain, sell, and by these presents convey unto him, the said Isaac Montgomery, and to his heirs, executors, administrators and assigns, forever, all that certain lot of land, situated in the Island of Oahu, aforesaid, and described as follows:

Commencing at mauka north corner or point of this land at place called Lae Kekaa, at bend of Pearl River, and running along edge of Pearl River, makai side, taking in three fish ponds called Pamoku, Okiokilipi and Paakule to open sea, thence following [page 63] along the edge of the sea (reserving all the reef in front) to end of stone wall by sea, in land called Kupaka, at the makai west comer of this land, thence running north 25° E. 283, direct to place of commencement, including an area of acres 2,244 as per plot hereto annexed.

"To have and to hold, the above conveyed premises and all the tenements and hereditaments situate thereon, with this my covenant and warranty and lawful

seizers, unto the said Isaac Montgomery, his-heirs, executors and administrators and assigns forever.

"In witness whereof, the said party, Kekauonohi, has hereunto set her hand and seal at Honolulu, this 7th day of September, A.D. 1849.

"M. Kekauonhi. [L. S.]
Executed in the presence of Frank Manini."

It is admitted that the defendant is now the owner of the property, originally conveyed to his brother by the foregoing deed. The Court also understood the defendant to admit that he had prohibited the plaintiff and his people from taking fish on the place in controversy. And it is admitted by the plaintiff that, from and after the execution of the deed by M. Kekauonohi, she withdrew her Luna from Puuloa, and ceased to take or taboo any fish on the reef opposite defendant's land, up to the time of her death, and that, until recently, Haalelea never asserted, any right or claim to take fish on said reef.

Upon this state of facts, the defendant claims to have, under a proper construction of the conveyance before recited, and the statutes of this Kingdom, an exclusive right of piscary, in the fishing ground lying opposite the land embraced in the deed; and the plaintiff on his part, claims the same exclusive right for himself and his tenants living on "Honouliuli" as against the defendant and all others living on the land covered by the conveyance, or in other words, that the defendant did not acquire by his purchase, a right to take fish anywhere outside of the boundaries of the land conveyed to him, and that the people living on that land after the date of the deed, ceased to be tenants of the Ahupuaa of "Honouliuli," and so lost their rights to piscary, under the laws of the land.

In order to a right decision of this controversy it would seem [page 64] to be necessary in the first place, to ascertain and define what were the rights of piscary possessed by M. Kekauonohi, as Konohiki of the Ahupuaa of "Honouliuli," at the time she made the conveyance, to Isaac Montgomery. To do this it is unnecessary to inquire what were the respective rights of piscary enjoyed by the Konohiki and the common people, in ancient times, became since the year 1839 those rights have been regulated and defined by written laws,

At page thirty-six of the English version of the old laws, will be found an enactment on this subject, which commences in the following words: "His

Majesty the King, hereby takes the fishing grounds from those who now possess them, from Hawaii to Kauai, and gives one portion of them to the common people, another portion to the landlords, and a portion he reserves to himself.

These are the fishing grounds which His Majesty the King takes and gives to the people: the fishing grounds without the coral reef, viz: the Kilohee grounds, the Luhee ground, the Malolo ground, together with the ocean beyond.

But the fishing grounds from the coral reefs to the sea beach are for the landlords, and for the tenants of their several lands, but not for others."

This is the point at which the existing piscatory regulations of the Kingdom had their commencement, and since which, ancient custom ceased to govern the subject. His Majesty Kamehameha III, as supreme lord of the islands, and having in himself the allodium of all the lands in the Kingdom, did at that time, with the concurrence of the Chiefs, resume the possession of all the fishing grounds within his dominions, for the purpose of making a new distribution thereof, and of regulating the respective rights of all parties interested therein, according to written law.

The fishing rights of both the Konohikis and the hoaainas were defined and regulated by the law of 1839, which was at different times amended in some particulars, until the passage of the organic Acts in 1846, when those rights were again defined by article 5th, of chapter 6th, part first, of the Act to organize the Executive Departments. (See 1st Vol. Stat. Laws, pp. 90 to 92, Secs. 1 to 7.)

The part of the law to which it is [page 65] necessary to have reference more particularly in the present case, reads as follows:

"Section 2. The fishing grounds from the reefs, and where there happen to be no reefs from the distance of one geographical mile from the beach at low water mark, shall in law be considered the private property of the landlords whose lands, by ancient regulation, belong to the same, in the possession of which private fisheries, the said landlords shall not be molested except to the extent of the reservations and prohibitions hereinafter set forth.

“Section 3. The landholders shall be considered in law to hold said private fisheries for the equal use of themselves and of the tenants on their respective lands; and the tenants shall be at liberty to use the fisheries of the landlords,

subject to the restrictions in this article imposed."

The four succeeding sections of this law, which we deem it unnecessary to cite at length, define and guard the rights of the konohikis, in relation to their reserved or tabooed fish, and contain certain provisions to protect the rights of the tenants or hoaainas, from unjust restrictions and exactions.

Under this statute, as we, understand it, the entire fishing ground, lying between low water mark and the outer edge of the coral reef, (or Kuanalu, as it is called in the Hawaiian version) along the seaward front of the Ahupuaa of "Honouliuli," was private property of M. Kekauonohi, possessed and held by her as such, subject to the piscatorial rights of the tenants living on that Ahupuaa. On this ground she had a common right of piscary with the tenants of "Honouliuli," or she was at liberty, if she saw fit, to taboo or set apart annually, one particular species of fish for her own private benefit, as provided in section 4th, or in lieu of this, she might on consultation with the tenants, as provided in section 7th, make an arrangement whereby she would be entitled to receive one third part of all the fish caught on the ground.

Such were the rights of M. Kekauonohi in the premises at the time when she executed the deed to Isaac Montgomery, and the next question is, what portion, if any, of those rights did she thereby convey to him, or did he, by operation of law, acquire any rights of piscary on the ground in question, upon receiving that conveyance? [page 66]

It is contended, on the part of the defendant, that by a fair construction of the descriptive part of the deed, it must be held to extend to deep water at the outer edge of the reef, thereby including all that part of the Konohiki's fishing ground lying opposite to the land conveyed to Isaac Montgomery. It is said that the expression, "to open sea," must be understood to mean, "to deep water outside of the reef," in contradistinction to the shallow water upon the reef, between the breakers and low water mark, and that the expression, "following along edge of sea," means following along the edge of deep water, outside of the reef. If this is correct, then unquestionably, the grantor conveyed away all her right and title to the fishing grounds, as well as to the dry land. But it seems very clear that this construction cannot stand without falsifying the obvious meaning of the descriptive language which follows. For if "open sea" means the deep water outside of the reef, and "edge of the sea" means the edge of such deep water, the stone wall which is described as being by sea, in land called Kupaka, must have extended out to the seaward edge of the reef, a proposition which has not been asserted in argument, and which, on reference to the plan

annexed to the deed, appears to be conclusively negative. So the expression "reserving all the reef in front," would seem to be inconsistent with the idea that the line ran along the outer edge of the reef, for in that case there would be no reef in front of the line. That the line ran along the inside of the coral reef, seems to us clear from the language used in the Hawaiian version of' the deed, which reads as follows: "Aole nae e hookomo ana i ka papa koa mawaho." We should translate this expression, "not including, however, the coral reef outside." Again, the last line of the survey is described as running from the end of the stone wall, north 25 ° east, by compass, 283 chains, to the place of commencement, and it is not pretended that this line extended out to the outer edge of the reef. If such is the case, it is a fact that could be readily ascertained by measurement. But the surveyor's plan clearly indicates the reverse. It is very evident, then, that no part of the fishing ground is included within the surveyed metes and bounds of the property conveyed to Isaac Montgomery. [page 67]

But, it is argued by defendants. counsel, that M. Kekauonohi's right of piscary in the fishing ground in question, passed to Montgomery as an appurtenance to the land, by virtue of the clause which, in the Hawaiian version of the deed, reads thus: "A me na mea paa a pau e waiho ana maluna iho, a me na mea e pili pono ana," and in the English version, thus: "And the tenements and hereditaments situate thereon." It is said that the words, "a me na mea e pili pono ana," are sufficiently broad in their signification to carry everything appurtenant to the land embraced In the conveyance, and that the Court ought to regard the Hawaiian version of the deed as controlling, wherever their appears a difference between that and the English for two reasons: First—Because the grantor herself was a native, and a person of intelligence, and must, therefore, be presumed, to have intended to convey whatever would pass under the words of the deed, as expressed in her own language; and, secondly, because the Court has decided in several previous cases that, in construing the statutes of the Kingdom, which are enacted in both languages, wherever an irreconcilable difference exists between the two versions, the Hawaiian must govern. On the other hand, it is argued that the grantee, who is an Englishman, received the deed in both languages, thus accepting the English version as the exact counterpart of the Hawaiian; and that, therefore, he and, those claiming under him, should be bound by the English version; that the deed in both versions form but one instrument, and that if the language of: the one is altogether inconsistent with that of the other, which, however, is not conceded, the proper course would . be to declare the instrument void for uncertainty.

This involves a question of considerable magnitude, the decision of which may affect the rights and interests of many individuals throughout the Kingdom.

After careful reflection upon the point, we are of the opinion that it would be both unsafe and unreasonable, for the Court to hold that the Hawaiian, and not the English version, should control in this instance, if the difference contended for by the defendant does really exist, which, we think, is not clear. It is true this Court has repeatedly ruled, as stated by the defendant, that, in the case of an, irreconcilable difference between the Hawaiian and [page 68] English versions of a statute, the former shall control (See Metcalf vs. Kahai, 1st Haw. Rep., p. 225; Hardy vs. Ruggles et als., ibid, o. 255.) But it seems to us that the same considerations which constrained the Court so to decide in that case, do not exist in the present instance. The deed before us, with the exception of those parts of it which are descriptive, consists of a printed formula, in the two languages, which has been extensively used here, in dealings between natives and foreigners, since the enactment of laws requiring conveyances of real estate to be made in writing. The English version of this formula is, of course, the original, and the Hawaiian merely a translation. There do not exist in the Hawaiian language, two words which would exactly represent the two English words tenements and hereditaments. The exact legal signification of those terms could not be expressed in Hawaiian without great difficulty, and therefore words, which if used in some other connection, or under other circumstances would convey a widely different meaning, have, when used in the printed formula of conveyance now before us, been accepted by the general consent of natives and foreigners using such formula, as meaning precisely the same things, and neither more or less than those two legal terms. So far then as purely legal phraseology, or words or technical import, are concerned, it would seem to us both unsafe and unreasonable, to hold that the Hawaiian translation, and not the English original, should govern, when a question arises. upon the construction of any part of the deed, where such legal or technical language is used. Such a course would unbar the door to endless litigation and fraud, and involve our courts in a maze of uncertainty.

It is contended, further, on the part of the defense, that the conduct of the grantor, in withdrawing her luna from Puuloa, at the time of her execution of the conveyance, and in subsequently, up to the time of her death, forbearing to take or taboo any fish on the reef opposite the land sold to Montgomery, and the like forbearance on the part of the plaintiff, for several years, afterwards, are strong evidence in favor of the defendant, and facts from which it may be fairly inferred that M. Kekauonohi intended to grant away tile fishing ground, or, at least, all her rights in the fishery. To this it is replied, that such a [page 69] grant cannot be inferred from circumstances, or from the conduct of the grantor, but must be found, if at all, in the express language of the deed.

As to the fact of her withdrawing her luna from Puuloa, after the sale of that land to Isaac Montgomery, we consider it a natural consequence of the sale, and of slight significance as to any bearing it may be supposed to have upon the disputed question of the fishery. If, however, there was any doubt as to the grantor's intentions, arising from the use of unusual or ambiguous language, then, the fact of her subsequent forbearance to take or taboo fish; upon the place in question, might be regarded as evidence tending to sustain the construction contended for by the defendant. But, it is clear to our minds, for the reasons already stated in remarking upon the descriptive part of the deed, that she did not intend to include therein, or to convey thereby, any part of the fishing ground to Montgomery; nor did she convey to him her individual rights of piscary, under the words, "tenements and hereditaments situate thereon."

None of the rights of piscary possessed by M. Kekauonohi as owner of the fishery, could have passed as a mere appurtenance to the piece of land conveyed to Isaac Montgomery. She could have transferred the fishery, or her right therein, only by an express grant, eo nomine. Had she made a deed even of the whole Ahupuaa, by metes' and bounds, not including the fishery, nor expressly naming it in the conveyance, it is doubtful if either the fishery or her right therein would have passed to the grantee.

Again, if the grantor had conveyed the fishery, or her individual rights therein, by name, to Isaac Montgomery, that would not have conferred upon him the exclusive right which is now set up by the defendant, because M. Kekauonohi herself was not possessed of an exclusive right. It may even be doubted whether she could have conveyed away the portion of the fishing ground lying opposite to Puuloa, ·or her special rights therein, so as to divide the fishery, without infringing on the rights of the tenants living on "Honouliuli." Certainly if her grantee had tabooed one kind of fish, on his part of the ground, while she tabooed another kind upon the other part, the rights [page 70] of the tenants would have been violated. And if she could have divided the fishing ground into two parts she could have divided into twenty, and so have rendered the rights of the tenants worthless.

But, while we are clearly of the opinion that M. Kekauonohi did not convey any part of the fishing ground, or of her individual rights therein, to Isaac Montgomery, we are also of opinion that, when he received a conveyance of a portion of the Ahupuaa of "Honouliuli," he acquired along with it a common right of piscary in the fishing ground adjacent. That is to say, he became, for the purposes of the law, governing this subject, a tenant of the Ahupuaa, and as such entitled to take fish in the sea adjoining. We understand the word tenant,

as used in this connection, to have lost its ancient restricted meaning, and to be almost synonymous, at the present time, with the word occupant, or occupier, and, that every person occupying lawfully, any part of "Honouliuli," is a tenant within the meaning of the law. Those persons who formerly lived as tenants under the Konohikis but who have acquired fee simple title to their kuleanas, under the operation of the Land Commission, continue to enjoy the same rights of piscary that they had as hoaainas under the old system. (See Joint Resolution on the subject of rights in lands, etc., Vol. 2, Statute Laws, p. 70.) If any person who has acquired & kuleana on the Ahupuaa of "Honouliuli," should sell and convey his land, or even a part of it, to another, a common right of piscary would pass to the grantee, as an appurtenance to the land. In that case it would not be necessary, we apprehend, to mention the right of piscary in the conveyance—it would pass as an incident. (See Kent's Com., Vol. 4, p. 517; Comyns's Digest, Vol. 4, title Grant E. 11.) Here, we think, is the great distinction between the rights of the Konohiki, and those of the tenant or occupant, for, while the former holds the fishery as his private property, the latter has only a right of piscary therein, as an incident to his tenancy. This marked distinction in their respective rights must create a corresponding difference in regard to the transfer of those rights.

As the conveyance, by the owner of a kuleana, of a part of his land to another, would create such a tenancy in the grantee [page 71] as would entitle him to a common right of piscary, so, in our opinion, the conveyance to Isaac Montgomery, by M. Kekauonohi, of a part of the Ahupuaa, created such a tenancy, as carries with it, as an appurtenance thereto, under our laws, a common right of piscary; subject, always, to the rights of the grantor, and her legal representatives.

No specific damage having been proved by the plaintiff we think he is only entitled to recover nominal damages.

Let judgment be entered for the plaintiff, as of the last day of term, in the sum of five dollars damages, together with the costs of suit.

A. B. Bates, Esq., for the plaintiff.
J. Montgomery, Esq., for the .defendant.
January, 1858. [page 72]

Ka Hae Hawaii
Olelo Hooholo a ka Ahakiekie. O Levi Haalelea kue Daniel Montgomery.

Apelila 14, 1858 (aoao 6)

Hoakaka ae la ka Lunakanawai o Robertson i ka manao hooholo o ka Aha, penei:

Ke hoopii mai nei o Haalelea, i mea e maopopo ai ke kuleana o ka honu ia ana i hoopaapaaia e ka mea kue e D. Montgomery, a e loaa paha ia ia kona poino no kona hoole ia aole make hopu ia ma kauwahi o Montgomery, ma Puuloa i Oahu nei.

Mamuli o ka hoike ana, o ka aina o D. Montgomery, ka mea kue, he wahi apana ia o ka ahupuaa o "Honouliuli," a ua kuaiia e Isaac Montgomery ke kaikuana o ka mea kue, i ka makahiki 1849, no M. Kekauonohi mai, ia manawa, he wahine kane make oia. a mahope iho, i ka makahiki 1851, make oia, me ka waiho ana i ka aina o "Honouliuli" a me na waiwai e ae i kana kane mare hou a oia ka mea hoopii ma keia hookolokolo ana, O ka palapala hoolilo aina a M. Kekauonohi ia Isaac Montgomery, ua kakauia ma na olelo Hawaii a me ka Beritania, a o Frank Manini ka hoike.

Eia na mea i aeia e na aoao elua:

Ua aeia o D. Montgomery, oia ka mea nona ka aina i keia wa e noho nei.

Ua ae mai hoi o D. Montgomery, ua hookapu oia ia Haalelea a me kona poe, aole make hopu i ka ia ma kahi i hoopaapaaia.

Ua ae mai noi o Haalelea, mai ka wa i kakauia'i ka palapala hoolilo aina e M. Kekauonohi, ua pau ka noho ana o kona luna ma Puuloa, a hooki hoi i ka lawaia a e hookapu ia ma ke kohola e ku pono ana i ka aina o D . Montgomery , a make o M. Kekauonohi. a o Haalelea hoi, aole oia i hoike mai i kona manao e hopu i ka ia ma ia wahi, a i keia manawa iho nei.

A mamuli o keia mau mea, manao ae la o D. Montgomery ia ia ponoi wale iho no ke kuleana hopu ia ma kahi e ku pono ana i kona aina. A manao ae la hoi o Haalelea ia ia ponoi wale iho no a me kona poe e noho ana ma "Honouliuli" ke kuleana e hopu ia ma ia wahi; no ka mea, i kona manao, aole i loaa ia D. Montgomery ke kuleani hopu ia mawaho ae o na mokuna o ka aina ana i kuai ai me Kekauonohi.

I ko kakou hoomaopopo ana i ka mea nona ka pono a me ke kuleana o ka hopu ia ana. he pono ke heluhelu i ke kanawai.

Ma ka aoao 36 o ka buke Kanawai mua, olelo Beritania, penei ke kakauia ana: “Ke lawe nei ka Moi o ke Alii nui i na wahi ia noloko ae o ka lima o ka poe i loaa, mai Hawaii a Kauai, a. Ke haawi hou aku i kekahi hapa na na kanaka, a i kekahi hapa na na konohiki, a i kekahi apa hoi nana ponoi no.

Eia na wahi ia a ka Moi e haawi nei na na kanaka, o na wahi mawaho ae o ka Puukoa, penei, o na wahi Kilohee, o na wahi Luhee o na wahi Malolo, a me ka moana mawaho ae.

A o na wahi ia mawaena ae o ka Puukoa a me ke kahakai, na na konohiki ia a me na kanaka o ko lakou aina aole no na mea e ae.”

A mai ia wa mai o ke kuleana hopu ia o ka wa kahiko, ua pau i keia manawa he kanawai i kakauia.

Ma ke kanawai o ka makahiki 1839, o ke kuleana o na konohiki a me na hoaaina ua hooponoponoia ma kauwahi, a pela no a hiki i ka makahiki 1846, a malaila ua hooponopono hou ia. E nana i ka buke mua aoao 90 a hiki 92. pauku 1 a hiki 7. Eia na pauku pili pono:

“PAUKU 2 O na wah ia, no na puukoa aku, a ina aohe puukoa, hookahi no mile no ke kahakai aku, ma ke hapawai, oia no ke kuleana ponoi no o na konohiki no na ka aina e pili ana ma ke ano kahiko, aole e mea ia i na konoliiki i ko lakou kuleana hopu ia, aia mamuli o na kanawai e kau ia mahope.

“PAUKU 3. I ka mamio o ke kanawai, no na konohiki no ka hopu ia ana no lakou iho a me na hoaaina ma ko lakou aina iho; a e hopu no na hoaaina i ka ia o na konohiki malalo nae o na mea i oleloia ma keia kanawai.”

Mamuli o keia kanawai, o na wahi hopu ia a pau, e moe ana mawaena o kahakai a me kuanalu makai aku o ka ahupuaa o “Honouliuli,” oia no ke kuleana ponoi o M Kekauonohi, nona no malalo nae o na kuleana o na hoaaina e noho ana ma ia ahapuaa

Oia na kuleana o M. Kekauonohi i kona wa i kekauia‘i ka palapala hoolilo aina ia Isaac Montgomery; a eia ka ninau ua loaa anei ia ia, ia L Montgomery, kahi kuleana hopu ia ma ia wahi, i kela palapala hoolilo aina?

Ma ka aoao o ka mea kue, o D. Montgomery, manao oia e holo ana kona aina a i ke kai hohonu mawaho ae o ka papakoa e hookomo ana i kauwahi ia a pau o ke konohiki e kupono ana i ka aina i lilo ia Isaac Montgomery. Ua oleloia, okoa

ke kai hohonu, okoa hoi ke kai papau mawaena o ke kuanalu a me kahakai. Aka, ua maopopo aia ka mokuna oia aoao, aia no maloko ae o ka papakoa; no ka mea, penei ka olelo ana: “aole nae e hookomo ana i ka papakoa mawaho.” Nolaila, ua maopopo ia makou aole i komo kauwahi hopu ia iloko o ka aina i ana ia a i hooliloia ia Isaac Montgomery.

A olelo mai la ka loio o D. Montgomery. Ua lilo ae la ke kuleana ia o M. Kekauonohi ia D. Montgomery me he mea apana la o ka aina ma keia olelo ana, a me na mea paa a pau e waiho ana. maluna iho, a me na mea e pili pono ana, aka, a koʻu manao, aole e pili pono kela mau huaolelo i kauwahi o ke kai.

Ua olelo ia hoi, o ka hoopau ana o M Kekauonohi i kona luna ma Puuloa i ka wa i lilo ai ka aina a hiki i ka manawa i make ai, aole i hopu i ka ia, ma ka puu koa kupono i ka aina i lilo ia Montgomery, a pela no kana kane o Haalelea no kekahi mau makahiki, oia na mea e maopopo ai ka manao o M. Kekauonohi, a o kona manao ia e hoolilo loa aku i kela wahi ia, a i kona kuleana a pau iloko olaila. Aka, aole e pono ke manao wale aku ma ia mea, i ole e kakauia ma ka palapala hoolilo, aole e maopopo.

Aole i lilo kekahi kuleana ia o M. Kekauonohi me he mea apana la o ka aina i kuai ia ia Isaac Montgonery. Ma ka olelo maoli wale no i lilo ai. Ina paha ma ka palapala hoolilo, i hoohlilo ai oia i ka ahupuaa a pau ma na mokuna i anaia a puni me ke komo olelo kauwahi ia ma ka olelo, aohe maopopo ka lilo ana o kauwahi ia a o kona kuleana malaila.

I ko makou manao, aole i hoolilo o M Kekauonohi i kekahi apana o kahi ia, a i kekahi o kona kuleana ponoi ia Isaac Montgomery; a eia hoi ko makou manao, i ka wa i loaaʻi ia I. Monthomerv ke kuleana o kauwahi o ka ahupuaa o “Honouliuli,” ua loaa ia ia no hoi kekahi kuleana hopu ia me he hoaaina la, e like me na kanaka e ae e noho ana ma ia ahupuaa. (E nana i na Olelo ae Like, Vol 2, Statute Laws, pahe 70).

No ka maopopo ole o ka poino i loaa ia Haalelea, nolaila, o ka poino i manao wale ia ka pono.

E hooholoia na ka mea hoopii ke ko i ka la hope o ke kau hookolokolo. Elima dala ka poino me ke koina.

A. B. Bates, loio no L. Haalelea.
J. Montgomery, loio no D. Montgomery

5.5 Farming and Salt Making

Since poi was the staple food for Native Hawaiians, it was of the utmost priority for the first settlers to establish loʻi. Kalo's prominence in the Hawaiian diet derived from its nutritional value, but even more so from its mythological significance. According to Hawaiian traditions, the first human (male) was born from the taro plant:

> The first born son of Wakea and Papa was of premature birth and was given the name Haloa-naka. The little thing died, however, and its body was buried in the ground at one end of the house. After a while, a taro plant shot up from the child's body, the leaf of which was named lau-kapa-lili, quivering leaf; but the steam was given the name Haloa.
>
> After that another child was born to them, whom they called Haloa, from the stalk of the taro. He is the progenitor of all the peoples of the earth. (Malo 1951:244)

As discussed in **Section 3.2 (Traditional Period),** the area has an extensive history of farming that extends well back into the pre-European contact era.

Additionally, from the previously archaeology shows that the location of the traditional salt pans were locate in the nearby area, which is now known as Iroquois Point after the military seized control of the area.

5.5.1 Paʻakai (Salt Making)

The making of paʻakai (sea salt) was one of the significant traditional practices associated with the coastal lands of Honouliuli. There are a number of Māhele claims by native tenants of the larger Puʻuloa land division for salt making sites. The formation of a salt works business at Puʻuloa led to continuing residency along the Pākule, Keahi and Kupaka shoreline leading towards Oneʻula. The Puʻuloa Salt Works was in operation from the 1840s to the early 1900s. The narratives below provide an overview of the modern business venture.

Figure 14. Puʻuloa Salt Works (USGS-Mendenhall Collection, No. mwc00802, 1909)

Daily Alta California
Puuloa Salt Works Advertisement

July 1, 1852 (page 4)

Puuloa Salt Works—Sandwich Islands. These extensive works are situated at the mouth of Pearl river, Island of Oahu, within ten miles of Honolulu, and has the largest and safest harbor on the entire group of Islands. The entrance is half a mile wide, easily distinguished, with 12 feet of water over the bar at low tide. These works are capable of supplying the entire Pacific Ocean with the article of salt.

Shippers and masters of vessels may procure entire cargoes or smaller quantities of the above article, in bulk, matt bags or barrels at the works, or delivered on board their vessels in the harbor of Honolulu, by applying to:

C.W. Vincent, Honolulu,

Corner of Mauna Kea and King Streets.

The following advertisements were published announcing the availability of ocean salt made at Pu‘uloa:

Ka Hae Hawaii

Ka Paakai o Puuloa Iulai 25, 1860 (‘Ao’ao 70)	The Salt of Puuloa July 25, 1860 (Page 70)
Mai ka wa kahiko mai ua ikea na kanaka maoli i ka hana ana o ka paakai; he mea ia e mikomiko ai ka ai; he mea kalepa no hoi; aoela one maikai loa ka paakai o Hawaii nei, aole pono loa ka hipi a me ka puaa i kopiia i keia paakai; ina e waiho liuliu, pilau no. I keia manawa nae, ua hanaia ka paakai ma Puuloa a maikai loa, kaawale na mea awaawa oloko; a ua loaa hoi ka wili e wali ai e like me ka palaoa, a e like hoi me ka paakai no na aina e mai; nolaila, ua makemake loa ia ka paakai o Puuloa i keia wa; he mea lawe i ka aina e, a he mea no hoi e waiwai ka aina.	From ancient time, the natives have known about and made salt; it is that with which food is seasoned, and is also an item of trade; but the salt of Hawaii is not very good, it is not the best for salting beef and salting pork. If it is left for long, it spoils. But at this time, salt is made at Puuloa, and it is very good. The bitterness has been removed from within; a mill has been gotten and the salt mixed like flour, and like the salt of other lands; therefore, at this time, the salt of Puuloa is greatly desired. It is taken to other lands and it is a thing that brings prosperity to the land.

Honolulu Star Bulletin
Salt Works at Honouliuli Branching Out Into Shaker Salt Manufacture
Salt Works on Oahu to Branch Out Into Shaker Salt Field

March 11, 1922 (page 11)

Following a policy of doing its share towards making the Hawaiian islands self-supporting—productive of all necessities of life possible—an industry few know exists on Oahu is being brought rapidly to a standard equal to the highest achieved by mainland plants.

By a limpid lagoon, just beyond Pearl Harbor where crystal waters are not contaminated by infusion of foreign substances, the Honouliuli salt works has

been developing under the eyes of Honolulu yet few have seen.

Machinery is being installed now to take the industry out of its swaddling clothes—to graduate it from its infant drudgery of feeding ice-cream freezers and supplying demand for crystal and rock salt, into what is known in the trade as the shaker salt field.

Now the word shaker means, in the parlance of salt, something which will shake out of a shaker. So it is a step forward from ice cream freezers to the table.

The plant, producing crude salt is turning out some 55 tons weekly eight months of the year. The other four month overcast skies and rains minimize production. The product is largely due to the care taken in filling the tanks, which are washed, scrubbed and drained before pure sea waters are pumped in. The tanks are of cement. The element of dust and dirt eliminated by the scrubbing makes the product marketable for cruder uses immediately. A fleet of motor trucks is supplying island consumers.

The new machinery will convert part of this crude output into salt for table and kitchen uses, shaker and bag salt. The demand for coarser salt will not be slighted in expanding to enter the shaker salt filed. It is the intention of the men who have brought the industry into being, to increase its capacity as the consumption increases.

The new machinery is designed to shatter the crystals and process the salt so that, in the moist climate of the island coasts, it will not cake—in fact it is the intention of the company to produce a Hawaiian product that will compare on all points with the imported article, with the added feature of ocean freight eliminated.

Expert supply surveys have been conducted in the island from time to time to determine just what imports are necessary to make up the difference between local production of any food article and demands of consumers. It is estimated that the salt works, when under full swing, would be able to eliminate this item from freight lists. The plant is on a branch of the railway. The new unit of the plant will be in operation before summer.

5.6 Traditional Clothing (Clothes Making, Dyeing, and Lei Making)

Kapa (commonly known as barkcloth) was the traditional material made through a traditional method of gathering, treating, and beating plant fibers, often, but not limited to, wauke (*Broussonetia papyrifera*) to make fabric that was used to make lole (clothing). Pacific and Hawaiian kapa was known for its wide range of colors and the application of watermarks.

One article describes the process for making kapa:

> The finest kapa came from the paper of the mulberry tree. These trees were cultivated on plantations and grew to heights of more than twelve feet. As the tree grew, the branches were nipped off along the main trunk, insuring a long piece of bark which was easily peeled from the tree.
>
> The manufacture of kapa was an important occupation for women. After the bark had been peeled from the tree, the inner bark was separated and soaked in sea water to make it soft and pulpy. The softened bark was placed on an anvil and beaten with a cylindrical wooden beater. The first beating separted the fibers and produced strips about eight or nine feet long and ten to fourteen inches wide. These strips could be dried and stored until needed. When needed, the strips were soaked in water, placed in layers between banana leaves, and left for about ten days to mature by "retting" which is the decomposition and removal of softened tissues, leaving the finer fibers. These partially decomposed layered strips were beaten a second time with specially carved four-sided beaters. The patterns carved on the beaters were functional as they produced the necessary characteristics in the kapa for its end use. These carved designs left the equivalent of a watermark on the kapa.
>
> Kapa which was to be extremely soft and pliable, such as that used for the malo or loincloth, was subjected to an additional softening process. This process, which produced a finely ribbed fabric, was done by dampening the cloth, stretching it over a grooved board, and running a wooden grooving tool along the indentations in the board. When the cloth dried, permanent ribs remained. The hand was very similar to our crinkle gauze of today (Furer 1981:109-110).

Hawaiians were skilled at utilizing plants and materials to dye their clothing and other materials. Different methods would be employed to hō‘awa, extract dye colors from their source material(s). These dyes would be placed in a cup, known as a kā kāpala. Even foreign or exotic plants were utilized for this practice. Hawaiians used different words for the various types of dyeing activities and methods.

- We‘a – a red dye or to print or dye red
- Hili – bark dye, as hili kukui, hili kōlea, hili noni; also kapa dyed with bark or the name for dyeing with the use of bark

- Kūhili – to dye (or stain) by soaking in water containing mashed bark, such as used for nets; also mulberry bark before it is beat into kapa
- Kūpenu – to dye by dipping material
- Ki‘olena – to dye kapa
- Hōlei –native tree (*Ochorosia compta*) related to the hao (*Rauvolfia*), which yields a yellow dye for kapa
- Kīhe‘ahe‘a pala‘ā – dye made from the pala‘ā (Sphenomeria chinensis syn. chusana) fern; pala‘ā also references a kapa made from the māmaki (*Pipturus spp.*) bark which is then dyed a brownish-red with pala‘ā fern

Hawaiians also had a lexicon for the various colors that could be achieved through this traditional practice.

- ‘Ōlenalena – yellow
- Hili – Dark-brown dye made from bark
- Puakai – red
- Nao – dark red
- Pōkohukohu – color made from the noni (*Morinda citrifolia*) root
- ‘Ākala – color made from raspberry or thimbleberry juice
- ‘Ōma‘oma‘o – light green color made from ma‘o leaves

Similarly, lei making was a regular occurance in traditional Hawaii. Anderson-Fung and Maly (2009) write about the traditional practice:

> In old Hawai‘i, lei could have important ceremonial functions, such as in religious offerings and for chiefly regalia, but lei were also enjoyed as personal adornment by Hawaiians of all levels of society. The ali‘i (chiefs) and the maka‘ainäna (the common people who tended the land) all wore lei. Even the akua (gods, deities, spirits), it was believed, sometimes wore lei when they walked the land in human form. The following observation by the French botanist Gaudichaud, who visited the islands in 1819, paints a picture of Hawai‘i as a place where the lei was an integral part of everyday life:
>
> > “It is indeed rare to encounter one of the natives of this archipelago who does not have an ornamental plant on his head or neck or some other part of his body…[The] women … change [the plants they wear] according to the seasons, [and for them] all the fragrant plants, all flowers, and even the colored fruits, serve as attire, one after another. …The young girls of the people, those of the island of Hawai‘i especially, seem to be fond of the [kou, Cordia subcordata], a tree very abundant in all the cultivated areas… The young girls of the mountains, who live near the forests, give their preference to the flowers of the

> [Erythrina (wiliwili) and a species of Canavalia, called ‘awikiwiki], the lively color of which makes magnificent garlands. Such natural attire is much more rich, much more striking, than all the dazzling creations of the elegant European ladies.”
>
> This account and others like it suggest that lei worn for personal adornment were fashioned from the favorite plant materials that were readily available and abundant in the lei maker’s environment (4).

Lei making continues as an important practice today, as the making and giving of lei as an expression of aloha to loved ones still regularly occurs throughout the Hawaiian Islands. There used to be a lei stand right along the side of the highway in ‘Ewa. Practitioners of these crafts actively practice in the ‘Ewa ahupua‘a, although there is no indicator that the project area is currently used for any of these practices.

5.7 Lā‘au Lapa‘au

Lā‘au lapa‘au is the practice of traditional Hawaiian medicine. For centuries, native Hawaiians relied upon the environment around them to provide them medicine. It is still actively taught and practiced today. Medicinal experts or healers have intimate knowledge about plants and other resources to cure ailments illnesses and sicknesses. Traditional medicine is practiced by native peoples and local communities around the world. Similarly, Native Hawaiians, over many generations, have learned how to properly care for, utilize, and prepare plants to maintain the community’s health.

It was important to not only have plants and have access to plants but to ensure that these plants were healthy and in good condition. In the list of biological resources, plants with medicinal capacity and components are identified. These resources are cultural resources. They are critical to the ongoing practice of traditional medicine and healing within the Native Hawaiian community. There are still many traditional medicine practitioners in the Hawaiian community and throughout the Hawaiian Islands today. It is a practice that is still taught to the younger generation, and it is a practice that is still honored and utilized in many Hawaiian households throughout the state.

It was important that medicinal plants existed throughout the Hawaiian Islands so that when people traveled throughout different places on in the islands, they would always have access to the medicine they needed. In some cases, some plants were extremely rare, and, in those cases, it was particularly important to make sure that these populations were well protected and well cared for. There were also numerous gods associated with health, healing, and medicine. They are listed in Table 3.

Table 3. Hawaiian Gods Associated with Health, Healing and Medicine

Hawaiian gods associated with health, healing, and medicine (Pukui, 1971)
*Hiʻiakaikapolio*Pele
Lonopūhā
Maʻiola
Hiʻiakaikapuaʻenaʻena
Hauwahine
Hina
Hinaʻea
Hinalaulimukala
Kamakanuiʻahuʻilono
Kanaloa
Kū
Kūkeoloʻewa
Mauliola
ʻŌpeluhuikauhaʻailo

ʻEwa has an active community of healing practitioners and educators at the University of Hawaiʻi West Oʻahu campus. Kauʻi Baumhofer and Manulani Meyer oversee the Hawaiian and Indigenous Health and Healing Program at UH West Oʻahu. The program offers courses in hoʻoponopono and Hawaiian ways of healing. Beyond this scope, practitioners actively practice in the ʻEwa ahupuaʻa, although there is no indicator that the project area is currently used for any of these practices.

5.8 Kilo

Kilo are observational traditions and people who examine, observe, or forecast are identified as kilo and serve as traditional climate and weather experts. Kilo "references a Hawaiian observation approach which includes watching or observing [the] environment and resources by listening to the subtleties of place to help guide decisions for management and pono practices" (ʻĀuamo Portal 2021). The practice of kilo is seeing a resurgence on Hawaiʻi Island and in the Hawaiian Islands.

Kilo hōkū are traditional astronomers, or those who study the stars. A hale kilo or hale kilo hōkū were observatories or star observatories respectfully. Kilo makani were those who traditionally observed the winds. Kilo moana were traditionally oceanographers. Kilo ʻuhane were those who observed and communicated with spirits.

Traditionally the practice of kilo or observation was critical to the management of traditional Hawaiian landscapes. This practice is very closely tied to traditional or customary access as

observers would require access to specific vistas viewsheds or areas in order to observe environmental phenomenon.

As illustrated in the proceeding section, Native Hawaiians created a wide range of terms for the environment and understanding the ecosystems around them. These terms were often quite specific, and many were tied closely to a specific geographic area. This level of specify illustrated the close kinship Hawaiians shared to their surrounding environment. The ability to observe and understand all elements of their ecosystem was essential to both the successful care of natural resources and the survival of the Hawaiian people.

The ability to effectively and accurately read weather phenomena was essential to the ability of Hawaiian people who farm, fish, navigate, and conduct any number of practices in a sustainable and successful manner. The knowledge Hawaiians acquired about their environment around them, including weather phenomena were the result of multi-generational observations that comprised an extensive body of information passed down through oral traditions. The following Hawaiians names and their descriptions of weather phenomena include words for clouds, rains, and winds that are utilized by kilo to help guide activities and practices:

ao akua	godly cloud, figurative representative of a rainbow.
ao loa	long cloud or high, distant cloud. Status cloud along the horizon.
ao ʻōnoh	cloud with rainbow, ʻōnohi, colors contained within it.
ao puaʻa	cumulus clouds of various sizes piled together, like a mother pig with piglets clustered around her. The Kona coast is famous for ao puaʻa, a sign of good weather and no impending storms.
hoʻomalumalu	sheltering cloud.
hoʻoweliweli	threatening cloud
ānuenue	rainbow, a favorable omen.
ua loa	extended rainstorm.
ua poko	short rain spell.

5.9 Ceremonial Practices

The ceremonial practices of traditional Hawaiians are extensive. Throughout the course of Hawaii's history, traditional Hawaiians have integrated religious, spiritual, and ceremonial practices in their daily lifestyle. Traditional or customary practices are then not distinct ceremonial practices but rather a part of their way of life. Therefore, it is challenging to define in discrete terms ceremonial practices associated with traditional Hawaiian customs. For the purpose of this section, the ceremonial practices discussed here focus primarily on customs carried out by general populations of Hawaiians, as opposed to activities or rituals carried out by trained and recognized specialists, kahuna. Those practices are discussed in a separate section.

Ceremonial practices are incorporated throughout numerous, if not all, of the activities identified in this section. For example, there is a great level of ceremonial practice and ritual associated with the care of the dead, burial remains, and funerary objects. Native Hawaiians as with most Iindigenous people integrated ceremony into most of their practices especially those that occurred out in the natural landscape or related to their way of life. There was no specific site or materials required for ceremony *per se*.

Nonetheless, shrines were sometimes associated with ceremonial practices. Shrines for the purpose of this assessment are distinct from heiau, which were places of worship. Again, the distinction is the nature in which these features or sites were created. Heiau required the advice and guidance of a kahuna, who would help aliʻi determine the best location in which to erect a heiau. Conversely, shrines were erected by makaʻāinana (working class) as part of their daily or occupational functions.

Makahiki is one example of a practice that has taken place prior to contact and continues post-contact and involves ceremonial elements. One of these elements is the akua loa, described by Malo as "the image of the Makahiki god, Lono-makua … This work was called ku-i-ke-pa-a" (Malo, 1951: 143). Further described by Malo:

> 22. This Makahiki idol was a stick of wood having a circumference of about ten inches and a length of about two fathoms. In form, it was straight and staff-like, with joints carved at intervals and resembling a horse's leg; and it had a figure carved at its upper end.
>
> 23. A cross piece was tied to the neck of this figure, and to this cross piece, kea, were bound pieces of the edible pala[12] fern. From each end of this cross piece were hung feather lei that fluttered about, also feather imitations of the kaupu bird[13], from which all the flesh and solid parts had been removed.

[12] Native fern (*Marattia douglasii)* used for medicinal purposes as well as in ceremony.
[13] Laysan albatross (*Diomedea immutabilis*), written with diacritical markings as kaʻupu.

> 24. The image was also decorated with a white tapa cloth made from wauke[14] kakahi[15], such as was grown at Kuloli[16]. ... One end of this tapa was basted to the cross piece, from which it hung down in one piece to a length greater than that of the pole. The width of this tapa was the same as the length of the cross piece, about sixteen feet.
>
> 25. The work of fabricating this image, I say, was called kuikepaa. The following night the chiefs and people bore the image in grand procession, and anointed it with coconut (sic) oil. Such was the making of the Makahiki god. It was called Lono-makua (father Lono), also the akua loa. This name was given it because it made the circuit of the land (Malo, 1951: 144-145).

The akua loa was taken to each ahupuaʻa. This custom was important to the care, stewardship, and worship of the gods. These practices were intimately tied to the proper care and sustainable stewardship of all cultural and natural resources. Ethnographic data indicates that such practices take place within the Project Area or Study Area.

As with many concepts of traditional Hawaiian living and practices, the contemporaneous concept of the kahuna has been largely influenced by Western thought. The roles and responsibilities of the kahuna are well explained by Professor Terry Kanalu Young in his text, *Rethinking the Native Hawaiian Past*, in which he writes:

> As recipients of hana lawelawe[17], the Aliʻi Nui were themselves serves of a sort. They were responsible for maintaining a positive spiritual relationship with the Akua through pono conduct. Pono was defined for individuals of that era within the context of a particular task specialty. Kahuna who functioned as experts in specific skill areas like medicinal healing, canoe building, or spiritual advising were consulted by leaders. The experts were looked to as responses for what was considered pono in their respective realms of knowledge (Young 1998).

Kahuna were critical to traditional Hawaiian lifeways as their extensive expertise helped to provide sound and strategic advice to aliʻi and other leaders on proper spiritual, cultural, and ecological management. There are numerous types of kahuna in Hawaiian traditions. including, but not limited to:

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[14] Paper mulberry (*Broussonetia papyrifera*)
[15] Meaning outstanding or of high quality, as in reference to the white kapa (tapa) made from these fibers.
[16] Likely a reference to the place in Pelekunu Valley at Kamalō, Molokaʻi, located between the peaks of Kaunuohua and Pēpēʻōpae.
[17] Hana lawelawe are defined by Young as “service tasks” by which kaukau aliʻi (lower ranked chiefs) served the Aliʻi Nui (high chiefs). These hana lawelawe were critical to the ability of the Aliʻi Nui to effective govern (Young 1989).

kahuna ʻanāʻanā	sorcerer who practices black magic and counter sorcery.
kahuna aʻo	teaching preacher, minister, sorcerer.
kahuna hāhā	an expert who diagnoses, as sickness or pain, by feeling the body.
kahuna haʻiʻōlelo	preacher, especially an itinerant preacher.
Kahuna hoʻohāpai keiki	medical expert who induced pregnancy.
kahuna hoʻopiʻopiʻo	malevolent sorcerer, as one who inflicts illness by gesture.
kahuna hoʻoulu ʻai	agricultural expert.
kahuna hoʻoulu lāhui	priest who increased population by praying for pregnancy.
kahuna hui	a priest who functioned in ceremonies for the deification of a king.
kahuna kālai	carving expert, sculptor.
kahuna kālai waʻa	canoe builder.
kahuna kiʻi	caretaker of images, who wrapped, oiled, and stored them, and carried them into battle ahead of the chief.
kahuna kilokilo	priest or expert who observed the skies for omens.
kahuna lapaʻau	medical doctor, medical practitioner, healer. Lit., curing expert.
kahuna makani	a priest who induced spirits to possess a patient so that he might then drive the spirits out.
kahuna nui	high priest and councilor to a high chief; office of councilor.
kahuna poʻo	high priest.
kahuna pule	preacher, pastor, minister, parson, priest. clergyman. Lit., prayer expert.
kahuna pule kaʻahele	preacher
kahuna pule wahine	priestess

Most kilo practices in ʻEwa would be associated with the ocean, specifically observing ocean conditions prior to going to fish or dive. The previous archaeology shows ceremonial sites in the area.

5.10 Haku Mele, Haku Oli, and Hula

This practice is related to the composition of song and chants. this is a practice that has existed for many centuries in the Hawaiian culture. When the Hawaiian culture primarily relied on an oral tradition to pass on knowledge and information, the ability to create songs and chants was essential to pass information from one generation to the next. As Donaghy (2013) notes, Hawaiians had hundreds of terms associated with this practice.

Songs and chants are largely influenced by the environment around them. As a pedagogical device it was important if not imperative that these songs or chants effectively captured data from the environment around the composer and passed on this information for others to utilize when managing natural resources. In a very real sense, the land and natural resources act as a muse for composers. The category of songs that provide information on or speak to natural resources are called mele ʻāina (songs of the land). As shown in the previous section, there are numerous traditional chants and songs about the project area and its surrounding landscape.

Much like mele and oli, hula serves as a way of both honoring place and telling the story of place. Many hula, especially those based on mele ʻāina, require intimate understanding of the place where the mele was composed, including the natural elements of that ʻāina. Hula hālau will regularly take huakaʻi, or journeys, to visit and honor the place a particular mele speaks of. The ability to visit the place and learn about it is important to the practice of hula.

Hula, as well as mele or oli, are also offered as gifts to kupuna or gods. This practice also requires access to traditional sites. Associated with hula would have been the practices of lei making and the use of plants to dye clothing, both practices were identified through ethnographic data collection.

5.11 Paddling and Sailing

Canoe paddling, a popular and robust sport in the Hawaiian Islands and Pacific has a rich history in Hawaiʻi. In the moʻolelo of *The Wind Gourd of Laʻamaomao,* the young son of Laʻamaumau and the high priest Kūʻanuʻuanu, Pākaʻa, stands out for his innovative tenacity. Credited by the author, Moses Kuaea Nakuina, for the development of sailing technologies, Pākaʻa's story is a testament to the resilience and innovation of the Hawaiian people. The notion that Hawaiians sailed here from faraway lands hints at the moʻolelo being part of an older tradition in the rest of the Pacific.

Kūanuʻuanu, having sailed to Kauaʻi from Waipiʻo Hawaiʻi, fell in love with a woman from Kapaʻa named Laʻamaomao. Soon, Kūanuʻuanu was called back to the court of Keawenuiaʻumi, who missed his kahu dearly. His departure left Laʻamaomao destitute, with no one to care for her needs. Because the actual rank of her companion was kept a secret, her family rejected her, thinking she had squandered the opportunity of her youth and beauty by her pregnancy. She soon gives birth to a son named Pākaʻa, named after the cracked and scaley skin of Keawenuiaʻumi—who was an avid ʻawa drinker.

Pākaʻa's upbringing was marked by the strong familial bonds and support of his mother and her brother, Maʻilou. Recognizing his intelligence, they were not surprised when he expressed his desire to fish with the adults. With their approval, Pākaʻa was allowed to venture to the sea, a testament to the trust and support he had from his family.

After preparing his sail and other previously unknown technologies of deep-sea fishing, Pākaʻa was off with the adults, maneuvering his canoe in a fashion that would allow him to grab an excess of mālolo from their nets. Upon returning to shore, Pākaʻa challenges the adults to a heihei waʻa (canoe race). Surprised by his request, they compare the number of fish they have, ultimately ending in a deal. Should Pākaʻa win, he receives the lot of eight adults; should they win, they will receive his lot. Pākaʻa wins in an epic race and takes home his wins to share with his family.

In the 19th century, canoe paddling and racing continued to be a popular sport especially around the time of King Kalākaua's birthday celebrations on November 16th of every year. The following passage from *Ka Nupepa Kuokoa* on October 16th, 1875, details the planning of these celebrations:

Ka Nupepa Kuokoa

Ka la hanau o ka Moi Okatoba 16, 1875 (ʻAoʻao 2)	The birthday of the King October 16, 1875 (Page 2)
Ke kokoke mai nei ka la hanau o ka Lani Kalakaua i ka 16 of keia Nov. Ae. O ia ka la maikai a kona mau makaainana naau lokahi e hoikike ai i kekahi hana hookahakaha nui, i mea e hoolealea ai no ia la kulaia. Ua lonolono wale mai makou, e paikau hookahakaha nui ana na koa pualu [sic]. Ua hapai wale ia mai hoi kekahi manao malia he lealea kupono ka heihei	The birthday of our chief, Kalākaua is soon approaching on the 16th of this coming November. It will be a great day for his harmonious subjects to showcase some large displays to liven up this celebratory day. It has been heard in rumor that there will be a great march of soldiers. We thought it might also be joyous to have a boat race with a canoe race at the harbor;

waapa a me ka heihei waa maoli ma ke awa nei; a o ka heihei au paha iloko o ke kai; a o ke kukini wawae paha makai o Ainahou, ke haawiia kekahi mau makana i ka poe e eo ana.	perhaps even a swimming race in the ocean; and perhaps too a messenger on the ocean side of Ainahou to be there to give prizes to those who win. [Kahikina, transcriber and translator]

The moku of ʻEwa has a rich history of paddling and sailing. In an article from 1892 in *Ka Holomua*, a large canoe racing festival honoring Kamehameha III was held at Honouliuli where it was estimated 2,000 people gathered.

Hawaii Holomua

Ka la Kulaia o Kamehameha III Ma Puuloa Malaki 19, 1892 (ʻAoʻao 1)	The day of festivities for Kamehamhea III at Puʻuloa March 19, 1892 (Page 1)
Ua malama ia na heihei moku, waapa, a me waa maoli ma ke kai o Honuliuli, e kapaia nei i oia wa[hi] o Puuloa, ma ka Poaha nei, Maraki 17. Ua oleloia he 2000 ka nui o na kanaka i akoakoa aku ma kai i malama ia ai na lealea o ka la. 1. O ka mahele heihei mua i malamaia oia ka heihei moku, a o na moku na laua i wehe i na hana oia ka Healani e noho Kapena ia ana e Mr. F.M. Haki, a me Hawaii e noho Kapena ia ana e Hon. L.A. Kakina. Ma ka hora 10 ponoi o ke kakahiaka i holo ai keia mau moku no ke aumeume ana i ka mea a laua e lilo ai ka Lanakila. Ua lilo ka eo ia Hawaii. 2. Edita L. kue ia Kaohilani, lilo ka eo ia Edita L. He mau wahi sekona wale no nae kona oi aku mamua o kona hoa paio.	Yacht, rowboat, and canoe races were conducted at the sea of Honouliuli, they call this place Puʻuloa, on Thursday, March 17. It is said that 2,000 people gathered to participate in the celebration of the day. 1. The first race conducted was the yacht race, and the first two ships revealed to go first, they were the Healani whose captain was Mr. F.M. Haki, along with the Hawaiʻi whose captain was Hon. L.A. Kakina. At 10 o'clock sharp in the morning these ships were off to a start struggling to see who the winner would be. They were defeated by Hawaiʻi. 2. Edita L. vs. Kaohilani, was defeated by Edita L. by only just a few seconds of their being ahead of their rival.

3. He eha moku. Linnie B., Unknown, Paauau, a me Paulo. Lilo ka eo ia Unknown. O ka pau no ia o na heihei moku, a hoomaka na heihei waapa, o ka hora 1 ia o ka auina la. Heihei 1. Mawaena o Alice M., me Kaiulani. Lilo ka eo ia Alice M. Heihei 2. Waapa eono hoe. He ekolu waapa ma keia heihei ana, Kapiolani, he poe "kamalii uapo" ka poe nana i hoe, Kanoelani o ka Hui Waapa Kaiulani, a me Kapalakiko o ka mokukaua Kapalakiko. Lilo ka eo ia Kapiolani. Heihei 3. He ekolu waapa, Alice M., Alf. Rogers a me Kaiulani. Lilo ke eo ia Alf. Rogers. O ka mahele heihei hope loa oia ka heihei waa. He ekolu waa I komo ma keia heihei ana. Aikala[,] Puakalehua, Kauaheahe. Lilo ka eo ia Mikala.	3. Four yacht. Linnie B., Unknown, Paaua, and Paulo. They were defeated by Unknown. This concluded the racing of the ships, and next started the race of rowboats at 1 o'clock. Race 1. Between Alice M., and Kaiulani. Defeated by Alice M. Race 2. Six-oared boat. There were three boats to this race, Kapiolani, the "kamalii uapo" were the once paddling, Kanoelani of the Hui Waapa Kaiulani, and Kapalakiko of the warship Kapalakiko. They were defeated by Kapiolani. Race 3. Three boats, Alice M., Alf. Rogers and Kaiulani. They were defeated by Alf. Rogers. The very last race section was the canoe race. There were three canoes that entered the race. Aikala[,] Puakalehua, Kauaheahe. They were defeated by Mikala. [Kahikina, Transcriber and translator]

Connecting back to the story of the The Wind Gourd of La'amaomao, an article from 1897 showcases the popularity of paddling and racing in 'Ewa.

Ka Nupepa Kuokoa

Heihei Waa Kaeaea Sepatemaba 24, 1897 ('Ao'Ao 1)	Skilled Canoe Race September 24, 1897 (Page 1)
Ua makemake loa na keiki hoe waa lae oo o Puuloa e malamaia ona [sic] heihei waa mawaena o lakou ame na keiki alehe alamihi o Kakaako ae nei. A ina e hololea ana na kuka hooponopono aelike ana mawaena o lakou, alaila, e malamaia ana keia heihei kaeaea ma kekahi la o keia mua aku.	The master canoe paddling kids of Puuloa want to hold their race between themselves and the 'alamihi ensnaring kids o Kakaako. Should they agree beetween all of them, then they will hold this expert race on a day in the future We thought though that it would be nice to hold days for great races, like last

Manao nae makou, he mea maikai ke hapai hoi ia ona [sic] la heihei nui, elike iho la me ko ka Poaono i hala, ma ka la 28 ae nei o Novemaba, a oia ka wa e ikea ai na keiki hoi waa oiaio o Keawenui-a-Umi ame Pakaa laua o Kuapakaa.	Saturday that passed on the 28th of November, which was the time when the true canoe paddling children were seen, they were Keawenui-a-Umi, Pakaa, and Kuapakaa.

Today, at least two leading canoe clubs in ʻEwa operate out of Honouliuli and Puʻuloa. Kamahaʻo Canoe Club is located at Hammer Point in ʻEwa. The club hosts two main annual events throughout the year. The first is their Makahiki celebration at Moku ʻUmeʻume and Kapuaikaula (Hickam). The second is their annual Kapuaikaula Relay Race out of Kapuaikaula.

The second leading canoe club in ʻEwa is the ʻEwa Puʻuloa Outrigger Canoe Club, which operates out of the Waikai Lagoon at Puʻuloa Beach Park. Founded in 1998, the club has a long-standing presence in Puʻuloa. According to its website, the club is geared toward offering safe and competitive sports access to youth. Further, its mission emphasizes education about coastal marine health. The websites of both clubs can be found in the table below.

6.0 Ethnographic Data

As discussed previously in **Section 2.6 (Ethnographic Methodology)**, information was collected from a wide range of individuals and sources. The findings of those efforts are discussed in this section. Ethnographic data is utilized to supplement the other research methods utilized. It is one in a range of research tools employed to gather information about the project area.

Honua Consulting was tasked with gathering information from individuals with lineal and cultural ties to the area and its vicinity regarding regional biocultural resources, potential impacts to these biocultural resources, and mitigation measures to minimize and/or avoid these impacts.

The bulk of the information available from practitioners and kūpuna were drawn from native testimonies and Hawaiian language sources and integrated into the cultural and historic overview section of this survey. Those sources, along with responses to this project, were considered when researching the traditional or customary practices discussed in a previous section.

Interviews were conducted with two (2) individuals are included in this section. Additional descendants were reached out to and did not respond to the request for interviews. Additionally, Honua Consulting has conducted numerous interviews with community members in ʻEwa and works closely with the Hoakalei Cultural Foundation, which was created by ʻEwa descendants to care for area cultural resources. This background ethnographic data helped to identify additional resources and practices in the area; this information also helped to confirm research conducted for this report.

6.1 Interview with Anthony Sproat

Interviewer: Mathew Sproat
Interviewee: Anthony (Tony) Sproat
Date: 1/23/2024
Location: via telephone

Biography

Anthony Sproat is a senior sales representative for Bacon Universal Equipment Company. He was born and raised in Hau'ula on the island of O'ahu. He has lived in ʻEwa Beach for 27 years.

General Discussion

Mr. Sproat is associated with the project area through his cultural descendancy and his long-term residency in ʻEwa.

Cultural Resources

Mr. Sproat is not aware of any specific cultural resources in the project area or broad geographical area. He shared, however, that some of the area is undeveloped and there could be unknown cultural resources present, including iwi.

Traditions and Customs

Mr. Sproat does not believe that the project would have adverse effects on any traditions or customs that take place in the area.

Impacts

Mr. Sproat was not aware of any impacts the project could have on cultural resources or traditions and customs.

Mitigation Measures and Recommendations

Mr. Sproat recommended that the project set aside space for sustainable food production, such as kalo, fruits, and vegetables.

6.2 Interview with Kawika Perreira

Interviewer: Mathew Sproat
Interviewee: Kawika Perreira
Date: 1/24/2024
Location: via telephone

Biography

Kawika Perreira is a lineal descendant of the area. He is the 4th generation member of his ʻohana to live on his land, which is walking distance to the project area. He visited the project area as a child when it was still under managed by the federal government. He is extensively familiar with the area, as multiple members of his family, including two grandparents, grew up in the area.

General Discussion

Mr. Perreira is associated with the project area through his long-term residency in ʻEwa.

Cultural Resources

Mr. Perreira shared that the area is filled with kiawe trees. He could not confirm if there were any native flora and fauna in the project area. He notes that the salt flats were once near the project area, on the makai side of the parcel.

Traditions and Customs

Mr. Perreira was not aware of any traditions or customs associated with the project area, but he also noted that the project area has long been controled by the federal government and access into the area was restricted. He did note that there are people who use the ocean in the area, whether for surfing or fishing. He does not believe any of these activities would be impacted by the proposed project.

Impacts

Mr. Perreira highlighted that the area is already heavily populated. More development and homes could require more resources and exacerbate heavy traffic. He also shared that James Campbell High School already has too many students for its current facilities and operations; adding more homes could make this worse.

Mitigation Measures and Recommendations

Mr. Perreira recommended that the development be limited to single-story structures. He also believes there should be more parks.

7.0 Impact Assessment

The project as currently conceptualized would not adversely impact cultural resources or traditional or customary practices. There are wahi pana (storied places) within the overall property in which the project area is located, but it is not currently anticipated that any of the resources or practices in the area will adversely impact cultural resources or practices.

7.1 Impacts to Flora

Impacts to flora are address through the biological assessment. It is also advised that the project incorporate suitable native plants, as identified in the assessment, into the landscaping.

7.2 Imacts to Fauna

Impacts to fauna are address through the biological assessment.

7.3 Impacts to Historic Sites

Impacts to historic sites and properties will be formally assessed through the HRS 6E-42 process, which is required for this project.

7.4 Impacts to Intangible Cultural Resources

Intangible cultural resources refer to those resources without physical form, such as hula or mele. As there are no known or identified cultural practices currently taking place on the property and the property has been heavily disturbed, it is unlikely the proposed activities would adversely impact intangible cultural resources on the property or in adjacent areas.

7.5 Impacts to Cultural Practices

It is unlikely that the project would adversely impact any cultural practices as the area. Fishing also occurs in the coastal areas, but those are far from the project area and the project potential to impact this activity in negligible. With proper conditions and BMPs, discussed below, it is unlikely the project would have any impact, direct, indirect, or cumulative, on these activities.

7.6 Cumulative and Indirect Impacts

Adverse cumulative and indirect impacts to cultural resources are often overlooked in CIAs, as they are difficult to assess. Cumulative impacts are cultural impacts that result from the incremental impacts of an activity when added to past, present, and reasonably foreseeable future actions and activities. Indirect impacts are impacts on cultural resources which are not a direct result of the project, but a secondary or tertiary result of the project. It is currently not anticipated that the project will have any cumulative or indirect impacts.

7.7 Mitigation and Best Management Practices

The traditions of Pu‘uloa have long been adversely impacted by development and the seizure of important resources by the military. Above all else, use (and other misuse) by the military and federal government drove Hawaiians and their practices from this region. Unlike other locations on O‘ahu, this community has not managed to maintain many of the traditional activities that once flurished in the area. The return of native Hawaiians to the area will hopefully help to restore and uplift the tremendous knowledge and traditions that were once thrived in the this part of ‘Ewa.

8.0 Ka Pa‘akai Analysis

It has long been the law of the land that the State of Hawai‘i has an “obligation to protect the reasonable exercise of customary and traditionally exercised rights of Hawaiians to the extent feasible” *Public Access Shoreline Hawai‘i v. Hawai‘i County Planning Commission (“PASH”)* 79 Hawai‘i 425, 450 n. 43, 903 P.2d 1246, 1271 n. 43 (1995). In 2000, in the *Ka Pa‘akai* decision, the Court established a framework “to help ensure the enforcement of traditional and customary Native Hawaiian rights while reasonably accommodating competition private development interests.” 94 Hawai‘i 31, 35, 7 P.3d 1068, 1972 (2000). This analysis is used here to fulfill the goal of this CIA (**Section 1.4**).

It is also imperative to emphasize that the State may not delegate their obligations under the *Ka Pa‘akai* decision to another party, including but not limited to the federal government. While the *Ka Pa‘akai* decision was specific to a private developer, the facts of that case would be applicable to the situation at hand because the Court’s reasoning for this decision and applicable precedent apply – the issue being that another entity would not have the same public accountability as the State. That is the case herein, the public accountability of the federal government is not equal to that of the State of Hawai‘i. More specifically, the federal government is not bound to the obligations of the State as set forth under the Hawai‘i State Constitution, which is the document from which the rights protected under *Ka Pa‘akai* emanate.

Based on the guidelines set forth in *Ka Pa‘akai*, the Hawai‘i Supreme Court provided government agencies an analytical framework to ensure the protection and preservation of traditional and customary Native Hawaiian rights while reasonably accommodating competing private development, or other, interests. The Court has stated: “that in order to fulfill its duty to preserve and protect customary and traditional Native Hawaiian rights to the extent feasible, as required by Article XII, Section 7 of the Hawai‘i Constitution, an administrative agency must, at minimum, make specific findings of fact and conclusions of law as to the following:

1) The identification of valued cultural, historical, or natural resources in the project area, including the extent to which traditional and customary Native Hawaiian rights are exercised in the project area.
2) The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action; and
3) The feasible action, if any, to be taken to reasonably protect Native Hawaiian rights if they are found to exist. *Ka Pa‘akai*, 94, Hawaii at 47, 7 P.3d at 1084. Cited in *Matter of Contested Case Hearing Re Conservation District Use Application (CDUA) HA-3568 for the Thirty Meter Telescope at the Mauna Kea Science Reserve, Ka‘ohe Mauka, Hāmākua, Hawai‘i*, 143 Hawai‘i 379, 431 P.3d 752 (2018) (“*Mauna Kea II*”).

In order to complete a thorough CIA that complies with statutory and case law, it is necessary to fully consider information available from, and provided by, Native Hawaiian cultural practitioners and cultural descendants from the project area. From thorough research, data was extrapolated that provides a comprehensive look at the cultural resources in this 'āina. Through this research, the factors from *State v Hanapi* are met. These factors are: "to establish that his or her conduct is constitutionally protected as a native Hawaiian right, he or she must show, at minimum, the following three factors. First, he or she must qualify as a "native Hawaiian" within the guidelines set out in PASH . . . [as] "those persons who are 'descendants of native Hawaiians who inhabited the islands prior to 1778,' ... regardless of their blood quantum." Second, once a defendant qualifies as a native Hawaiian, he or she must then establish that his or her claimed right is constitutionally protected as a customary or traditional native Hawaiian practice.... Finally, a defendant claiming his or her conduct is constitutionally protected must also prove that the exercise of the right occurred on undeveloped or "less than fully developed property."" 89 Hawai'i 177, 185-86, 970 P.2d. 485, 493-94 (1998).

The *Ka Pa'akai* analysis is largely a legal analysis, as the applicable tests are legal standards. Therefore, a strong analysis is one conducted by someone with sufficient legal training. Additionally, at the core of a thoughtful *Ka Pa'akai* analysis is a comprehensive understanding of traditional and customary practices. In breaking down the Court's tests, it is important to the different elements that contribute to each test.

The first test - "The identification of valued cultural, historical, or natural resources in the project area, including the extent to which traditional and customary Native Hawaiian rights are exercised in the project area" – actually consists of two separate elements. First, the simple identification and existence of valued cultural, historical, or natural resources. These resources are tangible in nature. They can include sacred places, culturally valuable plants, or a religious or historic site. This survey how sought to exhaustively identified the great multitude of resources that may exist in the project area or adjacent areas.

As to this test, this survey shows there are potentially resources within the project area. Archaeological survey work will be conducted and any impacts to historic sites and properties will be formally assessed through the HRS 6E-42 process, which is required for this project. Interviews indicate there are otherwise no current traditional cultural resources in the area that are used for traditional or customary practices, but this was likely the result of the federal control of the land and related access restrictions.

The second element of this first test is access. Access requires two things to occur. One is the existence of a resource. Whether a plant, an animal, a place, or site, the resource must exist in order a practitioner to access it. The second thing is physical access. This includes, but it is

not limited to, the ability to physically access a plant, animal, site, or location associated with a particular practice. This can also include the traditional and customary route or path taken to access the resource. This can also include cultural protocols that existed in accessing a resource. These are often temporal, in that access protocols can be at a certain time of day or year. Makahiki would be a good example of a traditional custom that has specific cultural protocols associated with access. In the case of Makahiki, the custom takes place at a certain time of year.

Therefore, the first test under *Ka Pa‘akai* should include not only a listing of resources, but the identification of ways in which those resources are accessed and utilized in association with a traditional and customary practice. As noted above, access to the area has been restricted by federal government control of the property.

Therefore, the second test – “The extent to which those resources—including traditional and customary Native Hawaiian rights—will be affected or impaired by the proposed action” – also looks at two separate elements. The first, does the proposed action and its alternatives have an adverse impact on the existence of resources? This would include the alteration, destruction, modification, or harm of sites, including biological resources, sacred places, burial sites, etc. It also includes a loss of species. Any adverse impact or harm to resources is alone an affect or impairment caused by the proposed action.

Under this element, adverse impacts to historic sites or culturally utilized plants would all be identified adverse impacts. Under this same element, any indirect or cumulative effects would create an adverse impact under *Ka Pa‘akai* if those actions harmed resources. It is not currently anticipated that any of these impacts would occur on this project. Nonetheless, efforts to proserve native and canoe plants through occur, and similarly, the project should make every effort to increase the native and canoe plants on the property. The project should review the plants historically in the area and strive to restore some of them to this area through the project’s landscaping. Plants of value to area practitioners should be prioritized, which would result in a net increase in traditional and customary access in the project area.

In addition to this, any action that impacts traditional and customary access to resources, even if there is not direct adverse impact to the resource itself, would result in an affect or impairment resulting from the proposed action. Therefore, the limitations on access that could result from development or use of the project area could create an adverse impact under *Ka Pa‘akai.* Again, it is not anticipated any impacts to cultural access would result from this project.

The third part of the *Ka Pa‘akai* framework aims to identify “[t]he feasible action, if any, to be taken to reasonably protect Native Hawaiian rights if they are found to exist.” Determining

whether or not action has been suitably “feasible” is a matter for the State. These feasible actions could include continued access to the project as needed to conduct cultural practices.

As potential adverse effects can be avoided through the implementation of best management practices, the third part of the *Ka Pa‘akai* framework becomes moot.

8.0 Conclusion

This cultural impact assessment investigated potential traditional or customary practices that occur within the proposed project area. This survey found that while the project area may have used for traditional habitation, farming, and gathering, much of those activities stopped as land ownership changed in the area and the project area was utilized for modern agricultural activities.

Impacts to historic sites and properties will be formally assessed through the HRS 6E-42 process, which is required for this project.

‘Ewa is an important region for traditional and customary practices, and there are many Hawaiian families that continue to live in the area. Practitioners identified plants with culturally important that grow in the project area, but these plants are common and can be easily found in the larger region. There is no adverse impact to the practitioners ability to access these plants anticipated to result from the project.

This DHHL project, as it is by and for native Hawaiians, is a critical opportunity to reclaim Hawaiian traditional names and knowledge that have been impacted by the area’s development and military seizure of resources in the area. There are famed mo‘olelo that should inform the community master plan, and the development should honor area traditions, like the nearby salt pans that once existed in the area. It would be incredible to attempt to restore this resource and practice if possible, alternatively, this very important historic use should be integrated into interpretive signage for the project, to educate future residents about this history. This project is a significant opportunity to restore traditional and customary knowledge and its potential to adversely impact traditions or customs is negligible due to the long use of the land by the federal government.

Nonetheless, it would be important for the project to implement best management practices recommended from the biological assessment and archaeological and/or cultural monitoring during the construction of the project. It is also advised to continue to work closely with the community to ensure there are no unintended adverse effects and that practitioners have a means of quickly contacting the project applicant with questions or concerns should any arise.

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Appendix I: Glossary of Hawaiian Terms

The following list of terms were used throughout this report. All definitions were compiled using Pukui and Elbert's *Hawaiian Dictionary* (1986).

Ahupua'a	Land division usually extending from the uplands to the sea, so called because the boundary was marked by a heap (ahu) of stones surmounted by an image of a pig (pua'a), or because a pig or orther tribute was laid on the altar as tax to the chief.
'Āina	Land, earth.
Akua	1. God, goddess, spirit, ghost. 2. Divine, supernatural, godly.
Ala	Path, road, trail.
Ali'i	1. Chief, chiefess, ruler, monarch. 2. Royal, regal. 3. To act as chief, reign.
'Aumakua	Family or personal gods, deified ancestors who might assume the shape of sharks, owls, hawks, dogs, plants, etc. A symbiotic relationship existed; mortals did not harm or eat them, and the 'aumakua warned or reprimanded mortals in dreams, visions, and calls.
'Aumākua	Plural of 'aumakua.
'Auwai	Irrigation ditch, canal.
Haku mele	Poet, composer; to compose song or chant.
Hālau	1. Long house, as for canoes or hula instruction; meeting house. 2. Large, numerous; much.
Hale	House, building, institution, lodge, station, hall.
Hale pili	House thatched with pili grass.
Heiau	Pre-Christian place of worship, shrine. Some heiau were elaborately constructed stone platforms, other simple earth terraces.
Hula	A Polynesian dance form accompanied by chant or song.
'Ili	Land section, next in importance to ahupua'a and usually a subdivision of an ahupua'a.
'Ili kūpono	A nearly independent 'ili land division within an ahupua'a, paying tribute to the ruling chief and not to the chief of the ahupua'a. Transfer of the ahupua'a from one chief to another did not include the 'ili kūpono located within its boundaries.
Iwi	Bone, carcass. The bones of the dead, considered the most cherished possession, were hidden, and hence there are many figurative expressions with iwi meaning life, old age.
Kalo	Taro (*Colocasia esculenta*), a kind of aroid cultivated since ancient times for food, spreading wildly from the tropics of the Old World. In Hawai'i, taro has been the staple from earliest times to the present, and

	here its culture developed greatly, including more than 300 forms. All parts of the plant are eaten, its starchy root principally as poi, and its leaves as lūʻau.
Kanaka	Human being, man, person, individual, party, mankind, population.
Kānaka	Plural of kanaka.
Kāne	Male, husband, male sweetheart, man; brother-in-law of a woman.
Kanikau	1. Dirge, lamentation, chant of mourning, lament. 2. To chant, wail, mourn.
Kapu	1. Taboo, prohibition. 2. Special privilege or exemption from ordinary taboo. 3. Sacredness, prohibited, forbidden, sacred, holy, consecrated. 4. No trespassing, keep out.
Kuleana	Right, privilege, concern, responsibility, title, business, property, estate, portion, jurisdiction, authority, liability, interest, claim, ownership, tenure, affair, province.
Kumu	Teacher, tutor, manual, primer, model, pattern.
Kumu hula	Hula teacher.
Kupuna	Grandparent, ancestor, relative or close friend of the grandparent's generation, grandaunt, granduncle.
Kūpuna	Plural of kupuna.
Limu	A general name for all kinds of plants living under water, both fresh and salt, also algae growing in any damp place in the air, as on the ground, on rocks, and on other plants; also mosses, liverworts, lichens.
Loʻi	Irrigated terrace, especially for taro, but also for rice and paddy.
Loko iʻa	Traditional Hawaiian fishpond.
Lua	A type of dangerous hand-to-hand fighting in which the fighters broke bones, dislocated bones at the joints, and inflicted severe pain by pressing on nerve centers. There was much leaping, and (rarely) quick turns of spears. Many of the techniques were secret. Lua holds were named. Lua experts were bodyguards to chiefs.
Mahi ʻai	Farmer, planter; to farm, cultivate; agricultural.
Makai	On the seaside, toward the sea, in the direction of the sea.
Māla	Garden, plantation, patch, cultivated field, as māla ʻai, māla kalo, māla kō, māla kūlina.
Mālama	To take care of, tend, attend, care for, preserve, protect, beware, save, maintain.
Manaʻo	Thought, idea, belief, opinion, theory, thesis, intention, meaning, suggestion, mind, desire, want; to think, estimate, anticipate, expect, suppose, mediate, deem, consider.
Mauka	Inland, upland, towards the mountain.
Mele	1. Song, anthem, or chant of any kind. 2. Poem, poetry. 3. To sing, chant.
Mele mākaʻikaʻi	Travel chant.

Mōʻī	King, sovereign, monarch, majesty, ruler, queen.
Moku	1. District, island, islet, section, forest, grove, clump, fragment. 2. To be cut, severed, amputated, broken in two.
Moʻo	Lizard, reptile of any kind, dragon, serpent.
Moʻolelo	Story, tale, myth, history, tradition, literature, legend, journal, log, yard, fable, essay, chronicle, record, article.
Moʻowahine	Female lizard deity.
Nīʻau-piʻo	Offspring of the marriage of a high-born brother and sister, or half-brother and half-sister.
ʻOhana	Family, relative, kin group; related.
ʻŌlelo noʻeau	Proverb, wise saying, traditional saying.
Oli	Chant that was not danced to, especially with prolonged phrases chanted in one breath, often with a trill at the end of each phrase; to chant thus.
ʻŌʻō	Digging stick, digging implement, spade.
Pae ʻāina	Group of islands, archipelago.
Piʻo	Marriage of full brother and sister of nīʻaupiʻo rank, presumably the highest possible rank. Their offspring had the rank of naha, which is less than piʻo but probably more than nīʻaupiʻo. Later piʻo included marriage with half-sibling.
Pueo	Hawaiian short-eared owl (*Asio flammeus sandwichensis*), regarded often as a benevolent ʻaumakua.
Wai	Water, liquid or liquor of any kind other than sea water.
Wahi pana	A sacred and celebrated/legendary place.
Wahine	Woman, lady, wife; sister-in-law, female cousin-in-law of a man.
Wao	1. Realm. 2. A general term for inland region usually forested but not precipitous and often uninhabited.

APPENDIX E
Traffic Impact Assessment Report

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DHHL ʻEwa Beach Homestead

TMK (3) 7-7-08:121

Traffic Impact Analysis Report

ʻEwa Beach, Oʻahu

August 2024

Prepared for

Department of Hawaiian Home Lands (DHHL)

Prepared by

SSFM INTERNATIONAL

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I. Project Description

The Department of Hawaiian Homelands (DHHL) is considering the development of a vacant parcel of land in 'Ewa Beach, O'ahu for the construction of homes. The proposed DHHL development is at the south end of Fort Weaver Road (FWR) within a portion of a larger parcel that used to serve as the Pacific Warning Tsunami Center on the mauka side (mountain side) of FWR (see Figure 1). There is no timeline for construction, however, the project is expected to be completed within 10 years. Therefore, for analysis, a full buildout year of 2034 will be assumed.

Six preliminary options were derived as a part of the prior conceptual planning effort that included proposals with variations in building unit type and quantity, ranging from 216 to 1,279 single-family and multi-family units. These six options were narrowed down to four alternatives, including one identified as the preferred alternative. Each of these alternatives proposed the same access points on North Road and FWR. One of the alternatives (Alternative C) consisted of 220 single-family units and up to 578 multi-family units. It is expected that the traffic resulting from this alternative would trigger the need for significant intersection and roadway improvements along FWR and therefore the alternative was excluded from further analysis here.

The three remaining alternatives analyzed for specific traffic impacts have the following land use and units:

- Alternative A (see Figure 2) –220 single-family units;
- Alternative B (see Figure 3) – 220 single-family units and up to 330 multi-family low-rise units;
- Preferred Alternative (see Figure 4) – with 220 single-family units and up to 160 multi-family low-rise units.

This Traffic Impact Analysis Report (TIAR) is being prepared in support of the design and permitting documents required for the proposed development. Traffic operations during the AM and PM peak hours for Existing (2022), Future (2034) Without Project, and Future (2034) With Project conditions will be evaluated for each alternative.

Vehicle operations will be analyzed using *Highway Capacity Manual (HCM)* Methodologies, consistent with standard traffic engineering practice. Guidelines provided in the City and County of Honolulu's (C&C) *Transportation Impact Assessment Guide* (C&C, 2020) (*TIA Guide*) were used to analyze existing and future pedestrian, bike, and transit operations. A Memorandum of Understanding (MOU) prepared for and approved by the C&C Department of Transportation Services (DTS) permitted the use of peak hour vehicle analysis in support of this effort. An analysis of parking will not be completed because the plans don't propose the removal of parking and the project location is not within a transit-oriented development (TOD) area.

Figure 1: Project Location Map

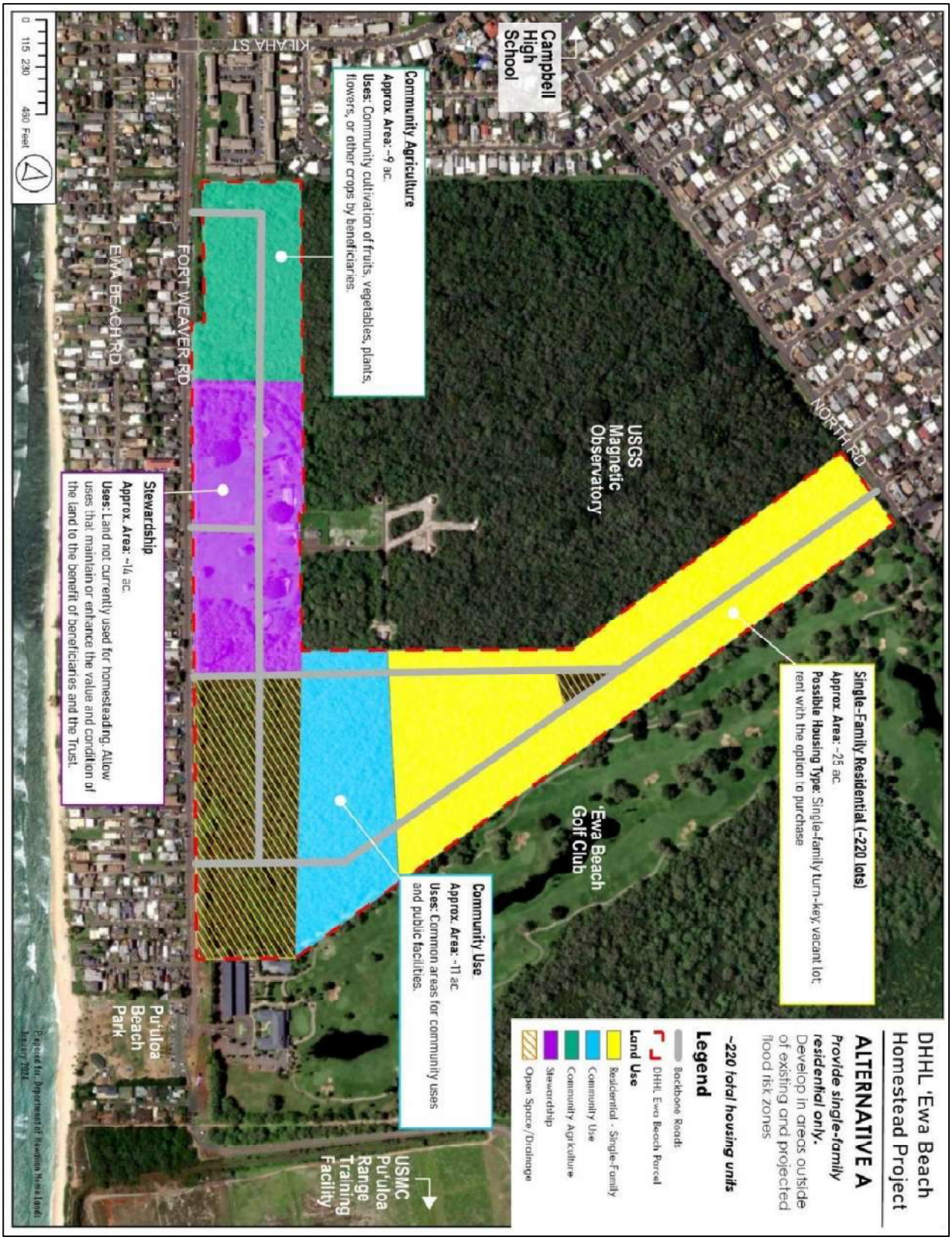

Figure 2: Alternative A - Project Site Plan

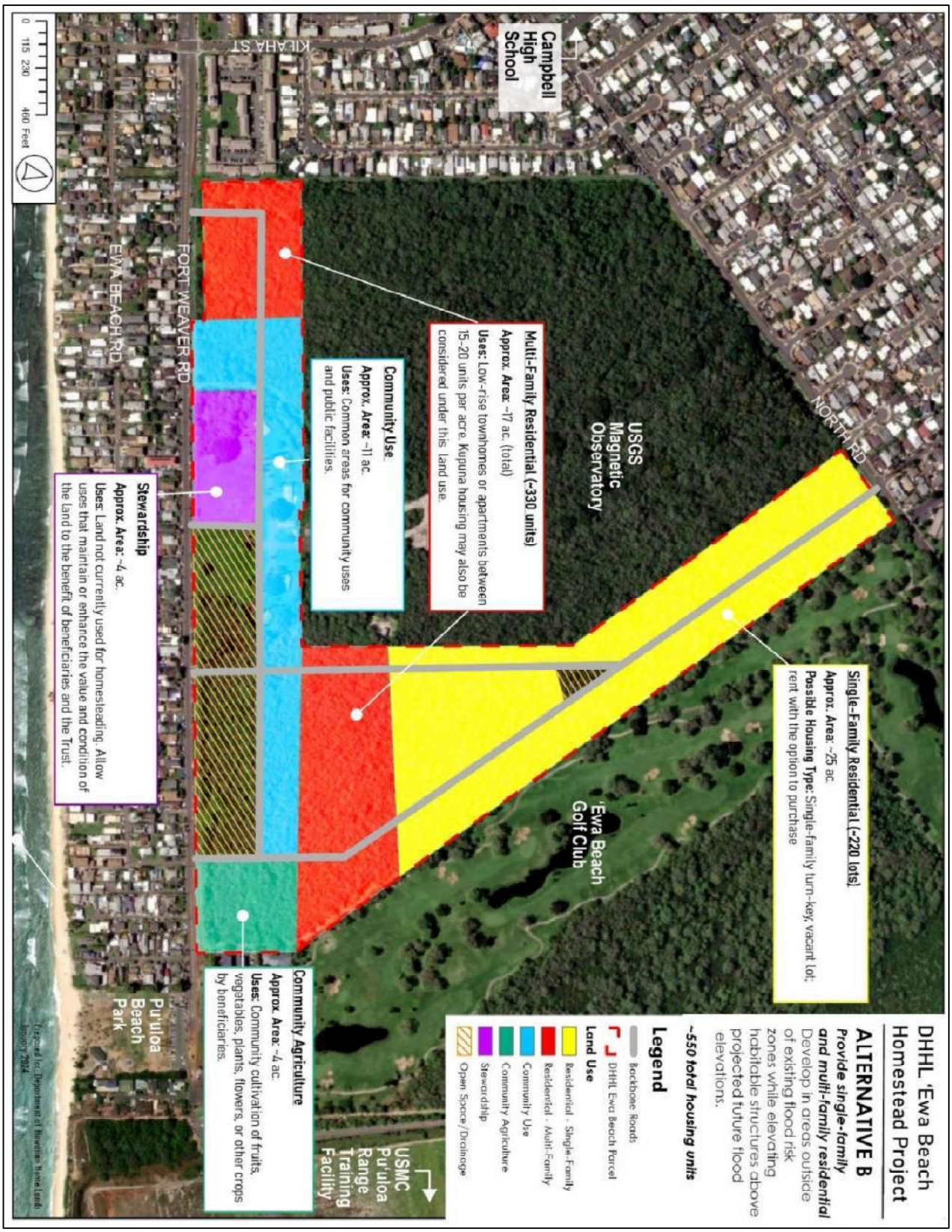

Figure 3: Alternative B - Project Site Plan

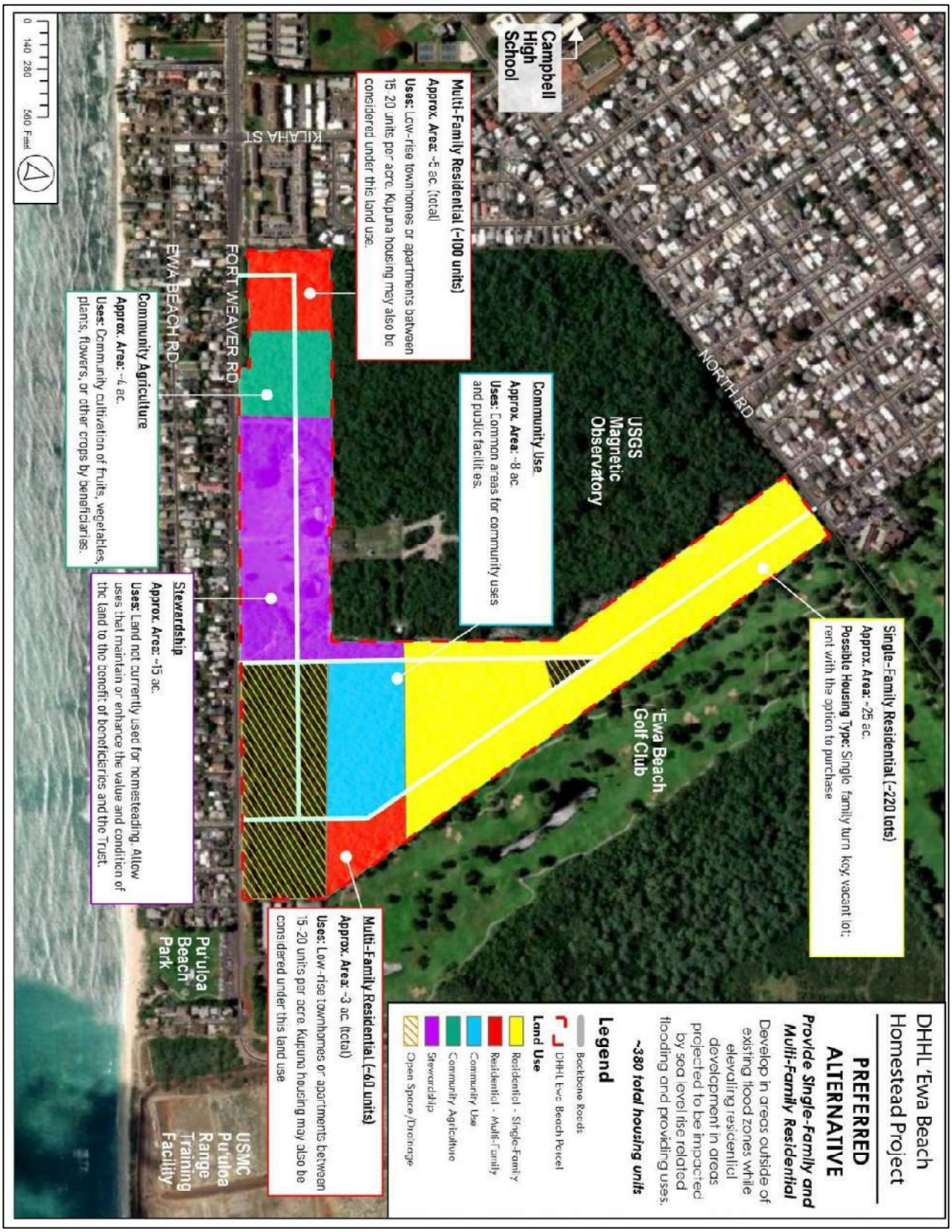

Figure 4: Preferred Alternative - Project Site Plan

II. Surrounding Area Master Plans

As a part of the TIAR and *TIA Guide* review process, the following plans and policies were reviewed:

1. Oʻahu General Plan
2. ʻEwa Development Plan
3. C&C Honolulu Complete Street Checklist/Design Manual
4. East Kapolei Transit-Oriented Development (TOD) plans
5. Oʻahu Regional Transportation Plan 2045
6. Statewide Pedestrian Master Plan
7. Oʻahu Bike Plan Update
8. Oʻahu Pedestrian Plan

A. Oʻahu General Plan

The *Oʻahu General Plan* (City DPP, November 2021) aims to create a multi-modal transportation system for all users, including users of all incomes, the elderly, and disabled populations, with the focus being the secondary urban center in Kapolei. The policies also include reducing traffic congestion by promoting carpooling, ride sharing, and other incentives to use other modes of transportation. There were no specific projects listed in the study area.

B. ʻEwa Development Plan

Major roadways such as Kapolei Parkway, Kualakai Parkway, and Fort Weaver Road (FWR) should be a network of greenways that provide landscaping, pedestrian paths, and bike paths as part of the *ʻEwa Development Plan* (City DPP, July 2013, Amended 2020). Proposed projects include an east-west road in East Kapolei connecting Kualakai Parkway and FWR and to widen FWR to six lanes from Geiger Road to North Road. There are no imminent plans for the implementation of these projects.

C. C&C Honolulu Complete Streets Design Manual

The *C&C Complete Streets Design Manual (Manual)* (City DTS, September 2016) provides guidelines when designing roadways to ensure all users of all modes of transportation have accessibility and mobility to a transportation network. The uncontrolled crosswalks at FWR and Pōhakupuna Street, FWR at Kīlaha Street, and North Road at Kīlaha Street were analyzed for appropriate treatments using the latest Criteria for Crossing Treatments at Uncontrolled Locations. The latest criteria is not from the *Manual*, but from a March 16, 2022 memo updating the Criteria for Crossing Treatments at Uncontrolled Locations.

D. East Kapolei Neighborhood TOD Plan

The rail system was originally planned to be about 20-miles long and include 19 stations from East Kapolei to the Civic Center Station in Kakaako. The C&C and State of Hawaiʻi have created special TOD zoning plans for the neighborhoods surrounding the rail stations. TOD rules may apply to redevelopment of existing facilities or new developments within ¼- to ½-mile radius from any major transit stops. These distances are reflective of a comfortable walking or biking distance. The *East Kapolei TOD Plan* (City DPP, October 2020) does not include any of the study roadways

or intersections and therefore, improvements proposed in the *East Kapolei TOD Plan* were not considered in this assessment.

E. Oʻahu Regional Transportation Plan 2045

The *2045 Oʻahu Regional Transportation Plan* (*2045 ORTP*) (Oʻahu Metropolitan Planning Organization [MPO], April 2021) includes projects that have funding in four tiers: "Short Range" projects to be completed in 2022-2025, "Mid-Range" projects to be completed in 2026-2035, "Long Range" projects to be completed in 2036-2045, and "Unfunded" projects that have no timeframe and will be included in the *2045 ORTP* when funds become available. There are no projects in the study area. Therefore, improvements proposed in the *2045 ORTP* were not considered in this assessment.

F. Statewide Pedestrian Master Plan

The *Statewide Pedestrian Master Plan* proposed a traffic study to verify the need for a traffic signal and crosswalks at the intersection of FWR and Makule Road. The intersection did not warrant a signal, however a raised crosswalk and signage was installed. There were no other projects listed in the study area.

G. Oʻahu Bike Plan

Seven bike projects in the study area are listed in the *Oʻahu Bike Plan* (City DTS, December 2019) based on three priority levels (see Figure 5). Study roads and intersections are shown in red in Table 1. Priority 1 projects have a target implementation date of five years while Priority 2 projects are proposed for implementation after the completion of Priority 1 projects. It is proposed that Priority 3 projects will be implemented after the completion of Priority 2 projects or when roadways are resurfaced. Redevelopment projects (RD) do not have state or city funds dedicated to the project and do not have a priority level. Priority 2 and Priority 3 projects depend on the completion of the preceding priority projects and were not considered for this analysis. The buffered bike lane on FWR from Keoneʻula Boulevard to Kīlaha Street is the only Priority 1 project in the area and will be part of the future bicycle analysis. The Keaunui Drive Extension is not listed under the priority list because it is a private project that is not dependent on government funding. There are no definite plans for the Keaunui Drive Extension project, and therefore it will not be included in any future analysis.

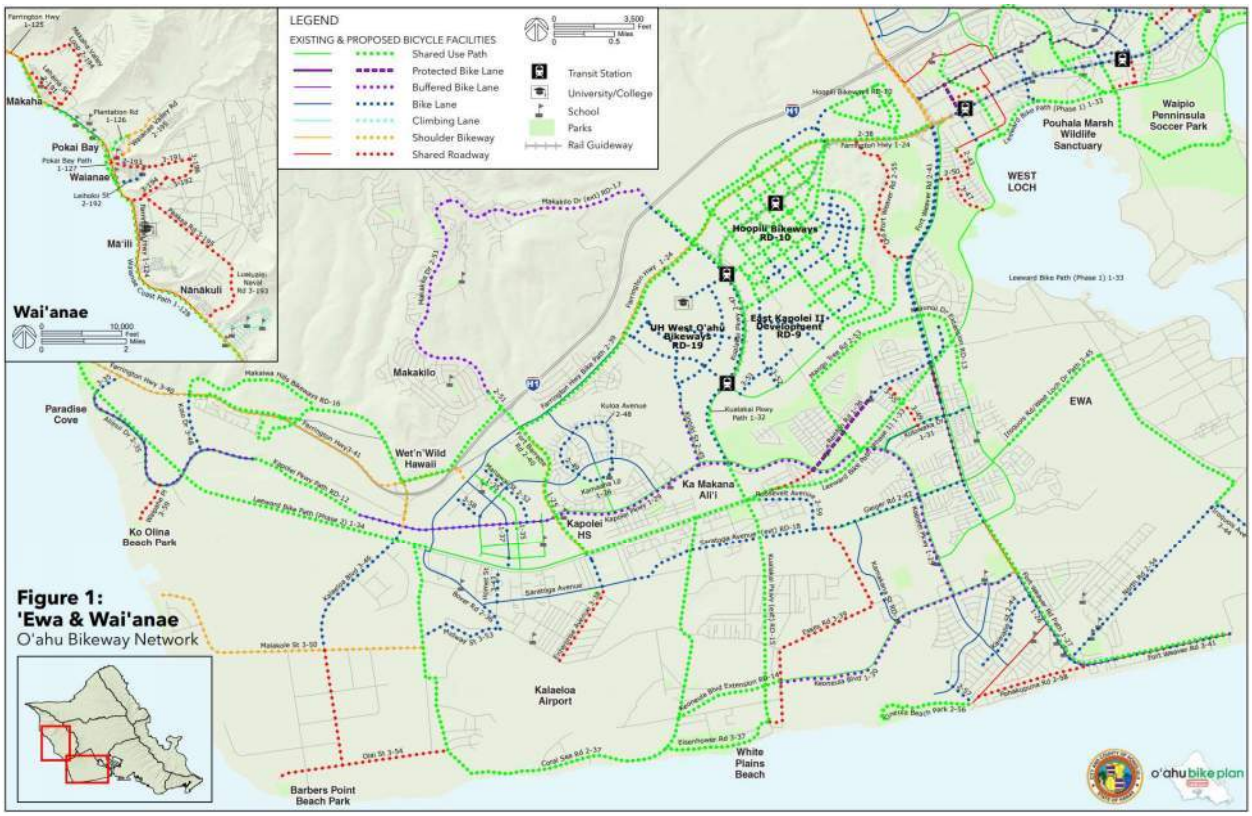

Figure 5: *Oʻahu Bike Plan* Projects in Study Area – Map

Table 1: Oʻahu Bike Plan Projects in Study Area

Project Number	Name	Description	Type	Owner	Length (Miles)
1-26	**FWR**	**Keoneʻula Boulevard** to **Kilaha Street**	Buffered Bike Lane	State	1.19
1-30	**Keoneʻula Boulevard**	Essex Road to **FWR**	Buffered Bike Lane	City	2.16
2-41	**FWR**	Farrington Highway to **Keoneʻula Boulevard**	Bike Lane	State	3.90
2-44	**Kaimālie Street**	**FWR** to Kaiee Street	Bike Lane	City	0.72
2-54	**North Road**	**FWR** to Iroquois Road	Bike Lane	City	1.72
2-58	**Pōhakupuna Road**	**Pāpipi Road** to **FWR**	Shared Roadway	City	0.87
3-41	**FWR**	**Kilaha Streeet** to Puʻuloa Beach Park	Bike Lane	State	0.92

H. Oʻahu Pedestrian Plan

Three pedestrian projects in the study area are listed in the *Oʻahu Pedestrian Plan* (City DTS, June 2021) and shown in Figure 6. Those that align with study roads and intersections are shown in red in Table 2. None of these projects were listed as high priority and specific improvements for each project were not discussed. However, proposed walkways and walkway upgrades are recommended on North Road between FWR and Kīlaha Street. Sidewalk improvements will be considered in the future pedestrian mode analysis.

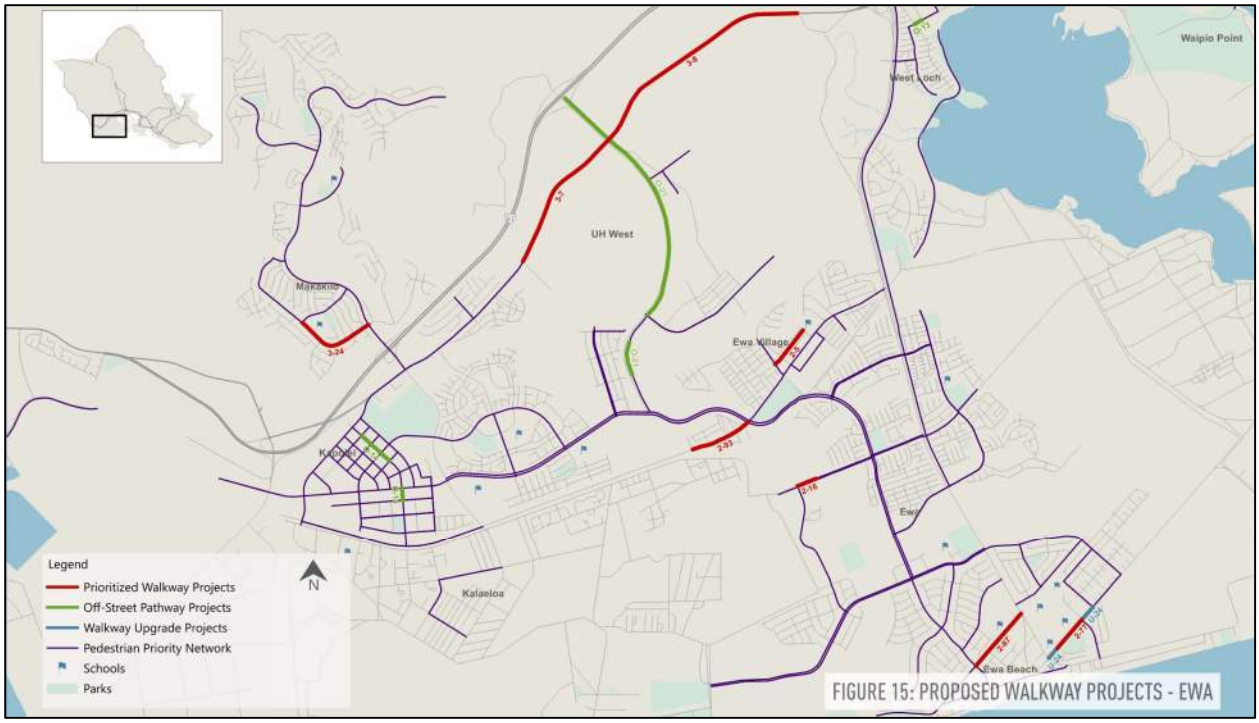

Figure 6: *O'ahu Pedestrian Plan* Proposed Projects – Map

Table 2: O'ahu Pedestrian Plan Proposed Projects

Project Number	Name	Description	Type
2-77	**North Road**	Kulana Place to **Kilaha Street**	Walkway
2-87	**Pāpipi Road**	Kapolei Parkway to **FWR**	Walkway
U-24	**North Road**	**FWR** to Kulana Place, **Kilaha Street** to Kehue Street	Walkway Upgrade

III. Existing Conditions

A. Surrounding Area

The proposed DHHL development is located in ʻEwa Beach, at the south end of FWR within a portion of a vacant parcel that used to serve as the Pacific Warning Tsunami Center on the mauka side of FWR. To the east of the project is the ʻEwa Beach Golf Club. The proposed project site is largely undeveloped, with unoccupied buildings and unmaintained roads from when previously used as the Pacific Tsunami Warning Center. The former Pacific Tsunami Warning Center is on a Federal and Military Preservation District. The surrounding study area is zoned as a residential district, low density apartments, Residential District, and commercial business district. There are six public schools within a couple of blocks of FWR between Keoneʻula Boulevard and North Road, with an estimated total enrollment of over 3,500 students based on information from the Hawaiʻi Department of Education's website. A map showing the nearby major attractors is shown in Figure 7.

B. Roadway Geometric Configuration

1. Fort Weaver Road

FWR is a state-owned roadway (State Route 76) extending from the Kunia Interchange in the north to the gated access at the Puʻuloa Range Training Facility near Popoi Place in the south. FWR is oriented in the north-south direction from the Kunia Interchange to Pōhakupuna Road, at which point it transitions into the east-west orientation from Pōhakupuna Road to the eastern terminus. FWR is a 6-lane roadway north of Geiger Road, a 4-lane roadway from Geiger Road to Kīlaha Street and continues as a 2-lane roadway east of Kīlaha Street. A raised median exists from the Kunia Interchange to just south of Keaunui Drive. Sections of FWR have a two-way center turn lane between ʻAikanaka Street and Kīlaha Street. Raised curb and gutters exist for most of FWR from Laulaunui Street to Kīlaha Street. Bike lanes exist on FWR between Keoneʻula Boulevard to Kīlaha Street. Portions of FWR between Keoneʻula Boulevard to Laulaunui Drive are signed as a bike route. East of Kīlaha Street, a shoulder exists with varying widths that are used by pedestrians, cyclists, or parked vehicles. On-street parking is generally only allowed south of Keoneʻula Boulevard and Hanakahi Street, except where No Parking signs are posted. The posted speed limit on FWR is 35 MPH, except for a 25 MPH school zone speed limit between Keoneʻula Boulevard and Parish Street. FWR has three different roadway classifications based on the Oʻahu Straightline Diagram. FWR between the Kunia Interchange and Kolowaka Drive is classified as a "Freeway & Expressway", transitioning into a "Principal Arterial" from Kolowaka Drive to North Road, and transitioning into a "Minor Arterial" from North Road to the end of FWR.

Figure 7: Major Attractions in Study Area

2. North Road

North Road is a 2-lane roadway oriented in the southwest-northeast direction extending from FWR in the west, to West Loch Drive in the east. North Road is C&C-owned from FWR to Haiamū Street, and private-owned from Haiamū Street to West Loch Drive. From FWR to Kihala Street Pohakea Elementary School, James Campbell High School, and the 'Ewa Beach Public Library are on the mauka side of North Road. 'Ewa Beach Community Park is on the makai side across from 'Ewa Beach Public Library and Campbell High School. All intersections along North Road east of FWR are unsignalized. Crosswalks exist at some intersections along North Road, but not crossing North Road. Sidewalks generally exist on both sides of North Road until 'Āpoke Place except along 'Ewa Beach Community Park. From 'Āpoke Place to Haiamū Street, the sidewalk exists on the mauka side only, which continues to Haiamū Street. The posted speed limit from FWR to Haiamū Street is 25 MPH and increases to 30 MPH from Haiamū Street to West Loch Dive. Four speed humps were installed between late 2023 and early 2024. On-street parking is allowed on the makai side of North Road from Kīlaha Street to Apoke Place. On the mauka side, on-street parking is allowed from just east of Kīlaha Street to just east of Haiamu Street.

3. Hanakahi Street

Hanakahi Street is a C&C-owned, 2-lane roadway extending from FWR in the west for about one mile to North Road in the east. Sidewalks exist on the entirety of the south side of Hanakahi Street and on the north side from Hanaloa Street to North Road. Marked street parking exists on both sides of Hanakahi Street from Hanaloa Street to North Road. All intersections along Hanakahi Street are unsignalized except at FWR. Curb ramps do not exist at any of the intersections except at FWR. Regulatory 25 MPH speed limit signs are posted on Hanakahi Street, with speed humps and 15 MPH speed limit warning signs posted between FWR and Kuhina Street. TheBus routes 42, 44, 91, PH7, and W1 turn left from FWR onto Hanakahi Street, then onto North Road before returning back to FWR in a clockwise travel pattern.

Using Google Maps directions, Hanakahi Street was identified as the preferred route between the project site access on North Road and the signalized intersection with FWR. As such, Hanakahi Street serves as a cut-through road, bypassing traffic generated by the nearbyschools in the area.

C. Study Intersections

Eleven study intersections were reviewed as a part of the proposed development. The study intersections along FWR were determined by calculating the "3% percent impact", which is the project generated traffic compared to the latest traffic volumes. Intersections along FWR that had more than a 3% impact were selected as a study intersection. A more detailed methodology to determine the study intersections can be found in Appendix A. The existing study intersection lane configurations are shown in Figure 8 and the existing surrounding area multimodal facilities are shown in Figure 9.

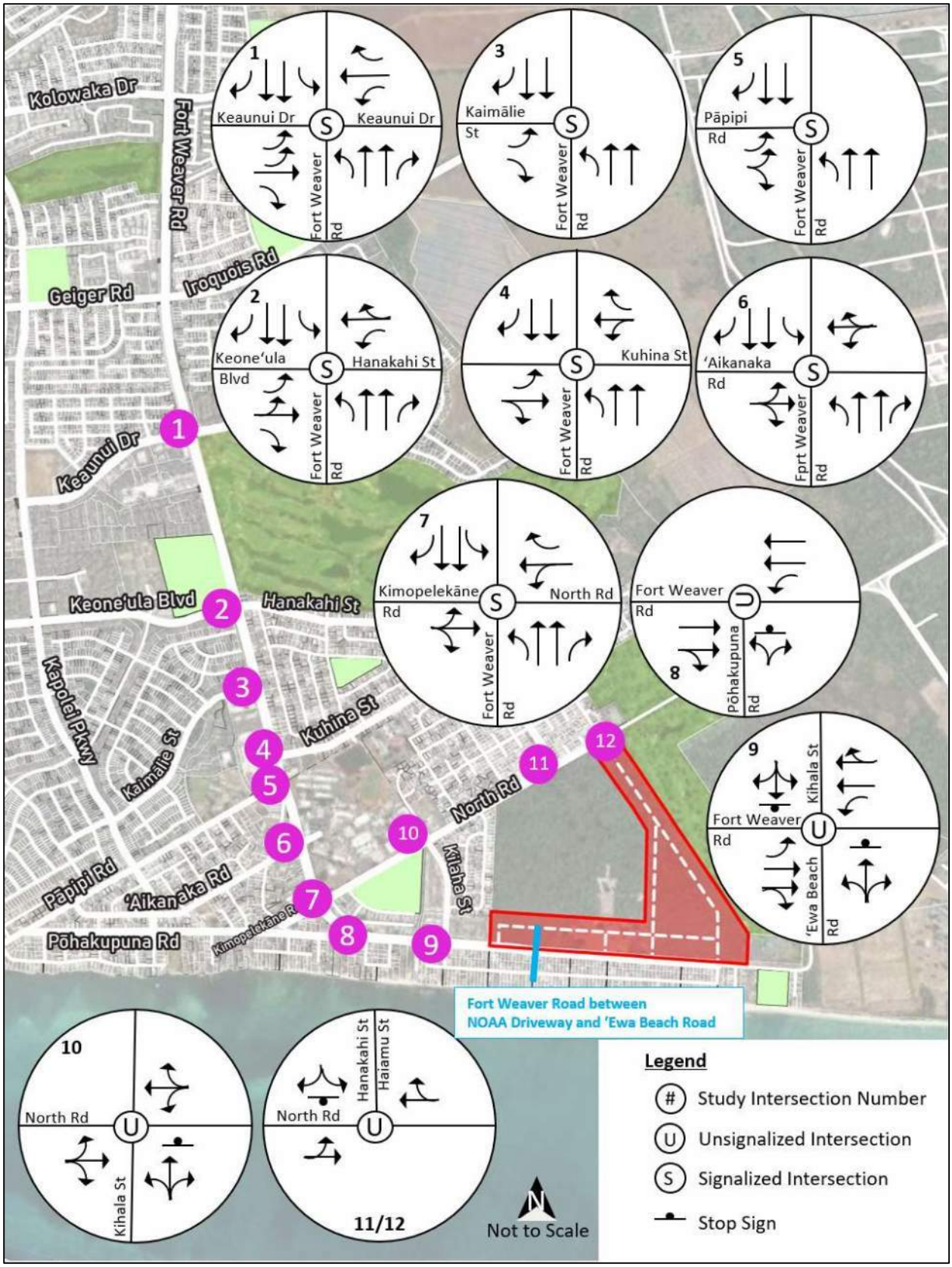

Figure 8: Study Intersections, Lane Configuration, and 24-Hour Count Location

Figure 9: Existing Multimodal Facilities

1. Fort Weaver Road at Keaunui Drive (Route 76 MP 2.585)

FWR at Keaunui Drive is a four-leg, signalized intersection with protected left turns on FWR and split phasing on Keaunui Drive, with a leading eastbound phase. Channelized right turn lanes exist for all approaches. The westbound dual right turn is channelized with permitted/overlap signal control. The cycle length is 180 seconds during the AM peak hour and varies from 160-175 seconds during the PM peak hour. There are marked crosswalks and curb ramps for crossing the west, south, and east legs. Sidewalks exist on each approach. Bus pullouts exist on the far side of the intersection in the northbound and southbound direction. There are no bike facilities at the intersection. The posted speed limit on Keaunui Drive is 25 MPH.

2. Fort Weaver Road at Keoneʻula Boulevard/Hanakahi Street (Route 76 MP 2.098)

FWR at Keoneʻula Boulevard and Hanakahi Street is a four-leg, signalized intersection with protected/permitted left turns on FWR and split phasing on the minor approach, with a leading westbound phase. Keoneʻula Boulevard is a 4-lane, raised median divided roadway, intersecting FWR from the west. To the east, Hanakahi Street is a 2-lane undivided roadway with speed humps near FWR and a short, dedicated right-turn lane at the intersection. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for the west, south, and east legs. Sidewalks exist on FWR and Keoneʻula Boulevard, but not on Hanakahi Street. Bus pullouts Exist on the south side of the intersection along FWR. The southbound bike passes through the intersection, while the northbound bike lane ends at the nearside bus stop. The posted speed limits on Keoneʻula Boulevard and Hanakahi Street are 30 MPH and 25 MPH, respectively.

3. Fort Weaver Road at Kaimālie Street (Route 76 MP 1.869)

FWR at Kaimālie Street is a three-leg, signalized intersection with a protected/permitted northbound left turn on FWR. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for the north and west legs. Sidewalks exist on both sides of Kaimālie Street. Bus pullouts exist on the far side of the intersection in the northbound and southbound direction. Striped bike lanes exist along FWR and pass through the intersection The posted speed limit on Kaimālie Street is 25 MPH.

4. Fort Weaver Road at Kuhina Street (Route 76 MP 1.682)

FWR at Kuhina Street is a four-leg, signalized intersection with protected/permitted left turns on FWR and permissive phasing for the minor street approaches. Kuhina Street intersects FWR from the east across the ʻEwa Beach Shopping Center, which intersects FWR from the west. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps for all approaches. Sidewalks exist for all approaches except for the north side of Kuhina Street and the ʻEwa Beach Shopping Center access. A bus pullout exists on the north side of the intersection. Striped bike lanes along FWR pass through the intersection. The posted speed limit on Kuhina Street is 25 MPH.

5. Fort Weaver Road at Pāpipi Road (Route 76 MP 1.610)

FWR at Pāpipi Road is a three-leg, signalized intersection with a protected/permitted northbound left turn on FWR. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There is an uncontrolled driveway intersecting FWR from the east, across of Pāpipi Road. This driveway is not controlled by the traffic signal, nor does it have a stop sign or stop bar. There are marked crosswalks and curb ramps the south and west legs. Sidewalks exists for all approaches. Bus pullouts exists on south side of the intersection near Makule Road. Striped bike lanes exist along FWR in both directions and pass through the intersection. The posted speed limit on Pāpipi Road is 25 MPH.

6. Fort Weaver Road at 'Aikanaka Road (Route 76 MP 1.438)

FWR at 'Aikanaka Street is a four-leg, signalized intersection with protected/permitted left turns on FWR and permissive phasing for the minor street approaches. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps on the west, south, and east legs. Sidewalks exist along FWR but not on 'Aikanaka Road. Bus pullouts exist on the south side of the intersection. Striped bike lanes along FWR pass through the intersection The posted speed limit on 'Aikanaka Street is 25 MPH.

7. Fort Weaver Road at Kimopelekāne Road/North Road (Route 76 MP 1.270)

FWR at Kimopelekāne Road/North Road is a four-leg, signalized intersection with protected/permitted left turns on FWR and permissive phasing for the minor street approaches. The traffic signal control is actuated with varying cycle lengths depending on the traffic volume and if there is a pedestrian call. There are marked crosswalks and curb ramps across all legs. Sidewalks exist for all approaches except on Kimopelekāne Road. A bus pullout exists on the far side of the intersection in the southbound direction. Striped bike lanes exist along FWR and pass through the intersection The posted speed limits on Kimopelekāne Road and North Road are 15 and 25 MPH, respectively.

8. Fort Weaver Road at Pōhakupuna Road (Route 76 MP 1.158)

FWR at Pōhakupuna Road is a three-leg intersection with stop control on Pōhakupuna Road. FWR is orientated in the east-west direction from Pōhakupuna Road to the east end of FWR. Pōhakupuna Road intersects FWR from the south. There is a dedicated westbound left turn lane and two-way center turn lane on FWR. There are marked crosswalks and curb ramps for the south and east legs of the intersections. The east leg crosswalk is raised with a "gateway treatment" consisting of plastic delineators on lane lines. Sidewalks exist on each approach. Striped bike lanes exist along FWR. The posted speed limit on Pōhakupuna Road is 25 MPH.

9. FWR at Kīlaha Street/'Ewa Beach Road (Route 76 MP 0.915)

FWR at Kīlaha Street is a four-leg intersection with stop control on Kīlaha Street. Kīlaha Street intersects FWR from the north, while 'Ewa Beach Road intersects FWR from the south. There are dedicated left turn lanes and two-way center turn lanes on FWR. HDOT constructed a raised

intersection here in late 2022. Marked crosswalks and curb ramps exist on each approach. Corner bulbouts were recently installed on FWR from Kīlaha Street to 'Aekai Place. The posted speed limit on Kīlaha Street is 25 MPH.

10. North Road at Kīlaha Street

North Road at Kīlaha Street is a three-leg intersection with stop control for Kīlaha Street. Kīlaha Street intersects North Road from the south. There is a parking lot entrance for Campbell High School across of Kīlaha Street. The parking lot across Kīlaha Street has 26 marked stalls, but 145 vehicles were observed turning into this parking lot, mainly using the parking lot as a drop-off and pick-up location for students. Vehicles generally exited the parking lot within one minute, but there was still heavy queueing observed on North Road and Kīlaha Street due to the heavy demand of the parking lot for drop-offs and pick-ups. There are marked crosswalks and curb ramps for the west and south legs of the intersections. Sidewalks exist on the westbound and northbound approaches. There is a pedestrian walkway separated from traffic by an AC berm on the north side of North Road between the 'Ewa Beach Public Library to west of Kehue Street.

11. North Road at Hanakahi Street

North Road at Hanakahi Street is a three-leg intersection with stop control for the Hanakahi Street approach. Hanakahi Street intersects North Road from the north. On-street parking is allowed on the mauka side of North Road and on both sides of Hanakahi Street. During the AM peak hour, the westbound queue was observed to extend slightly east of this intersection. There are no curb ramps or marked crosswalks at this intersection. Sidewalks exist on the mauka side of the intersection.

12. North Road at Haiamu Street

North Road at Haiamu Street is a three-leg intersection with stop control for Kīlaha Street. Haiamu Street intersects North Road from the north. To the north of the intersection are single family residential homes. To the south of the intersection will be the future project access onto North Road. There are no curb ramps or marked crosswalks at this intersection. Sidewalks exist on the mauka side of the intersection.

D. Existing Volumes and Data Collection

1. 24-Hour Volume

Historic Hawaii Department of Transportation (HDOT) counts in the study area on FWR were available from 2016-2021 (see Table 3). 24-hour tube counts were also collected on Tuesday, November 8, 2022, on FWR between 'Ewa Beach Road and the National Oceanic and Atmospheric Administration (NOAA) driveway and are shown in Table 3. The annual growth rate along FWR between 2016 and 2021 was nearly 0%. Year 2020 data was lower at nearly every traffic station due to the effects of the Covid-19 Pandemic on traffic. The 2021 counts show that traffic volumes generally returned to pre-pandemic levels. The 2022 volumes are assumed to be near pre-pandemic levels as well, therefore no adjustments were made to the traffic volumes to

account for any Covid-19 impact. Appendix A includes the historical HDOT traffic data and the 2022 24-hour hour counts.

Table 3: 2016-2021 AADT at Various HDOT Stations

HDOT Station on FWR between:	Year and AADT							Growth
	2016	2017	2018	2019	2020	2021	2022	Rate (2016-
Laulaunui Street and Old FWR	51,800	53,800	53,700	53,000	48,900	52,100		0.12%
Kolowaka Drive and Geiger Road	41,800	44,300	38,100	37,700	31,900	37,800		-1.99%
Geiger Road and Keaunui Drive	31,300	29,900	30,300	29,700	27,200	31,400		0.06%
Kaimālie Street and Keone'ula Boulevard	20,400	19,300	21,100	21,200	18,500	20,600		0.20%
Aekai Place and Parish Street	6,000	6,000	6,100	6,200	5,800	6,200		0.66%
NOAA and Ewa Beach Road	2,300	2,200	2,300	2,100	2,200	2,100	2015*	-1.80%

*Tuesday, November 8, 2022 count (Not AADT)

The 2021 HDOT 24-hour volumes along FWR are shown in Figure 10. The 2022 AM commuter peak starts between 6:30 – 7:00 AM. The magnitude of the PM commuter peak is slightly higher than the AM peak hour and begins around 3:00 PM. The AM and PM peak hours along the southern portion of FWR appear to have peak hours closely tied to the school schedule, resulting in peak hours between 7:00 – 8:00 AM and 2:30 – 3:30 PM.

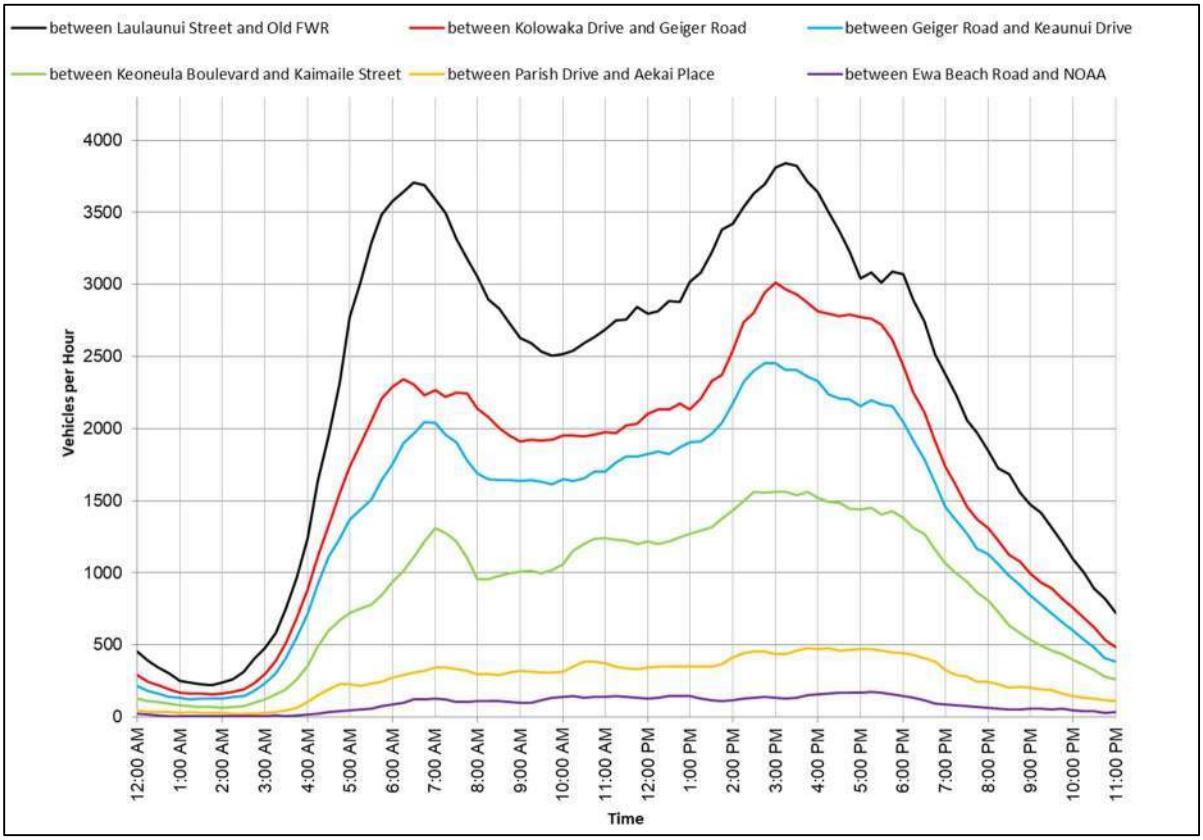

Figure 10: 2021 24-Hour HDOT Traffic Volume Distribution on FWR

2. Intersection Peak Turning Movement Counts

Turning movement counts were taken at the study intersections on Thursday, October 20, 2022, from 5:30 – 9:00 AM and 2:00 – 6:30 PM. Two of the study intersections had counts collected at later dates due to data collection conflicts or errors. The FWR at Kīlaha Street intersection was recounted on, November 8, 2022, during the same eight hours. The Kaimālie Street intersection was counted on Thursday, November 17, 2022, during the AM and PM peak hour that was identified by the other nine intersection counts. The AM and PM commuter peak hours occurred between 7:00 – 8:00 AM and 3:30 – 4:30 PM, respectively. The intersections of North Road at Hanakahi Street, North Road at Haiamu Street, and FWR at Keone'ula Boulevard/Hanakahi Street were counted on August 8, 2024 when it was identified as the main route to the North Road access. The 2024 FWR and Keone'ula Boulevard/Hanakahi Street volumes was comparable to the 2022 FWR and Hakanahi Street volumes and therefore the 2024 data collection on North Road is assumed to be similar to 2022 conditions. The intersection peak hour volumes are shown in Figure 11. Appendix A includes traffic count data at the study intersections.

3. Existing Intersection Control

The signalized intersections along FWR have various types of control, cycle lengths, and phasing. An inventory of the study intersection traffic control and average cycle length used for analysis are shown in Table 4. For intersections with fluctuating cycle lengths, or with phases that were occasionally skipped due to lack of vehicle presence, actuated-uncoordinated signal timing was used. Optimizing the cycle length and splits resulted cycle lengths that were much shorter than the actual cycle length and did not reflect traffic operations in the field. Instead, an average of five cycle lengths during the peak hour was used for analysis.

Table 4: Intersection Control at Study Intersections

Study Intersection		AM Peak Cycle Length 7:00 -8:00 AM	PM Peak Cycle Length 3:30 - 4:30 PM	FWR Left Turn Phasing	Minor Street Phasing
1	FWR at Keaunui Dr	170 seconds, Actuated	165 seconds, Actuated	Protected	Split (EB leading)
2	FWR at Keone'ula Blvd/Hanakahi St	120 seconds, Actuated	120 seconds, Actuated	Prot+Perm	Split (WB leading)
3	FWR at Kaimālie St	120 seconds, Actuated	120 seconds, Actuated	Prot+Perm	Permissive
4	FWR at Kuhina St	100 seconds, Actuated	120 seconds, Actuated	Prot+Perm	Permissive
5	FWR at Pāpipi Rd	120 seconds, Actuated	120 seconds, Actuated	Prot+Perm	Permissive
6	FWR at 'Aikanaka Rd	120 seconds, Actuated	90 seconds, Actuated	Prot+Perm	Permissive
7	FWR at Kimopelekāne Rd/North Rd	110 seconds, Actuated	90 seconds, Actuated	Prot+Perm	Permissive
8	FWR at Pōhakupuna Rd	Unsignalized	Unsignalized	n/a	Stop Control
9	FWR at Kilaha St	Unsignalized	Unsignalized	n/a	Stop Control
10	North Road at Kilaha St	Unsignalized	Unsignalized	n/a	Stop Control
11	North Road at Hanakahi St	Unsignalized	Unsignalized	n/a	Stop Control

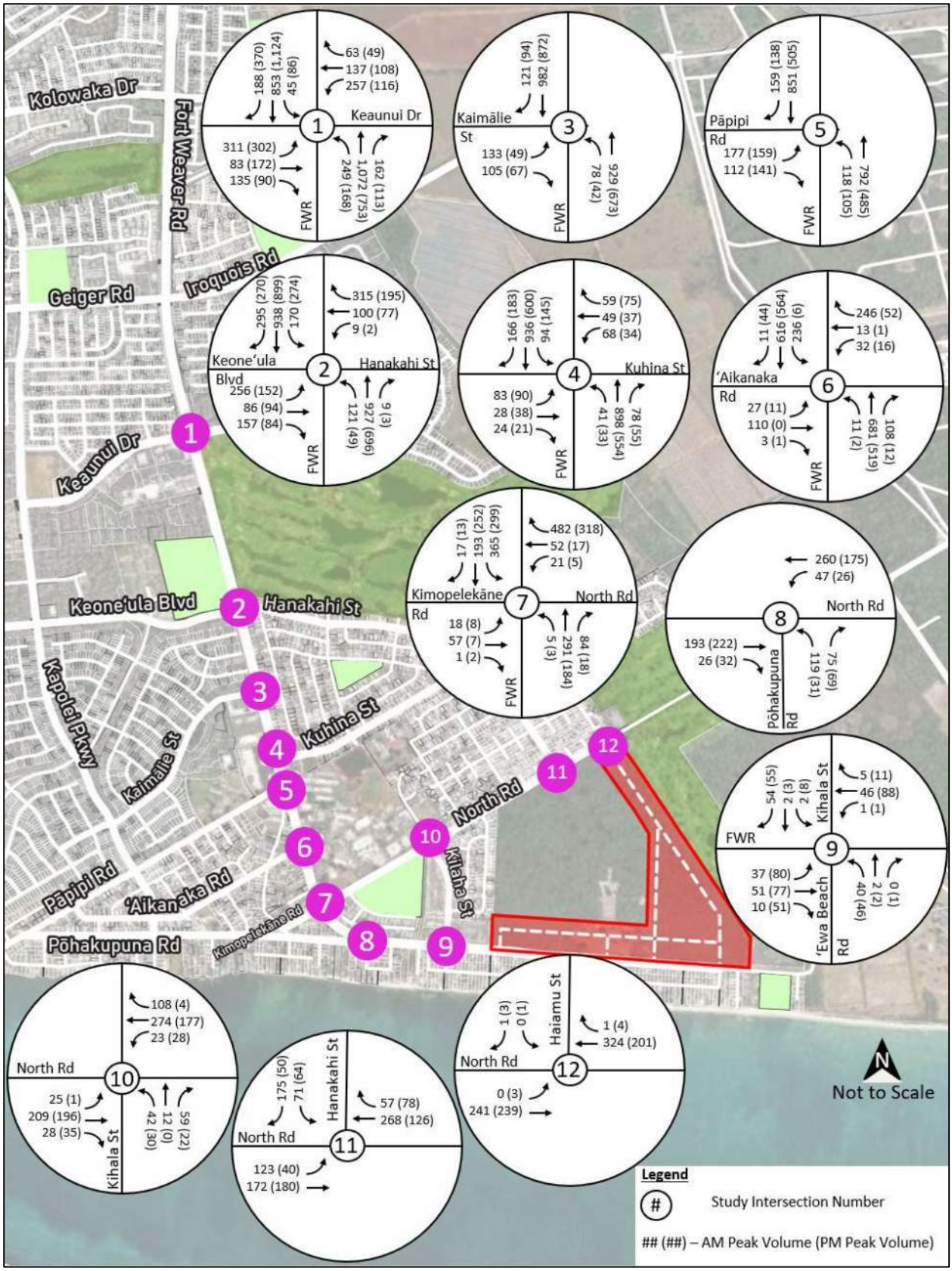

Figure 11: Existing Peak Hour Volumes

4. Transit Facilities

The C&C bus transit service, TheBus, runs several routes (Route 41, Route 42, Route 44, Route 91, Route 91A, Route E, Route PH7, and Route W1) along the study area. There are about 40 bus stops in the study area, 10 of those being on FWR between Kīlaha Street and the end of FWR (less than 1-mile of roadway) fronting the project site. Benches and shelters exist at most bus stops. The 'Ewa Beach Transit Center is located on the east side of FWR between 'Aikanaka Road and Makule Road. The existing bus route information can be found in Appendix B.

5. Pedestrian and Bicycle Volumes

Intersection pedestrian volumes (see Table 5) were taken at the existing study intersections. For 3-leg intersections, pedestrians crossing the sidewalk across the minor approach were included in the pedestrian count. In the AM peak hour, the pedestrian volumes at the intersections nearest to the schools are extremely high, topping off at over 400 pedestrians at the signalized intersection of FWR and Pāpipi Road in the AM peak hour. In the PM peak hour, most of the pedestrian crossings occurred at the signalized intersection of FWR and Kuhina Street. This intersection is adjacent to various fast-food restaurants and is the main access to the 'Ewa Beach Shopping Center.

Table 5: Existing Pedestrian Crossings

	Study Intersection	AM Peak (7:00 AM - 8:00 AM)					PM Peak (3:30 PM - 4:30 PM)				
		North Leg	West Leg	South Leg	East Leg	Total	North Leg	West Leg	South Leg	East Leg	Total
1	FWR at Keaunui Dr	-	1	17	15	33	-	1	22	17	40
2	FWR at Keone'ula Blvd/Hanakahi St	-	6	10	32	48	-	9	8	8	25
3	FWR at Kaimālie St	4	2	-	19	25	3	7	-	11	21
4	FWR at Kuhina St	18	103	42	42	205	32	33	23	26	114
5	FWR at Pāpipi Rd	-	151	82	178	411	-	2	3	1	6
6	FWR at 'Aikanaka Rd	-	45	103	20	168	-	29	11	13	53
7	FWR at Kimopelekāne Rd/North Rd	18	9	0	20	47	2	6	1	2	11
8	FWR at Pōhakupuna Rd	20	-	2	0	22	1	-	1	1	3
9	FWR at Kilaha St	3	0	2	3	8	1	2	1	2	6
10	North Road at Kilaha St	50	119	30	0	199	9	9	4	1	23
11	North Road at Hanakahi Street	3	0	-	0	3	3	0	-	0	3
12	North Road at Haiamu Street	0	3	-	0	3	0	3	-	0	3

The approach bike volumes were collected at each study intersection during the AM and PM peak hours (see Table 6). In the AM peak hour, there is a significant increase in bicycle usage between Keaunui Drive and North Road. Bicycle riders were observed to be mainly middle school and high school students. Students were often seen heading southbound in the northbound bike lane during the AM peak hour.

Table 6: Existing Approach Bike Volumes

	Study Intersection	AM Peak (7:00 AM - 8:00 AM)					PM Peak (3:30 PM - 4:30 PM)				
		SB	EB	NB	WB	Total	SB	EB	NB	WB	Total
1	FWR at Keaunui Dr	11	7	12	6	36	2	0	4	2	8
2	FWR at Keone'ula Blvd/Hanakahi St	33	23	2	0	58	4	1	16	1	22
3	FWR at Kaimālie St	60	4	1	-	65	6	2	11	-	19
4	FWR at Kuhina St	79	0	1	1	81	7	1	13	0	21
5	FWR at Pāpipi Rd	78	14	0	-	92	2	0	1	3	6
6	FWR at 'Aikanaka Rd	44	6	3	1	54	7	0	8	4	19
7	FWR at Kimopelekāne Rd/North Rd	12	3	5	1	21	8	2	8	3	21
8	FWR at Pōhakupuna Rd	-	2	1	10	13	-	5	3	4	12
9	FWR at Kilaha St	0	3	1	3	7	4	4	8	5	21
10	North Road at Kilaha St	-	0	4	2	6	-	6	6	3	15
11	North Road at Hanakahi Street	1	4	-	7	12	0	2	-	4	6
12	North Road at Haiamu Street	0	1	-	6	7	0	2	-	4	6

E. Multimodal Analysis

The *TIA Guide* provides a standard methodology to analyze multimodal facilities for a roadway network. Guidelines presented in the *TIA Guide* were used to perform pedestrian, bike, and transit analysis for the FWR study intersections and study corridors.

The *TIA Guide* provided target performance scale (score) for each mode dependent on street type (see Figure 12). For simplicity, the multimodal "score" will be used to describe performance level of each transportation mode. A score of 1 represents a well operating multimodal facility. The *TIA Guide* notes that Boulevards and Parkways tend to have higher speeds and prioritize vehicular traffic over pedestrian and bike facilities. For Avenues and Streets, speed limits are lower, and pedestrian and bike facilities can be prioritized over vehicular traffic.

Street Type	Auto	Transit	Pedestrian	Bike	Parking	Design Speed (mph)
Expressway	1	1				55
Boulevard and Parkway	1	1	1	2	3	35
Avenue	2	3	2	1	3	25 to 35
Main Street	2	1	1	3	3	20
Street	2	3	1	3	3	15
Mall (Transit)		1	1	2		20
Rural Road	2	3	3	3		25
Lane/Alley (Shared Streets)	3		1	2	3	5 to 10
Mews (Pedestrian Mall)			1	2		0

Figure 12: Mode Performance Targets by Street Type

FWR changes road type over the extents of the study area. It is considered a "Freeway & Expressway" between the Kunia Interchange and Kolowaka Drive, "Principal Arterial" between Kolowaka Drive and North Road, and "Minor Arterial" between North Road and the end of FWR. The AADT of the 6-lane segment of FWR between Laulaunui Street and Old FWR is 52,100 vpd while the 2-lane segment of FWR fronting the project site is 2,100 per day. The roadway classification, AADT, posted speed limits, multimodal facilities, and land use along FWR varies greatly. Street type definitions provided in the *C&C Complete Streets Design Manual* were used to determine the appropriate roadway street type for analysis. The street type selection will result in different target scores for each mode.

FWR best fits the "Avenue" roadway description and therefore has a target transit score, pedestrian score, and bike score of 3, 2, and 1, respectively. North Road best fits the "Street" roadway description and has a target transit score, pedestrian score, and bike score of 3, 1, 3, respectively. Parking analysis was not included within the scope of work for this study. Vehicle performance will be done using the *HCM* methodology, which is the standard traffic engineering practice.

1. Automobile Mode

The *HCM* Methodology was used instead of the *TIA Guide* to analyze vehicles level of service (LOS). LOS is an operational analysis rating system used in traffic engineering to measure the effectiveness of auto roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where average vehicle delays exceed 80 seconds at signalized intersections and exceed 50 seconds at unsignalized intersections.

Another measure of intersection operation is the volume to capacity (v/c) ratio. This is the ratio of the volume of traffic utilizing the intersection compared to the maximum volume of vehicles that can be accommodated by the intersection during a specific period. A v/c ratio under 0.85 means the intersection is operating under capacity and excessive delays are not experienced. An intersection is operating near its capacity when v/c ratios range from 0.85 to 0.95. Unstable flows are expected when the v/c ratio is between 0.95 and 1.0. A traffic movement can have a poor LOS but low v/c which suggests that the traffic volumes along that movement are low but must wait a long time to make the movement. This is common for low volume protected turn movements or side streets that must wait through a long cycle length for their phase to come up.

Signalized intersection LOS and vehicle delay were determined for the vehicle peak hour volumes using Synchro 11 (Trafficware) traffic analysis software and analyzed using *HCM 2000* (TRB, 2000), since *HCM 6th* (TRB, 2016) does not analyze signalized intersections with dedicated and shared lanes, which is the case at Keoneʻula Boulevard/Hanakahi Street and Pāpipi Road. HCM 2000 determines each movements LOS based on delay only, and not v/c ratio. This means that a v/c ratio can be above 1.00 but not result in LOS F.

2. Transit Mode

Transit mode analysis uses the Transit Capacity and Quality of Service Manual (TCQSM) to assess the transit amenities, operations, and pedestrian facilities, as discussed in the *TIA Guide*. The TCQSM methodology uses 19 inputs to determine a transit LOS score, which can be converted to a transit comfort score, ranging from 1 as the best to 4 as the worst. Per the *TIA Guide*, transit scores may differ depending on the existing pedestrian facilities, frequency of bus routes, and other factors. In situations where the transit LOS score will differ, the block score will be calculated as an average of both directions. The transit score range and the resulting transit comfort score are shown in Figure 13.

Transit LOS Letter	Transit LOS Score	Transit Operations/Comfort Scale 1-4
A	<2	1
B	2 to 2.75	2
C	2.76 to 3.5	3
D	3.6 to 4.25	
E	4.26 to 5	4
F	>5	

Figure 13: Transit Output Range and Score

3. Pedestrian Mode

Pedestrian analysis uses the Pedestrian Environmental Quality Index (PEQI) to assess the quality of pedestrian facilities at each intersection and along the corridor, as discussed in the *TIA Guide*. The PEQI methodology uses 10 inputs to determine the intersection score, and 27 inputs to determine the segment score, ranging from 1 as the best and 4 as the worst (see Figure 14). When analyzing a pedestrian segment, segments may have different facilities on either side of the road. In such cases, per the *TIA Guide*, the pedestrian segment score will be calculated based on the worst section of the segment.

Score	Description	Pedestrian Comfort Scale 1-4
100 to 81	Ideal pedestrian conditions exist	1
61 to 80	Reasonable pedestrian conditions exist	
41 to 60	Basic pedestrian conditions exist	2
21 to 40	Poor pedestrian conditions exist	3
0 to 20	Environment not suitable for pedestrians	4

Figure 14: PEQI Output Range and Score

4. Bicycle Mode

Bike analysis uses Level of Traffic Stress (LTS) to assess the quality of cycling facilities. The bike LTS methodology considers traffic volume, vehicle speeds, bike infrastructure, and roadway configuration to determine a bike LTS and score, ranging from 1 as the best and 4 as the worst (see Figure 15). When analyzing a bicycle segment, segments may have different facilities on either side of the road or change between blocks. In such cases, the bicycle segment score will be calculated based on the worst section of the segment. Bike LTS provides a segment analysis, but does not assess the comfort at intersections, which need to be considered subjectively as a part of the assessment.

Description	Bicycle LTS Scale 1-4
Lowest level of traffic stress. All types of cyclists feel comfortable at this level. Facility types include separated bike lanes.	1
Second lowest level of traffic stress. Families and less experienced cyclists may feel less comfortable on these facilities. Facility types include buffered bike lanes.	2
Higher level of traffic stress. Fewer cyclists are comfortable on this roadway type. Facility examples include narrow bike lanes or a shoulder on a busy street.	3
Highest level of traffic stress. Only the most experienced cyclists are willing to use these roadways. Examples include busy four lane roads with no bike lane.	4

Figure 15: Bike LTS Score

F. Existing Level of Service

Existing vehicle scores were analyzed using *HCM 2000 or HCM 6th* methodologies. The multimodal scores for transit, pedestrian, and bicycles were analyzed using methodologies provided in the *TIA Guide*.

1. Existing Intersection Vehicle LOS

Existing intersection and movement LOS and delay (in seconds per vehicle) was determined for the AM and PM peak hours using *Synchro 11* traffic analysis software. Movements that operate at LOS E or worse are highlighted in yellow. The intersection operations are shown in Tables 7 and 8. The existing traffic operations analysis worksheets can be found in Appendix C.

Table 7: Existing (2022) Intersection LOS

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**53.8**	**-**	**D**	**38.9**	**-**	**D**
FWR NB L	88.6	0.93	F	77.7	0.92	E
FWR NB T	35.7	0.76	D	20.4	0.51	C
FWR SB L	100.4	0.78	F	75.2	0.61	E
FWR SB T	51.0	0.79	D	31.0	0.82	C
Keaunui EB Double L	59.2	0.62	E	51.1	0.56	D
Keaunui EB T	55.4	0.31	E	52.0	0.59	D
Keaunui EB R	60.5	0.62	E	49.6	0.06	D
Keaunui WB L	86.4	0.92	F	70.7	0.56	E
Keaunui WB T	55.8	0.47	E	66.6	0.50	E
FWR at Keone'ula Blvd/Hanakahi St	**41.6**	**-**	**D**	**23.1**	**-**	**C**
FWR NB L	54.9	0.85	D	16.8	0.19	B
FWR NB T	37.0	0.82	D	24.5	0.54	C
FWR NB R	21.6	0.01	C	18.3	0.00	B
FWR SB L	70.3	0.94	E	13.7	0.62	B
FWR SB T	34.7	0.83	C	17.4	0.55	B
FWR SB R	22.2	0.25	C	13.4	0.19	B
Keone'ula EB L	63.4	0.83	E	40.9	0.59	D
Keone'ula EB L-T	63.4	0.83	E	40.7	0.59	D
Keone'ula EB R	39.8	0.14	D	34.3	0.06	C
Hanakahi WB L-T	38.1	0.33	D	4.0	0.41	D
Hanakahi WB R	52.9	0.77	D	37.7	0.13	D
FWR at Kaimālie St	**9.8**	**-**	**A**	**6.6**	**-**	**A**
FWR NB L	5.1	0.20	A	2.1	0.10	A
FWR NB T	3.5	0.36	A	2.0	0.25	A
FWR SB T	7.4	0.42	A	5.1	0.36	A
FWR SB R	5.1	0.12	A	3.8	0.07	A
Kaimālie EB L	53.8	0.78	D	50.5	0.44	D
Kaimālie EB R	51.3	0.69	D	46.9	0.05	D
FWR at Kuhina St	**19.0**	**-**	**B**	**16.0**	**-**	**B**
FWR NB L	13.8	0.18	B	10.7	0.07	B
FWR NB T	18.5	0.57	B	14.3	0.29	B
FWR NB R	13.6	0.13	B	12.2	0.04	B
FWR SB L	13.7	0.35	B	10.3	0.29	B
FWR SB T	18.9	0.63	B	12.9	0.31	B
FWR SB R	15.1	0.31	B	12.3	0.19	B
Shopping Center EB L	30.7	0.28	C	35.2	0.60	D
Shopping Center EB T-R	23.4	0.12	C	29.1	0.20	C
Kuhina WB L-T	25.3	0.27	C	29.6	0.39	C
Kuhina WB R	23.6	0.15	C	29.7	0.06	C

Table 8: Existing (2022) Intersection LOS (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Pāpipi St	**13.2**	**-**	**B**	**12.3**	**-**	**B**
FWR NB L	5.3	0.37	A	2.9	0.18	A
FWR NB T	4.1	0.37	A	2.9	0.20	A
FWR SB T	9.8	0.51	A	7.0	0.23	A
FWR SB R	9.0	0.32	A	6.5	0.12	A
Pāpipi EB L-R	49.4	0.67	D	41.9	0.55	D
FWR at 'Aikanaka Rd	**21.4**	**-**	**C**	**7.5**	**-**	**A**
FWR NB L	14.8	0.03	B	5.2	0.00	A
FWR NB T	20.5	0.44	C	6.4	0.25	A
FWR NB R	17.4	0.17	B	5.1	0.01	A
FWR SB L	14.8	0.59	B	5.1	0.01	A
FWR SB T	14.2	0.35	B	6.2	0.25	A
FWR SB R	11.2	0.01	B	5.2	0.03	A
'Aikanaka EB L-T-R	31.6	0.42	C	22.3	0.02	C
'Aikanaka WB L-T-R	39.9	0.72	D	23.3	0.19	C
FWR at Kimopelekāne Rd/North Rd	**30.5**	**-**	**C**	**20.6**	**-**	**C**
FWR NB L	29.3	0.02	C	27.3	0.01	C
FWR NB T	33.3	0.47	C	29.7	0.31	C
FWR NB R	32.5	0.33	C	28.0	0.01	C
FWR SB L	24.0	0.78	C	22.9	0.69	B
FWR SB T	16.9	0.16	B	18.6	0.25	B
FWR SB R	15.9	0.04	B	17.1	0.01	B
Kimopelekāne EB L-T-R	17.8	0.20	B	10.4	0.04	B
North Road WB L-T	17.0	0.12	B	10.3	0.04	B
North Road WB R	45.0	0.91	D	17.5	0.28	B
FWR at Pōhakupuna Rd	**5.8**	**TWSC**		**2.7**	**TWSC**	
FWR WB L	8.2	0.04	A	7.9	0.03	A
Pōhakupuna NB L-R	19.1	0.52	C	11.1	0.19	B
FWR at Kilaha St	**5.0**	**TWSC**		**4.6**	**TWSC**	
FWR EB L	7.4	0.03	A	7.7	0.07	A
FWR WB L	7.4	0.01	A	7.5	0.01	A
Kilaha NB L-T-R	10.9	0.08	B	13.5	0.14	B
Kilaha SB L-T-R	8.9	0.08	A	9.7	0.10	A
North Rd at Kilaha St	**5.4**	**TWSC**		**1.8**	**TWSC**	
North Road EB L-T-R	8.7	0.03	A	7.6	0.01	A
North Road WB L-T-R	8.1	0.03	A	7.8	0.02	A
Kilaha NB L-T-R	26.7	0.55	D	11.8	0.11	B
North Rd at Hanakahi Street	**6.5**	**TWSC**		**3.1**	**TWSC**	
North Road EB L-T	8.4	0.11	A	7.8	0.03	A
Kilaha Hanakahi SB L-T	18.7	0.51	C	11.9	0.19	B
North Rd at Haiamu Street	**0.0**	**TWSC**		**0.1**	**TWSC**	
North Road EB L-T	8.0	0.01	A	7.7	0.01	A
Kilaha Haiamu SB L-T	10.2	0.01	B	10.2	0.01	B

a) FWR at Keaunui Drive

FWR at Keaunui Drive operates at LOS D during the AM and PM peak hours. The FWR left turns and minor street approaches operate at LOS E or worse. The delay is a result of the traffic volume and the split phasing for the Keaunui Drive approaches. The overall intersection operates at an acceptable LOS. Vehicle queues cleared during every cycle and no major traffic issues were observed. Mitigation will not be analyzed.

b) FWR at Keoneʻula Drive/Hanakahi Street

FWR at Keoneʻula Drive/Hanakahi Street intersection operates at LOS D and LOS C in the AM and PM peak hours, respectively. The FWR southbound left turn, and eastbound left turn and through movements operate at LOS E during the AM peak hour. The delay is a result of the traffic volume and the split phasing for the Keaunui Drive approaches. The overall intersection operates at an acceptable LOS. Vehicle queues cleared every cycle and no major traffic issues were observed. Mitigation will not be analyzed.

c) FWR at Kaimālie Street, Kuhina Street/ʻEwa Beach Shopping Center, Pāpipi Street, ʻAikanaka Road, and Kimopelekāne Road/North Road

FWR at Kaimālie Street, Kuhina Street/ʻEwa Beach Shopping Center, Pāpipi Street, ʻAikanaka Road, and Kimopelekāne Road/North Road all operated at LOS C or better, with all movements operating at LOS D or better. Vehicle queues cleared every cycle and no major traffic issues were observed. Mitigation will not be analyzed.

d) FWR at Pōhakupuna Road and Kīlaha Street

All movements at the unsignalized intersections of FWR at Pōhakupuna Road and FWR at Kīlaha Street operate at LOS D or better. Mitigation will not be analyzed.

e) North Road at Kīlaha Street, Hanakahi Street, and Haiamu Street

All movements at the unsignalized intersections of North Road at Kīlaha Street, Hanakahi Street, and Haiamu Street operate at LOS D or better. Mitigation will not be analyzed.

2. Existing Segment Auto Mode (FWR Target Score: 2, North Road Target Score: 2)

The segment auto mode is dependent upon the number of travel lanes and the AADT. All segments in the study area meet the target segment auto score (see Table 9). Mitigation will not be analyzed.

Table 9: Existing (2022) Auto Segment Score

Roadway Segment	2021 ADT	Number of Lanes	Auto Segment Score
FWR between Geiger Road and Keaunui Drive	31,400	4	2
FWR between Kamaile Street and Keoneula Boulevard	20,600	4	2
FWR between Aekai Place and Parish Street	6,200	4	1
FWR between NOAA and ʻEwa Beach Road	2,100	2	1
North Road between FWR and Kilaha Street	6,600	2	1

3. Transit Mode (FWR Target Score: 3, North Road Target Score: 3)

Per the *TIA Guide*, transit scores may differ depending on the existing pedestrian facilities, frequency of bus routes, and other factors. In situations where the transit LOS score will differ, the block score will be calculated as an average of both directions. Based on this guidance, the directional transit scores were combined and analyzed separately for the AM and PM peak hours. The transit mode analysis was done by segments, depending on which bus routes provide service to the study segment. The bus routes servicing each segment met the target transit score of 3 (see Table 10) and therefore mitigation for the transit mode is not required. The existing transit analysis worksheets can be found in Appendix C.

Table 10: Existing (2022) Transit Score

Segment	Segment Bus Routes	Peak	Transit LOS Score	Transit LOS	Transit Score
FWR between Geiger Road and North Road	41, 42, 44, 91, 91A, E, PH7, W1	AM Peak	1.30	A	1
		PM Peak	1.36	A	1
FWR between North Road and end of FWR	41, 42, 91, PH7, WH1	AM Peak	2.25	B	2
		PM Peak	1.89	A	1
North Road between FWR and Kilaha Street	41, 44	AM Peak	2.05	B	2
		PM Peak	2.61	B	2

4. Pedestrian Intersection Mode (FWR Target Score: 2, North Road Target Score: 1)

The pedestrian mode was analyzed using the PEQI for intersection and segments provided in the *TIA Guide*. The resulting intersection pedestrian score is shown in Table 12. The intersections that do not meet the pedestrian target score of 2 on FWR or 1 on North Road are highlighted in Table 11. The threshold for a pedestrian score of 2 and a pedestrian score of 1 is a PEQI score of 40 and 60, respectively. Improvements to the three North Road intersections that do not meet the target pedestrian score will be discussed in the mitigation section. The existing pedestrian intersection analysis worksheets can be found in Appendix C.

Table 11: Existing (2022) Pedestrian Intersection Score

	Study Intersection	PEQI Score	Pedestrian Intersection Score
1	FWR at Keaunui Drive	45.38	2
2	FWR at Keone'ula Boulevard/Hanakahi Stre	42.02	2
3	FWR at Kaimālie Street	40.34	2
4	FWR at Kuhina Street	63.03	1
5	FWR at Pāpipi Road	40.34	2
6	FWR at 'Aikanaka Road	50.42	2
7	FWR at Kimopelekāne Road/North Road	63.03	1
8	FWR at Pōhakupuna Road	41.67	2
9	FWR at Kilaha Street	63.54	1
10	North Road at Kilaha Street	30.21	3
11	North Road at Hanakahi Street	5.21	0
12	North Road at Haiamu Street	5.21	4

5. Pedestrian Segment Mode (FWR Target Score: 2, North Road Target Score: 1)

Per the *TIA Guide*, the side of the street that would result in the lower pedestrian score will be presented for the pedestrian segment analysis. Some of the inputs for the pedestrian segment are highly subjective, such the visual attractiveness of a segment, how safe the user feels while walking on the segment, whether strong odors detectable, the noise level, and the user's opinion of how walkable the segment is. Some of these subjective inputs include how visually attractive the pedestrian facility is, how safe does the pedestrian feel, are there strong odors, how noisy is the surrounding are, and the pedestrians overall feeling of how walkable the segment is. These inputs were determined during a field visit during the data collection effort. The resulting pedestrian segment score is shown in Table 12. All analyzed FWR segments satisfy the target pedestrian score of 2, while the North Road segment did not reach the pedestrian target score of 1. Improvements to North Road will be discussed in the mitigation section. The existing pedestrian segment analysis worksheets can be found in Appendix C.

Table 12: Existing (2022) Pedestrian Segment Score

	Street Segment	Segment and Side analyzed	PEQI Score	Pedestrian Segment Score
1	FWR from Geiger Road to Keoneula Boulevard	Segments without sidewalk	48.58	2
2	FWR from Keone'ula Boulevard to Kilaha Street	West Side	53.00	2
3	FWR from Kilaha Street to end of FWR	South Side	41.32	2
4	North Road from FWR to Kilaha Street	South Side	44.16	2

6. Bicycle Mode (FWR Target Score: 1, North Road Target Score: 3)

The number of lanes, AADT, posted speed limit, and type of existing bike facility are inputs used to analyze the bike LTS of the study segments. The HDOT AADT data was available at certain

cross sections along FWR and on North Road. Each section that had HDOT AADT data was analyzed separately. The resulting score for each segment is shown in Table 13. The target score is not met by any study segment. Improvements to the bike facilities will be discussed in the mitigation section. The existing bike segment analysis worksheets can be found in Appendix C.

Table 13: Existing (2022) Bicycle Score

Segment	2021 AADT	Posted Speed Limit (MPH)	Bike Score	
			NB/WB	SB/EB
FWR between Geiger Road and Keaunui Drive	31,400	35	2	2
FWR between Kaimālie Street and Keone'ula Boulevard	20,600	25	4	4
FWR between Aekai Place and Parish Street	6,200	25	4	4
FWR between NOAA and Ewa Beach Road	2,100	35	3	3
North Road between FWR and Kilaha Street	6,600	25	4	4

G. Existing Condition Mitigation

1. Vehicle Mode

All signalized intersections operate at LOS D or better. All movements at all unsignalized intersections operate at LOS D or better. Mitigation for existing conditions will not be analyzed or recommended.

2. Transit Mode (FWR Target Score: 3, North Road Target Score: 3)

Each analyzed intersection met the target auto score of 2 and therefore mitigation is not needed and was not considered.

3. Pedestrian Mode (FWR Target Score: 2, North Road Target Score: 1)

For the North Road study intersections, adding ladder crosswalks and curb cuts for would improve the pedestrian score to 2 but would still fall short of the target score of 1. Adding five traffic control features, such as bulbouts, mini-circles, speed humps, drains & bumps, or bike lanes, which would provide the highest possible score for this segment, in addition to the east crosswalk would still not result in a pedestrian intersection score of 1 (see Table 14). The final option to improve this intersection would be to add traffic control features. Based on the PEQI scoring method, North Road at Kīlaha Street cannot reach a pedestrian score of 1 unless the intersection is signalized. All movements operate at an acceptable LOS during all peak hours and a traffic volume on North Road do not come close to meeting the traffic signal warrant thresholds. A traffic signal at this intersection based on traffic volume would not be appropriate.

Table 14: Existing Intersection Pedestrian Score with Mitigation

	Study Intersection	Existing PEQI Score	Existing Pedestrian Intersection	Mitigation	PEQI Score with Mitigation	Pedestrian Intersection Score with
10	North Road at Kilaha Street	30.21	3	Add Curb Cut and Ladder Crosswalks for all legs and 5 Traffic Calming Features	50.00	2
11	North Road at Hanakahi Street	5.21	4	Add Curb Cut and Ladder Crosswalks for all legs and 5 Traffic Calming Features	50.00	2
12	North Road at Haiamu Street	5.21	4	Add Curb Cut and Ladder Crosswalks for all legs and 5 Traffic Calming Features	50.00	2

In addition to the *TIA Guide* PEQI pedestrian analysis, the existing crossing treatments at the unsignalized intersections were checked against the *C&C Complete Streets Design Manual's* Criteria for Crossing Treatments at Uncontrolled Locations (see Figure 16). It is expected that North Road at Haiamu Street/Future North Road Access will meet the minimum adjusted pedestrian crossings and therefore was considered for crossing treatments. The North Road ADT, posted speed limit, and number of lanes on North Road at Haiamu Street/Future North Road Access result in Treatment A. Therefore, it is recommended to install marked crosswalks across North Road with crossing signage at the intersection with Haiamu Street/Future North Road Access.

Proposed walkways and walkway upgrades are recommended on North Road between FWR and Kīlaha Street, as part of the 2021 *O'ahu Pedestrian Plan*. At FWR and North Road, the north side of North Road has a sidewalk separated from the travel way by an AC berm, while the south side of North Road has a 4-foot sidewalk separated from the travel way by 4-foot landscape, curb, and gutter. While the 2021 *O'ahu Pedestrian Plan* does not call out specific walkway and walkway upgrade improvements, this segment of North Road was analyzed with the pedestrian facilities at FWR being extended to Kīlaha Street. This included a 4-foot sidewalk, with a buffer, and a higher value for the "feel safe" input into the PEQI score. These improvements satisfied the pedestrian target score of 1 along North Road (see Table 15).

Table 15: Uncontrolled Crossing Treatments

	Street Segment	Side of Segment	Existing PEQI Segment Score	Existing Pedestrian Segment Score	Mitigation	PEQI Score with Mitigation	Pedestrian Intersection Score with Mitigation
5	North Road from FWR to Kilaha Street	South Side	47.32	2	4-foot sidewalk, 4-foot buffer, increase safety	60.25	1

Roadway Configuration	Number of Lanes Crossed to Reach a Refuge	Roadway ADT and Posted Speed															
		1,500 - 9,000 vpd				9,000 - 12,000 vpd				12,000 - 15,000 vpd				≥15,000 vpd			
		≤ 30 mph	35 mph	40 mph	> 40 mph	≤ 30 mph	35 mph	40 mph	> 40 mph	≤ 30 mph	35 mph	40 mph	> 40 mph	≤ 30 mph	35 mph	40 mph	> 40 mph
1-2 Lanes	2	A	A	C	C	A	A	C	C	A	A	C	C	A	C	C	D
3 Lanes with Raised Median	1 or 2	B	B	C	C	B	B	C	C	B	C	C	C	B	C	C	D
3 Lanes	3	B	B	C	C	B	C	C	C	C	C	C	D	C	C	C	D
4 Lanes with Raised Median	2	B	B	C	D	B	C	C	D	B	C	D	D	C	C	D	D
4 Lanes	4	B	C	D	D	B	C	D	D	C	C	D	D	C	C	D	D
5 Lanes with Raised Median	2 or 3	B	B	C	D	B	C	C	D	C	C	D	D	C	C	D	D
5 Lanes	5	B	C	D	D	C	C	D	D	C	C	D	D	C	C	D	D
6 or More Lanes	3 or 6	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D

Notes:

1. Prior to the use of this table, the following mitigation and safety countermeasures should be considered and an updated roadway cross-section used, where possible within the scope of the study.

2. An assessment of the potential to reduce lane and roadway capacity, such as a through a road diet, should be completed in order to reduce the number of travel lanes a pedestrian has to cross.

3. Geometric roadway reconfigurations, such as the installation of raised median refuge island and/or curb extensions, should be considered to reduce pedestrian exposure to oncoming automobiles.

4. Per guidance from the FHWA, raised medians should be a minimum of 4 feet wide and 6 feet long to provide sufficient room for pedestrian to wait in between crossing traffic.

Recommended Treatments:

A. Install marked crosswalk with crossing signage.

Specific Guidance: Install marked crosswalk and consider including appropriate pedestrian crossing (W11-2 or S1-1) sign and down arrow (W16-7) sign.

B. Install marked crosswalk with crossing signage, advanced signage, and advanced markings.

Specific Guidance: Install marked crosswalk with appropriate pedestrian crossing (W11-2 or S1-1) sign and down arrow (W16-7) sign and consider advanced (W16-9P) sign and/or advanced stop line and Stop Here for Pedestrians (R1-5b or R1-5c) sign on multilane approaches.

C. Install marked crosswalk with crossing signage and RRFB (or PHB if warranted).

Specific Guidance: Install marked crosswalk with appropriate pedestrian crossing (W11-2 or S1-1) sign, down arrow (W16-7) sign, and RRFB with advanced stop line and Stop Here for Pedestrians (R1-5b or R1-5c) sign (or PHB if warranted).

D. Install marked crosswalk with crossing signage and PHB or traffic signal (if warranted).

Specific Guidance: Install marked crosswalk with appropriate pedestrian crossing (W11-2 or S1-1) sign, down arrow (W16-7) sign, and PHB or traffic signal (if warranted) with advanced stop line.

Interim treatments are recommended for use by the City where existing crossings are found to justify safety enhancements that will take additional time for permitting, design, and construction.

- The City has used advanced stop lines and a Stop Here for Pedestrians (R1-5b or R1-5c) sign in the interim, where an RRFB, PHB, or traffic signal was being considered.

- A gateway treatment may also be used in the interim at any crosswalk where an RRFB, PHB, or traffic signal is/was recommended. Where used, R1-6 signs are recommended, however florescent yellow green delineators may be used as a substitute where needed as a result of narrow lane widths. Where used across multi-lane approaches, advanced stop lines and Stop Here for Pedestrians (R1-5b or R1-5c) sign should be included.

- Where raised median refuges are recommended at an existing crosswalk, delineators or other vertical traffic control features may be used in the interim while awaiting full construction.

Figure 16: Criteria for Crossing Treatments at Uncontrolled Locations

4. Bicycle Mode (FWR Target Score: 1, North Road Target Score: 3)

No segments analyzed in the study met the target bike score of 1. The bike LTS methodology considers traffic volume, vehicle speeds, bike infrastructure, and roadway configuration. The 2019 Oʻahu Bike Plan proposes a buffered bike lane on FWR from Keoneʻula Boulevard to Kīlaha Street as a Priority 1 project. Providing a painted buffer will improve the bike score to LTS 2 (see Table 16), while a physical buffer will improve the bike score to LTS 1. It is recommended that the future buffer bike lane be constructed with a physical barrier instead of a painted buffer to meet the target bike score. The proposed bike lane on North Road would result in a bike score of LTS 1. Adding a bike lane would likely require the removal of on-street parking. It is recommended that the bike lane on North Road proposed in the Oʻahu Bike Plan be installed.

Table 16: Existing Condition with Oʻahu Bike Plan Improvements

Segment	2021 AADT	Posted Speed Limit	Bike Score	
			NB/WB	SB/EB
FWR between Geiger Road and Keaunui Drive	31,400	35	2	2
FWR between Kaimālie Street and Keoneʻula Boulevard	20,600	25	2	2
FWR between Aekai Place and Parish Street	6,200	25	2	2
FWR between NOAA and Ewa Beach Road	2,100	35	2	2
North Road between FWR and Kilaha Street	6,600	25	1	1

IV. Future (2034) Without Project Conditions

Regional traffic growth and future surrounding area development's traffic were added to the roadway network and analyzed for the Future (2034) Without Project analysis.

A. Upcoming Planned Projects

1. STIP

The Statewide Transportation Improvements Program (STIP) is a four-year forecast that identifies state and county transportation projects to be funded with Federal Highway and Federal Transit funds. There were no roadway construction or improvement projects listed in the STIP 2022-2025, Revision 20 (updated May 28, 2024) that would impact the project area. The 2025-2028 STIP is still in the development phase and does not include projects involving any study intersections or segments.

2. ERP (formerly OEQC)

Research was completed on February 2, 2023, at the State of Hawaii Office of Environmental Quality Control (OEQC) website. The OEQC website provides Environmental Impact Statement (EIS) and Environmental Assessments (EA) available to the public. As of July 2021, the OEQC was renamed the Environmental Review Program (ERP), but the URL led to the old OEQC website. Three projects from the OEQC website were identified that could impact the study area.

a) Ho'opili TIAR (ATA, 2014)

The Ho ʻopili TIAR analyzed the impact of the Ho ʻopili development in 2023 and 2035. The Ho'opili TIAR is currently being updated but was not available at the time of this report. The Future (2023) Without Project analysis recommended changing the westbound Kolowaka approach to have a shared left-through, through, and dual right turn lanes. The 2023 project related volumes will add traffic to Farrington Highway and Kualakai Parkway, but not FWR. The Future (2027) Without Project analysis will include the recommended for the Kolowaka Drive westbound approach and did not add any volumes to FWR.

b) Hawaii Humane Society TIAR (The Traffic Management Consultant, 2019)

The Hawaii Humane Society TIAR analyzed the impact a 20,745 SF GFA animal support facility in 2023 with its main access off Old FWR, west of FWR. This included 70 inbound and 24 outbound trips during the AM peak hour and 40 inbound and 60 outbound trips during the PM peak hour. The project related trips were added to FWR and distributed throughout the study area using existing traffic patterns.

c) West Loch Affordable Housing TIAR (SSFM, 2020)

The West Loch Affordable Housing TIAR analyzed the impact a 127-unit low-rise multi-family development, with its main access off Renton Road, east of FWR. This included 15 inbound and 47 outbound trips during the AM peak hour and 47 inbound and 28 outbound trips during the PM peak hour. The project related trips were added to FWR and distributed throughout the study area using existing traffic patterns.

B. Future (2024) Traffic Volumes

1. Background Growth

The 2016-2021 historical HDOT data showed relatively no growth along Fort Weaver Road.

The 2035 Oʻahu Regional Transportation Plan (2035 ORTP) (Oʻahu MPO, April 2011) used a travel demand forecast model to determine person trips in 2007 and 2035. Person trips include single occupancy vehicles, vehicles with 2 or more passengers, and transit trips. The 2035 ORTP estimates persons trips at various screenlines to compare growth for future year forecasts. The ʻEwa screenline trips were estimated to be 183,900 trips and 241,300 trips in 2007 and 2035, respectively, resulting in a compound annual growth rate of 0.97%. It was determined that a 1.00% annual growth rate over 12 years (2022 to 2034) in addition to project related trips from The Hawaiʻi Humane Society and the West Loch Affordable Housing was appropriate to determine the future background volume. The Future (2034) Without Project peak hour volumes are shown in Figure 17.

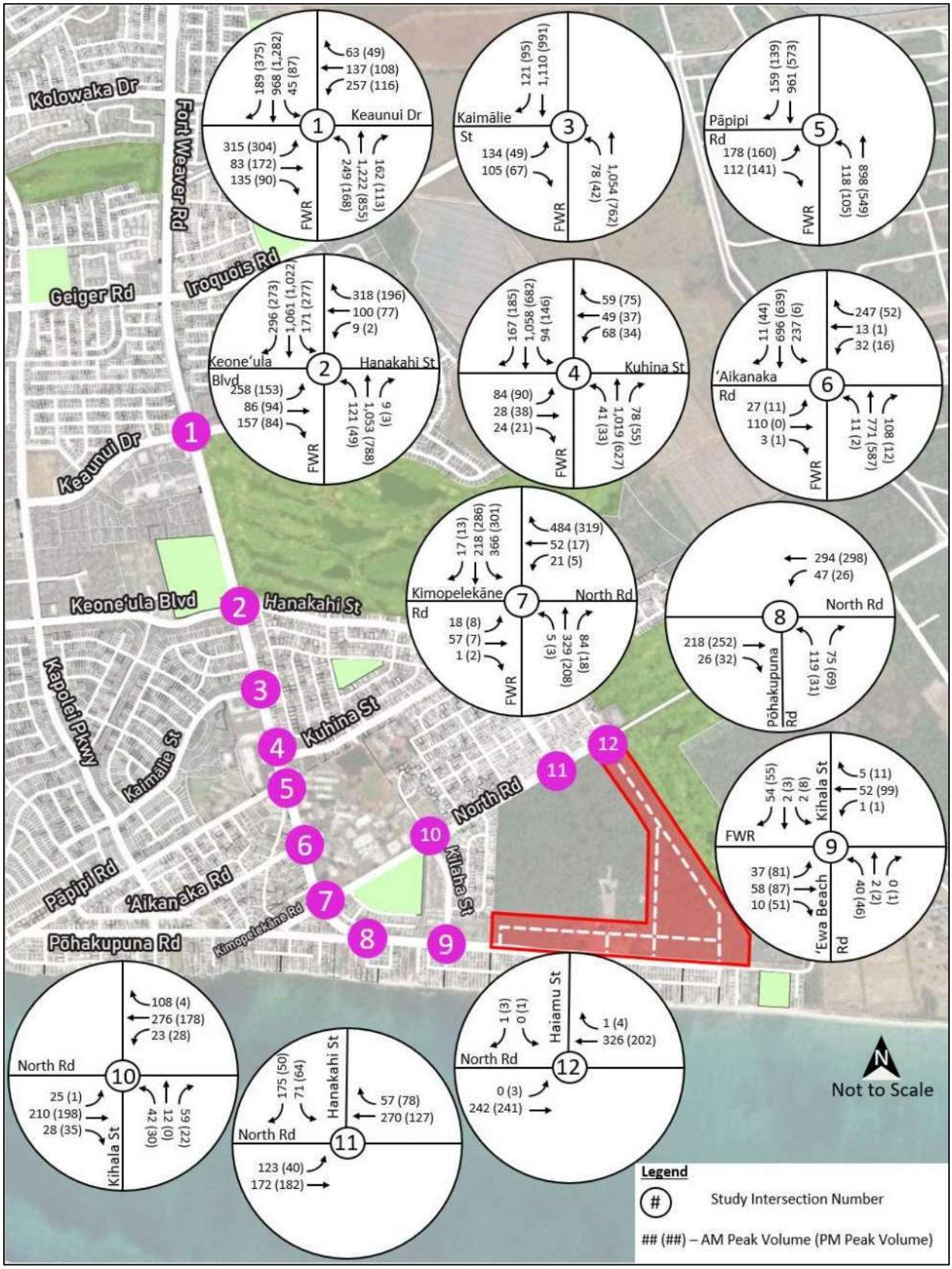

Figure 17: Future (2034) Without Project Peak Hour Volumes

C. Future Without Project Level of Service

Cycle lengths were kept the same as the existing (2022) condition cycle lengths, but the splits were optimized. There are no expected changes to any of the existing lane configurations.

1. Future (2034) Without Project Intersection LOS

Future (2034) Without Project intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Tables 17-18. The Future (2034) Without Project traffic operation analysis worksheets can be found in Appendix D. Intersections and movements that operate at LOS E or worse are highlighted in yellow and will be discussed in this section.

a) FWR at Keaunui Drive

FWR at Keaunui Drive intersection will continue to operate at LOS E and LOS D during the AM and PM peak hours, respectively. The FWR left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the FWR left turns and Keaunui Drive westbound movements operate at LOS E or worse. Mitigation for FWR at Keaunui Drive for Future (2034) Without Project will be analyzed.

b) FWR at Keoneʻula Drive/Hanakahi Street

FWR at Keoneʻula Drive/Hanakahi Street intersection will continue to operate at LOS D and LOS C in the AM and PM peak hours, respectively. The FWR left turns, and eastbound left turn and through movements will operate at LOS E or worse during the AM peak hour. The delay is due to the split phasing, rather than the inability of vehicles to clear the intersection. Existing vehicle queues cleared every cycle and no major traffic issues were observed. Future (2034) Without Project conditions are expected to operate similarly. No mitigation will be analyzed or recommended for this intersection.

c) FWR at Kaimālie Street

FWR at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.70) during the PM peak hour. The eastbound right turn volume is 67 vph. This movement will clear the intersection every cycle. No mitigation will be analyzed or recommended for this intersection.

Table 17: Future (2034) Without Project Intersection Operations

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**58.0**	**-**	**E**	**41.0**	**-**	**D**
FWR NB L	94.9	0.94	F	90.8	0.88	F
FWR NB T	40.5	0.85	D	51.5	0.47	C
FWR SB L	141.8	0.85	F	77.8	0.81	E
FWR SB T	57.1	0.88	E	34.4	0.80	C
Keaunui EB Double L	60.8	0.63	E	53.5	0.51	D
Keaunui EB T	56.7	0.31	E	54.4	0.53	D
Keaunui EB R	62.0	0.62	E	51.9	0.34	D
Keaunui WB L	91.7	0.93	F	74.9	0.80	E
Keaunui WB T	57.4	0.47	E	69.3	0.71	E
FWR at Keone'ula Blvd/Hanakahi St	**48.5**	**-**	**D**	**24.1**	**-**	**C**
FWR NB L	87.5	0.95	F	17.4	0.22	B
FWR NB T	44.8	0.92	D	26.4	0.62	C
FWR NB R	21.5	0.01	C	18.7	0.01	B
FWR SB L	97.8	1.02	F	15.9	0.66	B
FWR SB T	42.8	0.93	D	18.7	0.63	B
FWR SB R	22.0	0.25	C	13.5	0.19	B
Keone'ula EB L	65.7	0.84	E	41.3	0.60	D
Keone'ula EB L-T	64.6	0.84	E	41.1	0.60	D
Keone'ula EB R	40.2	0.14	D	34.6	0.06	C
Hanakahi WB L-T	37.7	0.31	D	40.3	0.42	D
Hanakahi WB R	54.3	0.79	D	38.0	0.13	D
FWR at Kaimālie St	**9.8**	**-**	**A**	**6.5**	**-**	**A**
FWR NB L	5.1	0.23	A	3.0	0.10	A
FWR NB T	3.5	0.40	A	2.0	0.28	A
FWR SB T	7.4	0.48	A	4.9	0.40	A
FWR SB R	5.1	0.12	A	3.5	0.09	A
Kaimālie EB L	53.8	0.78	D	49.5	0.45	D
Kaimālie EB R	51.3	0.69	D	55.9	0.70	E
FWR at Kuhina St	**20.3**	**-**	**C**	**16.2**	**-**	**B**
FWR NB L	15.1	0.20	B	10.9	0.10	B
FWR NB T	20.0	0.65	B	14.8	0.36	B
FWR NB R	13.7	0.13	B	12.2	0.08	B
FWR SB L	15.0	0.39	B	10.6	0.36	B
FWR SB T	20.8	0.72	C	13.4	0.41	B
FWR SB R	15.1	0.31	B	12.3	0.26	B
Shopping Center EB L	30.7	0.29	C	35.8	0.33	D
Shopping Center EB T-R	23.3	0.12	C	29.6	0.16	C
Kuhina WB L-T	25.3	0.27	C	30.1	0.19	C
Kuhina WB R	23.6	0.15	C	30.2	0.22	C

Table 18: Future (2034) Without Project Intersection Operations (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Pāpipi St	**13.1**	**-**	**B**	**12.0**	**-**	**B**
FWR NB L	6.4	0.37	A	2.9	0.19	A
FWR NB T	4.4	0.37	A	3.0	0.23	A
FWR SB T	10.5	0.51	B	7.0	0.26	A
FWR SB R	9.8	0.32	A	6.5	0.12	A
Pāpipi EB L-R	49.3	0.67	D	43.0	0.55	D
FWR at 'Aikanaka Rd	**22.0**	**-**	**C**	**7.6**	**-**	**A**
FWR NB L	14.7	0.03	B	5.2	0.01	A
FWR NB T	21.1	0.49	C	6.6	0.31	A
FWR NB R	17.1	0.17	B	5.1	0.01	A
FWR SB L	16.0	0.63	B	5.1	0.01	A
FWR SB T	14.5	0.39	B	6.5	0.32	A
FWR SB R	11.0	0.01	B	5.2	0.05	A
'Aikanaka EB L-T-R	32.7	0.43	C	22.3	0.08	C
'Aikanaka WB L-T-R	42.5	0.74	D	23.3	0.25	C
FWR at Kimopelekāne Rd/North Rd	**31.4**	**-**	**C**	**21.0**	**-**	**C**
FWR NB L	28.5	0.02	C	27.1	0.01	C
FWR NB T	32.9	0.51	C	29.7	0.46	C
FWR NB R	31.5	0.32	C	27.8	0.09	C
FWR SB L	23.7	0.79	C	23.1	0.69	C
FWR SB T	16.5	0.18	B	18.6	0.30	B
FWR SB R	15.4	0.03	B	16.9	0.03	B
Kimopelekāne EB L-T-R	18.2	0.20	B	10.7	0.05	B
North Road WB L-T	17.4	0.12	B	10.6	0.03	B
North Road WB R	49.2	0.93	D	18.0	0.60	B
FWR at Pōhakupuna Rd	**6.0**	**TWSC**		**2.5**	**TWSC**	
FWR WB L	8.3	0.04	A	8.0	0.03	A
Pōhakupuna NB L-R	21.5	0.56	C	11.5	0.20	B
FWR at Kilaha St	**4.8**	**TWSC**		**4.5**	**TWSC**	
FWR EB L	7.4	0.03	A	7.7	0.02	A
FWR WB L	7.4	0.01	A	7.6	0.01	A
Kilaha NB L-T-R	11.0	0.08	B	13.9	0.14	B
Kilaha SB L-T-R	9.0	0.08	A	9.8	0.10	A
North Rd at Kilaha St	**5.4**	**TWSC**		**1.8**	**TWSC**	
North Road EB L-T-R	8.7	0.03	A	7.6	0.01	A
North Road WB L-T-R	8.1	0.03	A	7.8	0.02	A
Kilaha NB L-T-R	27.1	0.56	D	11.8	0.11	B
North Rd at Hanakahi Street	**6.5**	**TWSC**		**3.1**	**TWSC**	
North Road EB L-T	8.4	0.01	A	7.8	0.03	A
Kilaha Hanakahi SB L-T	18.7	0.51	C	11.9	0.19	B
North Rd at Haiamu Street	**0.1**	**TWSC**		**0.1**	**TWSC**	
North Road EB L-T	8.0	0.01	A	7.7	0.01	A
Kilaha Haiamu SB L-T	10.2	0.01	B	10.2	0.01	B

2. Multimodal Analysis

There are no anticipated changes for the Future (2034) Without Project condition for transit, pedestrian, and bike modes. Mitigation discussed in the existing condition are recommended for all future conditions.

3. Future (2034) Without Project Mitigation

The westbound through lane was analyzed as a shared left-through lane. This would change the existing left, through, right turn lane to a left, left-through, and right turn lane. FWR has two southbound receiving lanes that will allow for this double westbound left turn without the need for any roadway widening (see Figure 18).

Figure 18: FWR at Keaunui Drive – Westbound Left Turn Analysis

The eastbound and westbound split phasing and cycle lengths are anticipated to remain the same. *HCM 6th* cannot analyze dedicated and shared lanes, and therefore *HCM 2000* was used for analysis. Future (2034) Without Project intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Table 19.

Table 19: Future (2034) Without Project Intersection Operations - Mitigation

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**50.6**	**-**	**D**	**38.8**	**-**	**D**
FWR NB L	80.7	0.87	F	80.6	0.81	F
FWR NB T	33.4	0.80	C	22.3	0.48	C
FWR NB R	19.2	0.15	B	16.9	0.08	B
FWR SB L	121.1	0.79	F	69.3	0.61	E
FWR SB T	49.6	0.82	D	34.2	0.80	C
FWR SB R	32.8	0.13	C	22.3	0.28	C
Keaunui EB Double L	65.5	0.71	E	59.8	0.63	E
Keaunui EB T	58.3	0.34	E	63.4	0.66	E
Keaunui EB R	55.7	0.10	E	52.5	0.06	D
Keaunui WB Double L	84.7	0.85	F	67.4	0.62	E
Keaunui WB T	86.1	0.86	F	71.0	0.68	E
Keaunui WB R	54.4	0.05	D	57.4	0.03	E

FWR at Keaunui Drive is projected to operate at LOS D during the AM and PM peak hours with this improvement. The FWR left turns and several Keaunui Drive movements will operate at LOS E or worse. It is recommended that the westbound approach be restriped to a left, shared left-through, and right turn lane. Advanced signs should be installed to alert drivers of the modified lane configuration. This improvement will be included in the Future (2034) With Project analysis.

V. Future (2034) With Project Conditions

Three buildout alternatives are being considered for the project:

- Alternative A with 220 single-family units,
- Alternative B with 220 single-family and 330 multi-family low-rise units, and
- Preferred Alternative with 110 single-family and 160 multi-family low-2034 units.

It is noted that some of the multi-family residential houses may be used for senior housing, which would have the effect of reducing the number of project generated trips. However, the analysis did not include senior housing to ensure that the highest project generated trip for each alternative was analyzed.

A. Future With Project Generated Volumes

1. Project Related Volumes

The expected number of trips and resulting traffic generated from the proposed project was determined using the following four-step methodology: trip generation, trip distribution, modal choice, and route assignment.

a) Trip Generation

Trip generation was calculated for the proposed three options using rates from Trip Generation, 11th Edition (ITE, September 2022) which is standard traffic engineering practice. The Single-Family Detached Housing (ITE Code 210) and Multi-Family (Low-Rise) (ITE Code 220) were used for the calculations. Calculated project related trips for the peak hour of the adjacent street are shown in Table 20.

Table 20: Development Trip Generation Rates

Land Use	ITE Code	AM Peak Hour of Generator			PM Peak Hour of Generator		
		Equation	In %	Out %	Equation	In %	Out %
Single-Family	210	T = 0.71(X) + 7.23	26	74	Ln(T) = 0.93 Ln(X) + 0.36	64	36
Multi-Family (Low-Rise)	220	T = 0.35(X) + 28.13	24	76	T = 0.42(X) + 34.78	62	38

The estimated trips expected from the development were calculated and are shown in Table 21.

Table 21: Project Related Development Phasing and Trips Generated

Proposed Alternative	Land Use	Units	AM Peak Hour of Generator			PM Peak Hour of Generator		
			In	Out	Total	In	Out	Total
A	Single-Family	220	42	121	163	138	78	216
	Multi-Family	0	0	0	0	0	0	0
	Total	**220**	**42**	**121**	**163**	**138**	**78**	**216**
B	Single-Family	220	42	121	163	138	78	216
	Multi-Family	330	34	110	144	107	66	173
	Total	**550**	**76**	**231**	**307**	**245**	**144**	**389**
Preferred	Single-Family	220	42	121	163	138	78	216
	Multi-Family	160	20	64	84	63	39	102
	Total	**380**	**62**	**185**	**247**	**201**	**117**	**318**

b) Trip Distribution

The single-family homes are planned to be located closer to North Road and therefore are anticipated to access the project from North Road. Vehicles accessing the project site through North Road are anticipated to use Hanakahi Street to travel to and from FWR. Traffic volumes at Keaunui Drive and Keone'ula Boulevard/Hanakahi Street will be distributed using 2022 turning movements.

The multi-family homes are planned to be located closer to FWR and are anticipated to access the project from FWR. Vehicles accessing the project site through the four FWR access points will be distributed along FWR using 2022 turning movements. For Alternative B, about one-third of the multi-family project generated trips are anticipated to use FWR Access #1, #3, and #4, while FWR Access #2 will be used by NOAA. For the Preferred Alternative, about one-half of the multi-family project generated trips are anticipated to use FWR Access #1 and #4, while FWR Access #2 will be used by NOAA.

c) Trip Assignment

Trips from the single-family residential units were assigned to the North Road access while trips from the multi-family residential homes were assigned to the nearest of the four FWR access points.

d) Modal Choice

The *ITE Trip Generation 11th Edition* provides estimates for vehicle, pedestrian, transit, bicycle, and truck trips based on land use and time period. The project generated trips provided in Table 21 were not reduced to account for other modes of transportation to assess the worst case scenario. Therefore, all trips are considered to be passenger vehicle trips. The transit, pedestrian, and bike multimodal scores are not dependent on the number of users, and therefore were not calculated and analyzed.

e) Future With Project Volumes

Project related trips were distributed using 2022 turning movements counts. The resulting project related traffic volume for each alternative are shown in Figures 19-24. The Project Generated Volume was added to the Future (2034) Without Project traffic volumes shown in Figure 17 to calculate the Future (2034) With Project traffic volumes for the three options, shown in Figures 25-30.

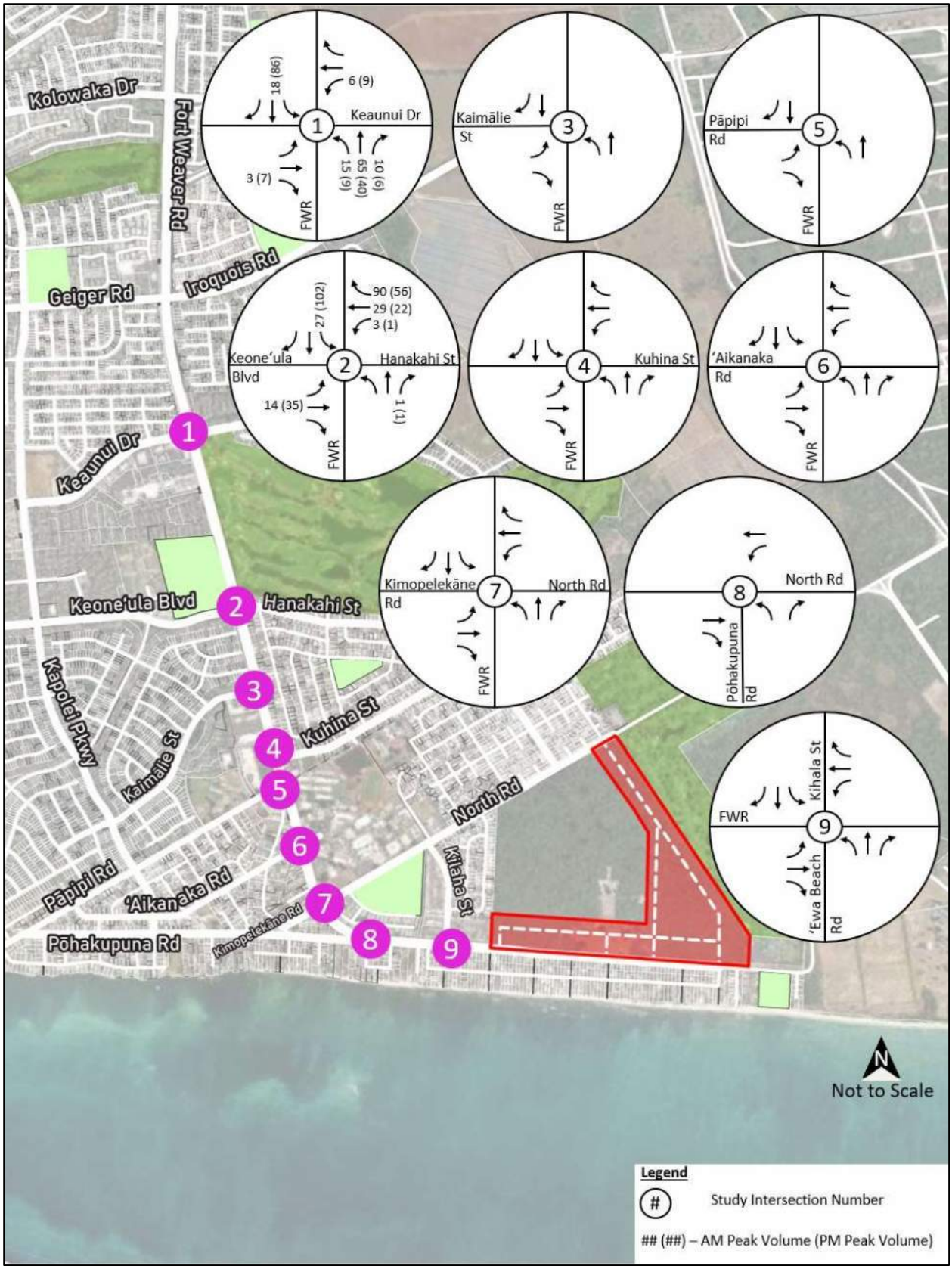

Figure 19: Project Generated Volume – Alternative A (220 SF)

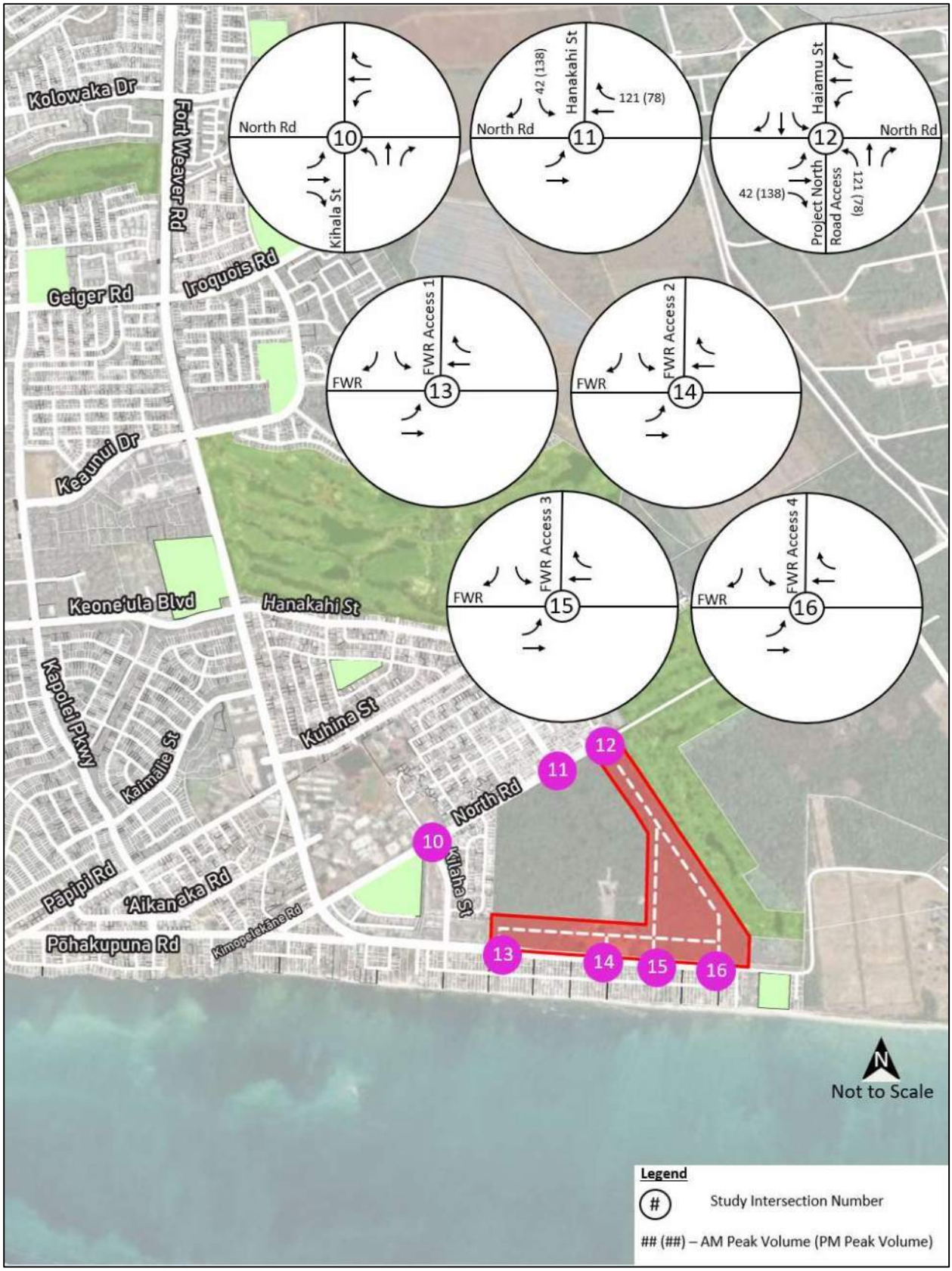

Figure 20: Project Generated Volume – Alternative A (220 SF) (cont.)

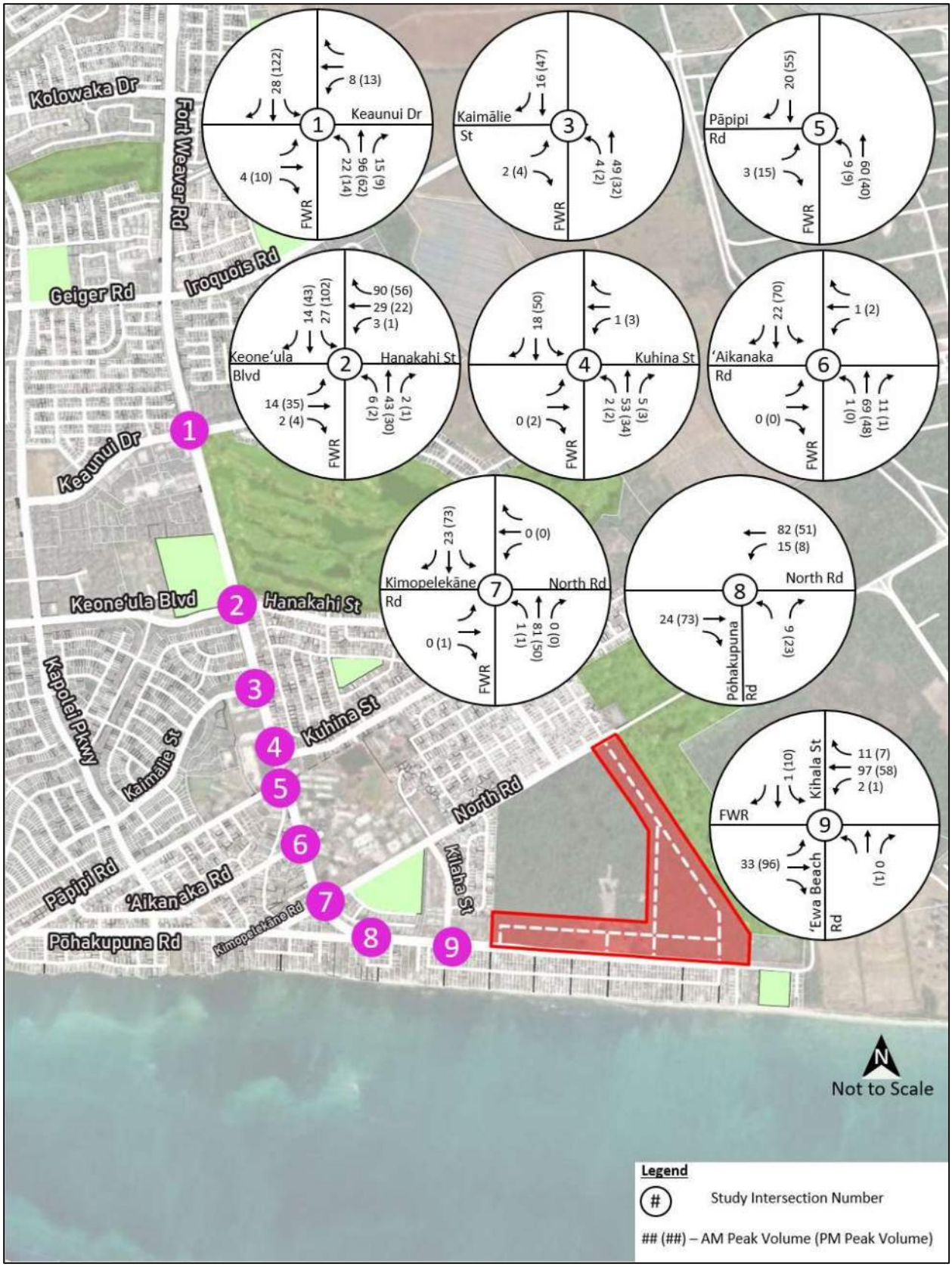

Figure 21: Project Generated Volume – Alternative B (220 SF, 330 MF)

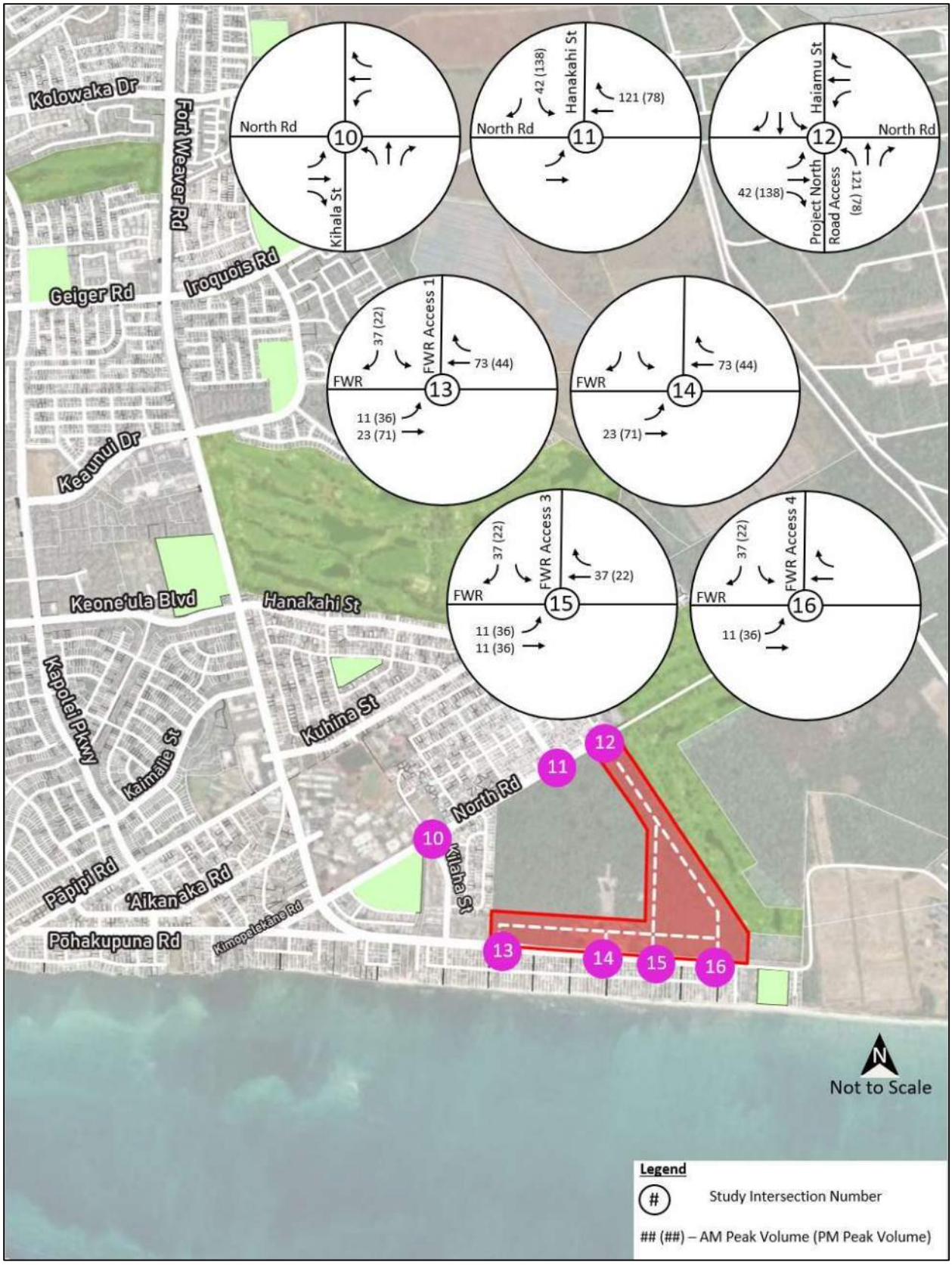

Figure 22: Project Generated Volume – Alternative B (220 SF, 330 MF) (cont.)

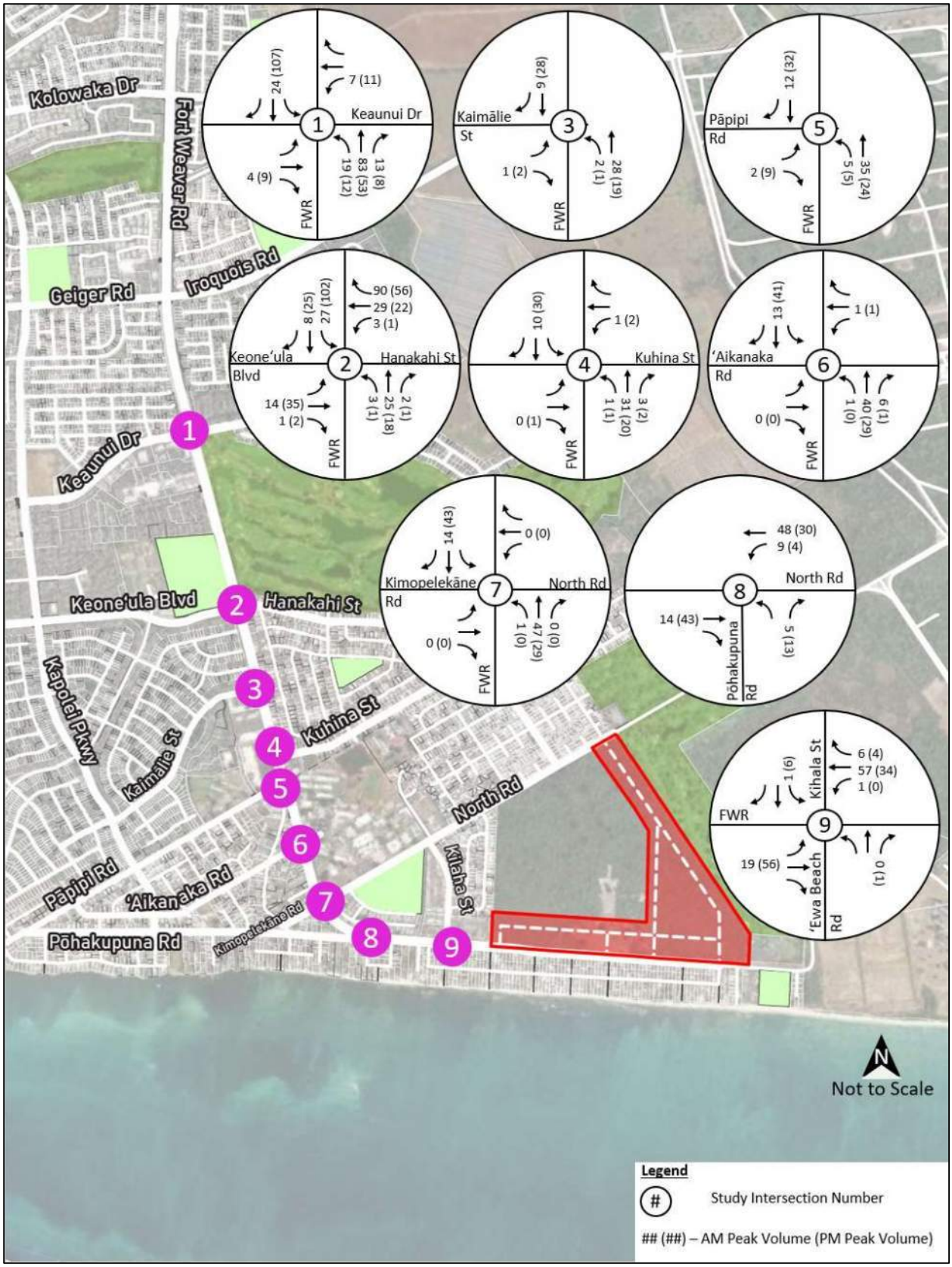

Figure 23: Project Generated Volume – Preferred Alternative (220 SF, 160 MF)

Figure 24: Project Generated Volume – Preferred Alternative (220 SF, 160 MF) (cont.)

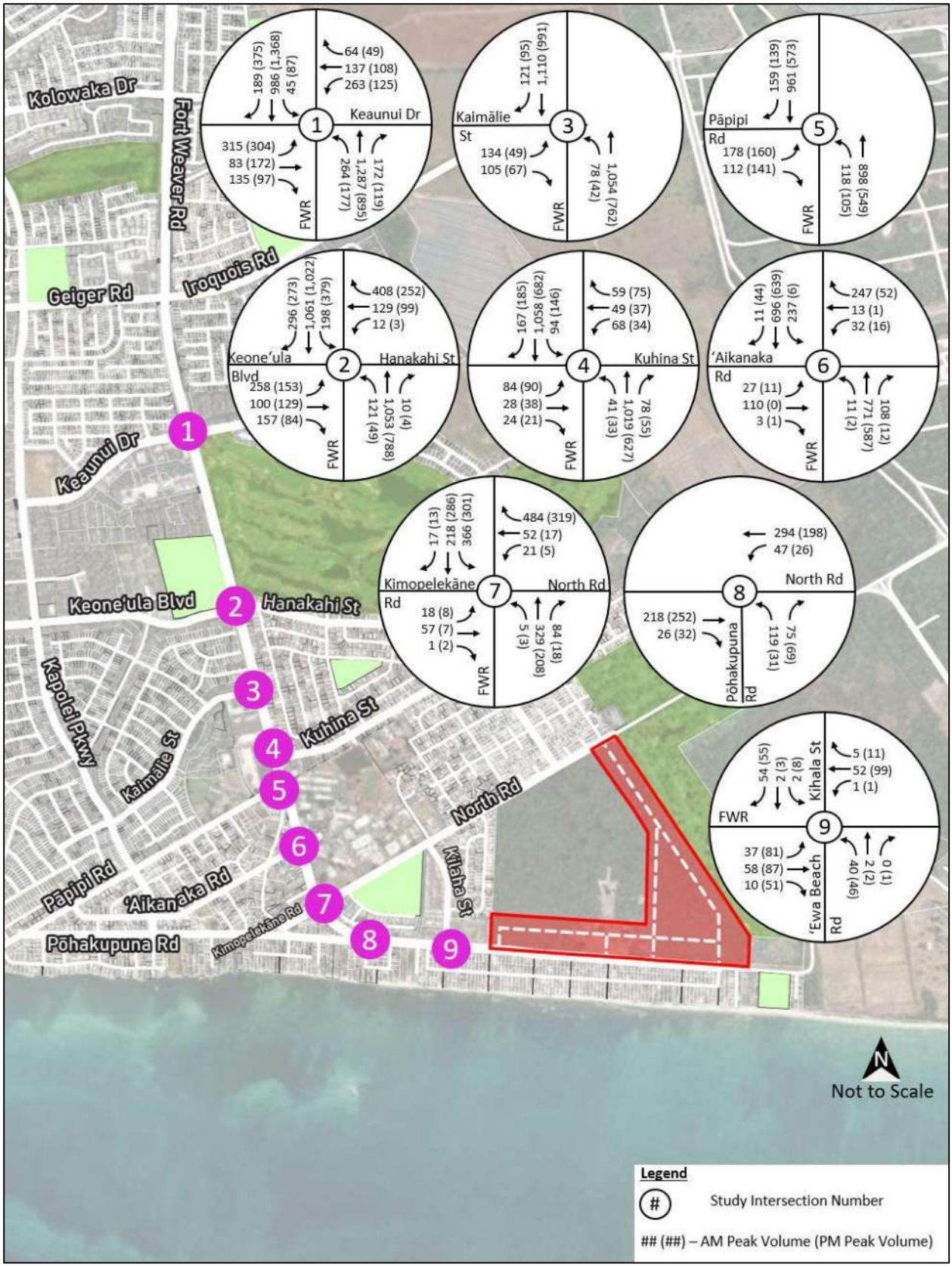

Figure 25: Future (2034) With Project Peak Hour Volumes – Alternative A

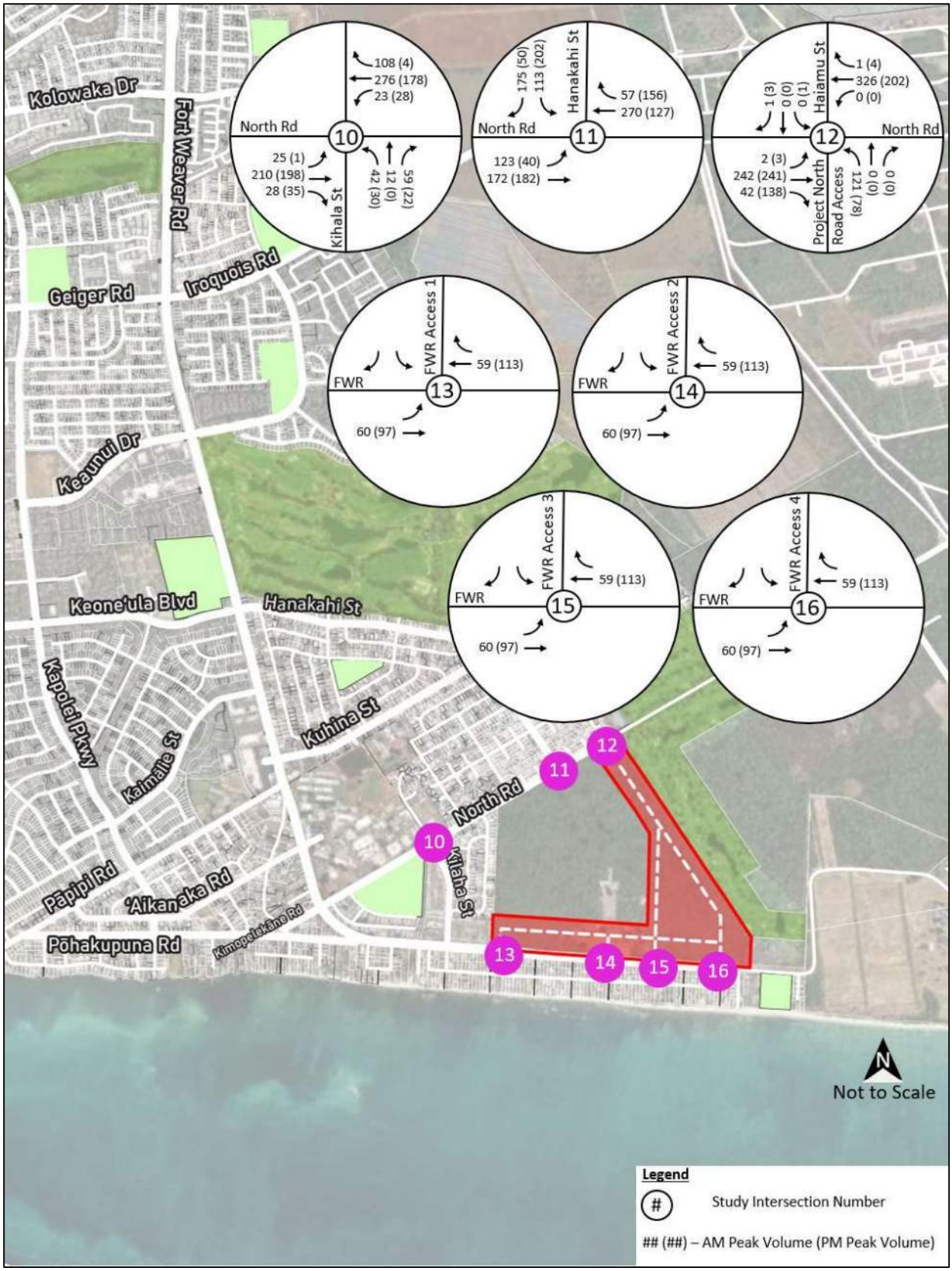

Figure 26: Future (2034) With Project Peak Hour Volumes – Alternative A (cont.)

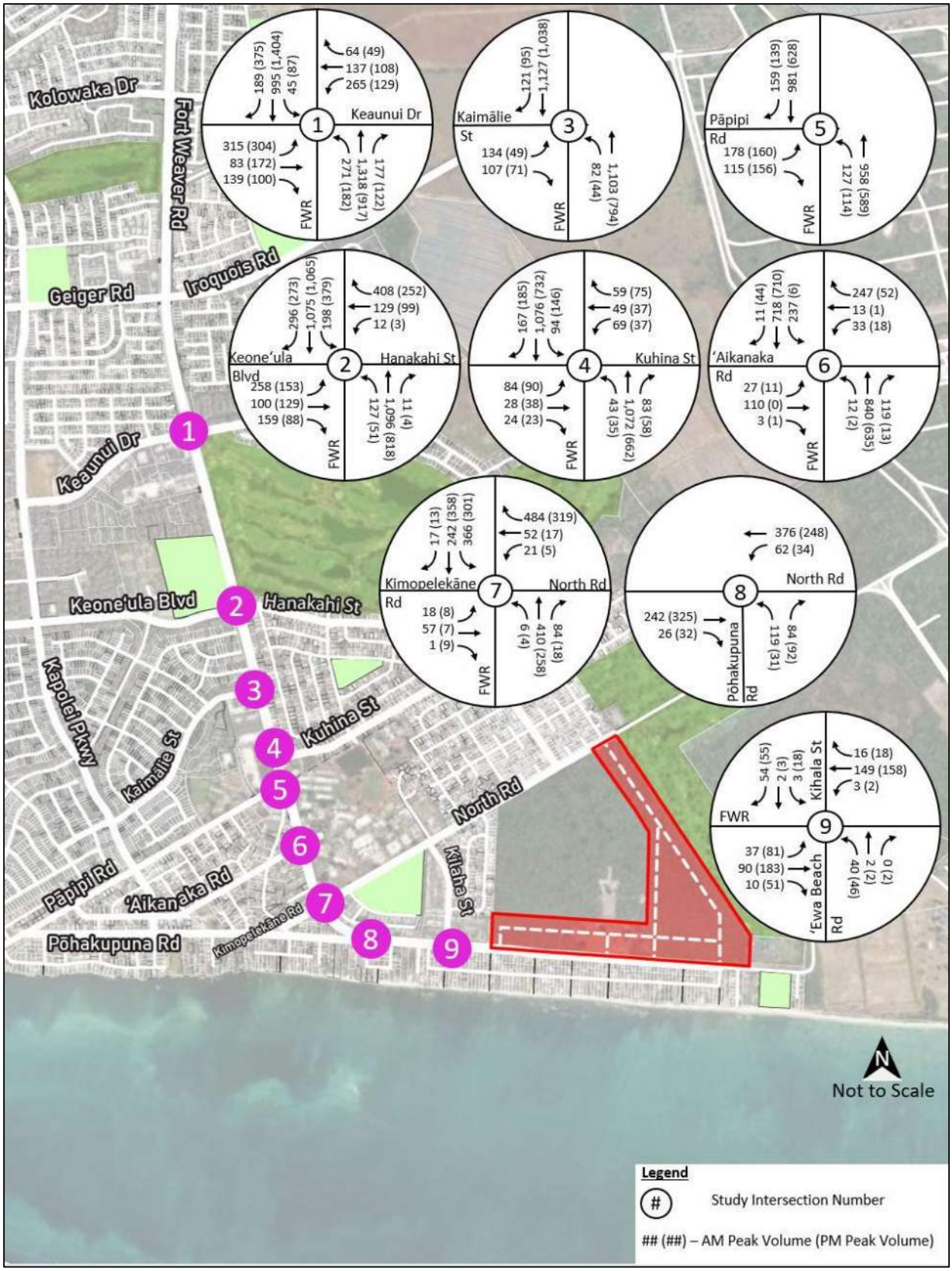

Figure 27: Future (2034) With Project Peak Hour Volumes – Alternative B

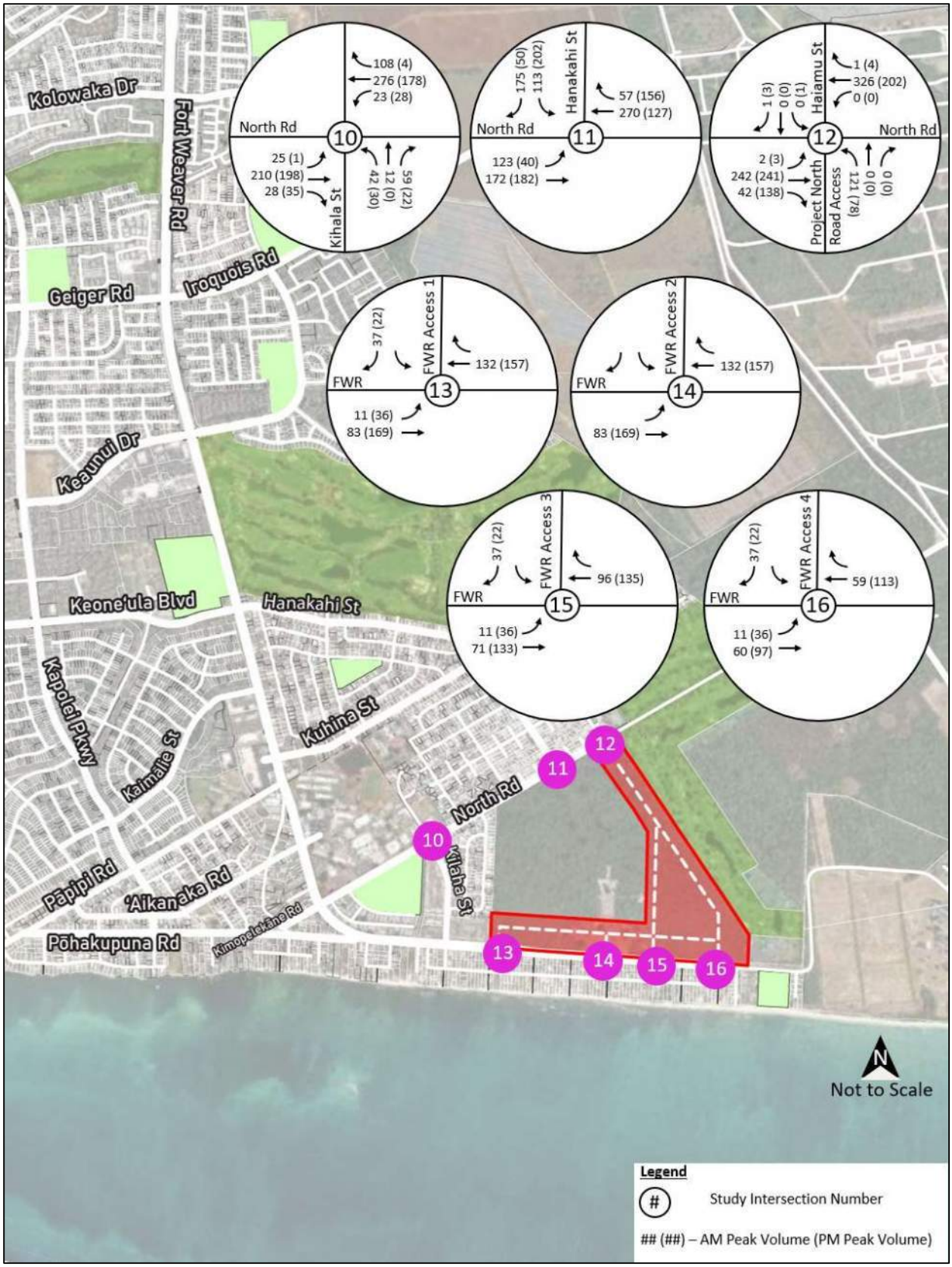

Figure 28: Future (2034) With Project Peak Hour Volumes – Alternative B (cont.)

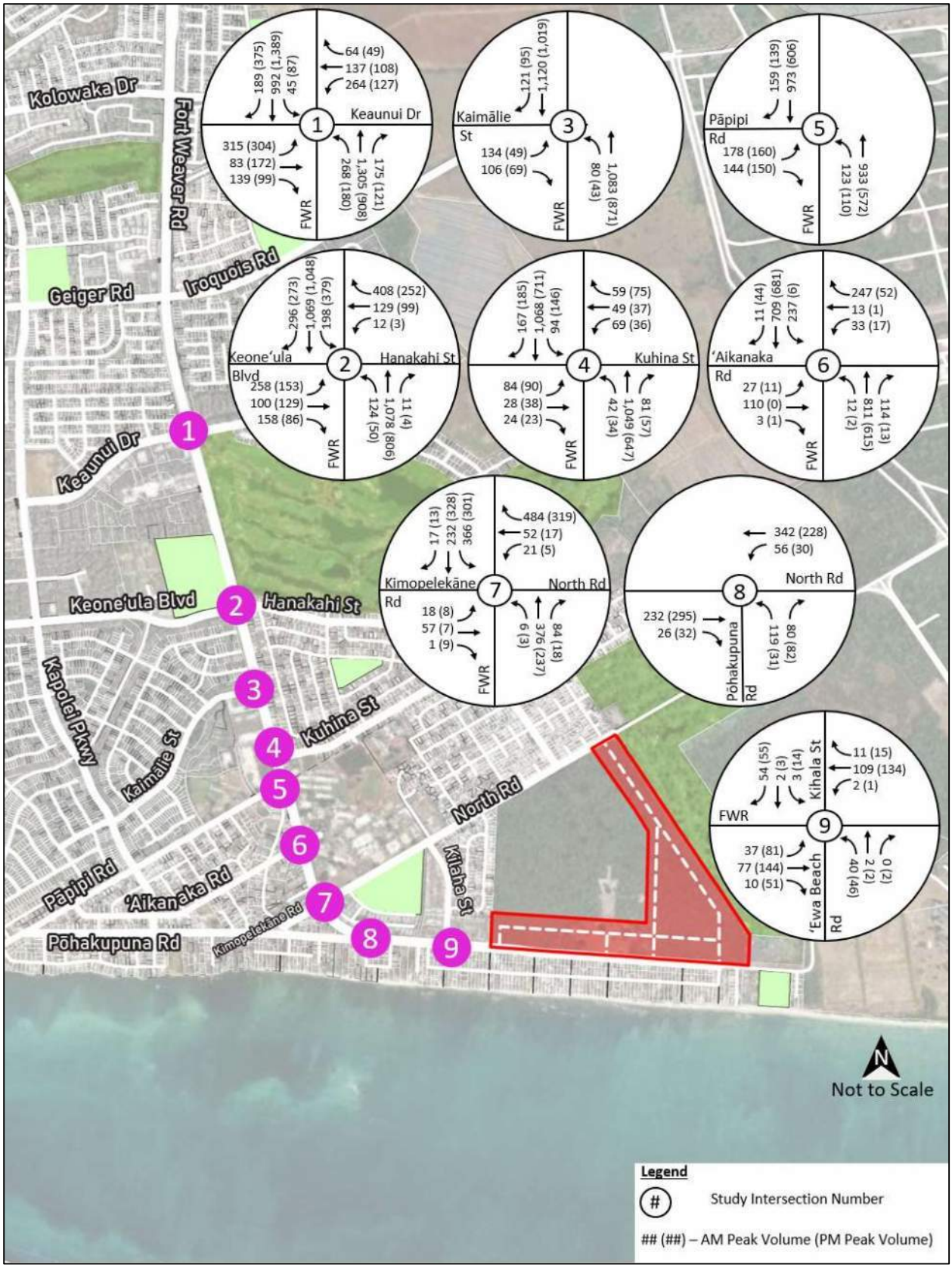

Figure 29: Future (2034) With Project Peak Hour Volumes – Preferred Alternative

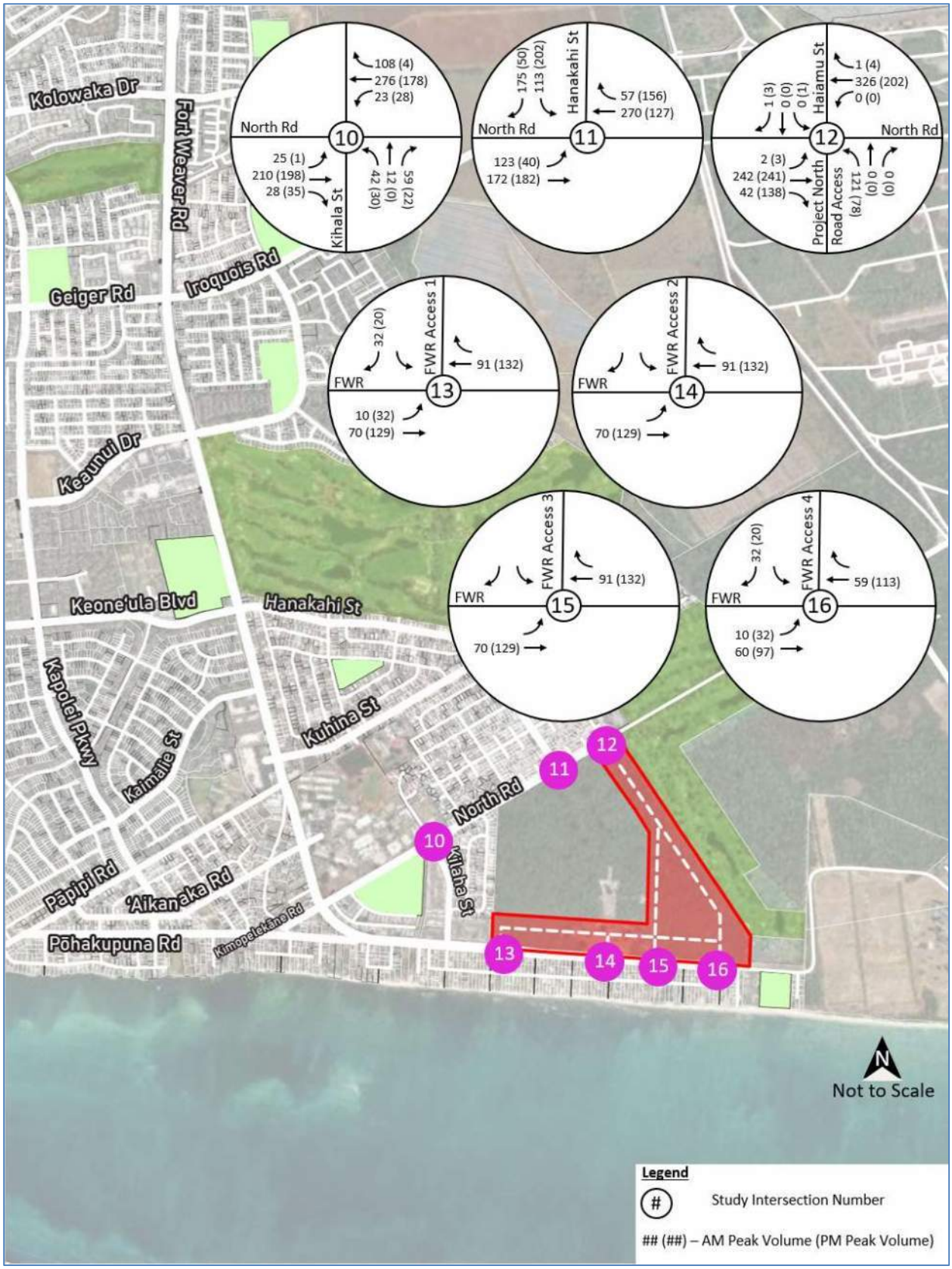

Figure 30: Future (2034) With Project Peak Hour Volumes – Preferred Alternative (cont.)

B. Future With Project Level of Service

For Future With Project analysis, the traffic signal cycle lengths were kept the same as the Existing (2022) condition cycle lengths, but the splits were optimized.

1. Future (2034) With Project Conditions – Alternative A

Future (2034) With Project – Alternative A intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Tables 22-23. The Future (2034) With Project traffic operation analysis worksheets can be found in Appendix D. Intersections and movements that operate at LOS E or worse are highlighted in yellow and will be discussed in this section.

a) FWR at Keaunui Drive

FWR at Keaunui Drive intersection will continue to operate at LOS D during the AM and PM peak hours. The FWR left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the FWR left turns and Keaunui Drive westbound approaches operate at LOS E or worse. The delay is due to the split phasing for the Keanui Drive approaches. The intersection will operate at an acceptable LOS, and therefore mitigation for FWR at Keaunui Drive for Future (2034) With Project will not be analyzed.

b) FWR at Keone'ula Drive/Hanakahi Street

FWR at Keone'ula Drive/Hanakahi Street intersection will continue to operate at LOS E and LOS C in the AM and PM peak hours, respectively. Various movements will operate at LOS E or worse, with the northbound through and southbound left turn operating with a v/c over 1.00. Mitigation for this intersection will be analyzed.

c) FWR at Kaimālie Street

FWR at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.70) during the PM peak hour. The eastbound right turn volume is 67 vph. This movement will clear the intersection every cycle. No mitigation will be analyzed or recommended for this intersection.

Table 22: Future (2034) With Project Intersection LOS – Alternative A

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**52.5**	**-**	**D**	**40.4**	**-**	**D**
FWR NB L	82.7	0.89	F	82.9	0.81	F
FWR NB T	34.9	0.83	C	22.8	0.48	C
FWR NB R	19.1	0.16	B	16.9	0.08	B
FWR SB L	143.8	0.86	F	69.7	0.61	E
FWR SB T	52.3	0.84	D	37.8	0.80	C
FWR SB R	33.6	0.13	C	22.9	0.28	C
Keaunui EB Double L	66.1	0.71	E	60.0	0.63	E
Keaunui EB T	58.9	0.34	E	63.6	0.66	E
Keaunui EB R	56.2	0.11	E	52.8	0.06	D
Keaunui WB Double L	91.3	0.89	F	81.7	0.62	E
Keaunui WB T	88.6	0.88	F	82.3	0.68	E
Keaunui WB R	55.2	0.05	D	57.8	0.03	E
FWR at Keone'ula Blvd/Hanakahi St	**61.5**	**-**	**E**	**29.5**	**-**	**C**
FWR NB L	106.6	0.99	F	21.9	0.23	C
FWR NB T	66.7	1.01	E	35.2	0.75	C
FWR NB R	25.0	0.01	C	23.5	0.00	C
FWR SB L	116.7	1.09	F	33.1	0.82	D
FWR SB T	52.3	0.98	D	19.8	0.63	C
FWR SB R	24.3	0.25	C	14.3	0.19	B
Keone'ula EB L	76.1	0.89	E	45.0	0.62	D
Keone'ula EB L-T	76.9	0.89	E	44.7	0.62	D
Keone'ula EB R	42.3	0.14	D	35.6	0.06	D
Hanakahi WB L-T	37.1	0.35	D	41.9	0.49	D
Hanakahi WB R	60.5	0.86	E	39.0	0.16	D
FWR at Kaimālie St	**9.8**	**-**	**A**	**6.5**	**-**	**A**
FWR NB L	5.1	0.23	A	3.0	0.10	A
FWR NB T	3.5	0.40	A	2.0	0.28	A
FWR SB T	7.5	0.48	A	4.9	0.40	A
FWR SB R	5.1	0.12	A	3.5	0.09	A
Kaimālie EB L	53.8	0.78	D	49.5	0.45	D
Kaimālie EB R	51.3	0.69	D	55.9	0.70	E
FWR at Kuhina St	**20.3**	**-**	**C**	**16.2**	**-**	**B**
FWR NB L	15.1	0.20	B	10.9	0.10	B
FWR NB T	20.0	0.65	B	14.8	0.36	B
FWR NB R	13.7	0.13	B	12.2	0.08	B
FWR SB L	15.0	0.39	B	10.6	0.36	B
FWR SB T	20.8	0.72	C	13.4	0.41	B
FWR SB R	15.1	0.31	B	12.3	0.26	B
Shopping Center EB L	30.7	0.29	C	35.8	0.33	D
Shopping Center EB T-R	23.3	0.12	C	29.6	0.16	C
Kuhina WB L-T	25.3	0.27	C	30.1	0.19	C
Kuhina WB R	23.6	0.15	C	30.2	0.22	C

Table 23: Future (2034) With Project Intersection LOS – Alternative A (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Pāpipi St	**13.1**	**-**	**B**	**12.0**	**-**	**B**
FWR NB L	6.4	0.37	A	2.9	0.19	A
FWR NB T	4.4	0.37	A	3.0	0.23	A
FWR SB T	10.5	0.51	B	7.0	0.26	A
FWR SB R	9.8	0.32	A	6.5	0.12	A
Pāpipi EB L-R	49.3	0.67	D	43.0	0.55	D
FWR at 'Aikanaka Rd	**22.0**	**-**	**C**	**7.6**	**-**	**A**
FWR NB L	14.7	0.03	B	5.2	0.01	A
FWR NB T	21.1	0.49	C	6.6	0.31	A
FWR NB R	17.1	0.17	B	5.1	0.01	A
FWR SB L	16.0	0.63	B	5.1	0.01	A
FWR SB T	14.5	0.39	B	6.5	0.32	A
FWR SB R	11.0	0.01	B	5.2	0.05	A
'Aikanaka EB L-T-R	32.7	0.43	C	22.3	0.08	C
'Aikanaka WB L-T-R	42.5	0.74	D	23.3	0.25	C
FWR at Kimopelekāne Rd/North Rd	**31.4**	**-**	**C**	**21.0**	**-**	**C**
FWR NB L	28.5	0.02	C	27.1	0.01	C
FWR NB T	32.9	0.51	C	29.7	0.46	C
FWR NB R	31.5	0.32	C	27.8	0.09	C
FWR SB L	23.7	0.79	C	23.1	0.69	C
FWR SB T	16.5	0.18	B	18.6	0.30	B
FWR SB R	15.4	0.03	B	16.9	0.03	B
Kimopelekāne EB L-T-R	18.2	0.20	B	10.7	0.05	B
North Road WB L-T	17.4	0.12	B	10.6	0.03	B
North Road WB R	49.2	0.93	D	18.0	0.60	B
FWR at Pōhakupuna Rd	**6.0**	**TWSC**		**2.5**	**TWSC**	
FWR WB L	8.3	0.04	A	8.0	0.03	A
Pōhakupuna NB L-R	21.5	0.56	C	11.5	0.20	B
FWR at Kilaha St	**4.8**	**TWSC**		**4.5**	**TWSC**	
FWR EB L	7.4	0.03	A	7.7	0.02	A
FWR WB L	7.4	0.01	A	7.6	0.01	A
Kilaha NB L-T-R	11.0	0.08	B	13.9	0.14	B
Kilaha SB L-T-R	9.0	0.08	A	9.8	0.10	A
North Rd at Kilaha St	**5.4**	**TWSC**		**1.8**	**TWSC**	
North Road EB L-T-R	8.7	0.03	A	7.6	0.01	A
North Road WB L-T-R	8.1	0.03	A	7.8	0.02	A
Kilaha NB L-T-R	27.1	0.56	D	11.8	0.11	B
North Rd at Hanakahi Street	**9.8**	**TWSC**		**6.4**	**TWSC**	
North Road EB L-T	8.8	0.12	A	8.0	0.04	A
Kilaha Hanakahi SB L-T	31.4	0.72	D	18.0	0.50	C
North Rd at Haiamu Street	**3.2**	**TWSC**		**1.9**	**TWSC**	
North Road EB L-T-R	8.0	0.01	B	7.7	0.01	A
North Road WB L-T-R	0.0	0.00	A	0.0	0.00	A
Kilaha Haiamu Project Driveway NB L-T-R	19.2	0.34	C	15.4	0.20	C
Kilaha Haiamu SB L-T	10.2	0.01	B	10.4	0.01	B

2. Future (2034) With Project Conditions – Alternative B

Future (2034) With Project – Alternative B intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Tables 24-26. The Future (2034) With Project traffic operation analysis worksheets can be found in Appendix D. Intersections and movements that operate at LOS E or worse were highlighted in yellow and will be discussed in this section.

a) FWR at Keaunui Drive

FWR at Keaunui Drive intersection will continue to operate at LOS D during the AM and PM peak hours. The FWR left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the FWR left turns and Keaunui Drive westbound approaches operate at LOS E or worse. The delay is due to the split phasing for the Keanui Drive approaches. The intersection will operate at an acceptable LOS, and therefore mitigation for FWR at Keaunui Drive for Future (2034) With Project – Alternative B will not be analyzed.

b) FWR at Keone'ula Drive/Hanakahi Street

FWR at Keone'ula Drive/Hanakahi Street intersection will continue to operate at LOS E and LOS C in the AM and PM peak hours, respectively. Various movements will operate at LOS E or worse. The northbound and southbound left turns and through movements operate with a v/c over 1.00. Mitigation for this intersection will be analyzed.

c) FWR at Kaimālie Street

FWR at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.71) during the PM peak hour. The eastbound right turn volume is 67 vph. This movement will clear the intersection every cycle. No mitigation will be analyzed or recommended for this intersection.

Table 24: Future (2034) With Project Intersection LOS – Alternative B

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**53.4**	**-**	**D**	**41.4**	**-**	**D**
FWR NB L	82.2	0.89	F	87.1	0.86	F
FWR NB T	36.1	0.85	D	23.1	0.52	C
FWR NB R	19.2	0.16	B	17.0	0.08	B
FWR SB L	143.8	0.86	F	69.9	0.61	E
FWR SB T	54.4	0.86	D	39.6	0.88	D
FWR SB R	34.3	0.14	C	23.1	0.30	C
Keaunui EB Double L	66.1	0.71	E	60.1	0.63	E
Keaunui EB T	58.9	0.34	E	63.4	0.66	E
Keaunui EB R	56.2	0.11	E	52.8	0.07	D
Keaunui WB Double L	92.9	0.89	F	73.2	0.69	E
Keaunui WB T	89.2	0.88	F	72.0	0.68	E
Keaunui WB R	55.2	0.05	E	57.7	0.03	E
FWR at Keone'ula Blvd/Hanakahi St	**71.0**	**-**	**E**	**29.7**	**-**	**C**
FWR NB L	128.9	1.06	F	20.2	0.28	C
FWR NB T	77.9	1.05	E	31.5	0.71	C
FWR NB R	25.3	0.01	C	21.4	0.00	C
FWR SB L	152.0	1.18	F	41.8	0.89	D
FWR SB T	62.4	1.01	D	20.4	0.66	C
FWR SB R	25.3	0.25	C	14.3	0.19	B
Keone'ula EB L	80.5	0.90	E	45.0	0.65	D
Keone'ula EB L-T	82.1	0.91	E	44.7	0.65	D
Keone'ula EB R	43.3	0.14	D	35.6	0.07	D
Hanakahi WB L-T	36.3	0.33	D	41.9	0.49	D
Hanakahi WB R	66.3	0.91	E	39.0	0.16	D
FWR at Kaimālie St	**9.8**	**-**	**A**	**6.6**	**-**	**A**
FWR NB L	5.2	0.24	A	3.2	0.11	A
FWR NB T	3.6	0.42	A	2.1	0.29	A
FWR SB T	7.4	0.48	A	5.2	0.42	A
FWR SB R	5.1	0.12	A	3.6	0.09	A
Kaimālie EB L	53.8	0.78	D	49.0	0.44	D
Kaimālie EB R	51.6	0.70	D	55.9	0.71	E
FWR at Kuhina St	**20.8**	**-**	**C**	**16.5**	**-**	**B**
FWR NB L	15.4	0.21	B	11.1	0.11	B
FWR NB T	20.7	0.68	C	15.2	0.38	B
FWR NB R	13.7	0.13	B	12.3	0.08	B
FWR SB L	15.8	0.42	B	10.9	0.37	B
FWR SB T	21.2	0.73	C	14.0	0.44	B
FWR SB R	15.2	0.31	B	12.5	0.26	B
Shopping Center EB L	30.8	0.29	C	36.3	0.34	D
Shopping Center EB T-R	23.4	0.12	C	29.6	0.16	C
Kuhina WB L-T	25.4	0.28	C	30.4	0.20	C
Kuhina WB R	23.6	0.15	C	30.1	0.22	C

Table 25: Future (2034) With Project Intersection LOS – Alternative B (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Pāpipi St	**13.1**	**-**	**B**	**12.0**	**-**	**B**
FWR NB L	6.7	0.41	A	3.1	0.22	A
FWR NB T	4.5	0.39	A	3.1	0.24	A
FWR SB T	10.7	0.52	B	7.4	0.28	A
FWR SB R	9.8	0.32	A	6.6	0.13	A
Pāpipi EB L-R	50.2	0.67	D	43.2	0.56	D
FWR at 'Aikanaka Rd	**22.4**	**-**	**C**	**7.7**	**-**	**A**
FWR NB L	14.6	0.03	B	5.3	0.01	A
FWR NB T	21.8	0.54	C	6.8	0.34	A
FWR NB R	17.3	0.18	B	5.1	0.02	A
FWR SB L	17..5	0.67	B	5.2	0.01	A
FWR SB T	14.7	0.40	B	6.7	0.35	A
FWR SB R	11.1	0.01	B	5.2	0.05	A
'Aikanaka EB L-T-R	32.7	0.43	C	22.2	0.08	C
'Aikanaka WB L-T-R	42.7	0.74	D	23.3	0.25	C
FWR at Kimopelekāne Rd/North Rd	**32.9**	**-**	**C**	**21.5**	**-**	**C**
FWR NB L	28.4	0.02	C	26.5	0.02	C
FWR NB T	34.1	0.60	C	29.7	0.51	C
FWR NB R	31.5	0.30	C	27.3	0.08	C
FWR SB L	26.8	0.83	C	23.4	0.70	C
FWR SB T	16.8	0.20	B	18.9	0.36	B
FWR SB R	15.5	0.03	B	16.7	0.03	B
Kimopelekāne EB L-T-R	19.0	0.20	B	11.2	0.05	B
North Road WB L-T	18.2	0.12	B	11.1	0.03	B
North Road WB R	51.7	0.94	D	18.9	0.61	B
FWR at Pōhakupuna Rd	**6.9**	**TWSC**		**2.4**	**TWSC**	
FWR WB L	8.5	0.06	A	8.3	0.04	A
Pōhakupuna NB L-R	28.2	0.65	D	12.6	0.23	B
FWR at Kilaha St	**3.4**	**TWSC**		**3.9**	**TWSC**	
FWR EB L	7.8	0.04	A	7.9	0.07	A
FWR WB L	7.5	0.01	A	7.8	0.01	A
Kilaha NB L-T-R	12.4	0.10	B	17.1	0.19	B
Kilaha SB L-T-R	9.5	0.09	A	11.4	0.15	B
North Rd at Kilaha St	**5.4**	**TWSC**		**1.8**	**TWSC**	
North Road EB L-T-R	8.7	0.03	A	7.6	0.01	A
North Road WB L-T-R	8.1	0.03	A	7.8	0.02	A
Kilaha NB L-T-R	27.1	0.56	D	11.8	0.11	B
North Rd at Hanakahi Street	**9.8**	**TWSC**		**6.4**	**TWSC**	
North Road EB L-T	8.8	0.12	A	8.0	0.04	A
Kilaha Hanakahi SB L-T	31.4	0.72	D	18.0	0.50	C
North Rd at Haiamu Street	**3.2**	**TWSC**		**1.9**	**TWSC**	
North Road EB L-T-R	8.0	0.01	B	7.7	0.01	A
North Road WB L-T-R	0.0	0.00	A	0.0	0.00	A
Kilaha Haiamu Project Driveway NB L-T-R	19.2	0.34	C	15.4	0.20	C
Kilaha Haiamu SB L-T	10.2	0.01	B	10.4	0.01	B

Table 26: Future (2034) With Project Intersection LOS – Alternative B (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Future FWR Access #1	**1.6**	**TWSC**		**1.2**	**TWSC**	
FWR EB L-T	7.5	0.01	A	7.6	0.03	A
Future FWR Access #1 SB L-R	9.2	0.04	A	9.2	0.03	A
FWR at Future FWR Access #3	**1.9**	**TWSC**		**1.4**	**TWSC**	
FWR EB L-T	7.4	0.01	A	7.6	0.03	A
Future FWR Access #1 SB L-R	9.0	0.04	A	9.1	0.03	A
FWR at Future FWR Access #4	**2.4**	**TWSC**		**1.7**	**TWSC**	
FWR EB L-T	7.4	0.01	A	7.5	0.03	A
Future FWR Access #1 SB L-R	8.8	0.04	A	9.0	0.03	A

3. Future (2034) With Project Conditions – Preferred Alterative

Future (2034) With Project – Preferred Alternative intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Tables 27-29. The Future (2034) With Project traffic operation analysis worksheets can be found in Appendix D. Intersections and movements that operate at LOS E or worse are highlighted in yellow and will be discussed in this section.

a) FWR at Keaunui Drive

FWR at Keaunui Drive intersection will continue to operate at LOS D during the AM and PM peak hours. The FWR left turns, and minor street approaches operate at LOS E or worse during the AM peak hour. During the PM peak hour, the FWR left turns and Keaunui Drive westbound approaches operate at LOS E or worse. The delay is due to the split phasing for the Keanui Drive approaches. The intersection will operate at an acceptable LOS, and therefore mitigation for FWR at Keaunui Drive for Future (2034) With Project – Preferred Alternative will not be analyzed.

b) FWR at Keone'ula Drive/Hanakahi Street

FWR at Keone'ula Drive/Hanakahi Street intersection will continue to operate at LOS E and LOS C in the AM and PM peak hours, respectively. Various movements will operate at LOS E or worse. The northbound left turn, northbound through, and southbound left turn movements operate with a v/c over 1.00. Mitigation for this intersection will be analyzed.

c) FWR at Kaimālie Street

FWR at Kaimālie Street is projected to operate at LOS A during the AM and PM peak hours. The eastbound right turn is projected to operate at LOS E (v/c of 0.71) during the PM peak hour. The eastbound right turn volume is 67 vph. This movement will clear the intersection every cycle. No mitigation will be analyzed or recommended for this intersection.

Table 27: Future (2034) With Project Intersection LOS – Preferred Alternative

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keaunui Dr	**53.0**	**-**	**D**	**40.4**	**-**	**D**
FWR NB L	82.9	0.89	F	95.8	0.89	F
FWR NB T	35.6	0.84	D	23.0	0.51	C
FWR NB R	19.1	0.16	B	17.0	0.08	B
FWR SB L	143.8	0.86	F	69.9	0.61	E
FWR SB T	53.4	0.86	D	37.4	0.86	D
FWR SB R	34.0	0.14	C	22.4	0.29	C
Keaunui EB Double L	66.1	0.71	E	60.1	0.63	E
Keaunui EB T	58.9	0.34	E	63.4	0.66	E
Keaunui EB R	56.2	0.11	E	52.8	0.07	D
Keaunui WB Double L	91.9	0.89	F	72.3	0.68	E
Keaunui WB T	89.2	0.88	F	72.0	0.68	E
Keaunui WB R	55.2	0.05	E	57.7	0.03	E
FWR at Keone'ula Blvd/Hanakahi St	**64.0**	**-**	**E**	**29.6**	**-**	**C**
FWR NB L	113.1	1.01	F	21.4	0.28	C
FWR NB T	73.5	1.04	E	34.1	0.71	C
FWR NB R	25.0	0.01	C	22.8	0.00	C
FWR SB L	116.7	1.09	F	35.9	0.89	D
FWR SB T	54.9	0.98	D	20.2	0.66	C
FWR SB R	24.3	0.25	C	14.3	0.19	B
Keone'ula EB L	76.1	0.89	E	45.0	0.65	D
Keone'ula EB L-T	76.9	0.89	E	44.7	0.65	D
Keone'ula EB R	42.3	0.14	D	35.6	0.07	D
Hanakahi WB L-T	37.1	0.35	D	41.9	0.49	D
Hanakahi WB R	60.5	0.86	E	39.0	0.16	D
FWR at Kaimālie St	**9.8**	**-**	**A**	**6.6**	**-**	**A**
FWR NB L	5.1	0.23	A	3.1	0.11	A
FWR NB T	3.6	0.41	A	2.0	0.29	A
FWR SB T	7.4	0.48	A	5.0	0.41	A
FWR SB R	5.1	0.12	A	3.5	0.09	A
Kaimālie EB L	53.8	0.78	D	49.8	0.45	D
Kaimālie EB R	51.4	0.69	D	56.5	0.71	E
FWR at Kuhina St	**20.6**	**-**	**C**	**16.4**	**-**	**B**
FWR NB L	15.3	0.21	B	10.9	0.11	B
FWR NB T	20.4	0.67	C	14.9	0.37	B
FWR NB R	13.7	0.13	B	12.2	0.08	B
FWR SB L	15.5	0.41	B	10.7	0.37	B
FWR SB T	21.0	0.72	C	13.7	0.42	B
FWR SB R	15.2	0.36	B	12.3	0.26	B
Shopping Center EB L	30.8	0.29	C	36.7	0.34	D
Shopping Center EB T-R	23.4	0.12	C	30.0	0.16	C
Kuhina WB L-T	25.3	0.28	C	30.7	0.20	C
Kuhina WB R	23.6	0.15	C	30.6	0.22	C

Table 28: Future (2034) With Project Intersection LOS – Preferred Alternative (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Pāpipi St	**13.1**	**-**	**B**	**12.0**	**-**	**B**
FWR NB L	6.6	0.39	A	3.0	0.21	A
FWR NB T	4.4	0.38	A	3.0	0.23	A
FWR SB T	10.6	0.52	B	7.3	0.27	A
FWR SB R	9.8	0.32	A	6.5	0.13	A
Pāpipi EB L-R	49.3	0.67	D	43.1	0.56	D
FWR at 'Aikanaka Rd	**22.2**	**-**	**C**	**7.7**	**-**	**A**
FWR NB L	14.6	0.03	B	5.3	0.01	A
FWR NB T	21.5	0.52	C	6.7	0.33	A
FWR NB R	17.2	0.18	B	5.1	0.02	A
FWR SB L	16.8	0.66	B	5.2	0.01	A
FWR SB T	14.7	0.39	B	6.6	0.34	A
FWR SB R	11.1	0.01	B	5.2	0.05	A
'Aikanaka EB L-T-R	32.7	0.43	C	22.3	0.08	C
'Aikanaka WB L-T-R	42.7	0.74	D	23.3	0.25	C
FWR at Kimopelekāne Rd/North Rd	**32.3**	**-**	**C**	**21.3**	**-**	**C**
FWR NB L	28.1	0.05	C	26.8	0.01	C
FWR NB T	33.2	0.56	C	29.7	0.49	C
FWR NB R	31.1	0.30	C	27.5	0.09	C
FWR SB L	24.7	0.81	C	23.2	0.69	C
FWR SB T	16.5	0.19	B	18.8	0.34	B
FWR SB R	15.3	0.03	B	16.7	0.03	B
Kimopelekāne EB L-T-R	18.7	0.20	B	11.0	0.05	B
North Road WB L-T	17.9	0.12	B	10.9	0.03	B
North Road WB R	51.8	0.94	D	18.5	0.61	B
FWR at Pōhakupuna Rd	**6.5**	**TWSC**		**2.4**	**TWSC**	
FWR WB L	8.4	0.05	A	8.1	0.03	A
Pōhakupuna NB L-R	25.1	0.06	D	12.1	0.22	B
FWR at Kilaha St	**3.9**	**TWSC**		**4.1**	**TWSC**	
FWR EB L	7.6	0.03	A	7.8	0.07	A
FWR WB L	7.5	0.01	A	7.8	0.01	A
Kilaha NB L-T-R	11.8	0.09	B	15.6	0.17	B
Kilaha SB L-T-R	9.3	0.09	A	10.6	0.13	B
North Rd at Kilaha St	**5.4**	**TWSC**		**1.8**	**TWSC**	
North Road EB L-T-R	8.7	0.03	A	7.6	0.01	A
North Road WB L-T-R	8.1	0.03	A	7.8	0.02	A
Kilaha NB L-T-R	27.1	0.56	D	11.8	0.11	B
North Rd at Hanakahi Street	**9.8**	**TWSC**		**6.4**	**TWSC**	
North Road EB L-T	8.8	0.12	A	8.0	0.04	A
Kilaha Hanakahi SB L-T	31.4	0.72	D	18.0	0.50	C
North Rd at Haiamu Street	**3.2**	**TWSC**		**1.9**	**TWSC**	
North Road EB L-T-R	8.0	0.01	B	7.7	0.01	A
North Road WB L-T-R	0.0	0.00	A	0.0	0.00	A
Kilaha Haiamu Project Driveway NB L-T-R	19.2	0.34	C	15.4	0.20	C
Kilaha Haiamu SB L-T	10.2	0.01	B	10.4	0.01	B

Table 29: Future (2034) With Project Intersection LOS – Preferred Alternative (cont.)

Intesection and Movement	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Future FWR Access #1	**1.8**	**TWSC**		**1.4**	**TWSC**	
FWR EB L-T	7.4	0.01	A	7.6	0.02	A
Future FWR Access #1 SB L-R	8.9	0.04	A	9.1	0.02	A
FWR at Future FWR Access #4	**2.2**	**TWSC**		**1.6**	**TWSC**	
FWR EB L-T	7.4	0.01	A	7.5	0.02	A
Future FWR Access #1 SB L-R	8.7	0.04	A	9.0	0.02	A

4. Future (2034) With Project Mitigation

FWR at Keone'ula Drive/Hanakahi Street will operate at LOS E during the AM peak hour for each alternative. Multiple movements will operate at LOS E or worse with a v/c over 1.00. The Future (2034) With Project westbound right turn volume at FWR and Hanakahi Street is extremely high and a contributing factor. The westbound right turn was analyzed with an overlap phase, which will allow for more westbound right turn vehicles to clear the intersection. The overlap phase will run simultaneously with the southbound protected left turn. Future (2034) With Project intersection and movement LOS and delay (in seconds per vehicle) for the AM and PM peak hours are shown in Table 30 for all alternatives.

With the overlap phase added to the westbound right turn, the overall intersection will operate at LOS D and LOS C during the AM and PM peak hours, respectively. For Alternative A and the Preferred Alternative, the southbound left will still operate at LOS E (v/c of 0.89 for both). For Alternative B, the northbound left turn and southbound left turn will operate at LOS E (v/c of 0.95 and 0.95, respectively). Vehicles making this left turn are expected to clear the intersection every cycle.

This change will require a new signal head for the westbound right turn. The traffic controller will need to be reprogrammed to add this change. No roadway construction is expected to make this change. Advanced signage should be recommended alerting drivers of the modified traffic signal. It is recommended that the westbound right turn approach be changed to also overlap with the southbound left turn.

Table 30: Future (2034) With Project Intersection LOS – Mitigation

Future (2034) With Project Alternative A	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keone'ula Blvd/Hanakahi St	**39.5**	**-**	**D**	**28.0**	**-**	**C**
FWR NB L	42.0	0.79	D	21.7	0.23	C
FWR NB T	41.3	0.92	D	34.8	0.75	C
FWR NB R	19.8	0.01	B	23.3	0.01	C
FWR SB L	55.5	0.89	E	32.2	0.82	C
FWR SB T	33.6	0.88	C	19.6	0.63	B
FWR SB R	18.9	0.25	B	14.1	0.19	B
Keone'ula EB L	53.4	0.79	D	44.8	0.65	D
Keone'ula EB L-T	53.7	0.80	D	44.7	0.66	D
Keone'ula EB R	35.7	0.14	D	35.5	0.06	D
Hanakahi WB L-T	45.8	0.62	D	42.1	0.50	D
Hanakahi WB R	46.0	0.82	D	23.6	0.31	C
Future (2034) With Project Alternative B	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keone'ula Blvd/Hanakahi St	**41.4**	**-**	**D**	**28.5**	**-**	**C**
FWR NB L	70.2	0.92	E	21.2	0.25	C
FWR NB T	42.1	0.93	D	34.2	0.75	C
FWR NB R	19.1	0.01	B	22.6	0.01	C
FWR SB L	71.3	0.95	E	36.4	0.85	D
FWR SB T	32.3	0.87	C	20.1	0.66	C
FWR SB R	18.3	0.25	B	14.1	0.19	B
Keone'ula EB L	53.4	0.79	D	44.8	0.65	D
Keone'ula EB L-T	53.7	0.80	D	44.7	0.66	D
Keone'ula EB R	35.7	0.14	D	35.5	0.07	D
Hanakahi WB L-T	45.8	0.62	D	42.1	0.50	D
Hanakahi WB R	49.7	0.85	D	24.3	0.32	C
Future (2034) With Project Preferred Alternative	AM Peak Hour			PM Peak Hour		
	Delay (veh/sec)	v/c	LOS	Delay (veh/sec)	v/c	LOS
FWR at Keone'ula Blvd/Hanakahi St	**40.5**	**-**	**D**	**28.2**	**-**	**C**
FWR NB L	44.5	0.80	D	21.2	0.24	C
FWR NB T	44.1	0.94	D	33.8	0.74	C
FWR NB R	19.7	0.01	B	22.6	0.01	C
FWR SB L	55.7	0.89	E	35.2	0.84	D
FWR SB T	34.1	0.89	C	19.9	0.65	B
FWR SB R	18.9	0.25	B	14.1	0.19	B
Keone'ula EB L	53.4	0.79	D	44.8	0.65	D
Keone'ula EB L-T	53.7	0.80	D	44.7	0.66	D
Keone'ula EB R	35.7	0.14	D	35.5	0.07	D
Hanakahi WB L-T	45.8	0.62	D	42.1	0.50	D
Hanakahi WB R	46.0	0.82	D	24.3	0.32	C

VI. Summary and Recommendations

The Department of Hawaiian Homelands (DHHL) is considering the development of homes on a vacant parcel of land in ʻEwa Beach, Oʻahu. The proposed DHHL development is at the south end of FWR within a portion of a parcel that used to serve as the Pacific Warning Tsunami Center. There is no timeline for construction, however, the project is expected to be completed by 2034.

The three alternatives analyzed for specific traffic impacts have the following land use and units:

- Alternative A –220 single-family units;
- Alternative B – 220 single-family units and up to 330 multi-family low-rise units;
- Preferred Alternative – with 220 single-family units and up to 160 multi-family low-rise units.

Traffic analysis shows that the intersection of FWR at Keaunui Drive will require mitigation to operate at LOS D or better in Future (2034) Without Project conditions. The Keaunui Drive westbound approach is recommended to be restriped to a left, shared left-through, and right turn lane. This will require restriping the through lane to a shared left-through lane and installing advanced warning lane configuration signs. FWR is currently a 4-lane roadway and will not require any widening. The eastbound and westbound approaches operate in split phasing, so the additional left turning vehicles will not conflict with the eastbound left turn. Turning vehicle analysis shows that the westbound left turns can be made simultaneously. With these changes, this intersection will operate at LOS D for all Future (2034) Without Project conditions. No additional mitigation is needed as a result of the project.

Traffic analysis shows that the intersection of FWR at Keoneʻula Drive/Hanakahi Street will require mitigation to operate at LOS D or better in Future (2034) With Project conditions. The Hanakahi Street westbound pashing at FWR is recommended to overlap with the southbound left turn phase in Future (2034) With Project. This will require a new signal head (with right arrow) and programming of the traffic controller. This change will not require any roadway construction or restriping. The overlap phase will allow more right turn vehicles to be processed through the intersection. The westbound right turn volume is currently over 300 vph and is expected to reach over 400 vph in Future (2034) With Project. With these changes, this intersection will operate at LOS D or better for all Future (2034) With Project for all three alternatives.

The *Oʻahu Bike Plan* includes the following projects on the FWR and North Road segments:

- A buffered bike lane on FWR from Keoneʻula Boulevard to Kīlaha Street (Priority 1).
- A bike lane on FWR from Kīlaha Street to Puʻuloa Beach Park (Priority 3).
- A bike lane on North Road from FWR to Iroquois Road (Priority 2).

A protected bike lane on FWR is recommended to achieve a bike target score of LTS 1 per the City's *TIA Guide*.

The *O'ahu Pedestrian Plan* includes a walkway from Kūlana Place to Kīlaha Place, and a walkway upgrade from Kīlaha Street to Kehue Street. Based on the PEQI scoring method, North Road at Kīlaha Street cannot reach a pedestrian score of 1 unless the intersection is signalized. However, these intersections will not satisfy a traffic signal warrant. The North Road study intersections are recommended to remain unsignalized. With the development, it is recommended to install marked crosswalks across North Road with crossing signage at the intersection with Haiamu Street/Future North Road Access in compliance with the City's Uncontrolled Crossing Guidance.

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APPENDIX F
Sea Level Rise Desktop Study Report

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Sea Level Rise Desktop Study

Department of Hawaiian Home Lands
'Ewa Beach Homestead Project

September 2024

Prepared for:
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1. PROJECT OVERVIEW

SSFM International, Inc. (SSFM) is collaborating with the Department of Hawaiian Home Lands (DHHL) to investigate and develop the ʻEwa Beach Homestead Project. This project will develop a community master plan for approximately 80 acres of land in ʻEwa Beach, Oʻahu, Hawaiʻi. The ʻEwa Beach homestead community is intended to provide residential homesteading opportunities to Native Hawaiian beneficiaries on the Oʻahu residential waiting list. DHHL hired SSFM to investigate the potential impacts of sea level rise on the proposed development and identify potential sea level rise adaptation and mitigation options.

Sea Engineering, Inc. (SE) was hired to conduct a desktop study to quantify the potential vulnerability of the ʻEwa Beach homestead community to sea level rise, inform the selection of sea level rise planning scenarios and design parameters, and facilitate development of alternatives to ensure that the community is resilient to sea level rise. This report includes a desktop analysis of current sea level rise projections that are germane to the project area, existing sea level rise planning guidance, and discussion of potential sea level rise adaptation and mitigation options.

SE understands that DHHL intends to offer Native Hawaiian beneficiaries the opportunity to apply for 99-year homesteading leases with the possibility for 100-year extensions. The potential for up to 200-year lease agreements was a primary consideration in the analysis, particularly the selection of sea level scenarios and projections. It is important to note that existing datasets do not include projections for sea level rise beyond 2150.

The proposed ʻEwa Beach homestead project is located on the south shore of the island of Oʻahu. This stretch of coastline stretches extends about 9 miles (mi) from Barbers Point at the southwest corner of Oʻahu east to the Pearl Harbor entrance channel. The coastline primarily consists of linear sandy beaches with a broad fringing reef extending offshore. The project area is located at the eastern end of ʻEwa Beach about 1.8 mi west of the Pearl Harbor entrance channel. A general location map is shown in Figure 1-1, and a vicinity map is shown in Figure 1-2.

The project area is adjacent to the U.S. Geological Survey (USGS) Honolulu Magnetic Observatory and is bounded by Fort Weaver Road to the south, North Road to the north, residential development to the west, and the ʻEwa Beach Golf Club to the east. The seaward side of the project area is located about 600 feet (ft) landward of the shoreline. The area between the project area and the shoreline consists of Fort Weaver Road and a densely developed residential community fronted by a linear sandy beach. The Tax Map Key No. of the project area is (1) 9-1-001:001.

This desktop study includes an analysis of the current state of sea level rise science, scenarios, projections, and modeled potential effects for the project area. Section 2 provides an overview of existing sea level rise data and projections on both a global and local scale. Section 3 presents the Hawaiʻi Sea Level Rise Exposure Area (SLR-XA) model projections for the potential effects of passive flooding, high wave flooding, and coastal erosion. Section 4 presents additional data sources for sea level rise and potential extreme coastal hazard events, including hurricanes and tsunamis. Section 5 provides sea level rise considerations for site development at various sea level rise elevations. Section 6 summarizes the planning framework and guidance for sea level rise adaptation, potential impacts of seal level rise, key observations, potential sea level rise adaption and mitigation options, and recommendations.

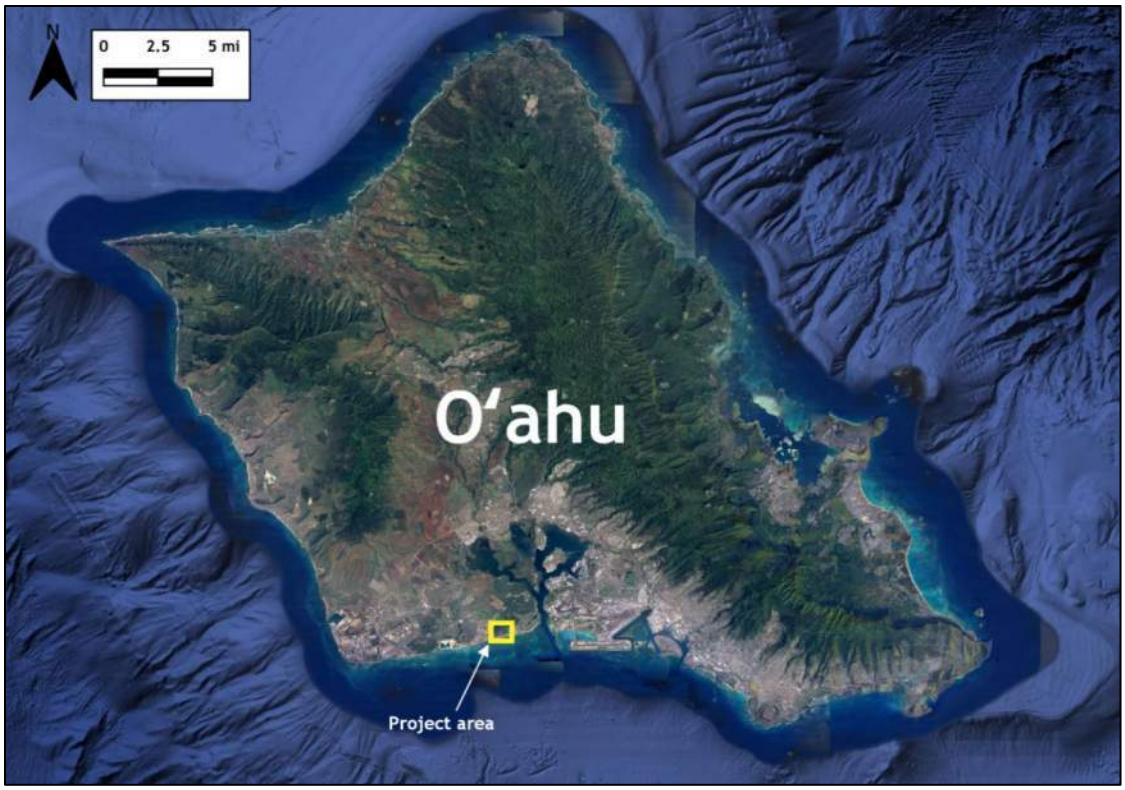


Figure 1-1. Project area location (Google Earth)

Figure 1-2. Project area vicinity map (project area outlined in red)

2. SEA LEVEL RISE

2.1 Global Sea Level Rise Projections

Global mean sea level is the average height of the entire ocean surface. The present rate of global mean sea level change is +3.1 mm/yr (Sweet et al., 2022, Figure 2-1), where a positive number represents a rising sea level. Global mean sea level rise has accelerated over preceding decades compared to the mean of the 20th century. Regional effects cause sea levels to increase in some parts of the planet while decreasing or remaining relatively stable in other areas. In the contiguous United States (U.S.), sea level has risen on average by 6.5 inches (in) since 1950 (Sweet et al., 2018). Factors contributing to the observed rise in sea level include melting of land-based glaciers and ice sheets and thermal expansion of the ocean water column.

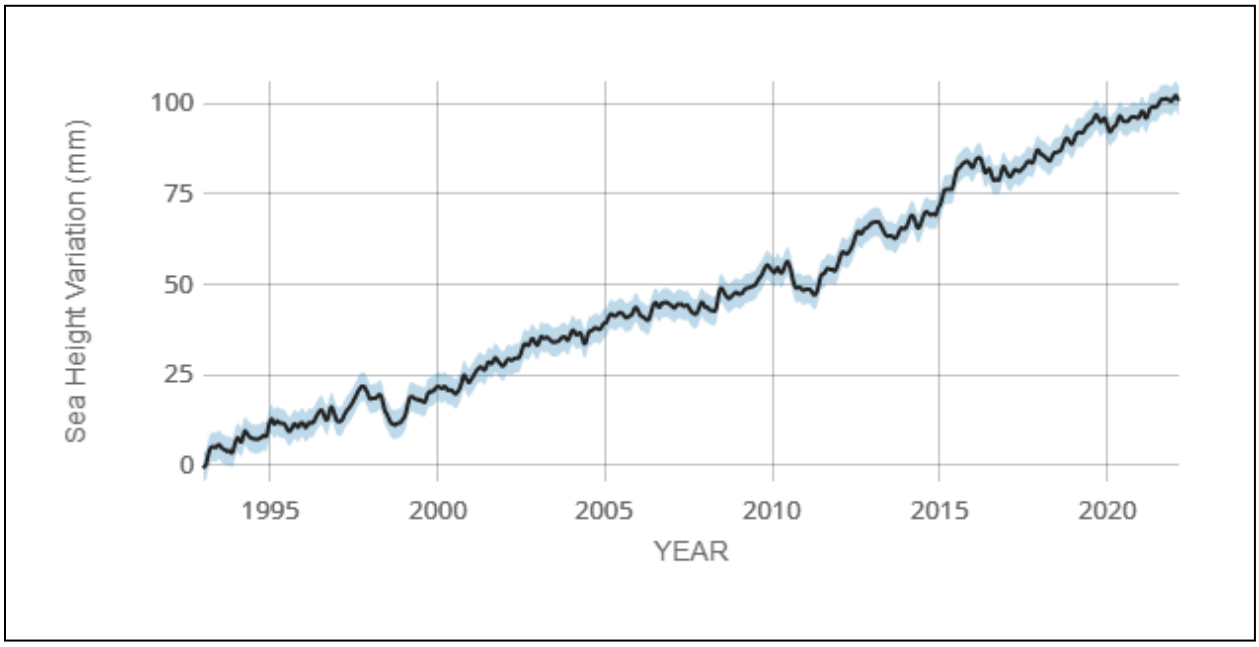


Figure 2-1. Global satellite sea level rise variability from 1993 to 2022 (Sweet et al., 2022)
(Black line shows the average sea level rise during the time period.)

2.1.1 IPCC AR6 - Global Sea Level Rise Projections

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations (U.N.) body for assessing the science related to climate change. The IPCC was created to provide policymakers with periodic scientific assessments on climate change, its implications, and potential future risks. As part of this effort, the IPCC surveys and distills the existing body of scientific research and provides consensus projections on future sea levels across the globe under a range of possible future scenarios. The most recent iteration of the IPCC's work, the 6th Assessment Report (AR6), was published on August 9, 2021. Five Shared Socioeconomic Pathways (SSPs) representing future scenarios are described (Figure 2-2) with sea level rise projections for each (Figure 2-3).

SSP1-1.9 Holds warming in 2100 to approximately 1.5°C relative to the years 1850 to 1900 after a slight overshoot (median) and implies net zero CO_2 emissions around the middle of the century.

SSP1-2.6 Stays below 2.0°C warming relative to the years 1850 to 1900 (median) with implied net zero emissions in the second half of the century.

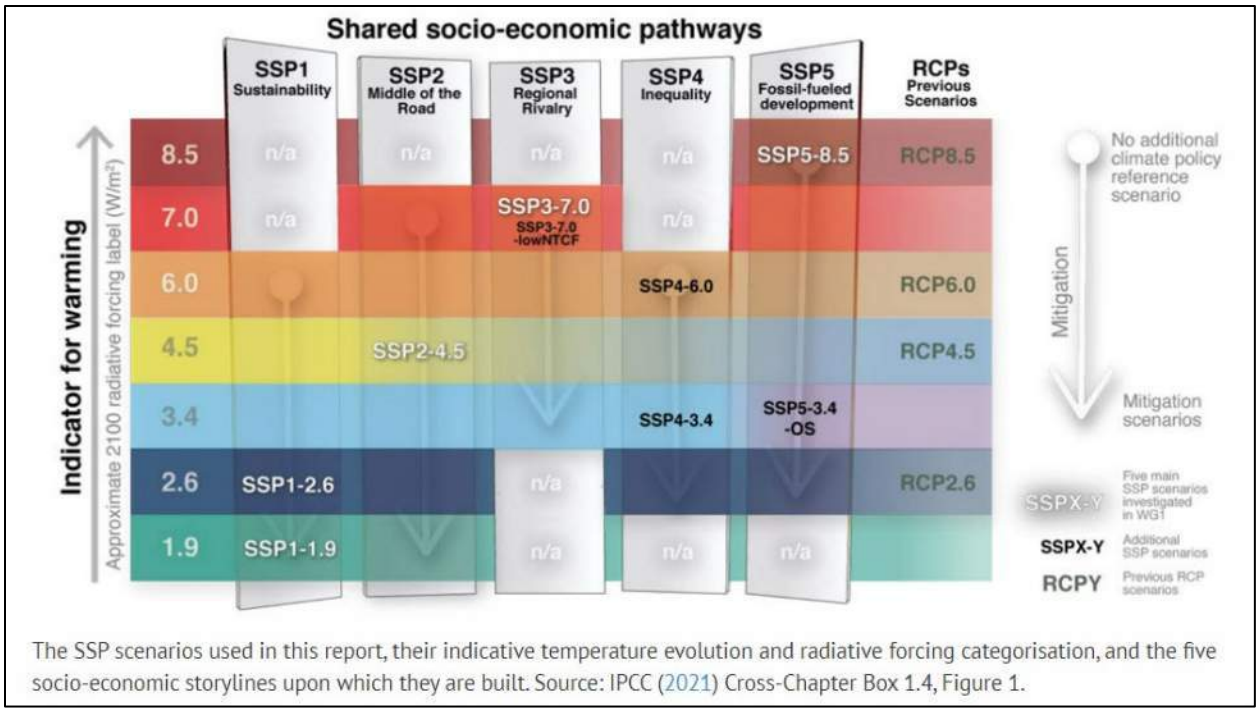
SSP2-4.5 Approximately in line with the upper end of aggregate Nationally Determined Contribution (NDC) emission levels by 2030. SR1.5 assessed temperature projections for NDCs to be between 2.7 and 3.4°C by 2100, corresponding to the upper half of projected warming under SSP2-4.5. New or updated NDCs by the end of 2020 did not significantly change the emissions projections up to 2030, although more countries adopted 2050 net zero targets in line with SSP1-1.9 or SSP1-2.6. The SSP2-4.5 scenario deviates mildly from a "no-additional-climate-policy" reference scenario, resulting in best-estimate warming of around 2.7°C by the end of the 21st century relative to the years 1850 to 1900.

SSP3-7.0 A medium to high reference scenario resulting from no additional climate policy under the SSP3 socio-economic development narrative. SSP3-7.0 has particularly high non-CO_2 emissions, including high aerosol emissions.

SSP5-8.5 A high reference scenario with no additional climate policy. Emission levels as high as SSP5-8.5 are not obtained by Integrated Assessment Models under any of the SSPs other than the fossil-fueled SSP5 socio-economic development pathway.

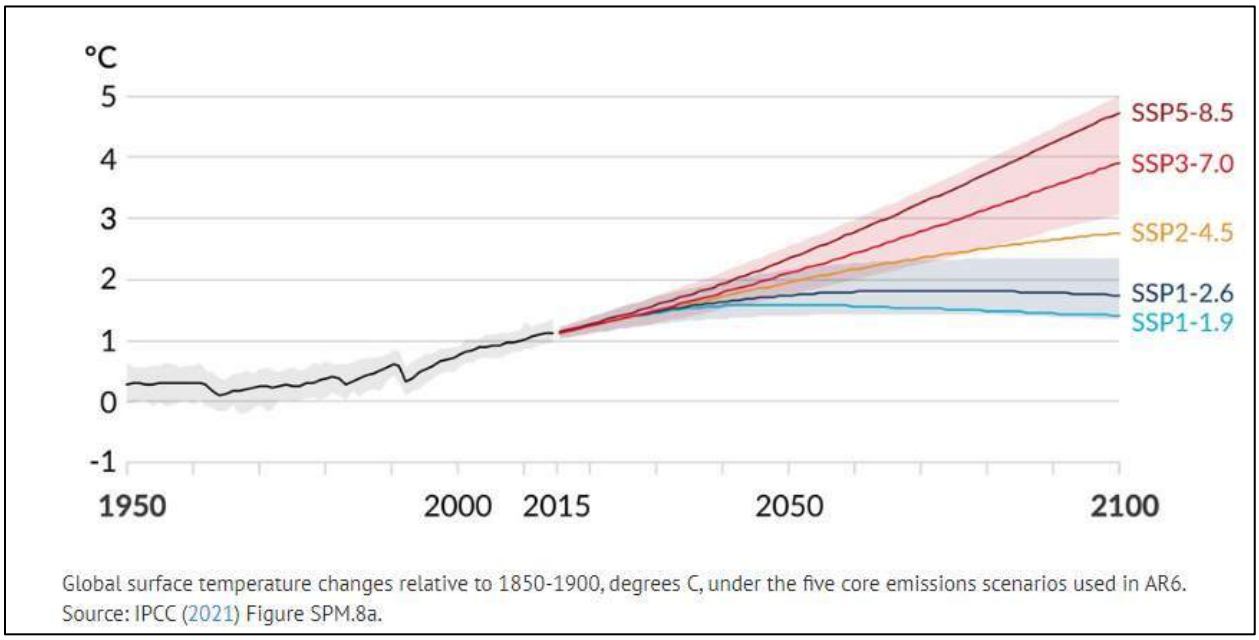
To visualize the AR6 sea level rise projections globally, NASA created the *IPCC AR6 Sea Level Projection Tool* [1], which allows users to view both global and regional sea level projections from 2020 to 2150 (Figure 2-4 and Table 2-1), along with how these projections differ depending on future scenarios. Users can click on a point anywhere in the ocean to obtain the IPCC projection of sea level for that specific location. The contributions of different physical processes to future sea level rise are also provided, indicating which processes will be the dominant drivers of future sea levels for a given location.

[1] https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool



The SSP scenarios used in this report, their indicative temperature evolution and radiative forcing categorisation, and the five socio-economic storylines upon which they are built. Source: IPCC (2021) Cross-Chapter Box 1.4, Figure 1.

Figure 2-2. IPCC AR6 shared socio-economic pathways (IPCC, 2021)



Global surface temperature changes relative to 1850-1900, degrees C, under the five core emissions scenarios used in AR6. Source: IPCC (2021) Figure SPM.8a.

Figure 2-3. IPCC AR6 global sea level rise projections, 1950 to 2100 (IPCC, 2021)

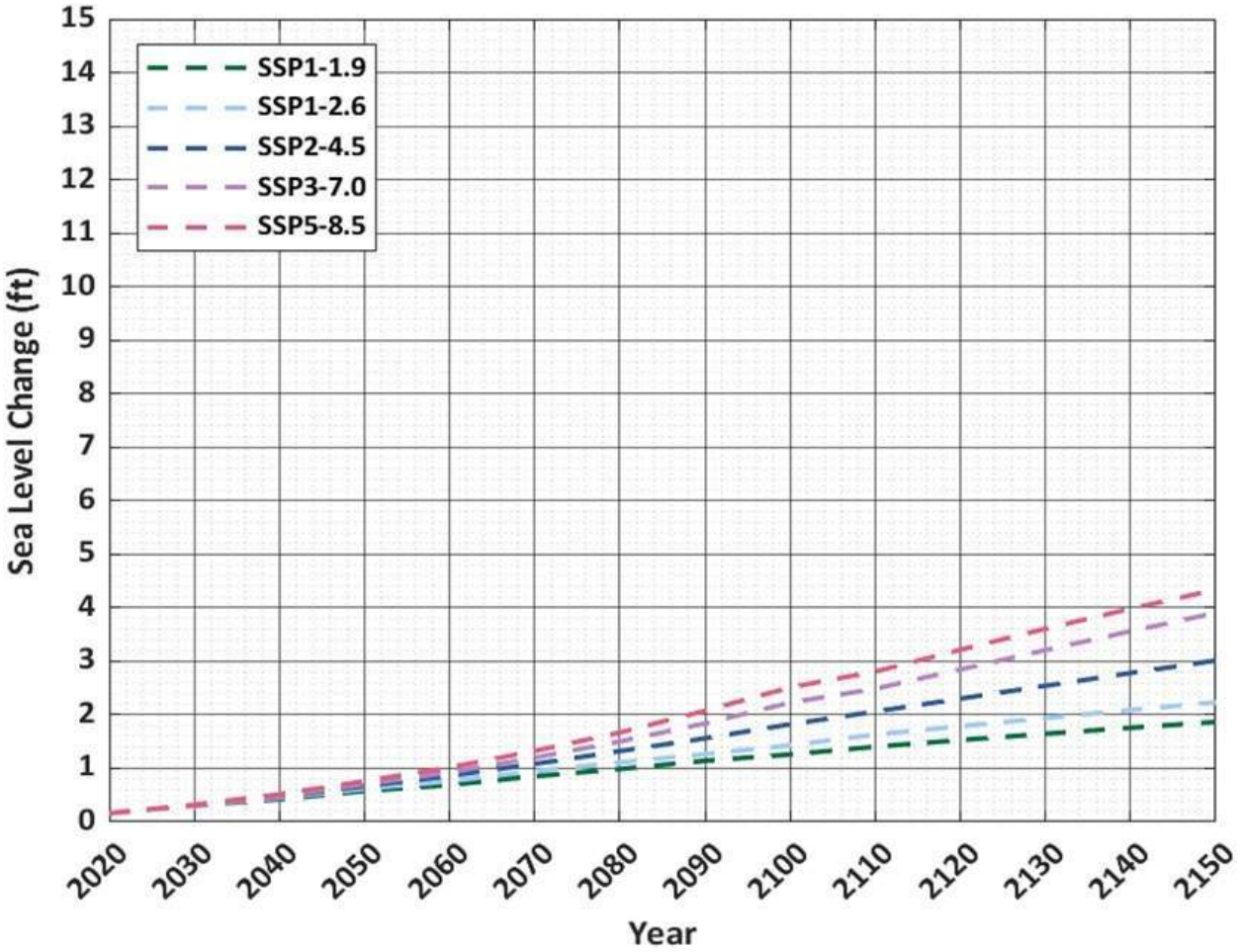


Figure 2-4. IPCC AR6 global sea level rise projections, 2020 to 2150 (IPCC, 2021)

Table 2-1. IPCC AR6 global sea level rise projections, 2020 to 2150 (IPCC, 2021)

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
SSP1-1.9	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.1	1.3	1.4	1.5	1.7	1.8	1.9
SSP1-2.6	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.8	1.9	2.1	2.2
SSP2-4.5	0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.6	1.8	2.1	2.3	2.5	2.8	3.0
SSP3-7.0	0.2	0.3	0.5	0.7	0.9	1.2	1.5	1.8	2.2	2.5	2.9	3.2	3.6	3.9
SSP5-8.5	0.2	0.3	0.5	0.8	1.0	1.3	1.7	2.1	2.5	2.8	3.2	3.6	4.0	4.3

2.1.2 U.S. Interagency Task Force - Global Sea Level Rise Projections

The Sea Level Rise and Coastal Flood Hazard Scenarios and Tools Interagency Task Force (Task Force) recently revised their sea level change projections through 2150, considering up-to-date scientific research and measurements. The Task Force consists of representatives from the National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), U.S. Environmental Protection Agency (EPA), U.S. Geological Survey (USGS), U.S. Army Corps of Engineers (USACE), and additional partners within academia. The most recent report entitled *Global and Regional Sea Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines* (Sweet, et al., 2022), provides the most up to date sea level rise projections for all the U.S. states and territories.

To visualize the Task Force sea level rise projections globally, NASA created the *Task Force Sea Level Projection Tool* [2], which allows users to view both global and regional sea level projections from 2020 to 2150 (Figure 2-5 and Table 2-2), along with how these projections differ depending on future scenarios. Users can select a point anywhere in the ocean to obtain the Task Force sea level rise projections for that specific location. The contributions of different physical processes to future sea level rise are also provided, indicating which processes will be the dominant drivers of future sea levels for a given location.

The Task Force scenarios and the IPCC AR6 scenarios are different but are based on the same underlying science and sea level rise projection framework. The key difference is that the Task Force created scenarios for targeted sea level rise elevations at specific times in the future, whereas the IPCC created scenarios for specific emissions pathways. The Task Force's targeted sea level rise elevations represent outcomes that are considered unlikely but plausible, compared to the IPCC AR6 scenarios, which are considered likely. The goal of the Task Force projections is to examine the full range of plausible amounts of future sea level to help bound certain risk planning exercises. The Task Force scenarios are based on target elevations for sea level rise in 2100 of 1.0 ft (*Low*), 1.6 ft (*Intermediate Low*), 3.3 ft (*Intermediate*), 4.9 ft (*Intermediate High*), and 6.6 ft (*High*). Comparisons of the Task Force global sea level rise projections and the IPCC AR6 global projections are shown in Figure 2-6 and Table 2-3.

[2] https://sealevel.nasa.gov/task-force-scenario-tool

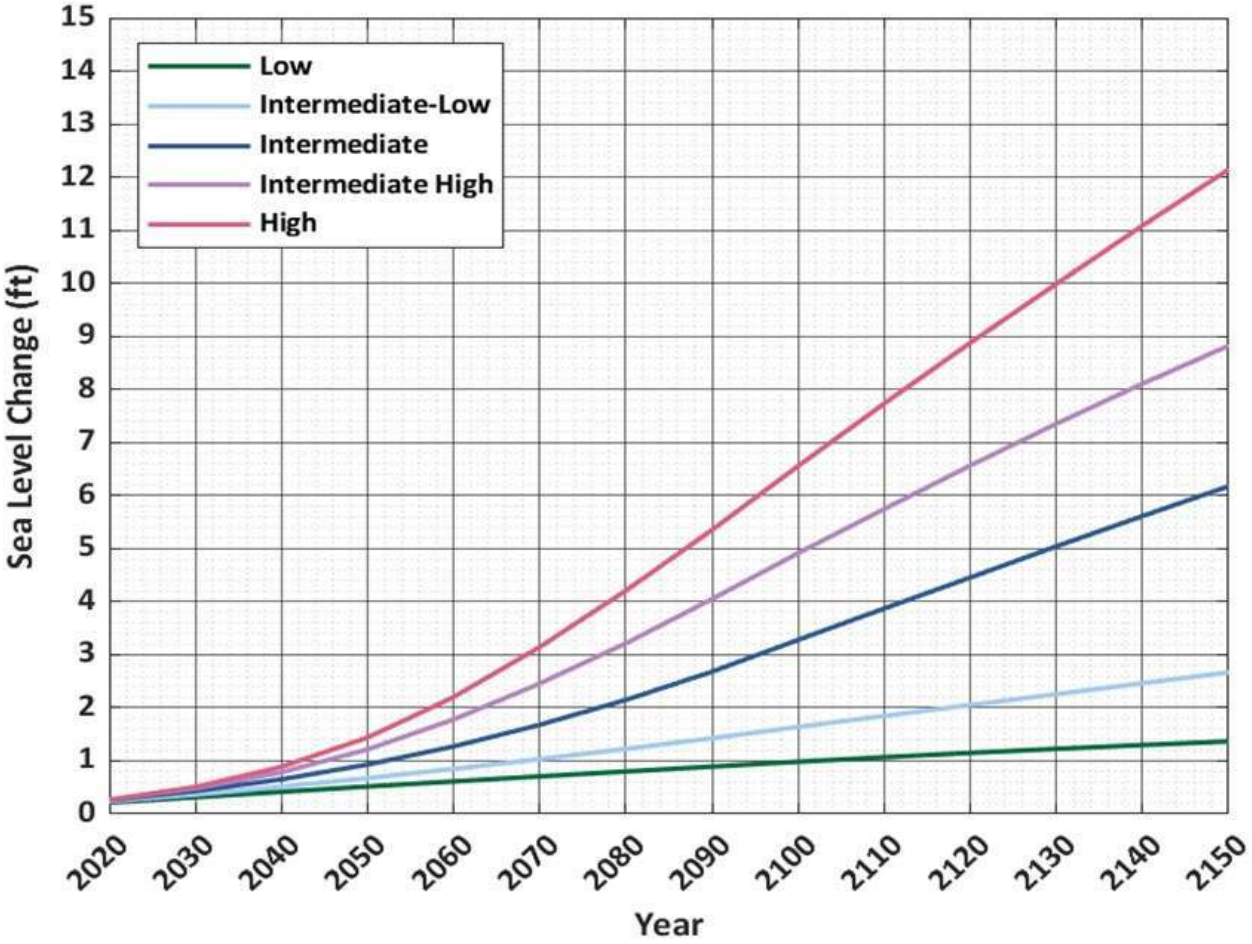


Figure 2-5. Task Force global sea level rise projections, 2020 to 2150 (Sweet, et al., 2022)

Table 2-2. Task Force global sea level rise projections, 2020 to 2150 (Sweet, et al., 2022)

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
Low	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4
Int-Low	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.9	2.1	2.3	2.5	2.7
Int	0.3	0.4	0.7	0.9	1.3	1.7	2.2	2.7	3.3	3.9	4.5	5.0	5.6	6.2
Int-High	0.3	0.5	0.8	1.2	1.8	2.5	3.2	4.1	4.9	5.7	6.6	7.4	8.1	8.8
High	0.3	0.5	0.9	1.4	2.2	3.2	4.2	5.4	6.6	7.7	8.9	10.0	11.1	12.1

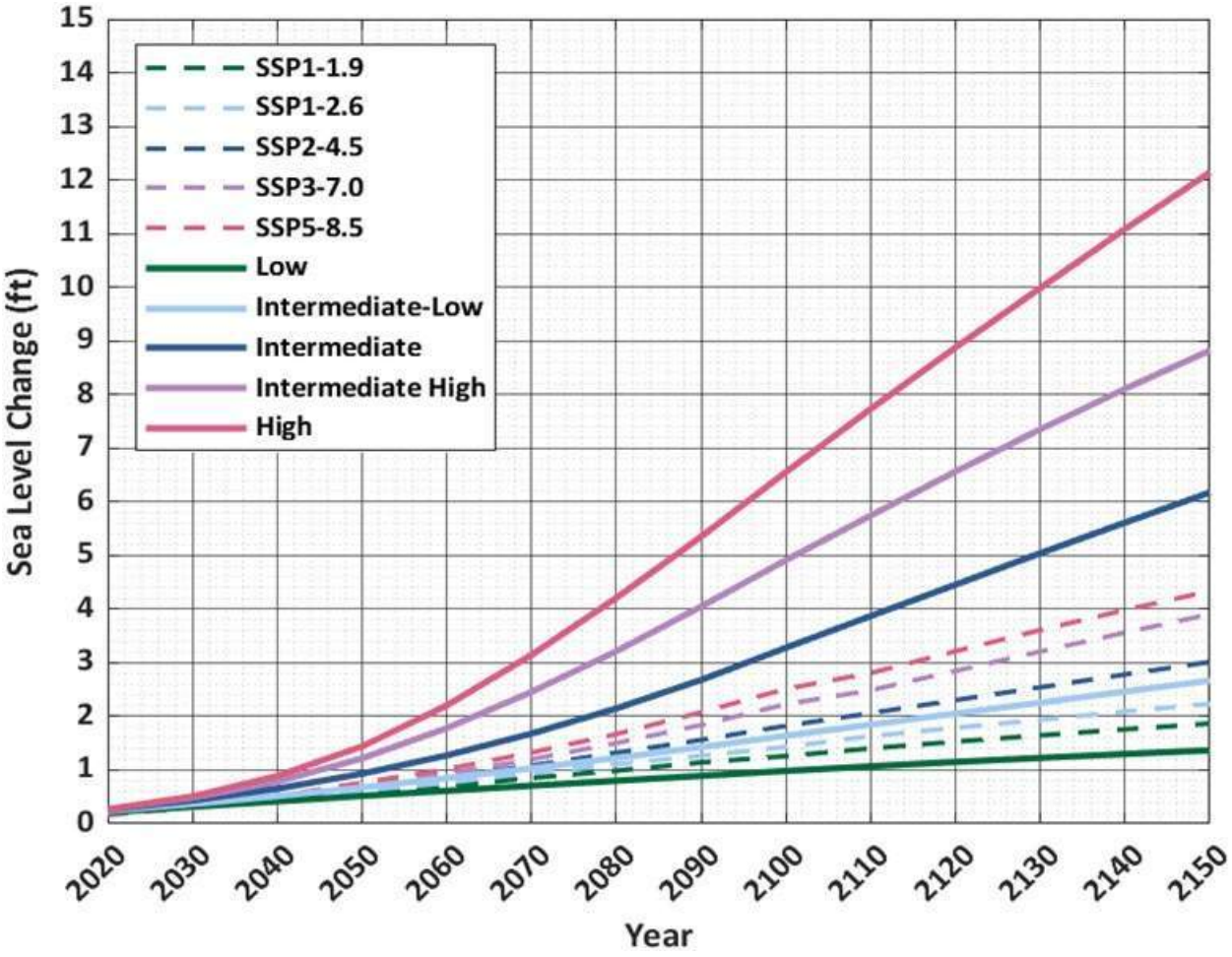


Figure 2-6. Comparison of IPCC AR6 and Task Force global sea level rise projections

Table 2-3. Comparison of IPCC AR6 and Task Force global sea level rise projections

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
SSP1-1.9	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.1	1.3	1.4	1.5	1.7	1.8	1.9
Low	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.4
SSP1-2.6	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.8	1.9	2.1	2.2
Int-Low	0.2	0.4	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.9	2.1	2.3	2.5	2.7
SSP2-4.5	0.2	0.3	0.5	0.7	0.9	1.1	1.3	1.6	1.8	2.1	2.3	2.5	2.8	3.0
Int	0.3	0.4	0.7	0.9	1.3	1.7	2.2	2.7	3.3	3.9	4.5	5.0	5.6	6.2
SSP3-7.0	0.2	0.3	0.5	0.7	0.9	1.2	1.5	1.8	2.2	2.5	2.9	3.2	3.6	3.9
Int-High	0.3	0.5	0.8	1.2	1.8	2.5	3.2	4.1	4.9	5.7	6.6	7.4	8.1	8.8
SSP5-8.5	0.2	0.3	0.5	0.8	1.0	1.3	1.7	2.1	2.5	2.8	3.2	3.6	4.0	4.3
High	0.3	0.5	0.9	1.4	2.2	3.2	4.2	5.4	6.6	7.7	8.9	10.0	11.1	12.1

2.2 Honolulu Sea Level Rise Projections

Sweet et.al. (2017 and 2022) identify specific regions that are susceptible to a greater-than-average rise in sea level. Hawai'i thus far has seen a rate of sea level rise (+1.54 mm/yr) less than the global average (+3.1 mm/yr); however, this is expected to change in the future. Hawai'i is in the "far-field" regarding the effects of melting land ice. This means that the effects of melting land ice have been significantly less in Hawai'i compared to areas nearer to the ice melt. Over the next few decades, these effects are expected to spread to Hawai'i, which is then projected to experience a sea level rise greater than the global average.

The relative sea level trend for Honolulu for the period of 1905 to present is +1.54 ± 0.20 mm/yr (Figure 2-7). Honolulu has also recorded interannual sea level anomalies exceeding 0.5 ft (15 cm) in magnitude due to natural oceanic variability from processes such as the El Niño-Southern Oscillation (ENSO) and the Pacific Decadal Oscillation (PDO).

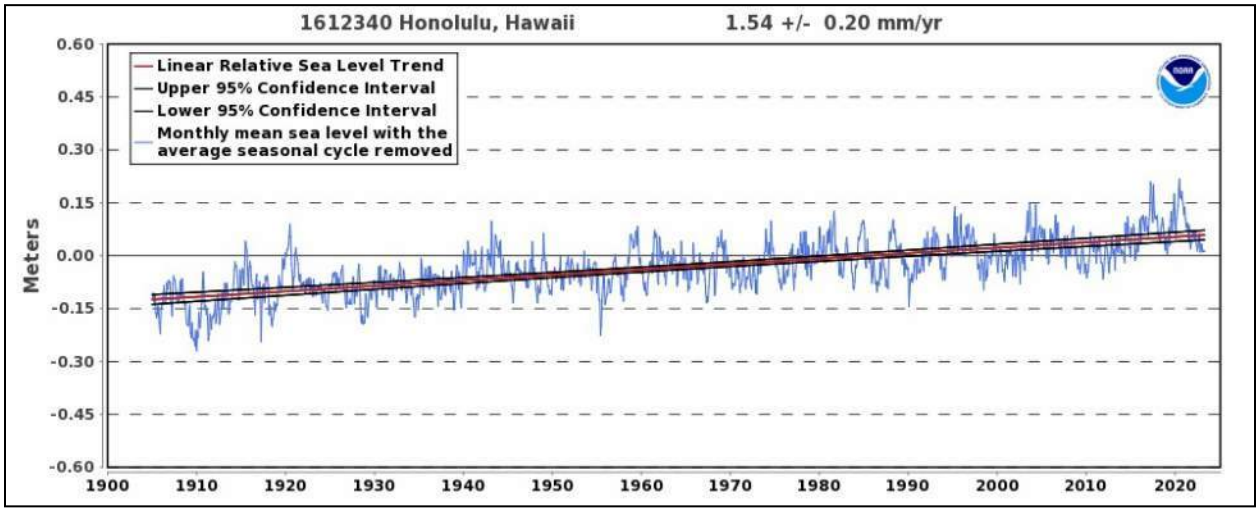


Figure 2-7. Relative sea level trend for Honolulu, 1905 to present (NOAA, 2023)

2.2.1 IPCC AR6 - Honolulu Sea Level Rise Projections

The *NASA Sea Level Rise Projection Tool* [3] for the IPCC AR6 projections provides adjusted sea level rise curves for individual tide stations around the globe. The IPCC AR6 sea level rise curves for Honolulu from 2020 to 2150 are shown in Figure 2-8 and Table 2-4. Projected timings of when sea level rise reaches 3.3 and 6.0 ft for each scenario are shown in Figure 2-9 and Figure 2-10, respectively.

[3] https://sealevel.nasa.gov/ipcc-ar6-sea-level-projection-tool?psmsl_id=155&data_layer=scenario

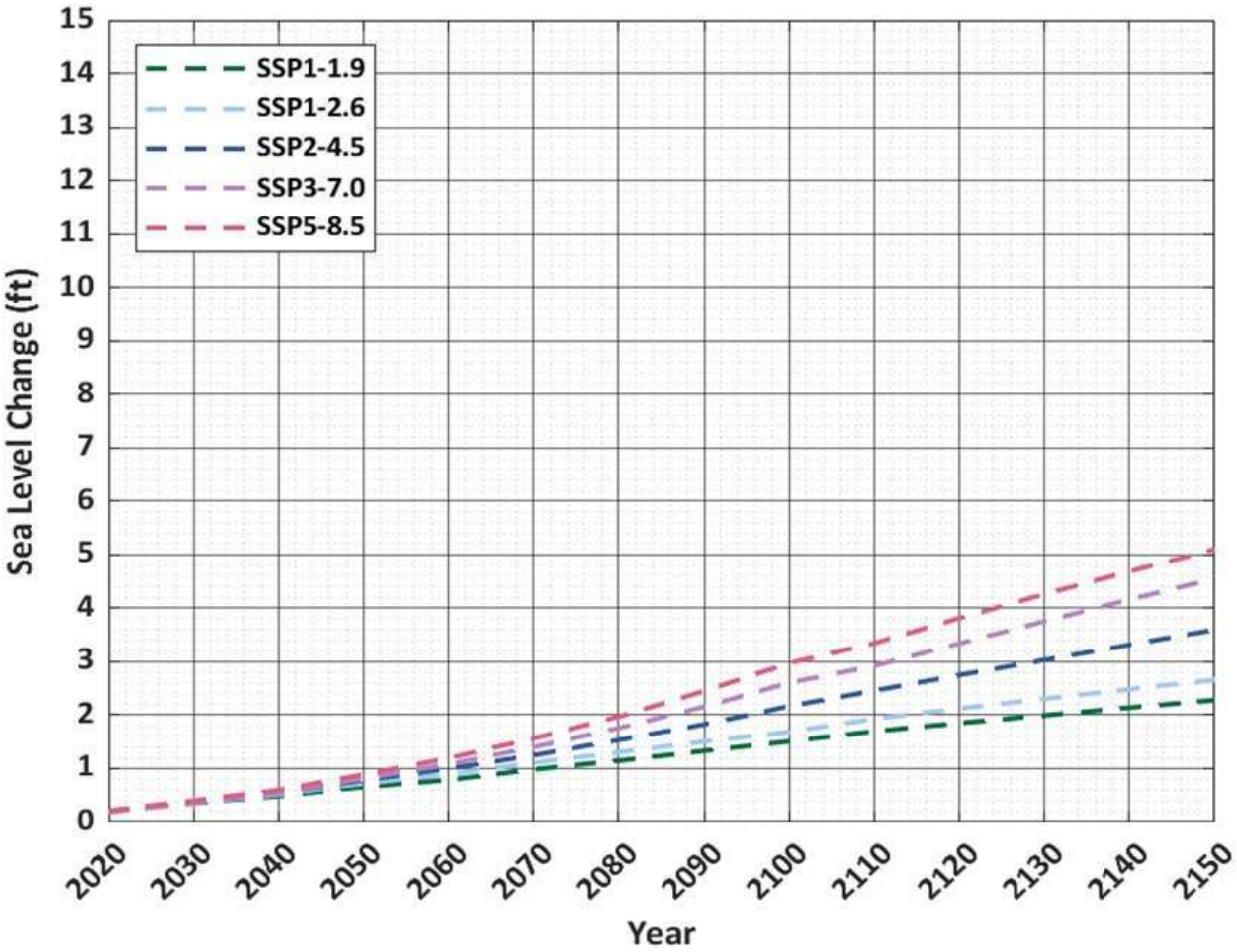


Figure 2-8. IPCC AR6 sea level rise projections for Honolulu, 2020 to 2150 (IPCC, 2021)

Table 2-4. IPCC AR6 sea level rise projections for Honolulu, 2020 to 2150 (IPCC, 2021)

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
SSP1-1.9	0.2	0.4	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.1	2.3
SSP1-2.6	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7
SSP2-4.5	0.2	0.4	0.5	0.8	1.0	1.3	1.5	1.8	2.2	2.5	2.8	3.0	3.3	3.6
SSP3-7.0	0.2	0.4	0.5	0.8	1.1	1.4	1.8	2.2	2.6	2.9	3.3	3.8	4.2	4.6
SSP5-8.5	0.2	0.4	0.6	0.9	1.2	1.6	2.0	2.5	3.0	3.3	3.8	4.3	4.7	5.1

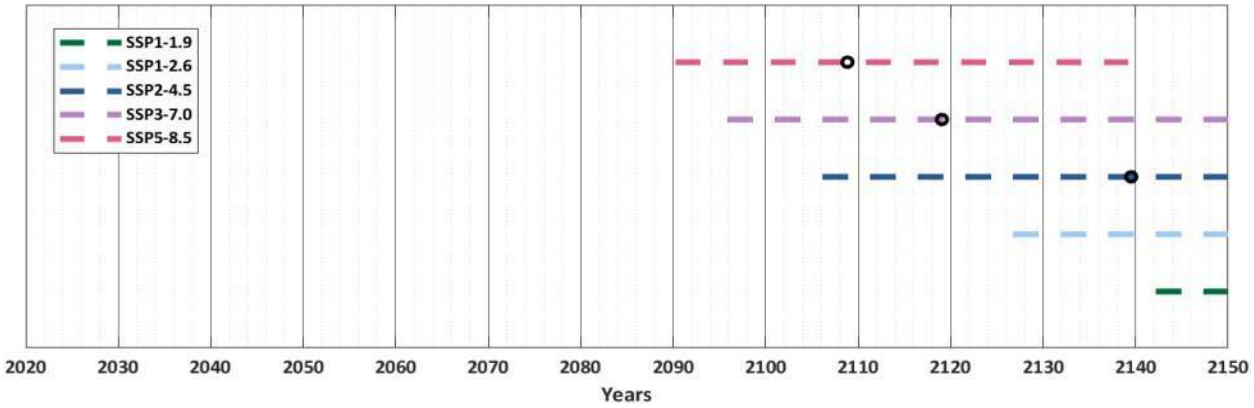


Figure 2-9. IPCC AR6 projected timings of 3.3 ft of sea level rise for Honolulu (IPCC, 2021)

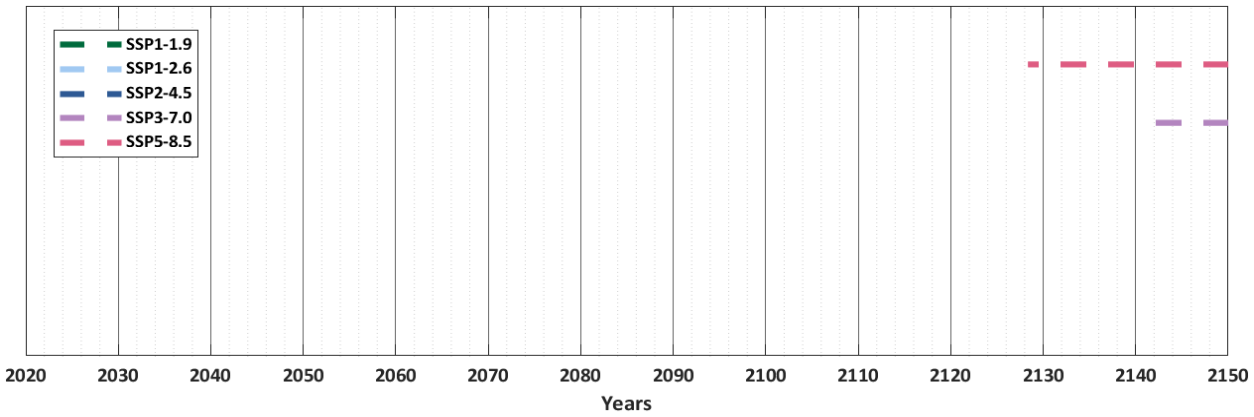


Figure 2-10. IPCC AR6 projected timings of 6.0 ft of sea level rise for Honolulu (IPCC, 2021)

2.2.2 U.S. Interagency Task Force - Honolulu Sea Level Rise Projections

The *Interagency Sea Level Rise Scenario Tool* [4] for the Task Force projections provides adjusted sea level rise curves for individual tide stations around the globe. The Task Force sea level rise curves for Honolulu from 2020 to 2150 are shown in Figure 2-11 and Table 2-5. Projected timings of when sea level rise reaches 3.3 and 6.0 ft for each scenario are shown in Figure 2-12 and Figure 2-13, respectively. Comparison of the Task Force and IPCC AR6 sea level rise projections for Honolulu are shown in Figure 2-14 and Table 2-6.

[4] https://sealevel.nasa.gov/task-force-scenario-tool?psmsl_id=155

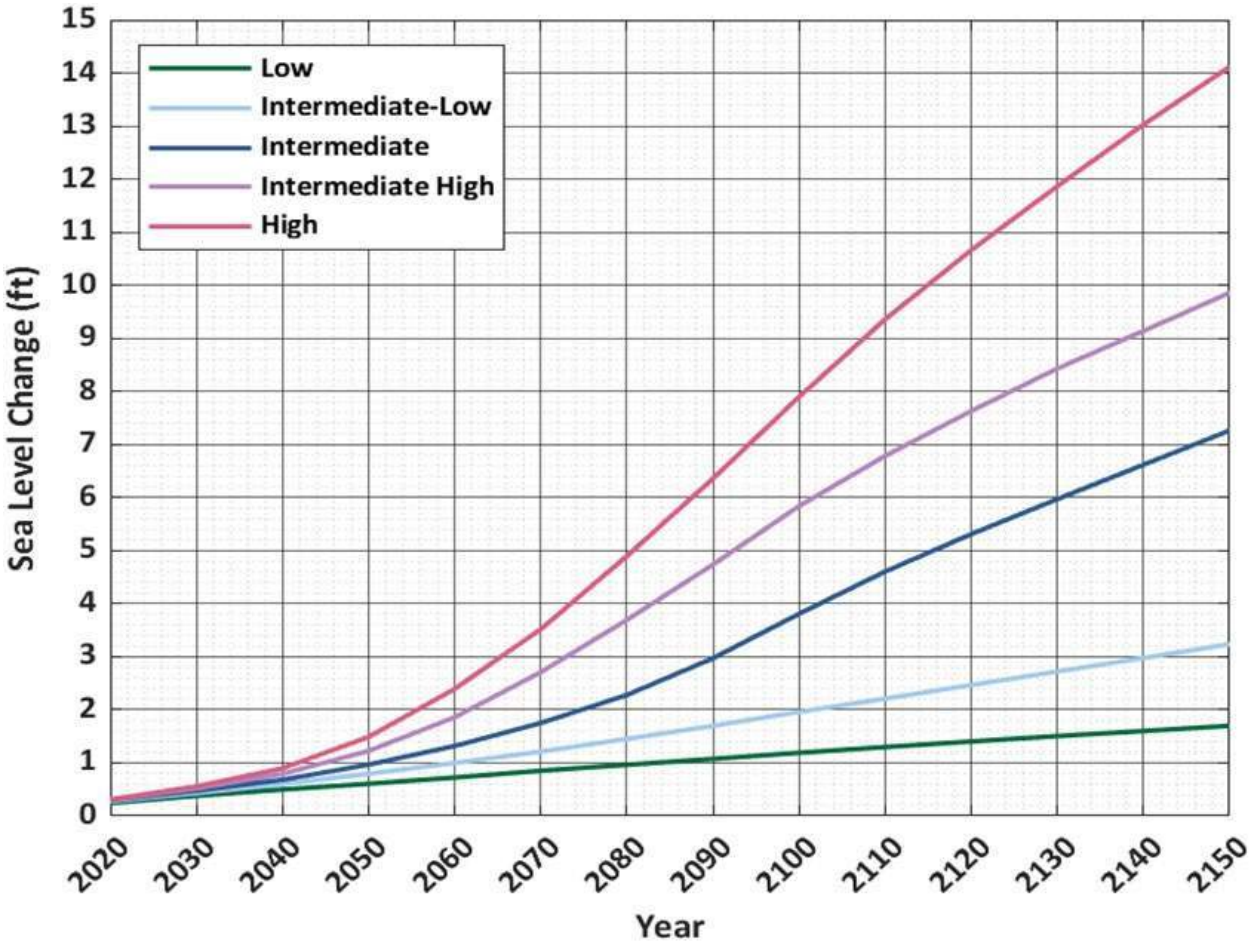


Figure 2-11. Honolulu local mean sea level rise projections (adapted from Sweet et al., 2022)

Table 2-5. Honolulu local mean sea level rise projections (adapted from Sweet et al., 2022)

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
Low	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
Int-Low	0.3	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.2
Int	0.3	0.5	0.7	1.0	1.3	1.8	2.3	3.0	3.8	4.6	5.3	6.0	6.6	7.3
Int-High	0.3	0.5	0.8	1.2	1.9	2.7	3.7	4.7	5.8	6.8	7.6	8.4	9.1	9.9
High	0.3	0.6	0.9	1.5	2.4	3.5	4.9	6.4	7.9	9.4	10.7	11.9	13.0	14.1

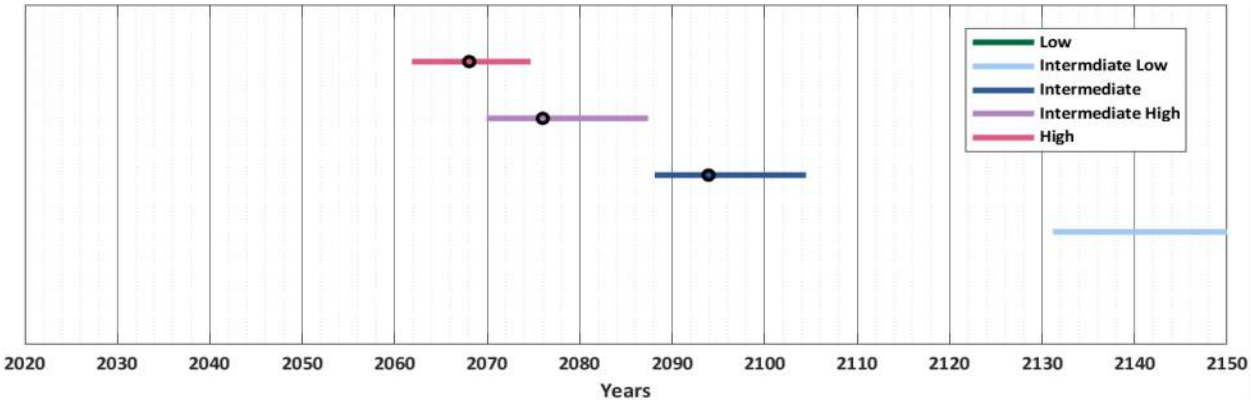


Figure 2-12. Task Force projected timings of 3.3 ft of sea level rise for Honolulu (adapted from Sweet et al., 2022)

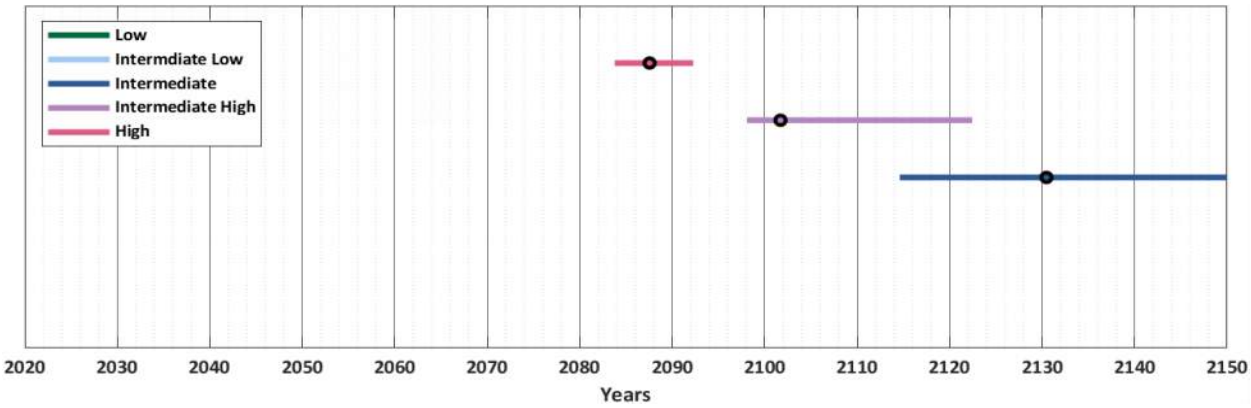


Figure 2-13. Task Force projected timings of 6.0 ft of sea level rise for Honolulu (adapted from Sweet et al., 2022)

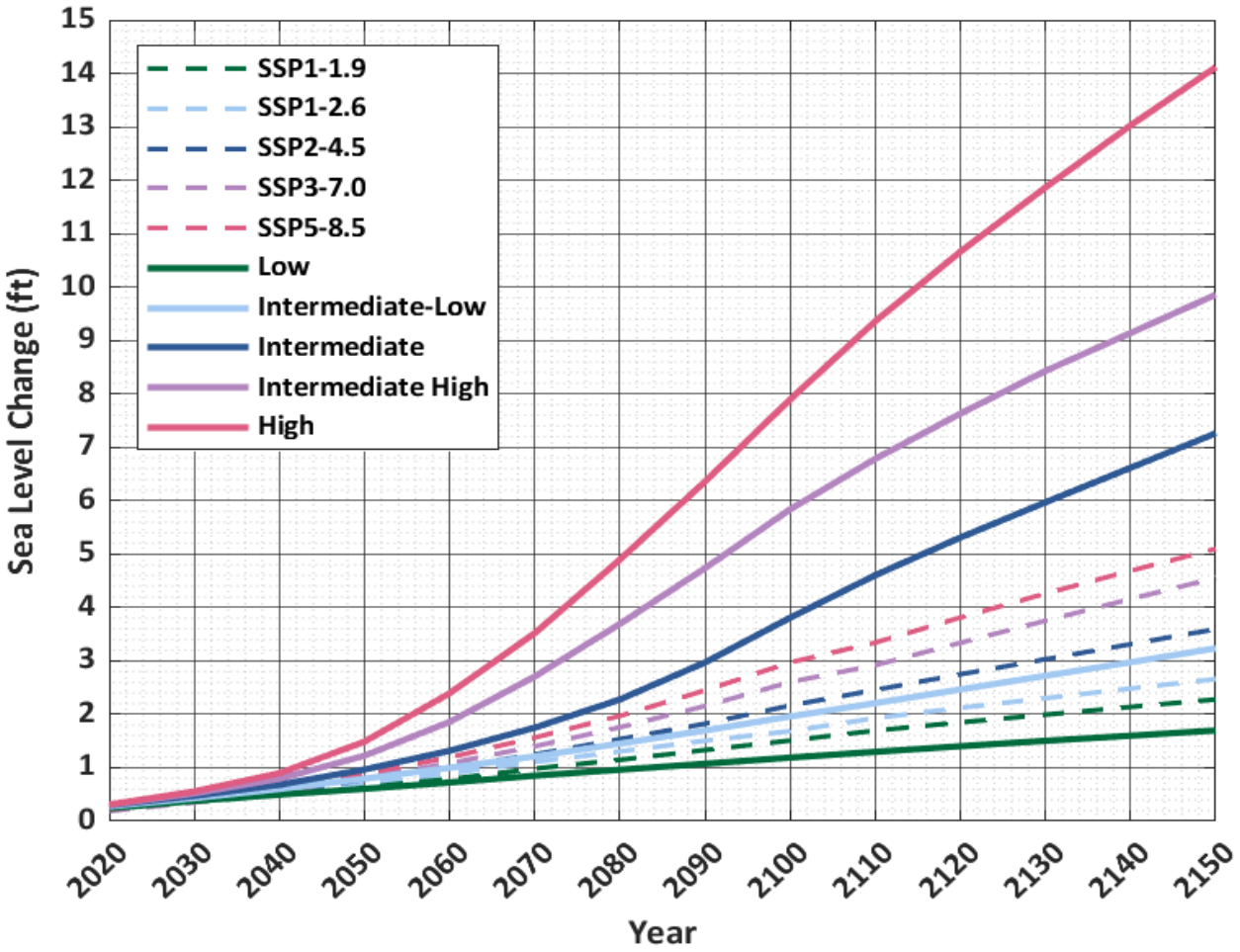


Figure 2-14. Comparison of IPCC AR6 and Task Force sea level rise projections for Honolulu

Table 2-6. Comparison of IPCC AR6 and Task Force sea level rise projections for Honolulu

Scenario/Year (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2110	2120	2130	2140	2150
SSP1-1.9	0.2	0.4	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.1	2.3
Low	0.2	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
SSP1-2.6	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7
Int-Low	0.3	0.4	0.6	0.8	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.2
SSP2-4.5	0.2	0.4	0.5	0.8	1.0	1.3	1.5	1.8	2.2	2.5	2.8	3.0	3.3	3.6
Int	0.3	0.5	0.7	1.0	1.3	1.8	2.3	3.0	3.8	4.6	5.3	6.0	6.6	7.3
SSP3-7.0	0.2	0.4	0.5	0.8	1.1	1.4	1.8	2.2	2.6	2.9	3.3	3.8	4.2	4.6
Int-High	0.3	0.5	0.8	1.2	1.9	2.7	3.7	4.7	5.8	6.8	7.6	8.4	9.1	9.9
SSP5-8.5	0.2	0.4	0.6	0.9	1.2	1.6	2.0	2.5	3.0	3.3	3.8	4.3	4.7	5.1
High	0.3	0.6	0.9	1.5	2.4	3.5	4.9	6.4	7.9	9.4	10.7	11.9	13.0	14.1

2.3 Guidance for Sea Level Rise Planning and Adaptation

While the sea level rise projections described in the previous sections are based on the most current scientific models and measurements, discretion is required when selecting the appropriate scenario(s) for planning purposes. Selecting the appropriate sea level change projection(s) is a function of many parameters, including but not limited to coastal setting, wave climate, topography, existing development patterns and intensity, existing land uses, criticality of infrastructure, adaptive capacity, resilience potential, budget, and objectives.

In 2017, NOAA published *Technical Report NOS CO-OPS 083* [5] describing global and regional sea level rise scenarios for the U.S. The report emphasizes that coastal planners making critical decisions should weigh several factors when selecting which sea level rise scenario to use, such as the type of decision to be made, expected future performance, planning horizon, and overall risk tolerance, including the criticality of the asset and/or the size and vulnerability of the exposed population (Hall et al., 2016). For example, when designing a patio for a home or a bike path, a lower sea level rise scenario might be used for the design as it is not supporting any critical functions and may have a higher risk tolerance. In contrast, when designing a hospital or power plant with a low-risk tolerance and a high criticality of the asset, a higher sea level rise scenario might be selected as a precautionary approach.

In 2018, SE participated in the regional climate assessment team for the Hawaiian Islands and Affiliated Pacific Islands, which contributed to the *4th National Climate Assessment* (USGCRP, 2018). The consensus from the regional team, which included representatives from NOAA, the USGS, and the University of Hawai'i (UH), was that the 2017 NOAA *Intermediate-High* scenario projections are recommended for planning purposes in Hawai'i.

According to the most recent IPCC AR6 report, the most aggressive, plausible sea level rise scenario is the SSP5-8.5. This projection along with the Task Force *Intermediate* and *Intermediate-High* scenarios are summarized in Table 2-7 below.

Table 2-7. Summary of key sea level rise projections (in ft)

Scenario / Year	2050	2070	2100	2150
IPCC AR6 *SSP5-8.5*	0.89	1.56	2.97	5.10
Task Force *Intermediate*	0.97	1.75	3.81	7.26
Task Force *Intermediate-High*	1.23	2.71	5.84	9.86

[5] https://tidesandcurrents.noaa.gov/publications/techrpt83_Global_and_Regional_SLR_Scenarios_for_the_US_final.pdf

3. HAWAI'I SEA LEVEL RISE EXPOSURE AREA

The Hawai'i Sea Level Rise Vulnerability and Adaptation Report (State of Hawai'i, 2017) discusses the anticipated impacts of projected future sea level rise on coastal hazards, and the potential physical, economic, social, environmental, and cultural impacts of sea level rise in Hawai'i. The report concluded that 3.2 ft of sea level rise may have substantial impacts on the island of Oʻahu. A key component of the report was a numerical modeling effort by the University of Hawai'i Coastal Geology Group (UHCGG) to estimate the potential impacts that 0.5, 1.1, 2.0, and 3.2 ft of sea level rise would have on passive flooding, annual high wave flooding, and coastal erosion. The footprints of these three hazards were combined to map the projected extent of chronic flooding due to sea level rise, referred to as the *Sea Level Rise Exposure Area* (SLR-XA). The modeling results are available through the *State of Hawaiʻi Sea Level Rise Viewer* [6].

3.1 SLR-XA Passive Flooding Hazard

The UHCGG modeled passive flooding using a modified "bathtub" method (Anderson et al., 2018). The method utilizes a detailed digital elevation model (DEM) of the backshore, typically derived from aerial light detection and ranging (LiDAR) data. Elevations within the DEM that are below the elevation of the combined sea level rise and local mean higher high water (MHHW) are considered passive flood areas. Passive flood areas that are connected to the ocean are considered "marine inundation" areas, while areas that are not connected to the ocean are considered "groundwater inundation" areas. Figure 3-1 shows cross-shore profile of passive flooding used in the SLR-XA model. Figure 3-2 depicts the potential for passive flooding for the project area with 0.5, 1.1, 2.0, and 3.2 ft of sea level rise. Passive flooding within the project area is observed for 2.0 and 3.2 ft of sea level rise. This passive flooding would likely occur through groundwater intrusion and/or through stormwater utilities that are connected to the ocean. This is evident by the passive flood waters not being connected hydraulically to the ocean.

3.2 SLR-XA Annual High Wave Flooding Hazard

The SLR-XA annual high wave flooding model propagates the maximum annually recurring wave, calculated from historical wave buoy data, over the reef and to the shore along 1-dimensional cross-shore profiles spaced 20 meters (m) apart. Topography and bathymetry for each profile was extracted from a 1-m DEM. Model output for areas between the 1-dimensional profiles were interpolated and compiled in a 5-m map grid. The model depicts the spatial extent of inundation that is greater than 10 centimeters (cm) in depth. Figure 3-3 illustrates an idealized cross-shore profile schematic of the SLR-XA annual high wave flooding. Figure 3-4 depicts the potential for annual high wave flooding for the project area with 0.5, 1.1, 2.0, and 3.2 ft of sea level rise. Annual high wave flooding for the project area only occurs for the 3.2 ft sea level rise scenario and extends up to 660 ft into the project area.

[6] https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/

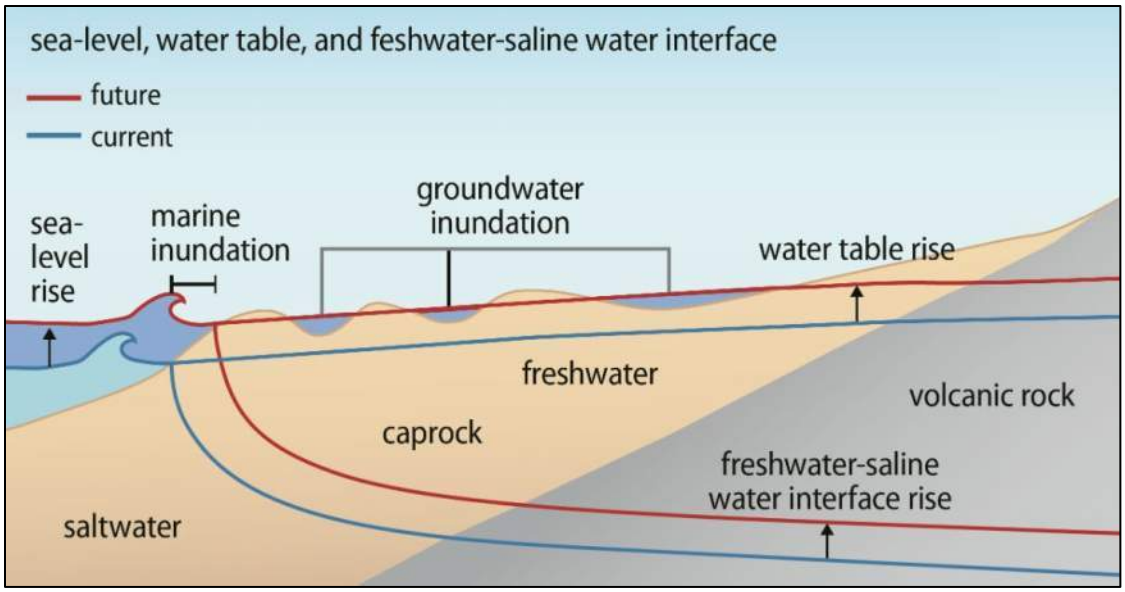


Figure 3-1. Cross-shore profile of SLR-XA passive flooding (UHCGG, 2017)

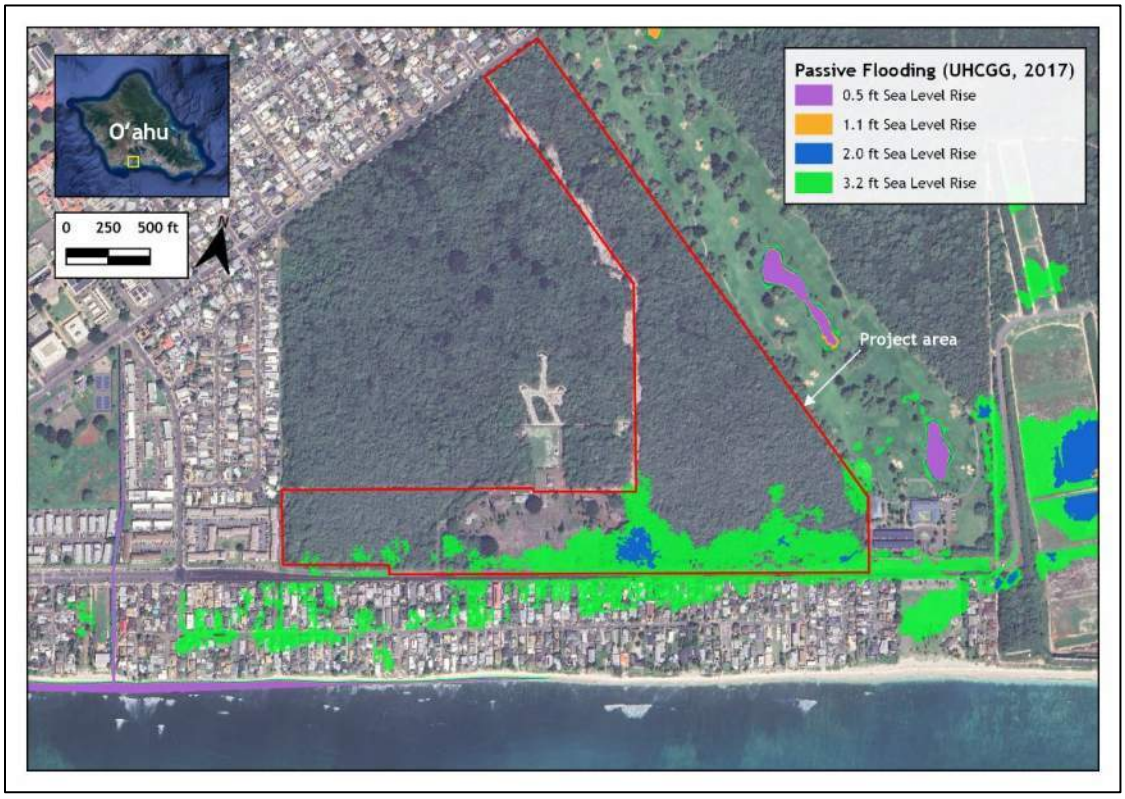


Figure 3-2. SLR-XA passive flooding with 3.2 ft of sea level rise

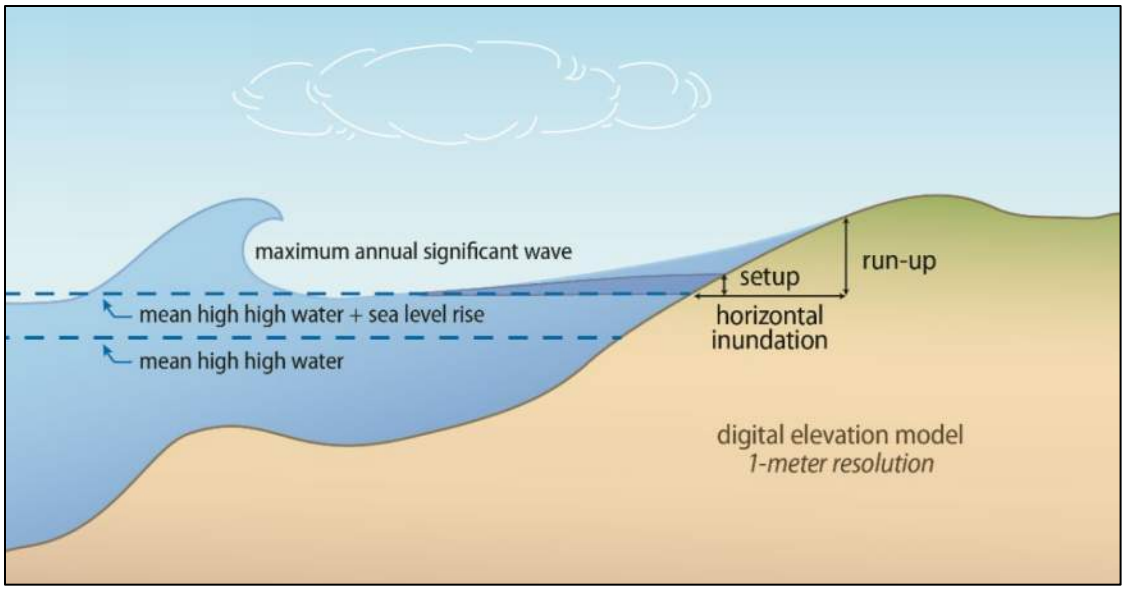


Figure 3-3. Cross-shore profile of SLR-XA annual high wave flooding (UHCGG, 2017)

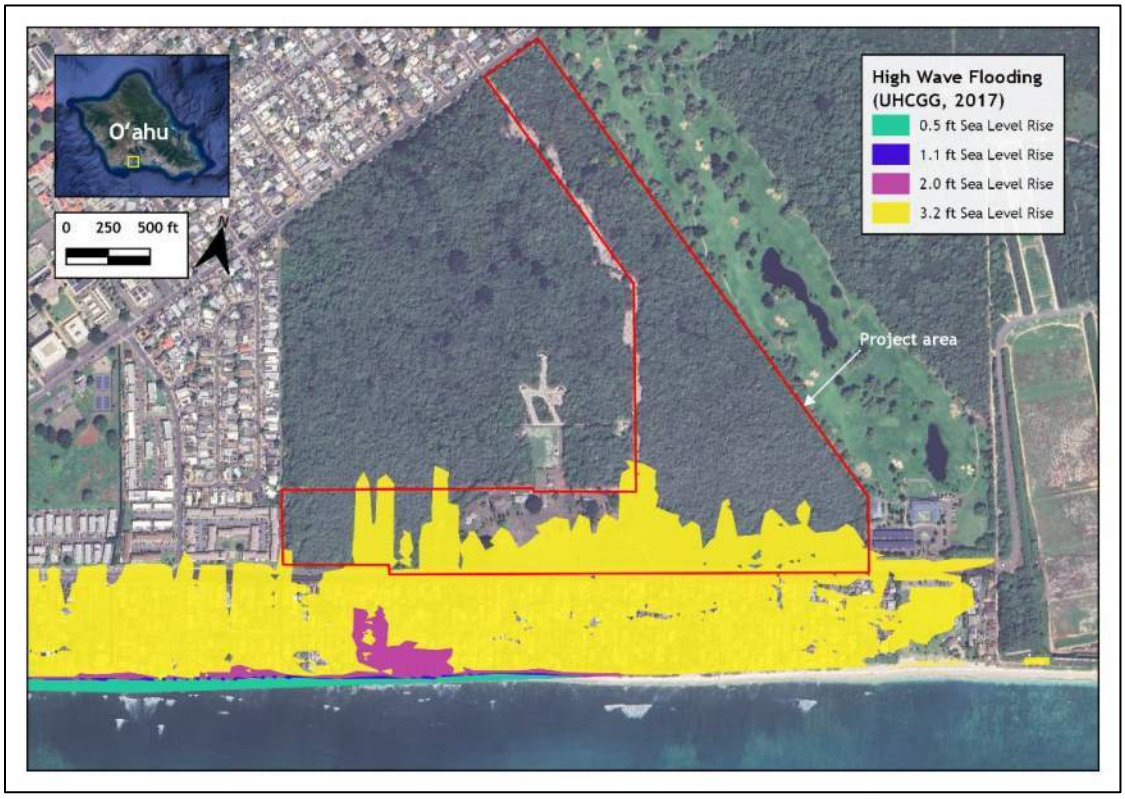


Figure 3-4. SLR-XA annual high wave flooding with 3.2 ft of sea level rise

3.3 SLR-XA Coastal Erosion Hazard Area

The erosion model (Anderson et al., 2015) presented in the *State of Hawai'i Sea Level Rise Viewer* is based on accepted sea level rise scenarios. The prediction of 3.2 ft of global mean sea level rise by 2100 is from the aggressive IPCC AR5 (2014) sea level curve. This curve represents the upper-end projection from the AR5 report, which is similar to the upper-end projection in the AR6 report. The SLR-XA erosion model estimates shoreline change resulting from a combination of the historic erosion pressures on the coastline, rising water levels, and the influence of additional water level on coastal erosion processes.

The historic erosion rates are based on shoreline location measurements collected at individual transects located 20 m apart along the coastline. These measurements capture the physical changes occurring in the unique environment at each transect. Though projections of historic erosion rates may not be accurate predictions of the distant future, they are accurate representations of historical environmental and physical changes at each individual transect location. These rates reflect changes in the position of the shoreline associated with historic changes in sea level, and do not include any influences of accelerating rates of sea level rise as expected in future decades and centuries.

Sea level rise results in a change to the horizontal shoreline location based purely on water levels moving to higher elevations and typically further inshore along the coastal profile. The SLR-XA erosion model in the *State of Hawai'i Sea Level Rise Viewer* includes a change of water level based on the historic rate of sea level (not the projected curves) extrapolated to the year 2100.

Projected erosion impacts as a response to rising sea levels, e.g., the amount of rise in excess of historic rates, assumes that coastal changes in the nearshore, shoreline, and backshore (to the maximum extent of erosion) are occurring in mobile sandy substrate (Figure 3-5) (Davidson-Arnott, 2005). The SLR-XA erosion model's implicit assumption is that sand moves freely along the affected dry and submerged profile, allowing the entire system to respond and adapt to the effects of a rising sea level. Actual shoreline migration may follow a different path and pace in some of the project areas, as some sections of the Oʻahu coastline do not closely match these assumptions.

In the vicinity of the project area, shallow fringing reefs extend into the nearshore, and ancient lagoonal deposits (sands, muds, and gravels), and alluvium may be present within the backshore, inshore of and sometimes beneath the sandy beach. The upper portion of the ʻEwa plain is composed of ancient lagoonal deposits (sands, muds, and gravels), and alluvium washed down from the Waiʻanae Range. The lower portion of the ʻEwa plain consists of a fossil reef platform that formed during a higher sea level stand. The shoreline is characterized by alternating stretches of sandy beaches and rocky shoreline consisting of marine terraces (reef limestone) and beachrock. The combined result of these inputs (Figure 3-6) is the erosion hazard line, presented in the *State of Hawai'i Sea Level Rise Viewer*.

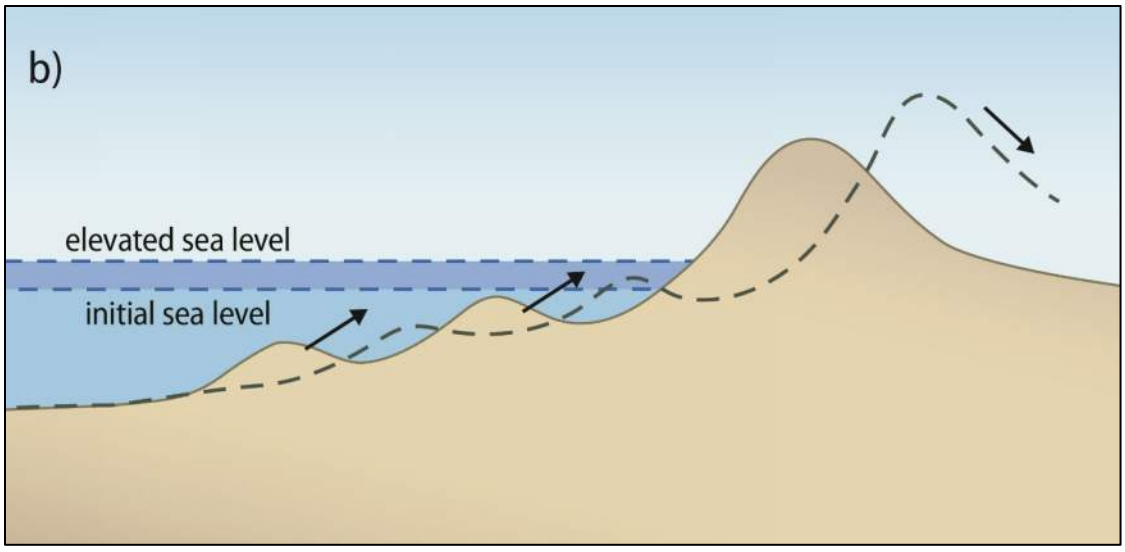


Figure 3-5. Davidson-Arnott conceptual model for shoreline change under rising sea levels (UHCGG, 2017)

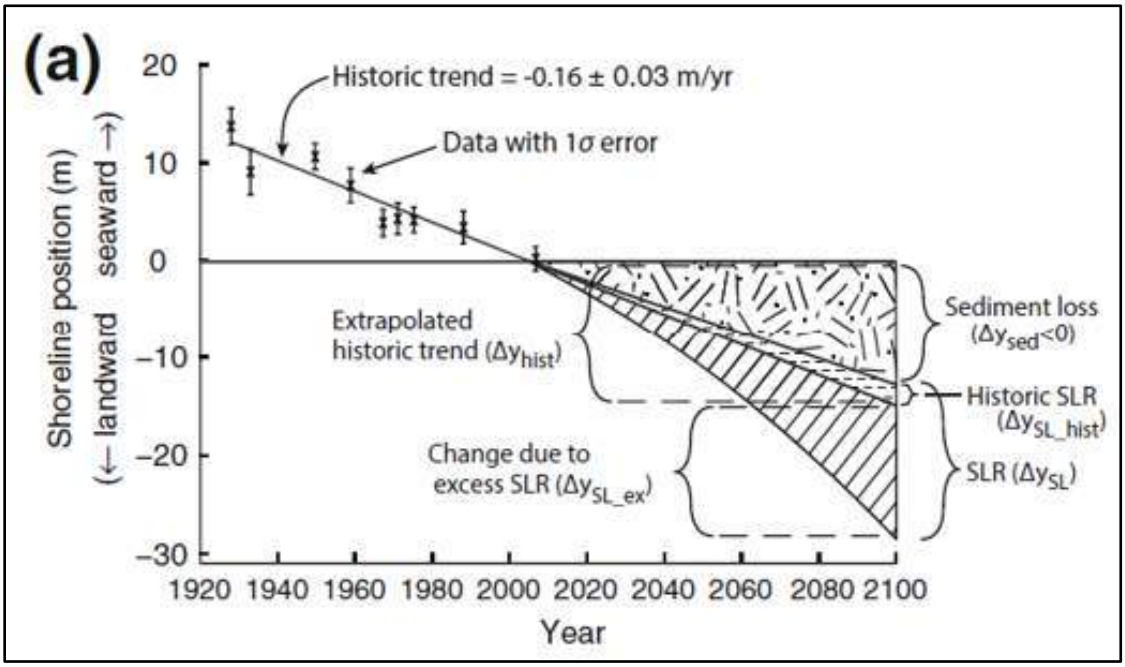


Figure 3-6. Graphic representation of erosion model components (Anderson et al., 2015)

Below is the list of assumptions and limitations, as presented on the *State of Hawai'i Sea Level Rise Viewer* website, which should be considered when interpreting the location of the coastal erosion hazard line:

- Existing seawalls or other coastal armoring in the backshore (may over-predict in these cases).
- Increasing wave energy across the fringing reef with sea level rise (may under-predict in these cases).
- Possible changes in reef accretion and nearshore sediment processes with sea level rise (may over-predict or under-predict based on the case).
- Possible changes to sediment supply from future shoreline development and engineering, such as construction or removal of coastal armoring or other coastal engineering (may over-predict [e.g., beach nourishment] or under-predict [e.g., sand mining] based on the case).
- Where a beach was lost to erosion fronting coastal armoring, historical shoreline change rates used in the coastal erosion model were calculated using historical shoreline positions up to and including the first shoreline indicating no beach.

The SLR-XA erosion model results represent a valuable tool for assessing potential erosion along a coastline under the pressure of rising water levels. Understanding that the SLR-XA erosion model may over-predict or under-predict erosion potential based on the unique physical characteristics of the project area allows for prudent use of the results for planning and design purposes.

Using the aggressive AR5 and AR6 sea level rise curves to establish 3.2 ft of sea level rise by 2100 provides a conservative estimate for water level at that point in time. Combining the conservative estimate for water level with a conceptual model to assess potential erosion along the project area's coastline provides a useful tool to inform planning and design.

Figure 3-7 shows the SLR-XA coastal erosion hazard exposure for the project area with 0.5, 1.1, 2.0, and 3.2 ft of sea level rise. The project area is located over 600 ft inshore from the projected coastal erosion hazard area, therefore coastal erosion is not a primary factor in determining the overall exposure area at this location.

Figure 3-7. SLR-XA projected coastal erosion with sea level rise

3.4 SLR-XA Combined Hazard Exposure Area

The SLR-XA is an overlay of the combined exposure to passive flooding, annual high wave flooding, and coastal erosion as shown in Figure 3-8 and does not include the interactive nature of these hazards that occurs in reality. Figure 3-9 depicts the SLR-XA combined hazard exposure area for the project area with 0.5, 1.1, 2.0, and 3.2 ft of sea level rise.

The SLR-XA combined hazard exposure area within the project area is a combination of passive and annual wave flooding and does not include coastal erosion. As shown previously in Section 3.1 and Section 3.2, backshore inundation with 2.0 ft of sea level rise is associated with passive flooding, while 3.2 ft of sea level rise shows backshore flooding as a combination of both passive and annual high wave overland flooding.

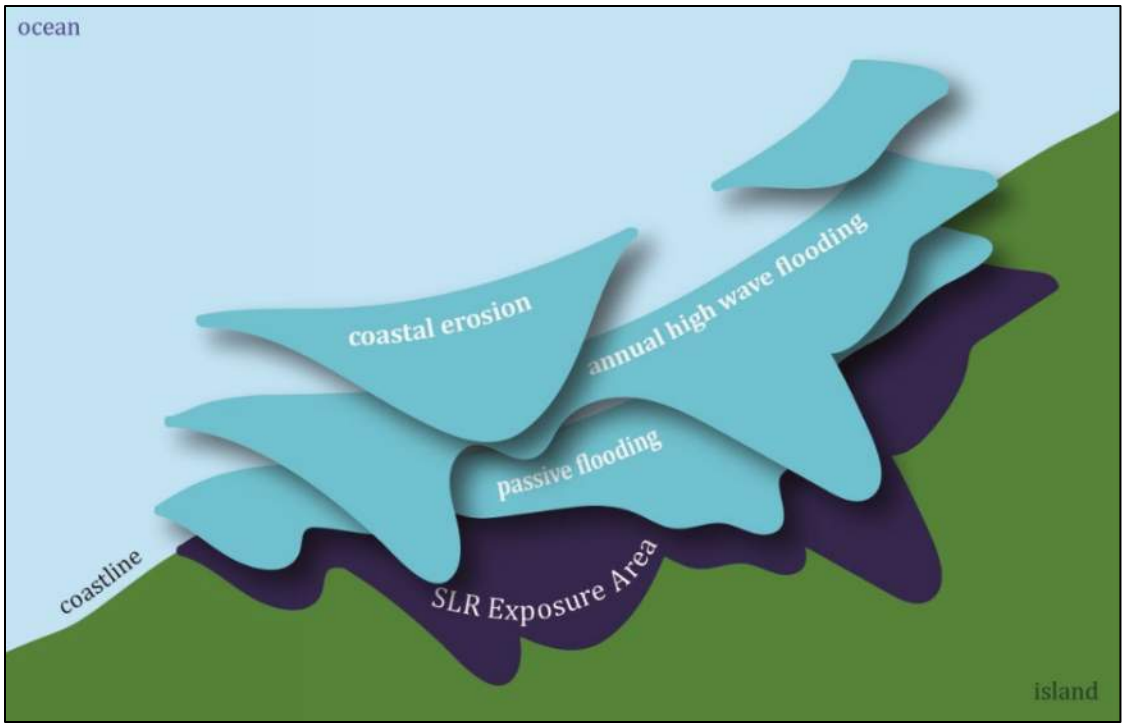


Figure 3-8. Schematic of combined exposure area consisting of passive flooding, annual high wave flooding, and coastal erosion (UHCGG, 2017)

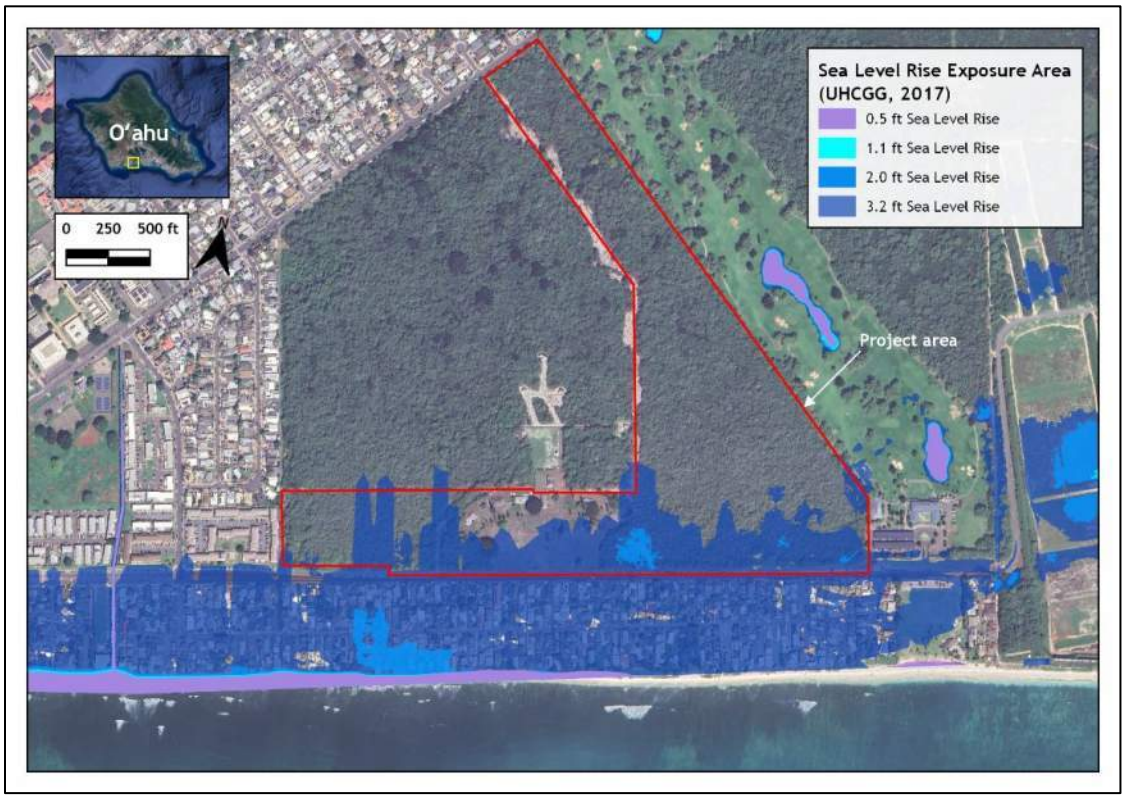


Figure 3-9. SLR-XA combined hazard exposure area with 3.2 ft of sea level rise

4. ADDITIONAL SEA LEVEL RISE DATA SOURCES

Additional data sources for floodplain hazards and sea level rise were compiled for the project area. These sources include the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps [7] (FIRM), the NOAA Sea Level Rise Viewer [8], and model results of hurricane storm surge and tsunami runup inundation with sea level rise.

4.1 FEMA Flood Zones

Figure 4-1 shows the FEMA flood zones relative to the project area. Current FEMA flood zones do not take into account future impacts of climate change and sea level rise, so while they remain an important planning tool, land use planning should also incorporate the best available science on future climate change impacts into the siting and design of homestead communities (DHHL, 2022). FEMA flood zones within and around the project area includes Zones D, X, and VE.

Approximately 46% of the project area is designated as Zone X, which represents areas with minimal flood hazard that are determined to be outside the Special Flood Hazard Area and higher than the elevation of the 0.2-percent annual exceedance probability (AEP) (500-year) flood. Flood insurance is not currently required in Zone X.

Zone VE represents areas subject to inundation by the 1-percent AEP (100-year) flood event with additional hazards due to storm-induced velocity wave action. Base Flood Elevations (BFEs) associated with Zone VE were derived from detailed hydraulic analyses. The project area is located outside of Zone VE, but the shoreline seaward of the project area is designated as Zone VE with BFEs between 7 and 8 ft.

Approximately 54% of the project area is designated as Zone D, which represents areas of undetermined but possible flood hazards where detailed flood hazard analyses have not been conducted by FEMA. The use of Native Hawaiian Housing Block Grant funds precludes development of residences within 100-year floodplains. Therefore, it is recommended that a detailed flood hazard analysis be conducted to determine possible flood hazards in Zone D. If any portion of this area is determined to be a Special Flood Hazard Area (SFHA), development may be prohibited.

[7] https://www.fema.gov/flood-maps

[8] https://coast.noaa.gov/digitalcoast/tools/slr.html

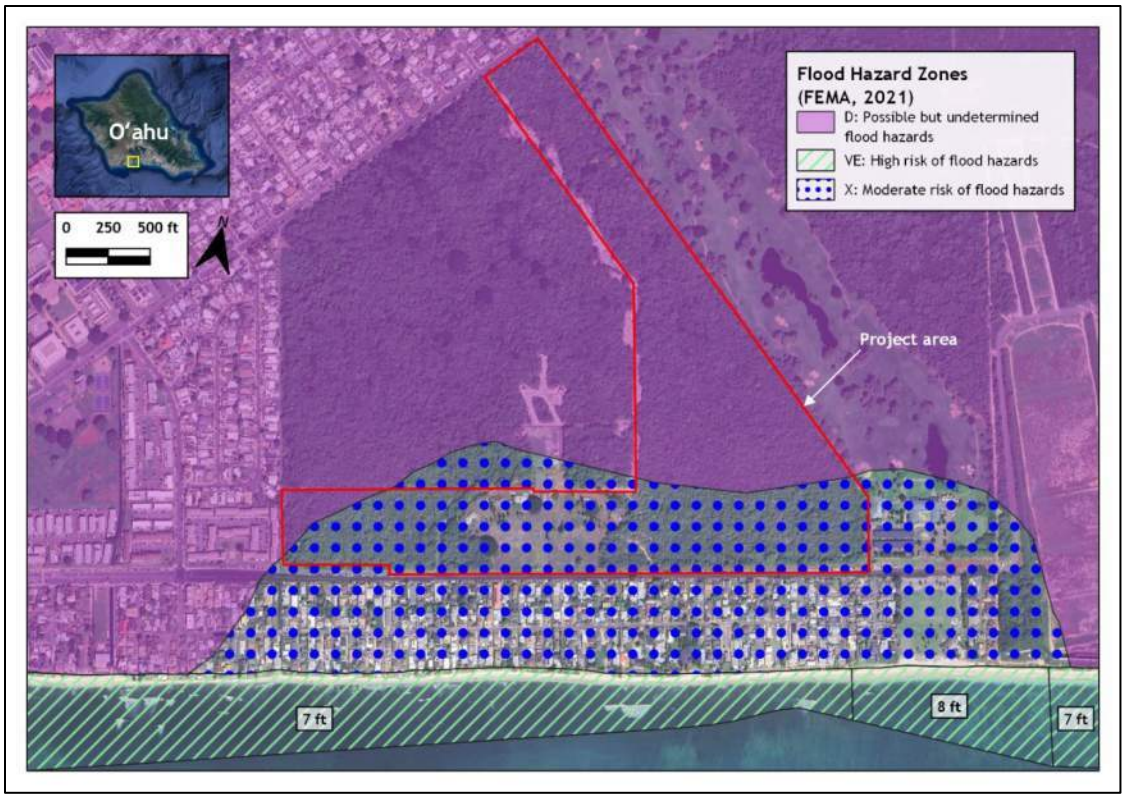


Figure 4-1. FEMA flood hazard zones (FEMA, 2023)

4.2 NOAA Passive Flooding Projections

The NOAA Sea Level Rise Viewer [9] provides visualization of impacts from sea level rise up to 10 ft above MHHW. The NOAA viewer only accounts for passive flooding based on a DEM and identifies flooded areas as either hydraulically connected to the ocean or unconnected. Hydraulically connected areas would see flood water propagating overland from the ocean while unconnected areas would see groundwater table rising and/or water migration through gravity fed underground utilities connected to the ocean.

As discussed previously in Section 3.1, passive flooding within the project area first occurs with 2.0 ft of sea level rise. The NOAA Sea Level Rise Viewer allows for viewing passive flooding under higher sea level rise scenarios. Figure 4-2, Figure 4-3, and Figure 4-4 show the high tide passive flooding for the project area with 5.0, 6.0, and 10.0 ft of sea level rise.

[9] https://coast.noaa.gov/slr/

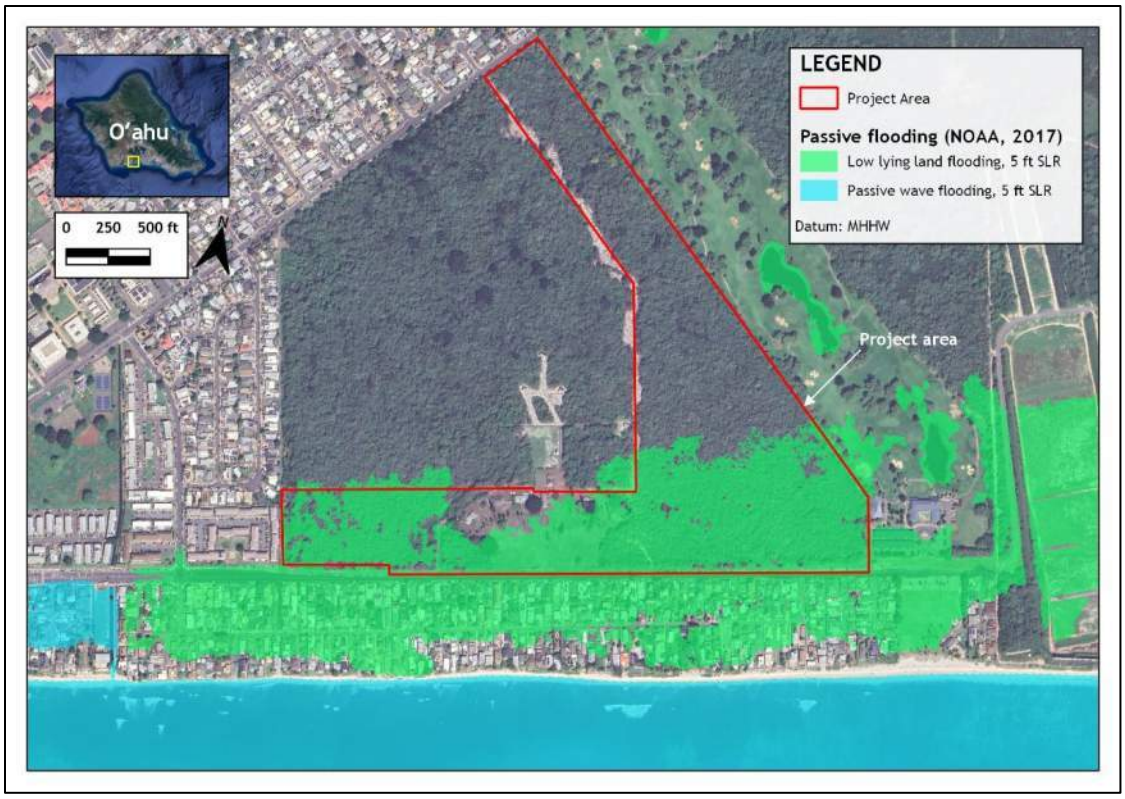


Figure 4-2. NOAA passive flooding with 5.0 ft of sea level rise (NOAA, 2023)

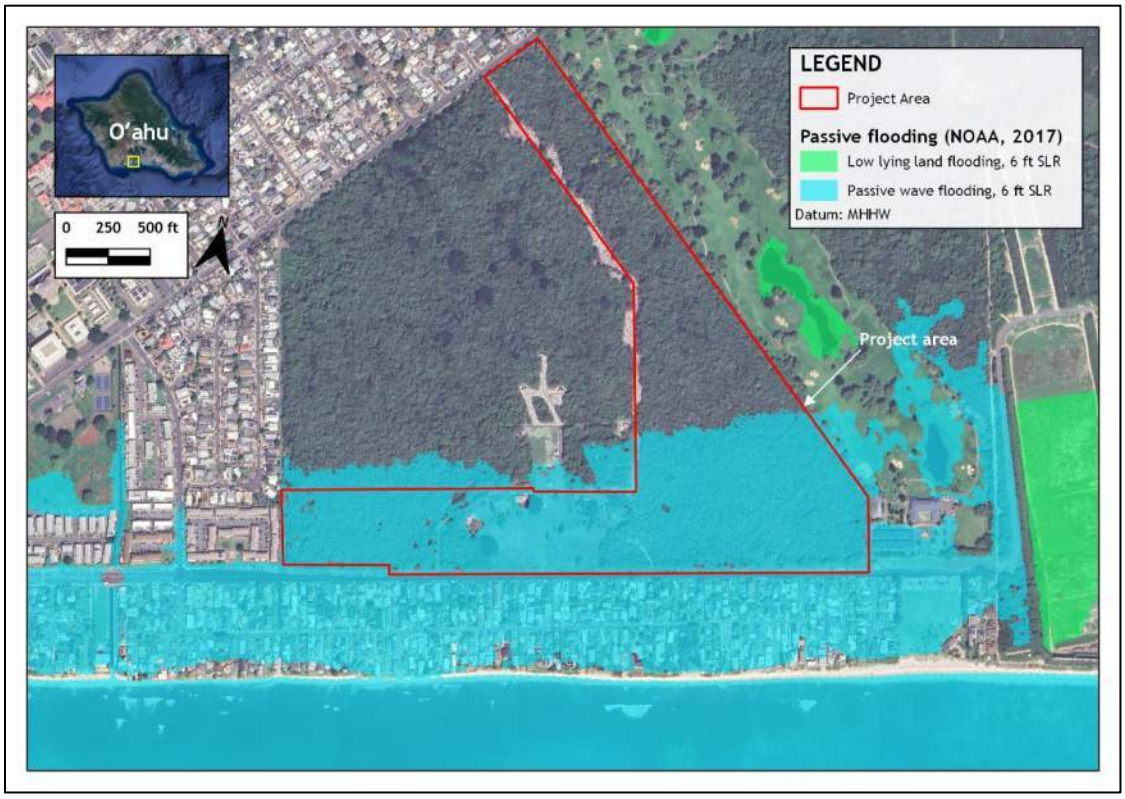


Figure 4-3. NOAA passive flooding with 6.0 ft of sea level rise (NOAA, 2023)

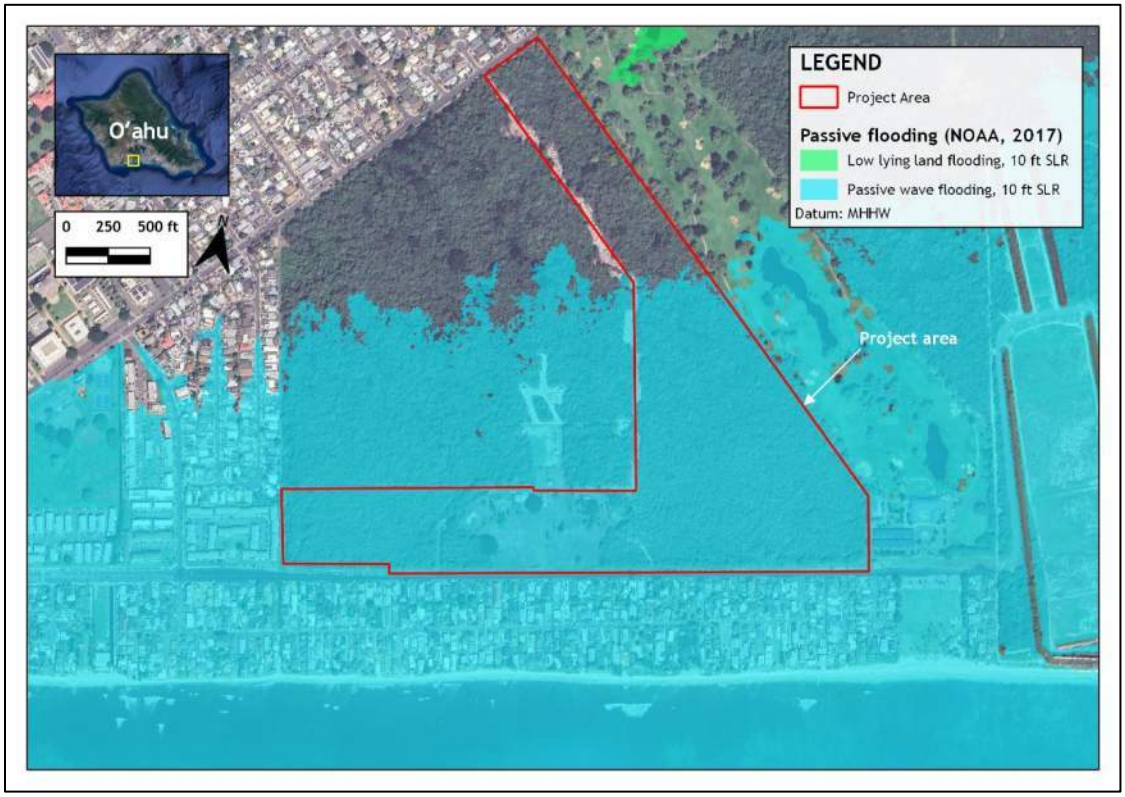


Figure 4-4. NOAA passive flooding with 10.0 ft of sea level rise (NOAA, 2023)

Based on the NOAA sea level rise passive flooding data, backshore high tide flooding for 5.0 ft of sea level rise is primarily sees flooding of low-lying areas unconnected to the ocean. These areas are anticipated to flood through rising of the groundwater table and/or flooding through underground stormwater utilities connected to the ocean. High tide passive flooding for 6.0 ft of sea level rise is hydraulically connected to the ocean and would likely be a combination of groundwater and underground utility flooding and overland flooding from the ocean.

4.3 Extreme Event Flooding Projections with Sea Level Rise

Low-lying coastal communities are exposed to a variety of coastal hazards including extreme events, such as hurricanes and tsunamis. As sea level rises, the effects of these hazards can become exacerbated, particularly in relation to overland flooding. The *Honolulu Sea Level Rise Inundation Risk Tool* [10] provides various flood maps, which include inundation associated with modeled hurricane and tsunami scenarios, for the project area.

4.3.1 Hurricane Flooding

Hurricane storm surge was determined through numerical model simulations of a Category 4 hurricane with varying central pressures and maximum sustained wind speeds. For all model simulations the Maximum of the Maximum Envelope of High Water (MEOW) was mapped to provide a snapshot of Category 4 hurricane flooding under "perfect" storm conditions (Cheung, 2014). Modeled hurricane flooding for the project area for 0 and 3.3 ft of sea level rise is shown in Figure 4-5 and Figure 4-6, respectively.

Under current sea level, hurricane flooding extends approximately 1,000 ft into the project area with flood depths up to 3.5 ft. With 3.3 ft of sea level rise, hurricane flooding extends approximately throughout the entire project area with flood depths up to 10 ft. Flooding associated with these extreme events is anticipated to be high energy overland flows which may cause erosion of the ground, scour around building edges, and potentially damaging hydrodynamic loads on proposed structures. The flood waters would also likely pick up debris as it propagates over the existing built environment between the shoreline and the seaward edge of the project area. In addition to damaging hydrodynamic loads, debris loads would also impact proposed structures, and the uncontrolled release of flammable materials could create a potential fire hazard.

[10] https://www.pacioos.hawaii.edu/shoreline/slr-honolulu/

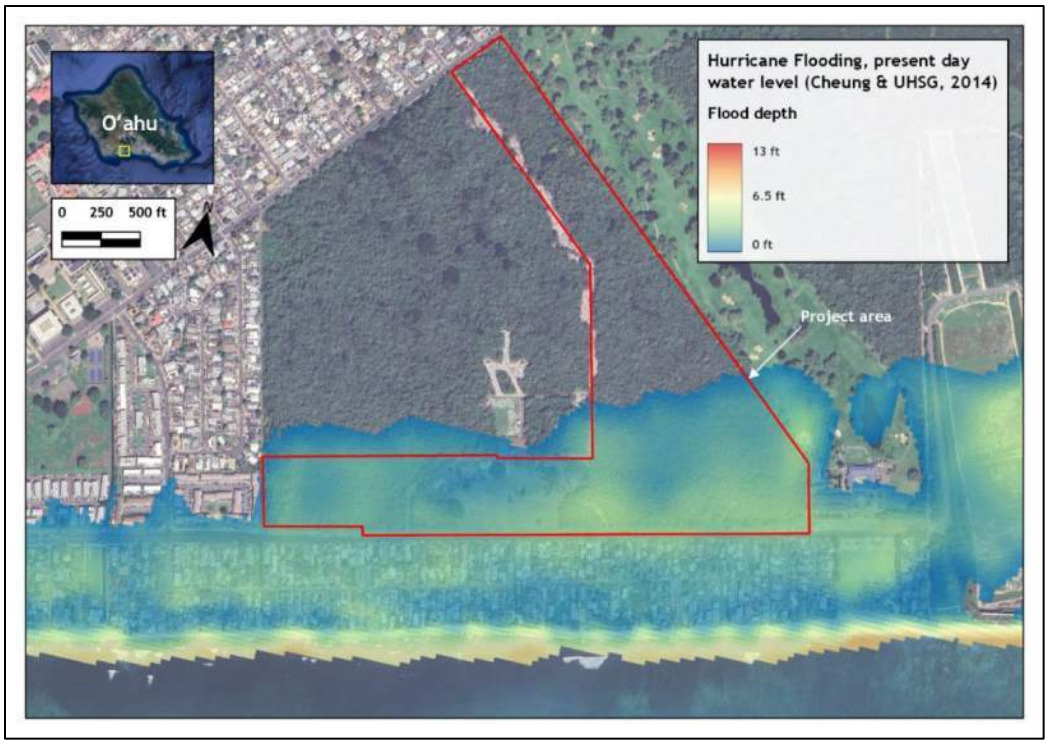


Figure 4-5. Modeled hurricane flooding for present-day sea level (Cheung, 2014)

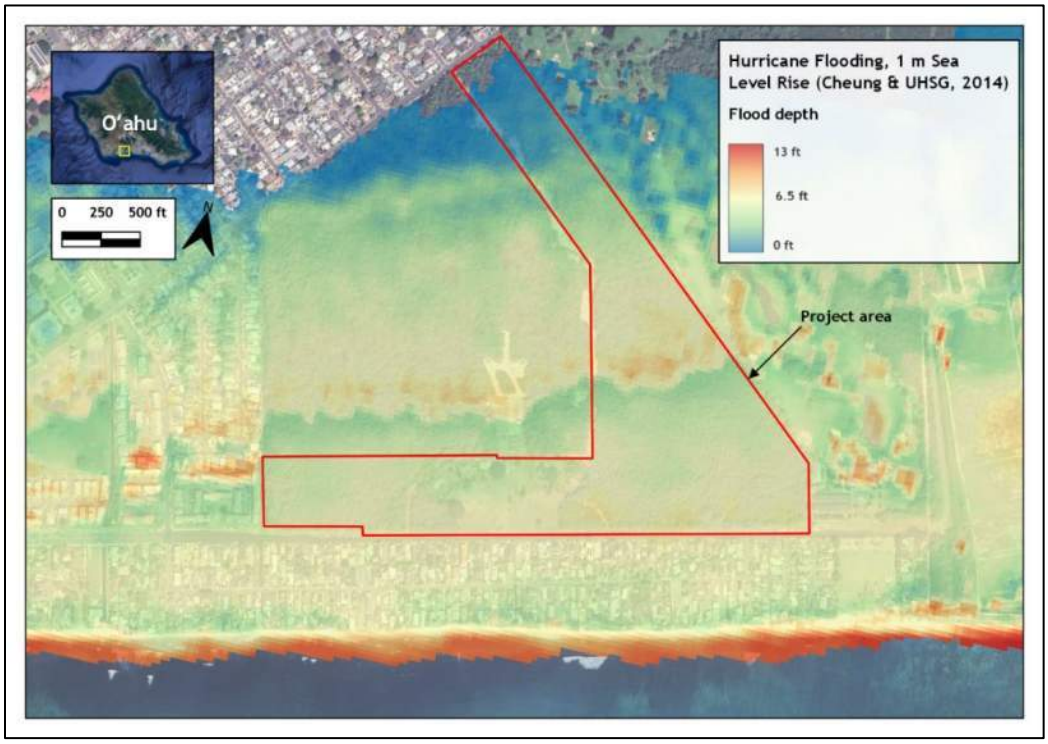


Figure 4-6. Modeled hurricane flooding with 3.3 ft of sea level rise (Cheung, 2014)

4.3.2 Tsunami Flooding

Tsunami runup inundation was determined through numerical model simulations of five (5) major historical tsunamis impacting Hawai'i that occurred at distant sources away from the state. These historical distant source tsunamis included the 1946 Aleutian earthquake (8.2 Mw), 1952 Kamchatka earthquake (9.0 Mw), 1957 Aleutian earthquake (8.6 Mw), 1960 Chile earthquake (9.5 Mw), and 1964 Alaska earthquake (9.2 Mw). The data includes the maximum inundation from the combined simulated events (Cheung, 2014). Modeled tsunami flooding for the project area with 3.3 ft of sea level rise is shown in Figure 4-7.

With 3.3 ft of sea level rise, tsunami flooding extends approximately 1,900 ft into the project area with flood depths up to 6.5 ft. Similar to hurricane flooding, tsunami flooding is anticipated to be high energy overland flows which may cause erosion of the ground, scour around building edges, potentially damaging hydrodynamic/debris loads on proposed structures, and potential fire hazards.

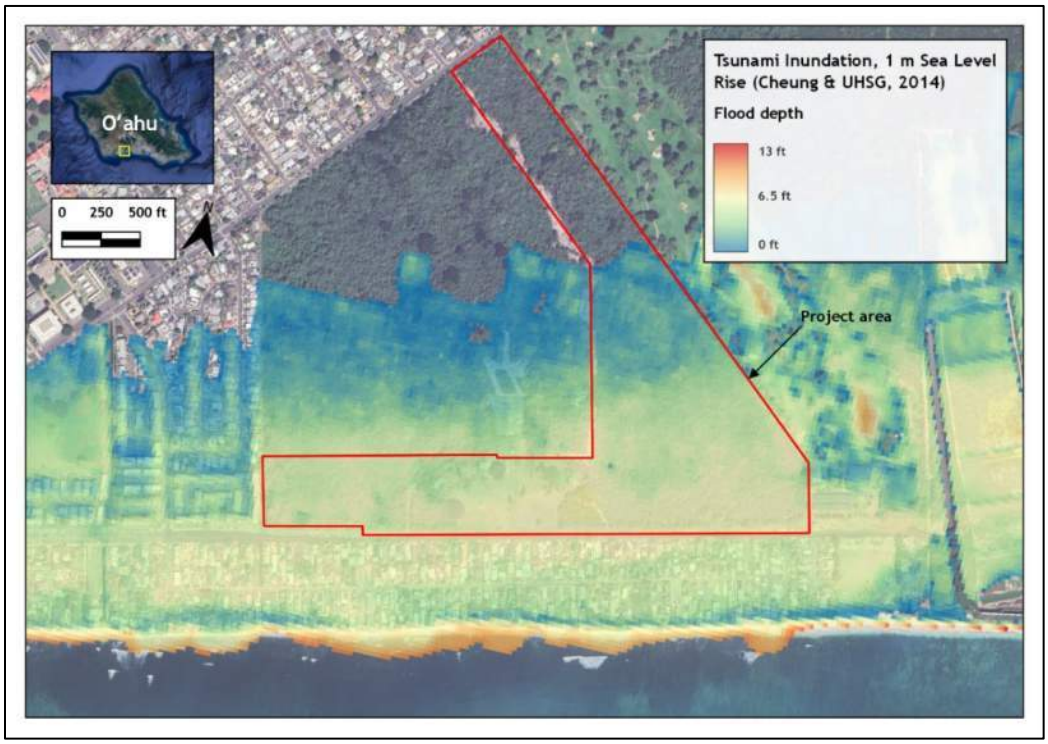


Figure 4-7. Modeled tsunami flooding with 1 m of sea level rise (Cheung, 2014)

5. SEA LEVEL RISE CONSIDERATIONS FOR SITE DEVELOPMENT

5.1 Sea Level Rise Projections and Potential Impacts

Below is a summary of key discrete sea level rise elevations that were identified through this desktop study based on various backshore flooding hazards impacting the project area. For each sea level rise elevation, the projected timings of when these may occur for Honolulu are summarized for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios, which represent appropriate planning projections for this study.

5.1.1 2.0 ft of Sea Level Rise

2.0 ft of sea level rise is projected to occur between 2053 (earliest) and 2092 (latest). With 2.0 ft of sea level rise, the project area will begin to experience passive flooding from subaerial sources that are not hydraulically connected to the ocean. At this point, no tidal or wave-induced flooding from the ocean is projected to occur.

With 2.0 ft of sea level rise, about 1% (1 acre) of the project area is subject to passive high tide flooding, as discussed in Section 3.1. This passive flooding is anticipated to occur through groundwater intrusion and/or through stormwater utilities that are connected to the ocean. This is evident by the passive flood waters not being hydraulically connected to the ocean. With 2.0 ft of sea level rise, the project area is also susceptible to hurricane storm surge, as discussed in Section 4.3.1. The impact of hurricane storm surge for 2.0 ft of sea level rise is unknown and not included in the available datasets; however, the available datasets for 0.0 and 3.3 ft of sea level rise both show impact to the project area, thus it can be assumed that hurricane storm surge for 2.0 ft of sea level rise will impact the project area. Figure 5-1 and Table 5-1 show the projected timing of when sea level rise reaches 2.0 ft for Honolulu for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios.

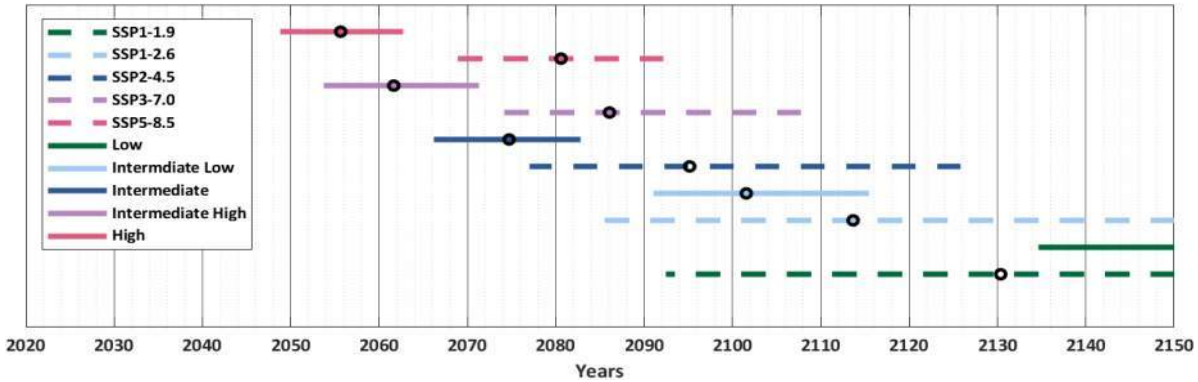


Figure 5-1. Task Force projected timings of 2.0 ft of sea level rise for Honolulu

Table 5-1. Projected timings of 2.0 ft of sea level rise for Honolulu

Scenario / Percentile (Year)	83rd (Earliest)	50th (Median)	17th (Latest)
IPCC AR6 *SSP5-8.5*	2068	2080	2092
Task Force *Intermediate*	2066	2074	2082
Task Force *Intermediate-High*	2053	2061	2071

5.1.2 3.2 ft of Sea Level Rise

3.2 ft of sea level rise is projected to occur between 2068 (earliest) and 2135 (latest). With 3.2 ft of sea level rise, the project area will begin to experience high wave flooding, primarily at high tide. High wave flooding will begin to occur on an annual basis in combination with flooding from subaerial sources occurring on a daily basis in the middle to upper range of the tidal cycle. At this point, overland flooding is not projected to occur in the absence of high waves. 3.2 ft of sea level rise aligns with current State of Hawai'i guidance for sea level rise planning and adaptation.

With 3.2 ft of sea level rise, about 15 acres (19%) of the project area is subject to passive high tide flooding and annual high wave flooding, as discussed in Section 3.1 and 3.2. This passive flooding extends further landward within the project area and is still anticipated to occur through groundwater intrusion and/or through stormwater utilities that are connected to the ocean. The SLR-XA annual high wave flooding extends up to 660 ft into the project area under this scenario. With 3.2 ft of sea level rise, the project area is also susceptible to hurricane storm surge and historical tsunami inundation, as described in Section 0. The impact of hurricane storm surge for 3.3 ft of sea level rise (comparable to 3.2 ft) extends approximately throughout the entire project area with flood depths up to 10 ft. Tsunami inundation with 3.3 ft sea level rise extends approximately 1,900 ft into the project area with flood depths up to 6.5 ft. Figure 5-2 and Table 5-2 show the projected timing of when the sea level rise reaches 3.2 ft for Honolulu for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios.

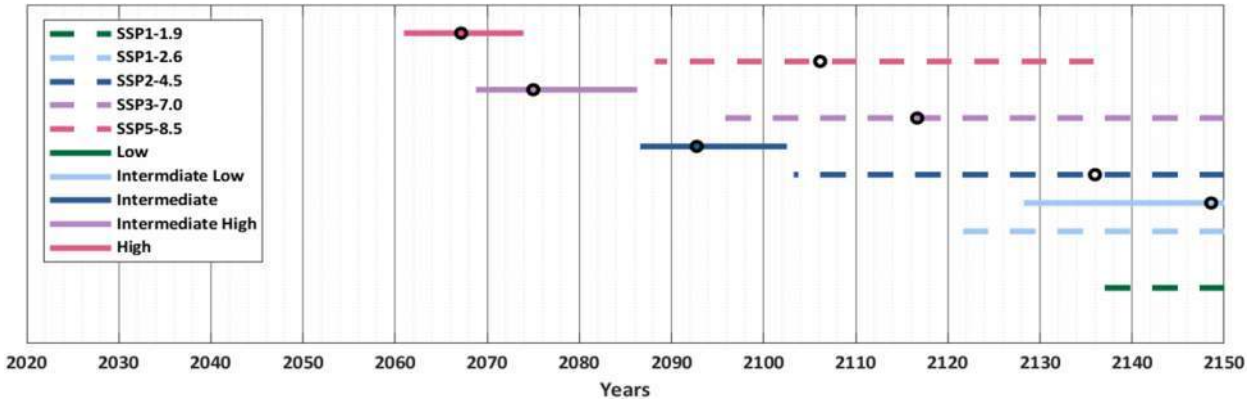


Figure 5-2. Task Force projected timings of 3.2 ft of sea level rise for Honolulu

Table 5-2. Projected timings of 3.2 ft of sea level rise for Honolulu

Scenario / Percentile (Year)	83rd (Earliest)	50th (Median)	17th (Latest)
IPCC AR6 *SSP5-8.5*	2088	2106	2135
Task Force *Intermediate*	2086	2092	2102
Task Force *Intermediate-High*	2068	2075	2086

5.1.3 5.0 ft of Sea Level Rise

5.0 ft of sea level rise is projected to occur between 2088 (earliest) and past 2150 (latest). With 5.0 ft of sea level rise, the project area will begin to experience more frequent annual high wave flooding throughout the complete tide cycle. High wave flooding will likely extend further landward into the project area. Passive flooding from subaerial sources will continue to occur on a daily basis throughout the complete tide cycle. Site-specific detailed modeling is needed to confirm the extent of high wave flooding under this sea level rise scenario.

With 5.0 ft of sea level rise, about 43 acres (54%) of the project area is subject to passive high tide flooding, as discussed in Section 4.2. This passive flooding extends further landward within the project area and is still anticipated to occur through groundwater intrusion and/or through stormwater utilities that are connected to the ocean. At this point, passive flooding covers about half of the project area. With 5.0 ft of sea level rise, the project area is expected to be more vulnerable to annual high wave flooding, hurricane storm surge, and tsunami inundation. Figure 5-3 and Table 5-3 show the projected timing of when the sea level rise reaches 5.0 ft for Honolulu for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios.

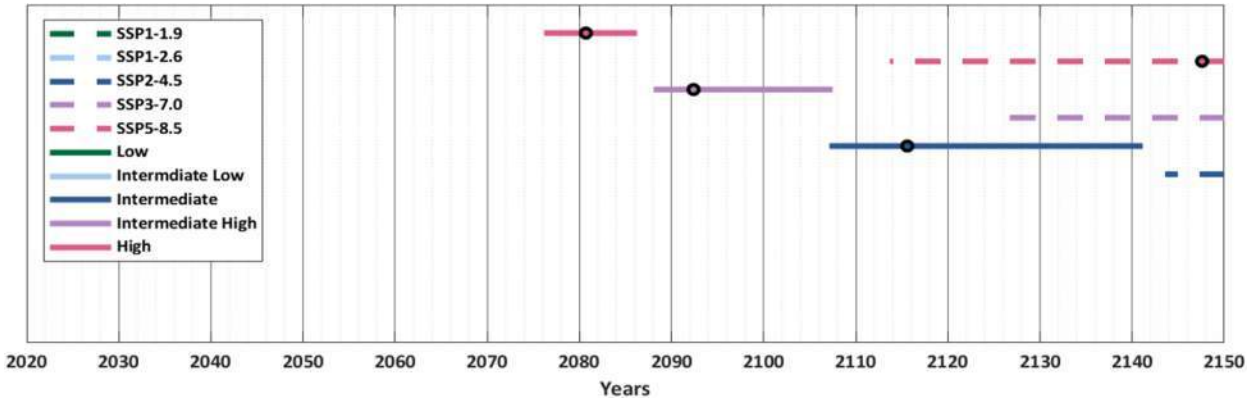


Figure 5-3. Task Force projected timings of 5.0 ft of sea level rise for Honolulu

Table 5-3. Projected timings of 5.0 ft of sea level rise for Honolulu

Scenario / Percentile (Year)	83rd (Earliest)	50th (Median)	17th (Latest)
IPCC AR6 *SSP5-8.5*	2113	2147	Past 2150
Task Force *Intermediate*	2107	2115	2141
Task Force *Intermediate-High*	2088	2092	2107

5.1.4 6.0 ft of Sea Level Rise

6.0 ft of sea level rise is projected to occur between 2098 (earliest) and last 2150 (latest). With 6.0 ft of sea level rise, the project area will begin to experience passive flooding connected to the ocean at high tide. High wave flooding will likely extend further landward into the project area and occur more frequently. Tidal flooding will likely also occur more frequently and extend further landward into the project area. Passive flooding from subaerial sources will continue to occur on a daily basis.

With 6.0 ft of sea level rise, about 50 acres (63%) of the project area is subject to passive high tide flooding, as discussed in Section 4.2. A key difference from 5.0 ft sea level rise, is that the passive flooding is now hydraulically connected to ocean and would likely consist of a combination of overland flow, groundwater intrusion, and/or through stormwater utilities that are connected to the ocean. With 6.0 ft of sea level rise, the project area is expected to be more vulnerable to annual high wave flooding, hurricane storm surge, and tsunami inundation. Figure 5-4 and Table 5-4 show the projected timing of when the sea level rise reaches 6.0 ft for Honolulu for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios.

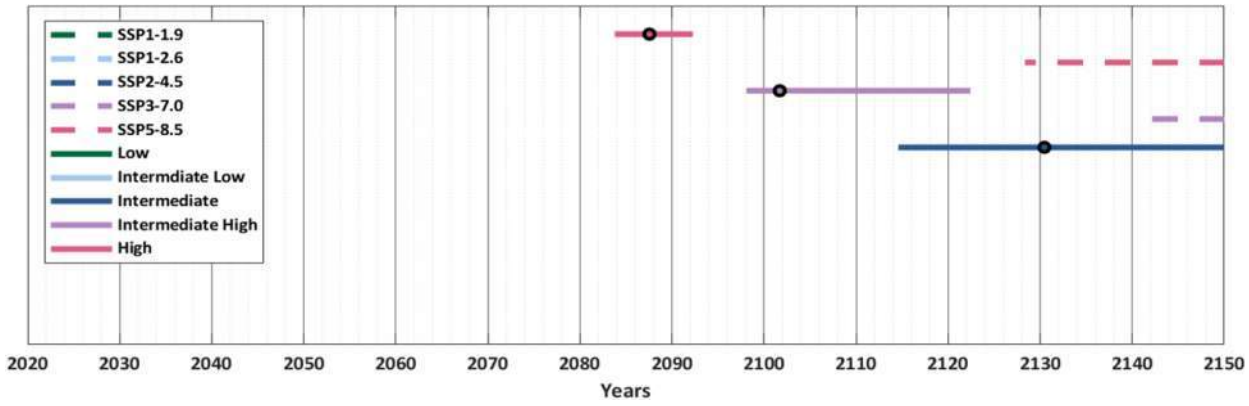


Figure 5-4. Task Force projected timings of 6.0 ft of sea level rise for Honolulu

Table 5-4. Projected timings of 6.0 ft of sea level rise for Honolulu

Scenario / Percentile (Year)	83rd (Earliest)	50th (Median)	17th (Latest)
IPCC AR6 *SSP5-8.5*	2128	Past 2150	Past 2150
Task Force *Intermediate*	2114	2130	Past 2150
Task Force *Intermediate-High*	2098	2101	2122

5.1.5 10.0 ft of Sea Level Rise

10.0 ft of sea level rise is projected to occur between 2135 (earliest) and past 2150 (latest). With 10.0 ft of sea level rise, the project area will experience permanent passive flooding throughout the complete tide cycle. Tidal flooding will occur daily and extend further landward within the project area. The frequency and severity of wave flooding will increase with continued passive flooding from subaerial sources. 10.0 ft of sea level rise is the upper limit of the existing data sources and available projections.

With 10.0 ft of sea level rise, about 65 acres (81%) of the project area is subject to passive high tide flooding, as discussed in Section 4.2. Passive flooding is hydraulically connected to ocean and would likely consist of a combination of overland flow, groundwater intrusion, and/or through stormwater utilities that are connected to the ocean. With 10.0 ft of sea level rise, the project area is expected to be more vulnerable to annual high wave flooding, hurricane storm surge, and tsunami inundation. Figure 5-5 and Table 5-5 show the projected timing of when the sea level rise reaches 10.0 ft for Honolulu for the IPCC AR6 *SSP5-8.5*, Task Force *Intermediate*, and Task Force *Intermediate-High* scenarios.

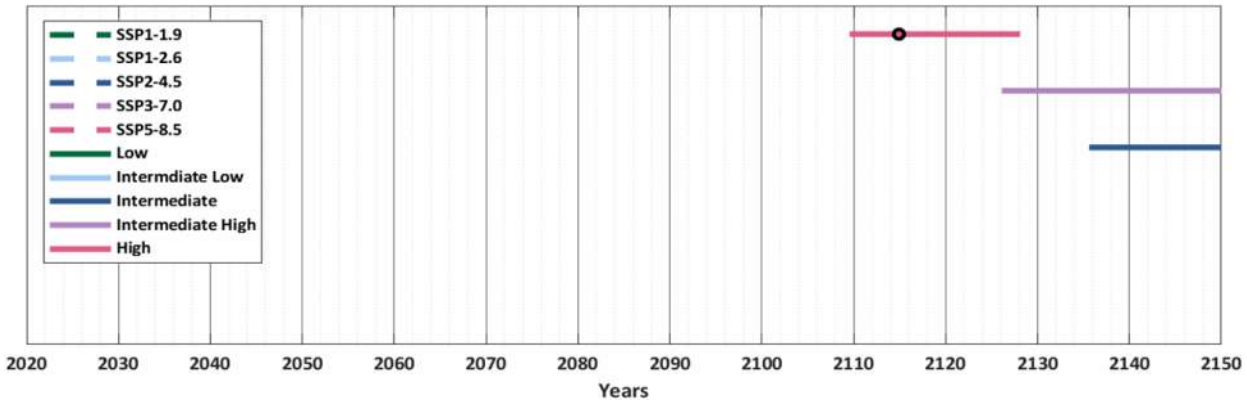


Figure 5-5. Task Force projected timings of 10.0 ft of sea level rise for Honolulu

Table 5-5. Projected timings of 10.0 ft of sea level rise for Honolulu

Scenario / Percentile (Year)	83rd (Earliest)	50th (Median)	17th (Latest)
IPCC AR6 *SSP5-8.5*	Past 2150	Past 2150	Past 2150
Task Force *Intermediate*	2135	Past 2150	Past 2150
Task Force *Intermediate-High*	2126	Past 2150	Past 2150

6. CONCLUSIONS

6.1 Planning Framework and Guidance

Government agencies and communities have recognized the potential impacts of climate change and sea level rise and established guidance and objectives for sea level rise planning and adaptation with an emphasis on reducing vulnerability and increasing community resilience. Guidance continues to evolve at the global, Federal, State, and County levels as the science and understanding of climate change and sea level rise improve.

In 2012, the Hawai'i State Planning Act was amended to include the *Hawai'i Climate Adaptation Priority Guidelines* [11]to encourage collaboration needed to promote and implement sustainability through economic, social, community, and environmental priorities. Specific recommendations that are relevant to this project include:

- Ensure that Hawaii's people are educated, informed, and aware of the impacts climate change may have on their communities.
- Encourage community stewardship groups and local stakeholders to participate in planning and implementation of climate change policies.
- Consider Native Hawaiian traditional knowledge and practices in planning for the impacts of climate change.
- Encourage planning and management of the natural and built environments that effectively integrate climate change policy.
- Explore adaptation strategies that moderate harm or exploit beneficial opportunities in response to actual or expected climate change impacts to the natural and built environments.
- Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change.
- Promote sector resilience in areas such as water, roads, airports, and public health, by encouraging the identification of climate change threats, assessment of potential consequences, and evaluation of adaptation options.
- Use management and implementation approaches that encourage the continual collection, evaluation, and integration of new information and strategies into new and existing practices, policies, and plans.

In 2017, the Hawai'i Climate Commission published the *Hawai'i Sea Level Rise Vulnerability and Adaptation Report* [12] providing the first state-wide assessment of Hawaii's vulnerability to sea level rise and recommendations to reduce exposure and sensitivity to sea level rise and increase adaptive capacity. A key recommendation was that 3.2 ft of feet of should be adopted as a statewide vulnerability zone for planning purposes. The report includes guidance for understanding and interpreting the SLR-XA models and utilizing the SLR-XA model results for planning, zoning, and permitting purposes. Specific recommendations that are relevant to this project include:

[11] https://www.capitol.hawaii.gov/hrscurrent/vol04_ch0201-0257/hrs0226/hrs_0226-0109.htm

[12] https://climateadaptation.hawaii.gov/wp-content/uploads/2017/12/SLR-Report_Dec2017.pdf

- Support sustainable and resilient land use and community development.
- Provide new opportunities to use land more sustainably by identifying and prioritizing areas for smart redevelopment within existing urban land boundaries and to minimize pressure on agriculture and conservation lands.
- Incentivize improved flood risk management through support to a state-wide Community Rating System program, encouraging property owners outside currently regulated flood zones to purchase flood insurance, and incorporate sea level rise in hazard mitigation plan updates and disaster recovery frameworks.
- An inventory, protocols, and processes are needed to preserve Native Hawaiian culture and communities with sea level rise.
- A comprehensive review of environmental regulations that allow for the siting of environmental hazards, such as hazardous materials/waste storage facilities and onsite wastewater storage systems is needed to protect nearshore water quality with rising seas.
- Develop funding sources and incentives for adaptation.
- Support research, assessment, and monitoring of changing conditions fundamental to a learning approach to adaptation which involves conducting research, assessments, and monitoring needed to update the Report and other "living" outputs.
- Promote collaboration and accountability for adaptation.

In 2018, the State of Hawai'i published a report entitled *Assessing the Feasibility and Implications of Managed Retreat Strategies for Vulnerable Coastal Areas in Hawai'i* [13], which evaluated options to establish policies, regulations, tools, and programs to support a managed retreat strategy in response to sea level rise (DBEDT, 2018). The study found that retreat is one of three primary adaptation strategies, along with accommodation and protection. Specific recommendations that are relevant to this project include:

- Prior to deciding upon retreat, accommodation and protection must be examined to determine which strategy is the best for the area dealing with coastal hazards, climate change and sea level rise.
- Retreat is only effective when done voluntarily and economic incentive programs to fund retreat (e.g., buyouts, transferable development rights, rolling easements) are unlikely to be effective in Hawai'i due to the high cost of oceanfront real estate.
- Retreat from chronic coastal hazards, such as erosion and sea level rise, is typically incremental and takes decades to complete.

[13] https://files.hawaii.gov/dbedt/op/czm/ormp/assessing_the_feasibility_and_implications_of_managed_retreat_strategies_for_vulnerable_coastal_areas_in_hawaii.pdf

In 2020, the Hawai'i Sea Grant Program published a report entitled *Guidance for Addressing Sea Level Rise in Community Planning in Hawai'i* [14] (Courtney et al., 2020). The report includes guidance and recommendations for vulnerability assessments, land use and development alternatives, plan and policy alignment, and adaptive management. Specific recommendations that are relevant to this project include:

- Conduct county-wide and community-scaled sea level rise vulnerability assessments using best-available data and identify potential adaptation strategies.
- Use the results of sea level rise vulnerability assessments to support community outreach activities, to inform all plan elements, and to create or revise policies and rules.
- Use community visioning to develop sea level rise adaptation strategies.
- Create land use and development alternatives based on different sea level rise adaptation strategies and analyze tradeoffs.
- Identify and retain disaster redevelopment alternatives that support adaptation to sea level rise in the event of a catastrophic coastal event.

In 2022, the Hawai'i Climate Commission published a report entitled *Guidance for Using the Sea Level Rise Exposure Area in Local Planning and Permitting Decisions* [15]. The report includes guidance for understanding and interpreting the SLR-XA models and utilizing the SLR-XA model results for planning, zoning, and permitting purposes. Specific recommendations that are relevant to this project include:

- Utilize the combined SLR-XA (and/or a multi-hazard map including the SLR-XA) as a screening tool to identify vulnerable coastal properties when creating a new plan and consideration should be given to whether additional development, i.e., increased density, is appropriate.
- Utilizing the SLR-XA in planning and permitting may require adjusting boundaries to allow for seamless implementation of sea level rise adaptation standards and guidelines.
- Coastal erosion, annual high wave flooding, and passive flooding should be considered individually for proposed development (or redevelopment beyond some threshold) that is exposed to sea level rise hazards.
- Adaptation in-place may be possible for properties located away from the shoreline and exposed solely to passive flooding.
- Where adaptation in-place is to be allowed in the annual high wave flooding area, , additional requirements should be considered for high velocity wave flooding areas, such as deeper and more robust pilings.
- Nature-based solutions and Low Impact Development (LID) for flood mitigation such as creating rain gardens and other floodable areas in and around passive flooding exposure areas and FEMA Special Flood Hazard Areas, reducing impervious surfaces for infiltration in areas outside of the passive flooding exposure areas, as well as building design options

[14] https://climate.hawaii.gov/wp-content/uploads/2020/10/Item-3-I-a-Guidance-for-Addressing-SLR-in-Community-Planning-in-HI-2.pdf

[15] https://climate.hawaii.gov/wp-content/uploads/2020/12/Guidance-for-Using-the-Sea-Level-Rise-Exposure-Area.pdf

such as green roofs may be the best options for reducing stormwater impacts for individual existing development or redevelopment in urban to rural settings.

- Requiring additional freeboard, such as two or three feet above existing base flood elevation (or above ground elevation if not currently within a FEMA flood zone), within the SLR-XA or a multi-hazard flood area can help mitigate for increasing flood heights with sea level rise over the lifetime of a structure.
- Special requirements such as strengthening or deepening pilings and other structural guidelines may be needed for properties with wave velocity exposure in the FEMA VE Zone and annual high wave flooding exposure area; though, construction on deep pilings may be counter-effective in the erosion hazard zone as discussed above.
- Elevating lands with fill and incorporating drainage improvements or elevating low-lying portions of individual properties in combination with LID guidelines may be an option in both urban and rural settings. Careful attention should be given not to increase flood hazards for neighboring lands.
- Elevating lands with fill should not be considered when it could impact an area's natural resilience and ecosystem values, or has the potential to cause contamination of nearshore areas, such as in sandy shoreline environments, low-lying wetlands, or floodplain areas.
- Agencies should integrate sea level rise adaptation into neighborhood-scale or regional flood management or adaptation plans.
- Adopting a multi-hazard coastal flood exposure area that includes the SLR-XA, FEMA Special Flood Hazard Areas, and/or 1%CFZ-3.2 can provide a basis for beginning to integrate future sea level rise considerations into floodplain management.

In 2022, DHHL published an updated version of the *DHHL General Plan* [16]. The updated plan includes goals, objectives, and recommendations related to climate change and sea level rise. Specific recommendations that are relevant to this project include:

- Sea level rise and climate change related hazards are increasing, and modeling is available that shows areas of potential impact statewide. Consideration of projected climate related impacts will be important moving forward as exposure to risk factors and increased vulnerability of landholdings to climate hazards present additional constraints to land use, especially considering projected climate change over the life of a 99-year beneficiary homestead leases.
- Climate change is a cross-cutting issue that is already impacting and will continue to affect DHHL's land assets and beneficiaries' way of life. Land use decisions are an important tool for protecting communities and resources and can also provide opportunities to implement mitigation and adaptation measures. The land suitability phase should identify areas that are subject to current and future hazards and apply appropriate land use designations such as the Special District Coastal Hazard designation. The design phase should also ensure that any uses or development within vulnerable areas are designed to be resilient to anticipated hazards and incorporate mitigation measures to minimize risk to life and property.

[16] https://dhhl.hawaii.gov/wp-content/uploads/2022/12/221123-DHHL-General-Plan-Final-Draft_Adopted.pdf

- Climate change is a challenge for both existing infrastructure and planning of future infrastructure. As DHHL looks to maintain and upgrade infrastructure, climate change impacts should be considered. Vulnerability assessments can identify and prioritize areas most at risk and inform decision making and capital improvement project (CIP) spending.
- Implementing cost-effective and sustainable alternative infrastructure solutions on individual homesteads and at the community scale will help build resilience.
- The use of Native Hawaiian Housing Block Grant funds precludes development of residences within Federal Emergency Management Agency (FEMA)-designated 100-year floodplains. It should be noted that current FEMA floodplains do not take into account future impacts of climate change and sea level rise, so while they remain an important planning tool, land use planning should also incorporate the best available science on future climate change impacts into the siting and design of homestead communities.
- Incorporate climate change projections and hazard zones into land use development plans by identifying areas vulnerable to climate change and other hazards and applying the Special District Natural Hazards land use designation.
- Designate evacuation routes, shelters and refuge areas for homestead communities and ensure they are marked and advertised in Regional Plans or Special Area Plans.
- Secure funding for the protection or relocation of vulnerable homes, infrastructure, and resources on Hawaiian home lands.
- Assess vulnerability of populations, resources, and infrastructure across Hawaiian home lands to climate change and natural hazards and conduct climate resilience and adaptation planning in high vulnerability areas.
- For residential developments, low-lying coastal areas may be vulnerable to sea level rise and other coastal hazards such as increasing frequencies of hurricanes and storm surge, as well as tsunami hazards. These factors should be considered in the planning and development of homestead communities going forward.
- Incorporate green infrastructure and low impact development principles in future homestead communities to manage stormwater in a way that promotes green, open spaces within homestead communities to the extent possible.

6.2 Summary of Impacts and Key Observations

Table 6-1 summarizes the approximate extent of flood hazard impacts within the project area for the discrete sea level rise elevations previously discussed.

Table 6-1. Summary of flood hazard extents at various sea level rise scenarios

Hazard / Elevation (ft)	0.0	2.0	3.2	5.0	6.0	10.0
Passive Flooding	0 acres (0 %)	1 acre (1%)	15 acres (19%)	43 acres (54%)	50 acres (63%)	65 acres (81%)
Annual High Wave Flooding	0 acres (0%)	0 acres (0%)	23 acres (29%)	No Data	No Data	No Data
Hurricane Storm Surge	50 acres (63%)	No Data	78 acres (98%)	No Data	No Data	No Data
Tsunami Inundation	No Data	No Data	65 acres (82%)	No Data	No Data	No Data

A summary of key observations from this desktop study are listed below:

Data Sources, Confidence, and Gaps

- IPCC scenarios are based on specific emissions pathways.
- Task force scenarios specify a targeted amount of sea level rise at a time in the future.
- Task force includes scenarios of global and regional sea levels out to 2150.
- Task force focuses on the near-term using observation-based trajectories out to 2050.
- Task force examines amounts of global sea level rise that are "unlikely but possible".
- Low confidence processes contribute significantly to the Task force projections.
- Data availability is limited beyond 3.2 ft of sea level rise.
- Uncertainty increases exponentially beyond 3.2 ft of sea level rise.
- Existing datasets do not include projections for sea level rise beyond 10.0 ft.
- Existing datasets do not include projections for sea level rise beyond 2150.

Site-specific Impacts and Analysis

- Coastal erosion is not a primary hazard due to the distance from the shoreline.
- Flooding from subaerial and marine sources is the primary hazard due to low elevation.
- Passive flooding from subaerial sources may begin to occur with 2.0 ft of sea level rise.
- High wave flooding at high tides may begin to occur with 3.2 ft of sea level rise.
- Tidal flooding at high tide may begin to occur with 6.0 ft of sea level rise.
- Flooding becomes 4-dimensional over 6.0 ft of sea level rise.
- Tidal flooding at all tide levels may begin to occur over 8.0 ft of sea level rise.
- Hurricanes and tsunamis can cause flooding at any time, regardless of sea level rise.
- Over half of the project area is currently vulnerable to hurricane storm surge.
- The entire project area is vulnerable to hurricane storm surge with 3.2 ft of sea level rise.
- Backshore elevation is a key factor in determining flood extents.
- Flood projections are reduced at adjacent properties with existing elevated berms.

- Drainage infrastructure will be essential and drainage capacity should be scalable to account for long-term sea level rise (i.e., beyond the initial 99-year lease terms).
- Some adaptation options may not be feasible due to the distance from the shoreline.
- Development seaward of the project area may increase hazards from extreme events.

6.3 Potential Sea Level Rise Adaptation and Mitigation Options

The pathways to sea level rise and hazard mitigation can range from risk avoidance (highly conservative designs) to phased adaptation approaches that can be adjusted over time (modular designs). Mitigation solutions for the project site should be based on discussion around acceptable levels of risk. Desire for adaptation to increased sea level rise and other hazards within the project lifespan, evaluation of the costs and feasibility of different mitigation options, and consideration of desired project outcomes will drive the selection and implementation of mitigation options. The evaluation of alternatives should also consider potential impacts to adjacent properties and the surrounding community.

6.3.1 Protection

Protection involves hardening systems in their existing location to withstand impacts from changing conditions (Codiga and Wager, 2011). Protection can be broken down into "hard' protection (e.g., engineered structures to armor the shoreline), and "soft" protection (e.g., nature-based solutions, low impact development, green infrastructure). Protection mitigates the effects of sea level rise by constructing barriers that prevent erosion and flooding from occurring within particular area. Protection options for the project area include but are not limited to:

Shore Protection Structures (e.g., seawalls, revetments, hybrid seawall-revetments)

Flood Protection Structures (e.g., levees, reinforced embankments, berms, flood walls)

6.3.2 Accommodation

Accommodation involves adjusting existing systems to changing natural conditions (Codiga and Wager, 2011). Accommodating rising water levels is typically accomplished by raising the existing ground elevation above the projected increased water level, or by elevating structures and infrastructure above the water level. Accommodation options for the project area include but are not limited to:

Elevated Structures (e.g., Flood Protection Elevation exceeds Base Flood Elevation)

Flood-resistant Structures (e.g., post and pier foundations, flood-resistant materials)

Flood-resistant Utilities (e.g., flood-resistant equipment, utility platforms, elevated utilities)

Flood-adaptive Elements (e.g., open space, pervious surfaces, wetlands, bioswales, fishponds)

6.3.3 Retreat

Retreat (also referred to as *Strategic Relocation* or *Adaptive Realignment*) involves avoiding development in high-risk areas or relocating existing structures to avoid impacts (Codiga and Wager, 2011). Retreat eliminates risk and vulnerability by siting development outside of known hazard areas; however, it is generally the most complex, challenging, and cost-intensive option. Retreat options for the project area include but are not limited to:

Vertical Retreat (e.g., habitable infrastructure and utilities are constructed in exposed areas and design elements, such as freeboard, are implemented to elevate structures above the flood hazard with no plan for decommissioning.)

Transitional Development (e.g., habitable infrastructure and utilities are horizontally scaled to concentrate structures/uses with a higher risk tolerance (e.g., open space, parks, non-habitable structures) in higher risk areas, structures/uses with a lower risk tolerance (e.g., habitable structures, utilities) in lower risk areas.)

Phased Development (e.g., habitable infrastructure and utilities are constructed in higher risk areas with a decommissioning plan to be implemented as flooding becomes progressively more frequent and intense.)

Horizontal Retreat (e.g., habitable infrastructure and utilities are only permitted in low risk areas, minimizing risk and vulnerability to the maximum extent practicable.)

6.4 Recommendations

A summary of key recommendations from this desktop study are listed below:

Identify Planning Approach (e.g., scenario-based, risk-based, adaptation pathways approach)

Select Planning Parameters. (e.g., scenarios, projections, risk tolerance)

Identify Goals and Objectives. (e.g., # of units, lot size, community amenities)

Identify Adaptation Approach and Select Preferred Mitigation Measures (e.g., protection, accommodation, retreat, hybrid approach)

Develop Site Development Alternatives (e.g., conduct additional feasibility studies and cost-benefit analysis to inform selection of alternatives, and incorporate selected adaptation approaches into the final Master Plan)

(Optional) Conduct Site-Specific Detailed Sea Level Rise Modeling (e.g., high-resolution modeling of the impacts of sea level rise to provide a more in-depth understanding of potential hazards and impacts, and evaluate the effectiveness of site-specific mitigation methods)

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APPENDIX G
Phase I Environmental Site Assessment

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PHASE I
ENVIRONMENTAL SITE ASSESSMENT

DHHL Land Acquisition - NOAA Surplus Land
Former NOAA NWS PTWC Ewa Beach HI Campus
91-270 Fort Weaver Road
Ewa Beach, Oahu, Hawaii
TMK [1] 9-1-001: Parcel 001 (portion)

Prepared For:
Department of Hawaiian Home Lands
P.O. Box 1879
Honolulu, Hawaii 96805

Prepared By:

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ETC Project No. 20-2014

July 2020

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APPENDICES

1.0 EXECUTIVE SUMMARY

This report presents the results of a Phase I Environmental Site Assessment (ESA) performed by EnviroServices & Training Center, LLC (ETC) in conformance with the scope and limitations of the American Society for Testing and Materials (ASTM) Practice E1527-13. This Phase I ESA was completed for the State of Hawaii, Department of Hawaiian Home Lands (DHHL) for the property located at 91-270 Fort Weaver Road in Ewa Beach, Hawaii herein referred to as the Subject Property. The Subject Property is identified by Tax Map Key (TMK) identification number [1] 9-1-001: Parcel 001 (portion). Review of tax records indicated that the Subject Property is currently owned by the United States of America/US Naval Reservation.

The Subject Property consists of approximately 80-acres of partially developed land located in the southwest portion of Oahu, (Appendix I, Figure 1). As part of the Phase I ESA, ETC performed a visual observation on June 10, 2020, for the use and/or storage of hazardous materials and/or hazardous waste. ETC noted a minimal amount of solid waste including tires, wood, and miscellaneous trash along the west portion of the Subject Property. Six pole-mounted transformers were observed on the Subject Property without evidence of a release. Limited quantities of chemicals commonly associated with landscaping was noted within the garage area of a former residence located on the south portion of the Subject Property. No material mishandling or evidence of the generation or improper disposal of hazardous waste was noted in connection with the site reconnaissance observations and as such no recognized environmental conditions (RECs) were indicated for the Subject Property.

The Subject Property was not identified by ETC's contracted database search. The contracted database search identified one Federal NPL Site, one Federal CERCLIS site, one State Hazardous Waste Site (SHWS), one Underground Storage Tank (UST) site, and four leaking UST sites within the specified radii. File review findings and/or distance and direction from the Subject Property indicated that none of these facilities were obvious RECs for the Subject Property.

ETC reviewed environmental reports, historical records, site maps, real property documents, and User provided information. Records review indicates the Subject Property was undeveloped until the 1950's after which the site was used for residential housing and administrative buildings used by one or more past governmental agencies including: The National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS), Pacific Tsunami Warning Center (PTWC), United State Geological Survey (USGS) and the University of Hawaii (UH). Onsite buildings were reportedly connected to cesspools before county service in 1996.

In summary, ETC performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 on the Subject Property. This assessment revealed there is no evidence of RECs in connection with the Subject Property.

2.0 INTRODUCTION

EnviroServices & Training Center, LLC (ETC) was contracted by the State of Hawaii, Department of Hawaiian Home Lands (DHHL) (User), to complete a Phase I Environmental Site Assessment (ESA) for the property located at 91-270 Fort Weaver Road in Ewa Beach, Hawaii herein referred to as the Subject Property. The Subject Property is identified by Tax Map Key (TMK) identification number [1] 9-1-001: Parcel 001 (portion).

This Phase I ESA was performed in accordance with the American ASTM International (ASTM) Standard E1527-13 entitled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (referred to herein as the ASTM Practice). The ASTM Practice is intended for use by parties who wish to assess the environmental condition of commercial real estate with respect to contaminants within the scope of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and petroleum products. The ASTM Practice is designed to satisfy 'all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice' as defined in 42 United States Code (U.S.C.) §9601(35)(B).

2.1 Background

Under CERCLA, persons may be held liable to clean up hazardous substances at properties that they either currently own or operate, or owned or operated at the time of disposal. Strict liability in the context of CERCLA means that a potentially responsible party may be liable for environmental contamination based solely on property ownership and without regard to fault or negligence.

In 1986, the Superfund Amendments and Reauthorization Act (SARA) amended CERCLA by creating an "innocent landowner" defense to CERCLA liability for those persons who could successfully demonstrate, among other requirements, that they "did not know and had no reason to know" prior to purchasing the property that any hazardous substance that is the subject of a release or threatened release was disposed of on, in, or at the property. Such persons, to demonstrate that they had "no reason to know" must have undertaken, prior to, or on the date of acquisition of the property, "all appropriate inquiries" into the previous ownership and uses of the property consistent with good commercial or customary standards and practices.

The Small Business Liability Relief and Brownfields Revitalization Act (referred to as "the Brownfields Amendments") was enacted in January 2002 to amend CERCLA. These amendments provide funds to assess and clean up Brownfields sites, clarify CERCLA liability provisions for certain landowners, and provide funding to enhance state and tribal cleanup programs.

Subtitle B of Title II of the Brownfields Amendments revised CERCLA, and clarifies the requirements necessary to establish the innocent landowner defense. The Brownfield Amendments also added protections from CERCLA liability for "bona fide prospective purchasers" and "contiguous property owners" who meet certain statutory requirements. Each of the CERCLA liability provisions for innocent landowners, bona fide prospective purchasers, and contiguous property owners (referred to collectively as "landowner liability protections," or LLPs) requires that persons claiming the liability protections conduct all appropriate inquiries into prior ownership and use of a property prior to or on the date a person acquires a property.

A key provision of the Brownfield Amendments finalized regulations setting federal standards for the conduct of all appropriate inquiries. The federal standards were promulgated in the *Standards and Practices for All Appropriate Inquiries(AAI), Final Rule, 40 CFR Part 312*, referred to as the AAI Final Rule.

Section 312.11 of the AAI Final Rule indicates that the ASTM International Standard E1527-05/13, entitled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*, may be used to comply with the requirements set forth in Sections 312.23 through 312.31 of the AAI Final Rule. Therefore, this Phase I ESA was performed in conformance with the ASTM International Standard E1527-13.

2.2 Purpose

The purpose and goal of this Phase I ESA is to conduct an inquiry to identify recognized environmental conditions in connection with the Subject Property, to the extent feasible pursuant to the process described in the ASTM Practice. The term recognized environmental condition (REC) is defined as:

> "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; (3) under conditions that pose a material threat of a future release to the environment. *De minimis* conditions are not recognized environmental conditions."

As defined in the ASTM Practice, for the purposes of this Phase I ESA, the term "migrate" or "migration" refers to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface (ASTM, 2013).

2.3 Scope of Services

The scope of work included the following tasks.

- Develop a site description for the Subject Property including background, physical characteristics, and historical site conditions.
- Evaluate user provided information including but not limited to environmental liens, activity and use limitations, specialized knowledge, valuation reduction of environmental issues, and other information pertaining to the property.
- Evaluate information in programs such as NPL, CERCLIS, FINDS, ERNS, RCRA notifiers, and other governmental information systems within specific radii of the property to identify sites that would have the potential to impact the property;
- Conduct a visual site reconnaissance from publicly accessible areas detailing the current property and adjacent property conditions.
- Provide a visual evaluation of the adjacent properties to identify high-risk neighbors, and the potential for a chemical to migrate onto the property;

- Conduct interviews with owner(s), site manager(s), occupant(s), local government official(s), and/or other individuals with past and prior use history of the property, if available.
- Conduct a Tier 1 Vapor Encroachment Screening for the subject property in conformance with the ASTM Practice E2600-15.
- Complete a written report detailing the Phase I ESA findings and conclusions.
- Document supporting information including maps, site photographs, regulatory records, and interview(s).

2.4 Significant Assumptions

This Phase I ESA is limited by the availability of information at the time of the assessment. Interviews were conducted and interviewee's responses were assumed as answered in good faith, to the extent of his/her actual knowledge.

Since no hydrogeological data was available for the Subject Property, groundwater was assumed to flow in the direction of the surface topography of the Subject Property and surrounding areas.

2.5 Conditions and Limitations

ETC completed this Phase I ESA for the Subject Property in accordance with the scope and limitations of ASTM Practice E1527-13. ETC's findings and conclusions contained herein are professional opinions based solely upon visual observations, interviews, and interpretation of the historical information and documents available to ETC at the time this Phase I ESA was conducted. Opinions stated in this report do not apply to changes that occur after services were performed.

ETC performed the specified services for this project with the degree of care, skill and diligence ordinarily exercised by professional consultants performing the same or similar services. No other warranty, guarantee, or representation, expressed or implied, is included or intended; unless otherwise specifically agreed to in writing by both ETC and ETC's Client.

2.6 User Reliance

This report is intended for the sole use of ETC's Client and User, exclusively for the Subject Property indicated. ETC's Client may use and release this report, including making and retaining copies, provided such use is limited to the particular site and project for which this report is provided. However, the services performed may not be appropriate to satisfy the needs of other users. Release of this report to third-parties is at the sole risk of the said user(s), and ETC is not liable for any claims or damages resulting from or connected with such release or any third party's use or reuse of this report.

3.0 SITE DESCRIPTION

3.1 Location and Description

The Subject Property consists of approximately 80-acres of improved land located in Ewa Beach, Hawaii on the southwest portion of the island of Oahu (Appendix I, Figure 1). The Subject Property is identified as TMK identification number [1] 9-1-001: Parcel 001 (portion).

3.2 Physical Setting

Approximately 80% of the Subject Property is undeveloped and densely vegetated. Five residential buildings, one administration building and one annex building are located along the south-central border of the Subject Property. The developed area includes an asphalt driveway, lawns, landscaped areas and dirt roads. A well house is located on the southeastern corner of the Subject Property.

The Subject Property is relatively flat with a slight southern gradient. An aerial site plan map and building site plan maps are included as Appendix I, Figure 2 and 3, respectively. Photographic documentation of ETC's site reconnaissance is included in Appendix II.

3.2.1 Site Topography

Topographic map coverage of the Subject Property and surrounding areas is provided by the United States Geological Survey, Island of Oahu, Hawaii, 7.5-minute Series, Pearl Harbor Quadrangle, 2013. The elevation of the Subject Property is approximately 3 to 13 feet above mean sea level (msl).

3.2.2 Regional Geology

Oahu is formed by the erosional remnants of two shield volcanoes. These are the Waianae range to the west and the Koolau range to the east. The Waianae volcano is estimated to have formed 2.4 to 3.6 million years before present. It consists of a tholeiitic lava shield with a thick cap of transitional to alkalic rock. Rejuvenation-stage volcanic of undifferentiated age occurs in Kolekole Pass and on the south flank of the Waianae shield. Dike orientations define northwest and southwest rift zones (Macdonald, et al., 1983).

The Koolau volcano is estimated to have formed 1.8 to 2.6 million years before the present (Macdonald, et al., 1983). It consists of a tholeiitic lava shield and lacks an alkalic cap. It has well defined major dike complex trending northwest-southwest. A third, minor rift zone referred to as the Kaau rift trends southward from Kaau crater, near the upland crest of the Koolau Ridge. After a long dormant period and periods of deep erosion, the Koolau volcano developed abundant and scattered rejuvenation-stage vents, typically aligned on northeast-striking fissures (Macdonald, et al., 1983).

3.2.3 Site Geology

The soil at the site is identified as Coral Outcrop (CR), which consists of coral or cemented calcareous sand on the island of Oahu. Coral outcrop is geographically associated with Jaucas, Keaau, and Mokuleia soils. Elevations range from sea level to 100 feet. The annual rainfall amounts to 18 to 40 inches. This land type is used for military installations, quarries, and urban development. Vegetation is usually sparse and consists of kiawe, koa hoale, and fingergrass (USDA, 1972).

3.2.4 Regional Hydrogeology

The primary drinking water in the Hawaiian Islands is drawn from basal groundwater. Basal groundwater is formed by rainwater percolating down through the residual soils and permeable volcanic rock. The portion of the island situated below sea level is saturated with ocean salt water, except within rift zones of the volcanoes where fresh water forms a basal lens called the "Ghyben-Herzberg" lens. A zone of transition between the fresh groundwater and the ocean salt water occurs due to the constant movement of the interface as a result of tidal fluctuations, seasonal fluctuations in recharge and discharge and aquifer development (Macdonald et al., 1983).

Groundwater aquifers in Hawaii occur under two principal conditions at high altitudes above sea level: perched and dike-impounded. Downward percolation of rainwater may be impeded by low permeability materials such as dense volcanic sediments, alluvial clay, and volcanic ash, which can cause the formation of a perched aquifer. A dike-impounded aquifer results from steeply dipping volcanic dikes serving as a barrier, sequestering water into compartments and reservoirs of impermeable lavas. Recharge of freshwater aquifers occurs in areas of high rainfall, which are the interior mountainous areas. The groundwater flows from the recharge areas to the areas of discharge along the shoreline. Frictional resistance to groundwater flow causes it to pile up within the island until it attains sufficient hydraulic head to overcome friction. Thus, basal groundwater tends to slope toward the shoreline (Nichols et al., 1996).

3.2.5 Site Hydrogeology

The site is underlain by the Waipahu Aquifer System, which is part of the Pearl Harbor Aquifer Sector on the island of Oahu. The aquifer is classified by Mink and Lau, 1990, with the system identification number 30203116 (12211). The system includes an unconfined, basal aquifer in sedimentary nonvolcanic lithology. The groundwater in this aquifer is described as being a currently used and ecologically important with a low salinity (250-1,000 mg/l Cl^-). The groundwater is further described as irreplaceable with a high vulnerability to contamination (Mink and Lau, 1990).

The site is further underlain by a second aquifer of the same system. The aquifer is classified by Mink and Lau, 1990, with the system identification number 30203121 (12212). The system includes a confined, basal aquifer in flank compartments. The groundwater in this aquifer is described as being a currently used and ecologically important with a low salinity (250-1,000 mg/l Cl^-). The groundwater is further described as irreplaceable with a moderate vulnerability to contamination (Mink and Lau, 1990).

3.2.6 Nearest Surface Water Bodies

The nearest surface water body is the Pacific Ocean located approximately 580-feet south of the Subject Property. The entrance to Pearl Harbor is approximately 1.5 miles east to northeast of the Subject Property.

3.3 Current Uses of the Adjoining Properties

ETC visually inspected the neighboring properties and their operations from the Subject Property and publicly accessible areas. The Subject Property is bordered to the north by several building structures, scientific monitoring and observation equipment formerly operated and/or occupied by National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS), and the Pacific Tsunami Warning Center (PTWC). The Subject Property is also bordered to the north by undeveloped land and North Road. The Subject Property is bordered to the northeast by Ewa Beach Golf Course and Ewa Beach Park is near the southeast corner. Primarily single-family residences are present immediately northwest and west of the Subject Property. Fort Weaver Road is immediately south, beyond which are residences and the Pacific Ocean. Other areas in the vicinity of the Subject Property include primarily residences and includes the Hawaii Prince Golf Course, a military gun range and undeveloped land.

4.0 USER PROVIDED INFORMATION

This section is intended to provide information obtained from the user of this Phase I ESA that will help identify RECs associated with the Subject Property. The information provided does not require the user to have the technical expertise of an environmental professional and are generally not provided by the environmental professional performing the Phase I ESA.

4.1 Required Information

In order to qualify for one of the LLPs offered by the Brownfields Amendments, the user must provide certain information about the site (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete. Mr. Darrell Ing, Real Estate Development Specialist, DHHL ("user"), provided ETC with the information in the following subsections.

4.1.1 Environmental Liens

The User did not have any information pertaining to any environmental liens or governmental notifications relating to past or recurrent violations of environmental laws with respect to the Subject Property.

4.1.2 Activity and Use Limitations

The User indicated that there are no activity or land use restrictions on the Subject Property, such as engineering controls, institutional controls, etc., filed or recorded in a registry under federal, tribal, state or local law.

4.1.3 Specialized Knowledge

The User noted that former occupants included NOAA, NWS, PTWC and Ewa Beach Hawaii Campus. Current property use is by NOAA and NWS, although offices, housing and storage areas are currently unused. The User did not have any additional specialized knowledge or experience related to the Subject Property or nearby properties.

4.1.4 Valuation Reduction for Environmental Issues

The User indicated that the purchase price for the property reflects the fair market value without regard to any possible contamination at the time of purchase.

4.1.5 Commonly Known or Reasonably Ascertainable Information

The User indicated that the Subject Property was historically used by the US NOAA Honolulu Magnetic Survey. Otherwise the User indicated no additional commonly known or reasonably ascertainable information about the Subject Property that would help the environmental professional to identify conditions indicative of releases or threatened releases.

4.1.6 Degree of Obviousness of Potential Contamination

The User did not have any additional knowledge of any obvious indicators that point to the presence or likely presence of contamination at the Subject Property based on their knowledge and/or experience related to the Subject Property.

4.2 Other Information Pertaining to the Subject Property

4.2.1 Reason for Performing Phase I ESA

This Phase I ESA was conducted to fulfill the User's due diligence requirements regarding the potential purchase of the Subject Property.

4.2.2 Title Records

Title records/documents were provided by the User which are discussed in Section 5.3. In addition, ETC conducted a limited land title search, which is documented in Section 6.4.4.

4.2.3 Owner, Property Manager, Current and Former Occupant Information

Subject Property Owner:	Mr. Tamas Doszkocs from GSA
Subject Property Manager:	Mr. Wesley Lum, NOAA Facility Engineering Branch Chief.
Former Occupants:	NOAA, NWS, PTWC and Ewa Beach Hawaii Campus.
Current Occupants:	Current property use is by NOAA and NWS, although offices, housing and storage areas are currently unused.

5.0 SUBJECT PROPERTY DOCUMENT REVIEW

ETC reviewed environmental reports, documents, and correspondence pertaining to the Subject Property. These documents were provided by the Client (DHHL). The following is a summary of selected documents that were provided:

5.1 BGES Phase I Report

BGES, Inc. Environmental Consultants (BGES) conducted a Phase I Site Assessment (ESA) between March and July of 2015 which included 175-acres and was inclusive of the Subject Property. The ESA was conducted for the owner, NOAA, who was in the process of relocating. Several government agencies conducted operations at the site including the NWS, PTWC, USGS and UH. The site was obtained in 1949 by the U.S. Navy for the Department of Commerce who operated a "magnetic observatory."

At the time of the ESA the 175-acre site included 16 structures, 2 asphalt parking lots, paved and unpaved driveways and walking paths, and densely vegetated areas. The structures were used for employee housing, offices, electronic shops, various magnetic buildings, microwave receiver room and a well house. Most of the buildings were built in 1961, with the most recent constructed in 2005.

Four wells were identified as potentially located on the 175-acre site. One well was owned by the USGS, one by NOAA and two by the University of Hawaii Geophysical Department. One well was reported north of onsite Building No. 14 and three were located near the southeast corner of the site (Subject Property). The wells were reportedly used for scientific purposes and/or as water wells.

The ESA referred to a 1993 "Environmental Project Prospectus" that indicated several structures had been connected to cesspools prior to connection to county sanitary services in 1996. The ESA further stated that since the site was underlain by coral formations, septic tanks and leach fields were impractical. Public water was reportedly connected to the site in 1978.

Miscellaneous debris piles and abandoned vehicles were also observed on the 175-acre site. The past operations included monitoring, reporting, and forecasting weather conditions, seismic events and tsunamis.

BGES identified a single REC for the larger parcel, which included the potential for leaking fuel from underground pipelines associated with a 250-gallon diesel ConVault, aboveground storage tank (AST) installed in 1988. This AST was north of the annex building (Building No 15). Subsurface lines were reportedly connected to the generator in the nearby Electronics Building (referenced as Building No. 6) located about 20 feet to the northwest. The ESA reported about 15-feet of subsurface fuel lines in this area without an indication of secondary containment. This AST, fuel lines and electronic building are located adjacent north of the Subject Property.

It was unknown if other fuel tanks had been located on the 175-acre site. The ESA interview section referenced a potential upgrade of an "emergency power generator unit" in 1979 to an electronics shop where a generator was observed during the ESA in 2015 near the diesel AST. During the upgrade, an existing generator was reported in the "AWIPS building," referenced as Building No. 7. No other reference or research was indicated about the upgrade or presence of fuel tanks prior to 1988.

An interview with a US Fish and Wildlife representative indicated neighbors had accessed the site for "farming and target practice," although no further research or evidence of such was noted.

Based on a database review of surrounding site, BGES did not identify any offsite facilities as RECs to the Subject Site.

5.2 Building Condition Survey

The Client provided a summary document of building construction and miscellaneous facilities. Five of the seven onsite buildings were constructed as residences, one as a modular annex (double wide trailer) and one as an administration building. Most structures were noted to be 55-years old and one (Residence No. 5) was noted as 18 years old as of 2016. A well house (Building No. 16) was also listed in the southeast corner of the Subject Property. This well was "slated" to be destroyed as it was unused for many years. No construction date was given for the well house. A 250-gallon ConVault (above ground storage tank) and diesel-powered generator were also listed and are adjacent north of the Subject Property.

5.3 Certificate of Title and Other Real Property Documents

A Certificate of Title was provided by the Client from the District Public Works Office, Fourteenth Naval District, dated November 1959. This title indicated the transfer of 175-acres at Puuloa, Ewa to the Department of Commerce for use by Coast and Geodetic Survey. An attached parcel map indicated the parcel inclusive of the Subject Property was on Lot 784-A-2. The Subject Property is approximately 80-acres of the 175-acres along the original southern and eastern borders. The provided documents included intent for operations of the Honolulu Magnetic Observatory and a seismograph station onto the 175-acre parcel.

6.0 RECORDS REVIEW

6.1 Standard Environmental Record Sources

To obtain information concerning RECs at or near the Subject Property, ETC contracted Environmental Data Resources, Inc. (EDR) to conduct an environmental database search. EDR is a company that specializes in the review of public regulatory environmental databases. The regulatory agency report provided (Appendix IV) is based on an evaluation of the data collected and compiled by a contracted data research company.

The radius search report focused on the Subject Property and adjacent properties that may impact the Subject Property. Adjacent properties listed in governmental environmental records are identified within a specific search radius. The search radius varies depending on the particular record being researched. The search is designed to meet the requirements of the current industry approach as described in ASTM Practice E1527-13. The information provided is assumed to be correct and complete, unless noted otherwise. In addition, ETC also manually searched the DOH databases for the Subject Property. Table 1 below provides a summary of database findings.

Table 1: ASTM Practice Environmental Record Sources

Environmental Database Sources	Search Distances (miles)	Subject Property	Off-Site Facilities
Federal NPL Site List	1.0	No	1
Federal Delisted NPL Sites	0.5	No	0
Federal CERCLIS List	0.5	No	1
Federal CERCLIS NFRAP Site List	0.5	No	0
Federal RCRA CORRACTS Facilities List	1.0	No	0
Federal RCRA non-CORRACTS TSD Facilities List	0.5	No	0
Federal RCRA Generators List	Subject Property and adjoining properties	No	0
Federal Institutional Control/Engineering Control Registries	Subject Property only	No	NA
Federal ERNS List	Subject Property only	No	NA
State-Equivalent NPL/CERCLIS	1.0	No	1
State Landfill and/or Solid Waste Disposal Site Lists	0.5	No	0
State Leaking UST List	0.5	No	4
State Registered UST List	Subject Property and adjoining properties	No	1
State Institutional Control Registry	Subject Property only	No	NA
State Voluntary Cleanup/Response (VCP/VRP) Sites	0.5	No	0
State Brownfields Sites	0.5	No	0

6.2 Additional Environmental Record Sources

The EDR database included a number of other regulatory databases that are not specified by the ASTM Practice. The Subject Property was not identified on any of the additional environmental databases.

6.3 Tier 1 Vapor Encroachment Screen

ETC conducted a Tier 1 Vapor Encroachment Screen (VES) for the Subject Property. The Tier 1 VES was conducted in conformance with the scope and limitations of ASTM Practice E2600-15.

The purpose and goal of a Tier 1 VES is to conduct an inquiry to identify whether a vapor encroachment condition (VEC) exists on the Subject Property. The term vapor encroachment condition is defined as the "presence or likely presence of chemical(s) of concern (COC) vapors in the subsurface of the target property caused by the release of vapors from contaminated soil or groundwater or both, either on or near the target property as identified by a Tier 1 or Tier 2 screen."

To obtain information concerning VECs at or near the Subject Property, ETC contracted EDR to conduct the VES. A VES is a radius search report that focuses on the Subject Property and adjacent properties that may impact the Subject Property. The search radius varies depending on the particular record researched. The search is designed to meet the recommended search radii described in ASTM Practice E2600-15. Table 2 below provides a summary of VES findings.

Table 2: ASTM Practice E2600-15 Environmental Record Sources

Environmental Database Sources	Search Distances (miles)	Subject Property	Off-Site Facilities
Federal NPL Site List	1/3	No	1
Federal CERCLIS List	1/3	No	1
Federal RCRA CORRACTS Facilities List	1/3	No	0
Federal RCRA non-CORRACTS TSD Facilities List	1/3	No	0
Federal RCRA Generators List	Subject Property only	No	NA
Federal Institutional Control/Engineering Control Registries	Subject Property only	No	NA
Federal ERNS List	Subject Property only	No	NA
State-Equivalent NPL/CERCLIS	1/3	No	1
State Landfill and/or Solid Waste Disposal Site Lists	1/3	No	0
State Leaking UST List	1/3	No	1
State Registered UST List	Subject Property only	No	NA
State Institutional Control/Engineering Control Registries	Subject Property only	No	NA
State Voluntary Cleanup/Response (VCP/VRP) Sites	1/3	No	0
State Brownfields Sites	1/3	No	0

6.4 Historical Use Information on the Subject and Adjoining Properties

Historical uses of the Subject Property and adjoining properties were investigated through the review of documentation available from public land records and State of Hawaii archived information. In addition, available aerial photographs, plat maps, Sanborn maps, building permits, and city directories were reviewed.

6.4.1 Aerial Photograph Review

Aerial photographs from the EDR Aerial Photo Decade Package were reviewed. A total of four aerial photographs were found that included the Subject Property. The photographs were dated 1976, 1992, 2000, and 2007.

In the 1976 aerial photograph, the majority of the site area is undeveloped. Approximately six residential structures were present with associated roadways, lawn and landscaped areas in the south-central portion of the site. Improved roads are noted adjacent to the southern and northwest property boundaries. Undeveloped vegetated areas are noted adjacent east of the site. Residential developments are noted to the north, east and south of the site. Industrial areas are noted in outlying areas to the east.

In the 1992 aerial photograph, the site features present appear similar to the 1976 aerial photograph. However, the southern portion of the site is not shown and is cut off. The adjacent property to the northeast is a golf course. No significant changes were noted in the 2000 aerial photograph. In the 2007 aerial photograph additional structures and undiscernible structures are located in the south-central building area where vegetation has been cleared.

6.4.2 Fire Insurance Maps

ETC contracted EDR to conduct a search for Sanborn fire insurance maps of the Subject Property. There were no Sanborn maps available for the Subject Property.

6.4.3 Historical Topographic Map Review

ETC contracted EDR to conduct a search of historic USGS topographic maps for the Subject Property. A total of nine topographic maps were provided that included the Subject Property. These maps were dated 1930, 1953, 1954, 1959, 1968, 1970, 1983, 1999, and 2013.

In the 1930 topographic map, the Subject Property is mostly undeveloped with the exception of a windmill in the southeast portion and three unimproved northeast trending roadways transecting a single roadway. The roadways extend offsite. An apparent stream also transects the northern portion of the site. A road is located along the southern border, beyond which are two tanks near Ewa Beach. Outlying areas are mostly undeveloped except for industrial development to the east including railroads, tanks and salt ponds. Other windmills are located to the west.

In the 1953 topographic map, prior onsite features discussed in the 1930 topographic map are no longer depicted. Increasing development is noted in adjacent and outlying areas. Fort Weaver Road is located along the southern boundary, beyond which are numerous residences. Tanks are no longer depicted near Ewa Beach as noted in 1930. Puuloa Beach Park is noted near the southeastern corner of the site. Immediately adjacent areas are undeveloped to the east, north and west, except North Road trends northeast along the northwest site boundary. A Naval Reservation is noted further to the east including a rifle range. A "CAA Reservation" and borrow

pit are located northeast of the site. The 1954 topographic map of the site is similar to the 1953 map.

In the 1959 topographic map, the site is labeled as the "Honolulu Observatory (USC & GS)." Six structures and roadways are present along the south-central portion of the site near Fort Weaver Road. Increasing residential development and a school are noted in outlying areas.

In the 1968 topographic map, the site features are similar to the 1959 topographic map, with the exception of four additional structures and additional roadways noted adjacent to the north of the Subject Property. The Subject Property is still labeled as an observatory. Additional schools are noted to the west and Puuloa Beach Park is now Ewa Beach Park. Site features remain the same in the 1970 topographic map, although the site is no longer labeled.

In the 1983 topographic map, the site features are similar to 1970 topographic map, but the site is now labeled as the "Pacific Tsunami Warning Center." Increasing residential development was noted north of the site. The site features in the 1999 topographic map are similar and the adjacent area to the east is now a golf course with several water features.

In the 2013 topographic map, no previously mentioned site features are present and the site is labeled as the Honolulu Observatory. No significant changes were noted in adjacent and outlying areas.

6.4.4 Property Tax Files and Land Title Records

ETC conducted a limited chain of title search for the Subject Property at the Honolulu County Property Tax office. ETC is not a professional title search company and does not warrant the completeness or accuracy of the information provided, but considers the data useful in screening the Subject Property for environmentally suspect owners or lessees.

ETC reviewed property records for TMK 910010010000 which includes approximately 700-acres of which the Subject Property is a part (approximately 80-acres). The records indicate a transfer of certificate of title (Order of Condemnation) from Chun Hoon, Ltd., Dowsett Co., Ltd. Ernest C Gray, Henry W. Dietz to The United States of America/US Naval Reservation in February of 1944. The property has been owned by The United States of America/US Naval Reservation since that time.

6.4.5 Building Permit Records

ETC reviewed available building permits issued by the City and County of Honolulu. Two permits were found which may or may not be on the Subject Parcel. Permit No. 103326, dated January of 1953, indicated an addition to an existing single-family residence. Permit No. 32230 indicated that in July of 1966, Hawaiian Telephone company added an addition to a generator room with occupancy listed for the transmitter building. The noted Lot No. was 784/K-3. Otherwise no building permits were observed which may have been issued for the Subject Property.

7.0 SITE RECONNAISSANCE

To complete a visual survey and identify the use and/or storage of hazardous materials, ETC performed a site reconnaissance on June 10, 2020.

7.1 Methodology and Limiting Conditions

The north and east portions of the Subject Property included inaccessible terrain and dense vegetation consisting primarily of Kiawe trees or similar vegetation. In addition, the interior area of the apparent well house structure was not accessible at the time of ETC's site reconnaissance activities. As such, these areas were not included in ETC's site reconnaissance activities. These areas were observed from the boundaries of the Subject Property. There were no other limiting conditions imposed by physical obstructions i.e. adjacent buildings, bodies of water.

7.2 General Site Setting

The Subject Property was developed with five former employee residences (Buildings 1 through 4 and 14), administration building (Building No. 5), annex building (Building 15), and apparent well house (Building 16). The Subject Property was observed to be vacant with no apparent usage. A site plan of the Subject Property is included in Appendix I, Figure 2. Photographic documentation of ETC's site reconnaissance is included in Appendix II.

7.3 Exterior Observations

Visual inspection of the exterior areas of the Subject Property indicated that with the exception of the developed area of Subject Property, the groundcover primarily consisted of dense vegetation. The developed area of the Subject Property consisted of landscaped vegetation, concrete walkways, and asphalt driveways/parking.

The Subject Property is bound by a fire break road along the north, east, and south borders of the Subject Property, which is maintained by NOAA. The fire break road is bounded by a chain-linked fence which is situated along the Subject Property border. Although unauthorized public access to the Subject Property is limited; a minimal amount of apparent solid waste was observed on the west portion of the Subject Property. Specifically, ETC noted apparent tires, wood, trash, etc. along the westernmost border of the Subject Property. In addition, apparent gardens and chicken coops were observed along the west portion of the Subject Property. These observations appeared to be unauthorized encroachments from the adjacent residential development. No active releases or evidence of past releases were observed in connection with these encroachments or solid waste. No evidence of the generation, storage or disposal of hazardous or regulated wastes was observed on the exterior areas of the Subject Property.

7.4 Interior Observations

Visual inspection was conducted within the interior areas of the five former employee residences, administration building, and annex building. Limited quantities of chemicals commonly associated with landscaping (e.g. Round-up, etc.) were observed within the garage area of one of the former employee residences (i.e. Building 2). All of the observed materials appeared to be stored in the original, sealed containers with no evidence of significant spills or releases. No other evidence of hazardous materials or petroleum staining was observed within the interior areas

of the Subject Property.

Limited quantities of miscellaneous solid waste (i.e. trash, defunct equipment, old files, etc.) was observed throughout the interior areas of the Subject Property. No material mishandling or evidence of the generation or improper disposal of hazardous waste was observed in interior areas. Observed drains were limited to the kitchen and bathroom reportedly discharge to the country sewer system.

7.5 USTs / ASTs

A visual inspection for the presence of underground storage tanks (USTs) or aboveground storage tanks (ASTs) was also conducted. No visual evidence (i.e. vent or fill pipes, dispensers, etc.) of the presence of USTs was observed. A diesel fuel AST was observed on the north adjacent property, near the north border of the Subject Property and north of the administration building. The AST appeared to be in good condition with no evidence of a release.

7.6 Hydraulic and Dielectric Fluid Containing Equipment

A visual inspection for hydraulic and electrical equipment or electrical components that use fluid that may contain PCBs was conducted. A total of six pole mounted transformers were observed on the Subject Property. The six pole mounted transformers appeared to be in good condition with no indications of a release. No other suspect PCB-containing equipment was observed on the Subject Property.

8.0 INTERVIEWS

The objective of performing interviews is to obtain information from past and present owners, operators, and occupants of the Subject Property to identify potential REC in connection with the Subject Property.

Mr. Wesley Lum, NWS PRH Facility Engineer Chief, provided ETC with the following information regarding the Subject Property:

- Mr. Lum's knowledge of the site dates back approximately 11 years.
- Onsite facility operations began in approximately 1956, with residential buildings built in 1960. Building No. 5 was built in 1998. Prior use of the site is unknown.
- There are no known drains or sumps except in bathrooms.
- Potable water or sewer services are provided by the county.
- There are no known permits from government agencies for site operations.
- There are no AST or USTs on the site. A diesel AST and associated generator are located adjacent north of the site.
- Pole-mounted transformers are located onsite. Mr. Lum does not know who owns them or if they contain PCBs.
- There has been no known usage of any hazardous materials such as acids, bases, solvents, cleansers, degreasers, oil/lubricants, paint, heavy metals etc., on the Subject Property.
- There has been no known burying of any waste or rubbish on the Subject Property.
- There are no known current or former pits, ponds, or lagoons located on the Subject Property in connection with waste treatment or disposal.
- There are no known waste chemical pipelines or vent or fill pipes on the Subject Property.
- There are and have been no damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of greater that 5-gallons or 50-gallons in the aggregate, stored on the Subject Property. Mr. Lum did state that miscellaneous municipal type rubbish has been present onsite.
- There are no known environmental liens or governmental notifications relating to past or recurrent violations of environmental laws with respect to the Subject Property.
- The Subject Property and adjoining properties are not used as a gasoline station, dry cleaner, printing facility, photo developing, landfill, waste TSDF, or recycling facility.
- There are no known current or past issues with runoff from adjacent properties onto the Subject Property.

9.0 FINDINGS AND OPINIONS

9.1 Site Description

No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.2 User Provided Information

No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.3 Document Review

No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.4 Records Review

9.4.1 Standard Environmental Record Sources

Federal NPL and Delisted NPL

The National Priorities List (NPL) is the Environmental Protection Agency's (EPA) database of uncontrolled or abandoned hazardous waste properties, which are considered to pose an immediate threat to human health and the environment. These properties are identified for priority remedial response actions under the Superfund Program. The Subject Property was not identified as a NPL site, or a delisted NPL site. The database identified one NPL site within a 1-mile radius of the Subject Property. No delisted NPL sites were identified within a 0.5-mile radius of the Subject Property.

The *Pearl Harbor Naval Complex* NPL site is located approximately 0.13-mile east of the Subject Property. Database review and Superfund review of the *Pearl Harbor Naval Complex* NPL facility indicated that site investigations and/or cleanup efforts have been ongoing since 1994. The facility includes approximately 12,600 acres of land currently or formerly occupied by the military. Although site investigation and cleanup is currently ongoing, the mapped NPL area is located cross-gradient and more than 600-feet from the Subject Property. Based on this information, the database identified NPL site is not anticipated to pose a reasonable risk of impacting the Subject Property. As such, no significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal CERCLIS and CERCLIS NFRAP

The Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database contains information on various aspects of potentially uncontrolled or abandoned hazardous waste properties from initial screening and assessment phases listed in the NPL. The Subject Property was not identified as an active CERCLIS site or a CERCLIS No Further Remedial Action Planned (NFRAP) site. The database search identified one active

CERCLIS site (*Pearl Harbor Naval Complex*) and no CERCLIS NFRAP sites within specified radii. The *Pearl Harbor Naval Complex* site was discussed as part of the Federal NPL and Delisted NPL section, and therefore will not be repeated here. No other significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal RCRA CORRACTS

The RCRA Corrective Action Sites (CORRACTS) database contains Resource Conservation Recovery Information System (RCRIS) sites with reported corrective action. The Subject Property was not identified as a CORRACTS facility, and the database search did not identify any CORRACTS sites within a 1-mile radius of the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal RCRA (non-CORRACTS) TSD Facilities

The EPA's RCRA program identifies and tracks hazardous waste from the point of generation to the point of final disposal. The RCRA Treatment, Storage, or Disposal (TSD) facility database compiles data from reporting facilities that treat, store, or dispose of hazardous waste. The Subject Property was not identified as a RCRA TSD facility. The database search did not identify any RCRA TSD facilities within a 0.5-mile radius of the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal RCRA Generator

The RCRA Generator database is a compilation by EPA's RCRIS of regulated facilities that generate hazardous waste. The Subject Property was not identified as a RCRA generator facility. Additionally, the contracted database search did not identify any RCRA generator facilities located on potentially adjoining properties with respect to the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal Institutional Control/Engineering Control Registries

Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or affect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on a site. The EPA Institutional Control and Engineering Control registry maintains a list of sites with institutional or engineering controls in place. The Subject Property was not identified as having institutional and/or engineering controls in place. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Federal ERNS

The Emergency Response Notification System (ERNS) tracks the initial notification of reported oil and hazardous material spills. The database contains information regarding the discharger, release date, material, amount released, incident location, and release action taken. The Subject Property was not identified as an ERNS facility. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Equivalent NPL and CERCLIS

The CERCLIS list is a compilation of known or suspected uncontrolled or abandoned hazardous waste sites. These sites either have been investigated or are currently under investigation by the EPA for the release, or threatened release, of hazardous substances. Once a site is placed in CERCLIS, it may be subject to several levels of review and evaluation, and ultimately placed on the National Priorities List.

The State of Hawaii does not have a formal "State Superfund" program; therefore, the State Hazardous Waste Sites (SHWS) are the State of Hawaii's equivalent to the EPA's CERCLIS database. Since this information is acquired from the DOH HEER Office, these sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup that use State funds (State-equivalent Superfund) are identified along with sites where the potentially responsible parties pay for the cleanup. The contracted database did not identify the Subject Property as a SHWS; however, one SHWS site was identified within a 1-mile radius of the Subject Property. ETC's database review indicated that the *Ewa Beach Chevron* SHWS site is classified as a "no further action" site and is too distant to pose a reasonable risk of impacting the Subject Property. No other significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Landfill and/or Solid Waste Disposal

The State of Hawaii has records that include an inventory of solid waste disposal facilities and/or landfills. These may include active or inactive facilities, or open dumps that failed to meet RCRA Subtitle D, Section 4004 criteria for solid waste landfills or disposal sites. The Subject Property was not identified as a Solid Waste Facility/Landfill (SWF/LF) facility. Additionally, the database search did not identify any SWF/LF facilities within a 0.5-mile radius of the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Leaking Underground Storage Tanks

The DOH Underground Storage Tank (UST) Program maintains a listing of all reported leaks and releases from USTs. The Subject Property was not identified as a leaking underground storage tank (LUST) facility. The database search identified four LUST facilities within a 0.5-mile radius of the Subject Property. ETC's database and file review indicated that all four LUST sites were either classified as "no further action" sites, are situated topographically downgradient or cross-gradient from the Subject Property; and/or are too distant to pose a reasonable risk of impacting the Subject Property. Therefore, no significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Registered Underground Storage Tanks

The DOH UST Program's registration system tracks known and registered UST systems. The Subject Property and adjoining properties were not identified as a UST facility. Therefore, no significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Institutional Control Registry

Institutional Controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on a site. The State Institutional Control list includes Voluntary Response Program (VRP) and Brownfield Sites with institutional controls in place. The Subject Property was not identified as having institutional controls in place. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Voluntary Cleanup/Response Sites

The Hawaii VRP was created on July 7, 1997 by amendments made to Hawaii's Environmental Response Law (ERL). The purpose of the VRP is to streamline the cleanup process in a way that encourages prospective developers, lenders, and purchasers to voluntarily clean up properties. The VRP facilitates the cleanup process and, in certain situations, provides relief from the strict liability provisions of the Federal CERCLA and Hawaii ERL. The Subject Property was not identified as a VRP site. Additionally, the database search did not identify any VRP sites within a 0.5-mile radius of the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

State Brownfields

A Brownfields Site is land which the expansion, redevelopment, or reuse of may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. The Subject Property was not identified as a Brownfields Site. Additionally, the database search did not identify any Brownfields Sites located within a 0.5-mile radius of the Subject Property. No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

Unmappable/Orphan Sites

Two unmappable sites were identified in the Orphan Summary of the EDR report. Unmappable sites are not plotted due to poor or inadequate address information. Due to the inaccurate or incomplete information provided by a respective agency, these sites cannot be plotted with confidence. Review of the site addresses and names indicated that none of the Orphan sites were located on a potential adjacent property. No significant findings to indicate suspect RECs, historical RECs, or *de minimis* conditions were identified in connection with the Subject Property.

9.4.2 Additional Environmental Record Sources

No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.4.3 Tier 1 Vapor Encroachment Screen (VES)

The Subject Property was not identified on the VES database search. The contacted database search identified one Federal NPL site, one CERCLIS site, one State Equivalent NPL/CERCLIS site and one LUST site within the VES-specified radii of the Subject Property.

All previously obtained data reviewed and discussed as part of ETC's Phase I ESA (Section 1.0 to 10.0) were also evaluated as part of this Tier 1 VES. Review of other historical records (i.e. Sanborn Maps, Aerials, etc.) did not indicate any potential VECs in connection with the Subject Property. ETC performed a Tier 1 VES in conformance with the scope and limitations of ASTM Practice E2600-15 on the Subject Property. Based on review of the noted database and historical records, no evidence of vapor encroachment conditions in connection with the Subject Property were identified.

No other significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.4.4 Historical Use Information on the Subject and Adjoining Properties

Review of user provided information, aerial photographs, and historical topographic maps indicated the Subject Property was undeveloped until the 1950's after which the site was used for residential housing including approximately four water wells used primarily for scientific purposes. The onsite structures were reportedly connected to cesspools before 1996. The site was potentially used for target practice and miscellaneous dumping of solid water rubbish, likely by nearby residences.

The Subject Property was likely used by NOAA, NWS, PTWC, United State Geological Survey (USGS) and the University of Hawaii (UH). However most scientific operations for these government agencies, including an electronic shop, generator, diesel AST, magnetic buildings, microwave receiver room, magnetic observatory, and seismograph station were noted adjacent to the north of the Subject Property.

According to DOH records, the nearest USTs are located at the adjacent Ewa Beach Golf Club about 2,300-feet northeast of the Subject Property boundary. No other UST systems were noted within 0.5-miles of the Subject Property.

No other significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

9.5 Site Reconnaissance

ETC observed limited quantities of solid waste on the Subject Property in the form of tires, wood, debris, and municipal rubbish. Although not considered a REC, these materials should be properly disposed. No other significant findings to indicate suspect RECs, historical RECs, or *de minimis* conditions were identified.

Visual inspection indicated limited quantities of chemicals commonly associated with landscaping (e.g. Round-up, etc.) within the garage area of one of the former employee residences. The observed materials appeared to be stored in the original, sealed containers with no evidence of significant spills or releases. No material mishandling or evidence of the generation or improper disposal of hazardous waste was observed in interior areas.

Six pole-mounted transformers were observed on the Subject Property without evidence of a release. No other suspect PCB-containing equipment was observed on the Subject Property.

No USTs, ASTs, landfilling, or hazardous wastes were observed in accessible areas of the Subject Property. No other significant findings to indicate suspect RECs, historical RECs, controlled RECs or *de minimis* conditions were identified.

9.6 Interviews

No significant findings to indicate suspect RECs, historical RECs, controlled RECs, or *de minimis* conditions were identified.

10.0 DATA GAPS

Data gaps are defined as the lack of or inability to obtain information required by the ASTM Practice despite good faith efforts by the environmental professional to gather such information. ETC identified the following data gaps:

- Although all reasonably ascertainable maps, site photographs, and standard historical sources (e.g., aerial photos, Sanborn Maps, chain of title, etc.) were reviewed, such documents and information were not available at five-year intervals. This data gap represents a "data failure." However, based on ETC's collective review of the documents and information which were available, this "data failure" does not represent a significant data gap (as described in Sections 8.3.2.3 and 12.7 of the ASTM Practice).
- ETC was unable to inspect the interior undeveloped portions of the Subject Property due to safety concerns associated with the inaccessible terrain and dense vegetation. In addition, the interior area of the apparent well house structure was not accessible at the time of ETC's site reconnaissance activities. However, based on ETC's visual observations of the remaining areas of the Subject Property and those areas along the edge of these areas, coupled with Subject Property owner interview findings, the inaccessible areas were not anticipated to be significantly impacted.

11.0 CONCLUSIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 for the Subject Property located at 91-270 Fort Weaver Road in Ewa Beach, Hawaii, identified by Tax Map Key (TMK) identification number [1] 9-1-001: Parcel 001 (portion). Any exceptions to, or deletions from, the ASTM Practice E1527-13 are described in Section 13.0 of this report. This assessment has revealed no evidence of recognized environmental conditions in connection with the Subject Property.

12.0 ENVIRONMENTAL PROFESSIONAL CERTIFICATION

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared by:

Douglas Heard
Environmental Professional
EnviroServices & Training Center, LLC

July 14, 2020

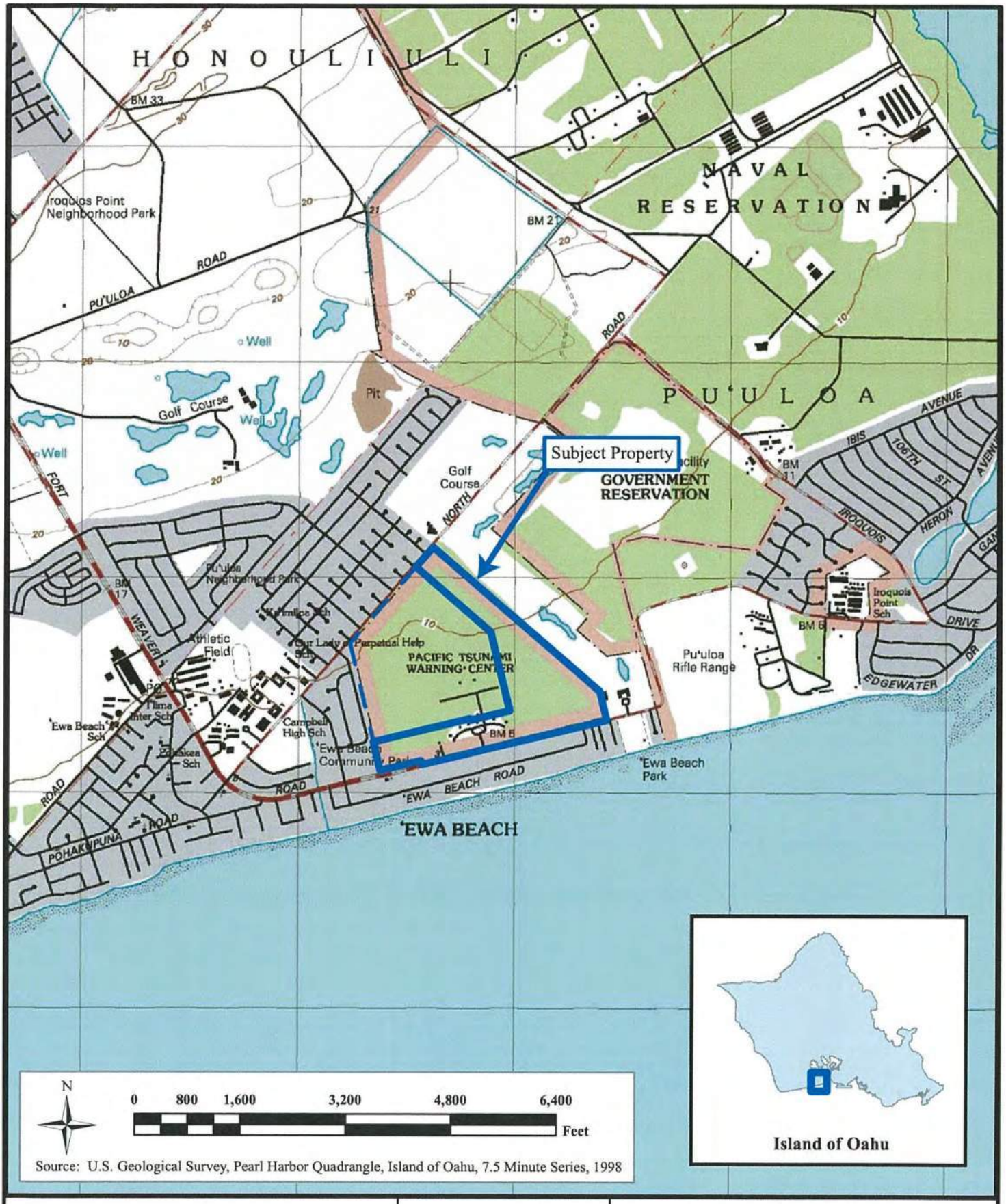
13.0 DEVIATIONS AND ADDITIONAL SERVICES

No client-imposed constraints were identified. As such, there were no deletions from the ASTM Practice E1527-13 upon completion of this Phase I ESA. No additional services were requested or completed.

14.0 REFERENCES

- ASTM International. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, Designation E1527-13.*
- BGES, Inc. Environmental Consultants., October, 2015. *Phase I Environmental Site Assessment, Pacific Tsunami Warning Center, 91-270 Fort Weaver Road, Ewa Beach, Oahu, Hawaii.*
- Environmental Data Resources, Inc., June 10, 2020. *The EDR Aerial Photo Decade Package.* Order No. 6086882.8.
- Environmental Data Resources, Inc. June 9, 2020. *The EDR Historical Topo Map Report.* Order No. 6086882.4.
- Environmental Data Resources, Inc., June 9, 2020. *The EDR Radius Map™ with GeoCheck®.* Report Inquiry No. 6086882.2s.
- Environmental Data Resources, Inc. June 30, 2020. *The EDR Vapor Encroachment Screen.* Order No. 6086882.2s.
- Environmental Data Resources, Inc., June 9, 2020. *Sanborn® Map Report.* Order No. 6086882.3.
- Macdonald, G. A., A. T. Abbot, and F. L. Peterson. 1983. *Volcanoes in the Sea.* University of Hawaii Press.
- Mink, J. F. and S. L. Lau. 1990. *Aquifer Identification and Classification for Oahu: Groundwater Protection Strategy for Hawaii.*
- State of Hawaii Department of Health. Hazard Evaluation and Emergency Response Office records.
- State of Hawaii Taxation Map Bureau, Tax Map Key [1] 9-1-001: Parcels 001 (portion).
- U.S. Department of Agriculture Soil Conservation Service. 1972. *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii.*
- U.S. Department of Interior Geological Survey. 2013. Pearl Harbor Quadrangle, Island of Oahu, 7.5 Minute Series (Topographic Maps).

APPENDIX I
FIGURES



Source: U.S. Geological Survey, Pearl Harbor Quadrangle, Island of Oahu, 7.5 Minute Series, 1998

enviro SERVICES & TRAINING CENTER, LLC

Project No. 20-2014

July 2020

Figure 1 - Site Location Map
Phase I Environmental Site Assessment
DHHL Land Acquisition - NOAA Surplus Land
91-270 Fort Weaver Road, Ewa Beach, Hawaii
TMK [1] 9-1-001: Parcel 001 (portion)

enviro SERVICES & TRAINING CENTER, LLC	Project No. 20-2014	**Figure 2 - Aerial Site Map** Phase I Environmental Site Assessment DHHL Land Acquisition - NOAA Surplus Land 91-270 Fort Weaver Road, Ewa Beach, Hawaii TMK [1] 9-1-001: Parcel 001 (portion)
	July 2020	

enviro SERVICES & TRAINING CENTER, LLC

Project No. 20-2014

July 2020

Figure 3 - Building Site Plan
Phase I Environmental Site Assessment
DHHL Land Acquisition - NOAA Surplus Land
91-270 Fort Weaver Road, Ewa Beach, Hawaii
TMK [1] 9-1-001: Parcel 001 (portion)

APPENDIX II
PHOTOGRAPHIC DOCUMENTATION

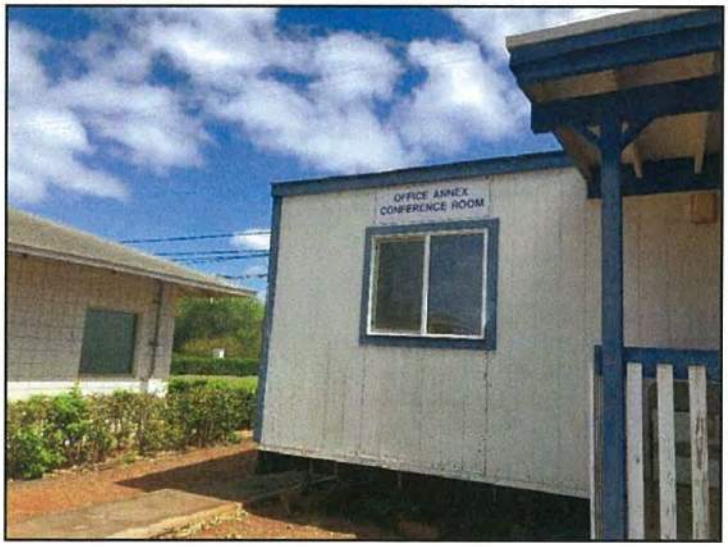
Photograph 1: Front view of the Subject Property from Fort Weaver Road.

Photograph 2: Front view of Building No. 4 (residence) located on the south portion of the Subject Property.

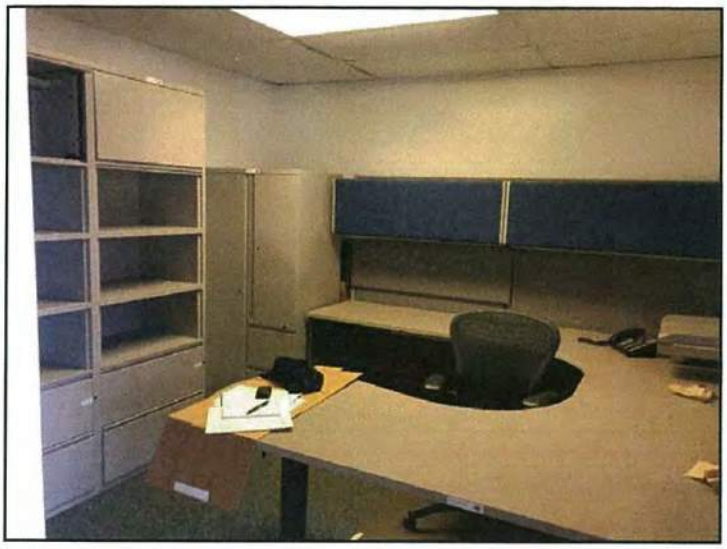
Photograph 3: Interior view of the kitchen within Building No. 4.

Photograph 4: Front view of Building No. 3 (residence) located on the south portion of the Subject Property.

Photograph 5: Interior view of the bathroom within Building No. 3 (residence).



Photograph 6: Front view of Building No. 15 (annex building) located on the south portion of the Subject Property.



Photograph 7: Interior view of the office space within Building No. 15 (annex building).

Photograph 8: Front view of Building No. 5 (administration building) located on the south portion of the Subject Property.

Photograph 9: Interior view of the office space within Building No. 5 (administration building).

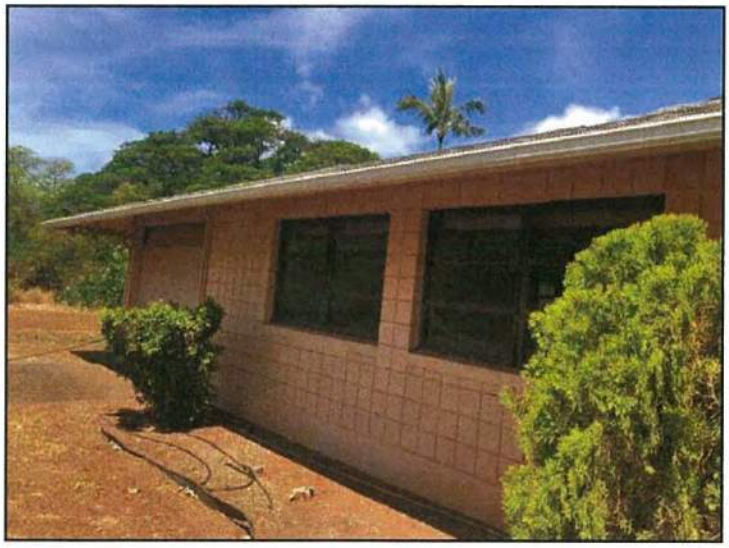
Photograph 10: Front view of Building No. 14 (residence) located on the south portion of the Subject Property.

Photograph 11: Interior view of storage within the garage of Building No. 14 (residence).

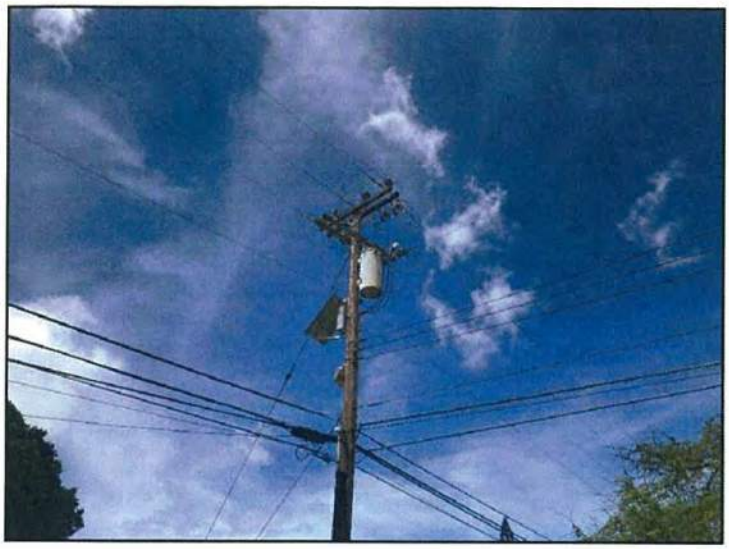
Photograph 12: Front view of Building No. 2 (residence) located on the south portion of the Subject Property.

Photograph 13: Interior view of the living room within Building No. 2 (residence).

Photograph 14: Interior view of the landscaper's storage within the garage of Building No. 2 (residence).



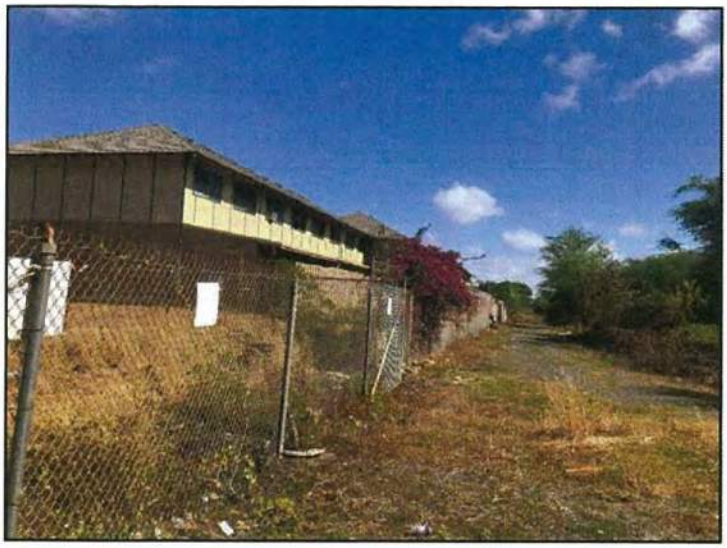
Photograph 15: Front view of Building No. 1 (residence) located on the south portion of the Subject Property.



Photograph 16: View of pole-mounted transformer located north of Building No. 14 (residence).

Photograph 17: View of three pole-mounted transformers located north of Building No. 15 (annex building).

Photograph 18: View of pole-mounted transformer located east of Building No. 3 (residence).



Photograph 19: View along the west portion of the Subject Property.

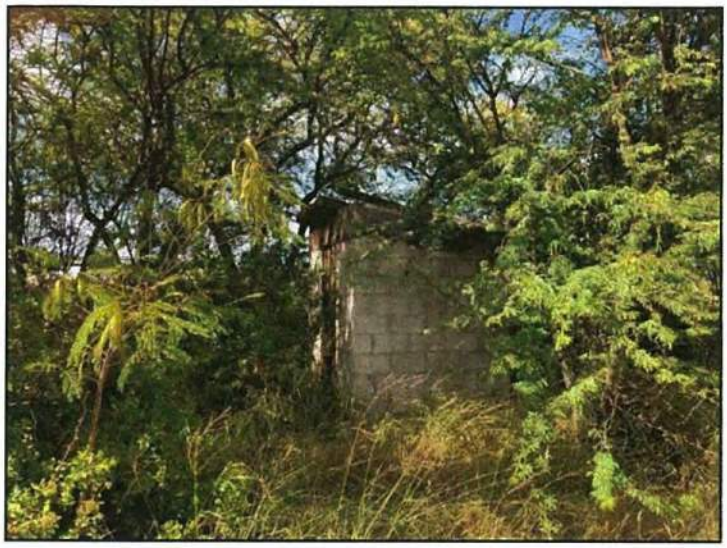
Photograph 20: View of apparent chicken coops observed along the west border of the Subject Property.

Photograph 21: View of apparent fruit/vegetable garden encroachment located along the west border of the Subject Property.

Photograph 22: View of the north corner of the Subject Property along North road.

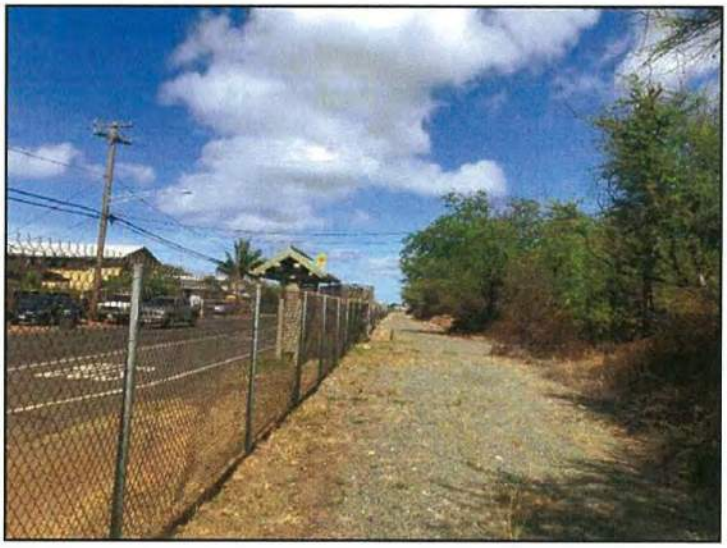
Photograph 22: View along the east portion of the Subject Property adjacent to the Ewa Beach Golf Club.

Photograph 24: View along the east portion of the Subject Property adjacent to the Ewa Beach Golf Club.



Photograph 25: View of apparent well house (Building No. 16) located on the southeast corner of the Subject Property.

Photograph 26: View along the south border of the Subject Property adjacent to Fort Weaver Road.



Photograph 27: View along the south border of the Subject Property adjacent to Fort Weaver Road.

Appendix III
Research Documentation


INQUIRY #: 6086882.8
YEAR: 2000
= 625'
N
EDR

DHHL - Ewa Beach Surplus Land

91-270 Fort Weaver Road

Ewa Beach, HI 96706

Inquiry Number: 6086882.4

June 09, 2020

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

06/09/20

Site Name:	Client Name:
DHHL - Ewa Beach Surplus La	Enviro Srvcs. and Trng. Center
91-270 Fort Weaver Road	505 Ward Avenue
Ewa Beach, HI 96706	Honolulu, HI 96814
EDR Inquiry # 6086882.4	Contact: Sharla Nakashima

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Enviro Srvcs. and Trng. Center were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	NA	**Latitude:**	21.314496 21° 18' 52" North
Project:	20-2014	**Longitude:**	-157.998446 -157° 59' 54" West
		UTM Zone:	Zone 4 North
		UTM X Meters:	603874.64
		UTM Y Meters:	2357284.45
		Elevation:	3.00' above sea level

Maps Provided:

2013	1930
1999	
1983	
1970	
1968	
1959	
1954	
1953	

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2013 Source Sheets

Pearl Harbor

7.5-minute, 24000

1999 Source Sheets

Pearl Harbor

7.5-minute, 24000
Aerial Photo Revised 1999

1983 Source Sheets

Pearl Harbor

7.5-minute, 24000
Aerial Photo Revised 1978

1970 Source Sheets

OAHU

15-minute, 62500

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1968 Source Sheets

Puuloa

7.5-minute, 24000
Aerial Photo Revised 1968

1959 Source Sheets

Puuloa

7.5-minute, 24000
Aerial Photo Revised 1959

1954 Source Sheets

HONOLULUVICINITYSOUTH

7.5-minute, 24000

1953 Source Sheets

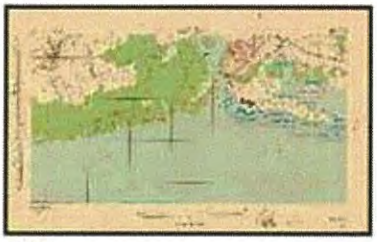
Puuloa

7.5-minute, 24000
Aerial Photo Revised 1952

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1930 Source Sheets



EWA

7.5-minute, 20000

EDR

Historical Topo Map

2013

This report includes information from the following map sheet(s).

TP, Pearl Harbor, 2013, 7.5-minute

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N

This report includes information from the following map sheet(s).

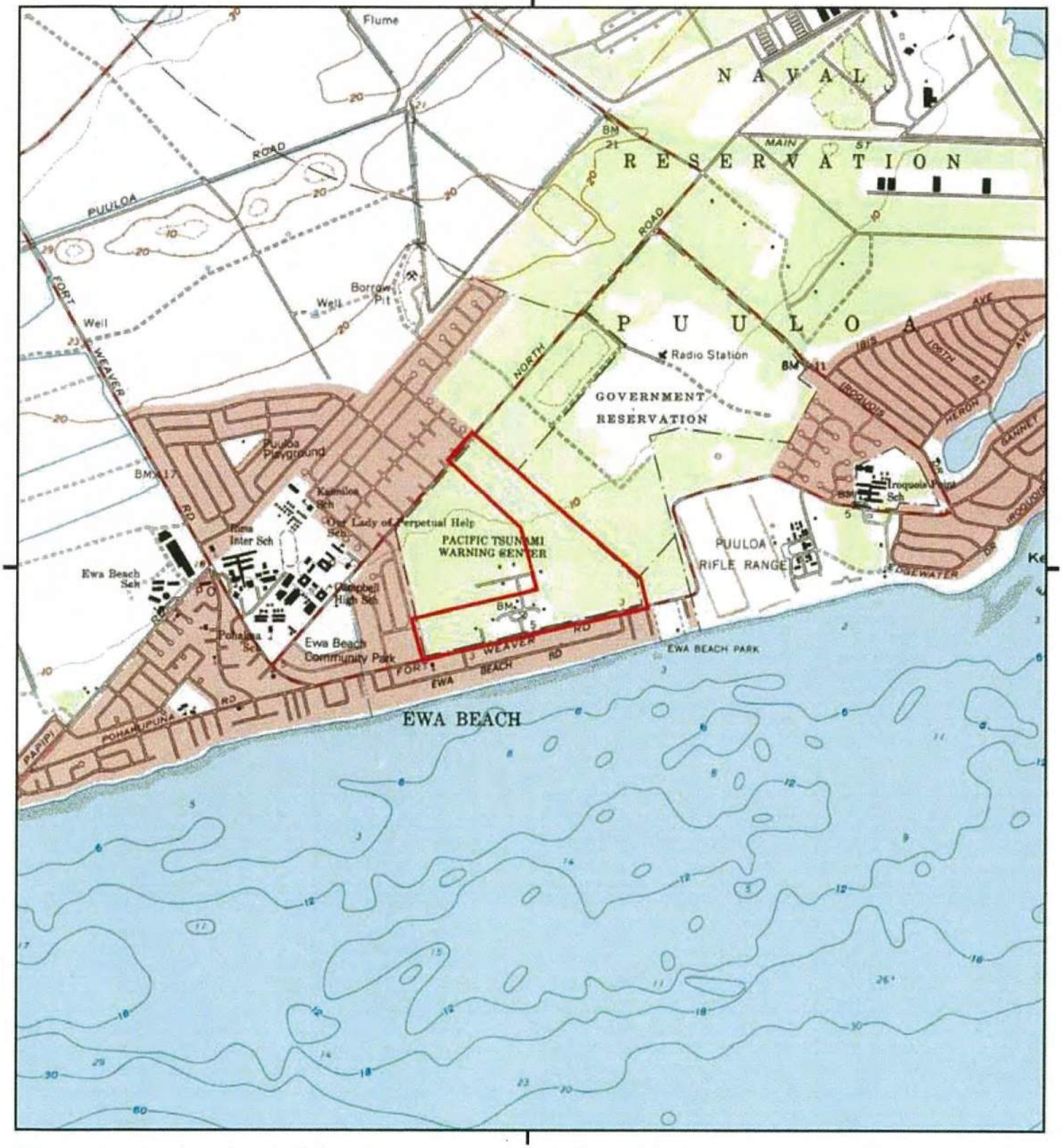
TP, Pearl Harbor, 1999, 7.5-minute

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N



This report includes information from the following map sheet(s).

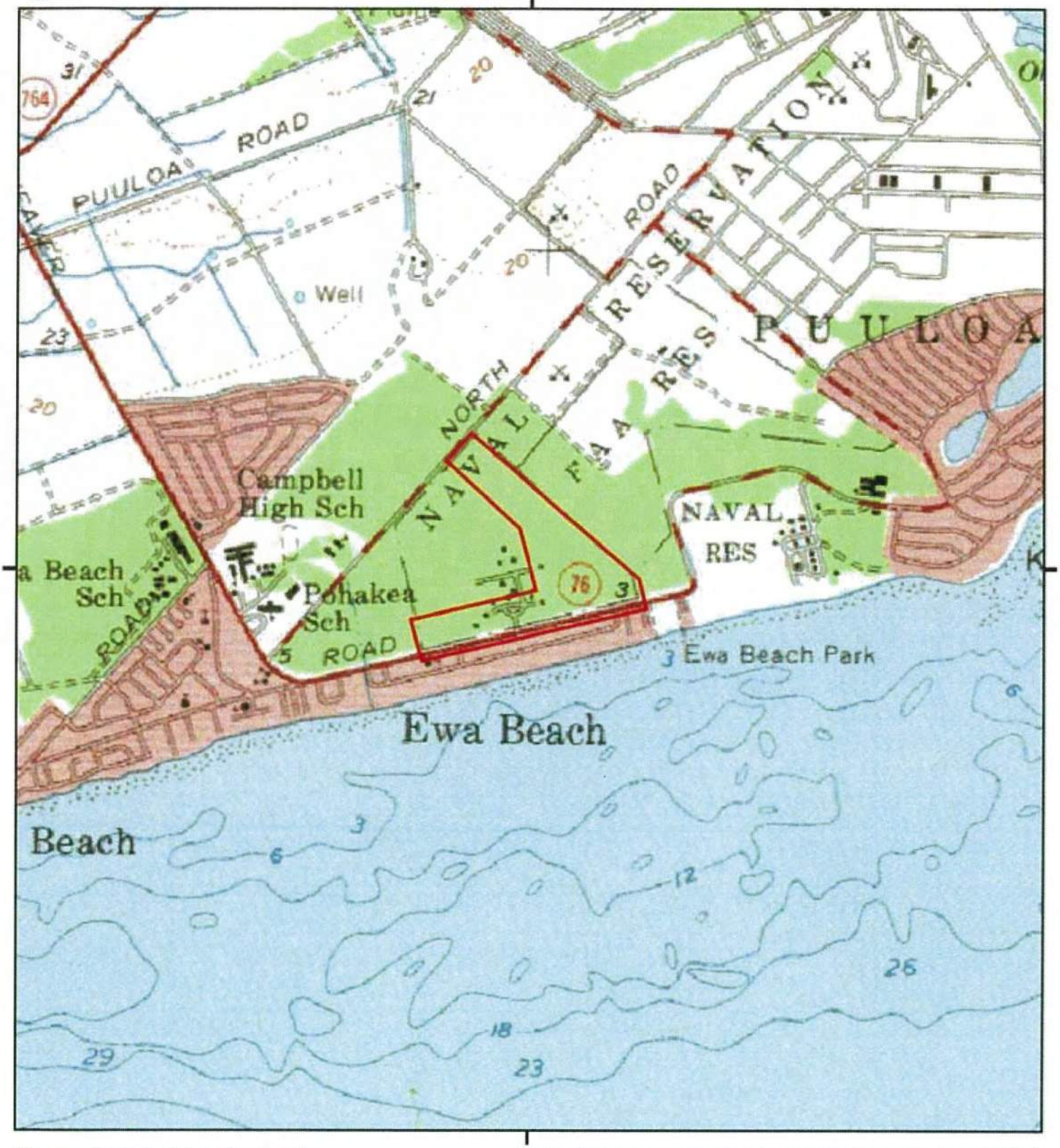
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Pearl Harbor, 1983, 7.5-minute

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N



This report includes information from the following map sheet(s).

TP, OAHU, 1970, 15-minute

NW N NE
W E
SW S SE

0 Miles 0.25 0.5 1 1.5

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N

EDR

Historical Topo Map

1968

This report includes information from the following map sheet(s).

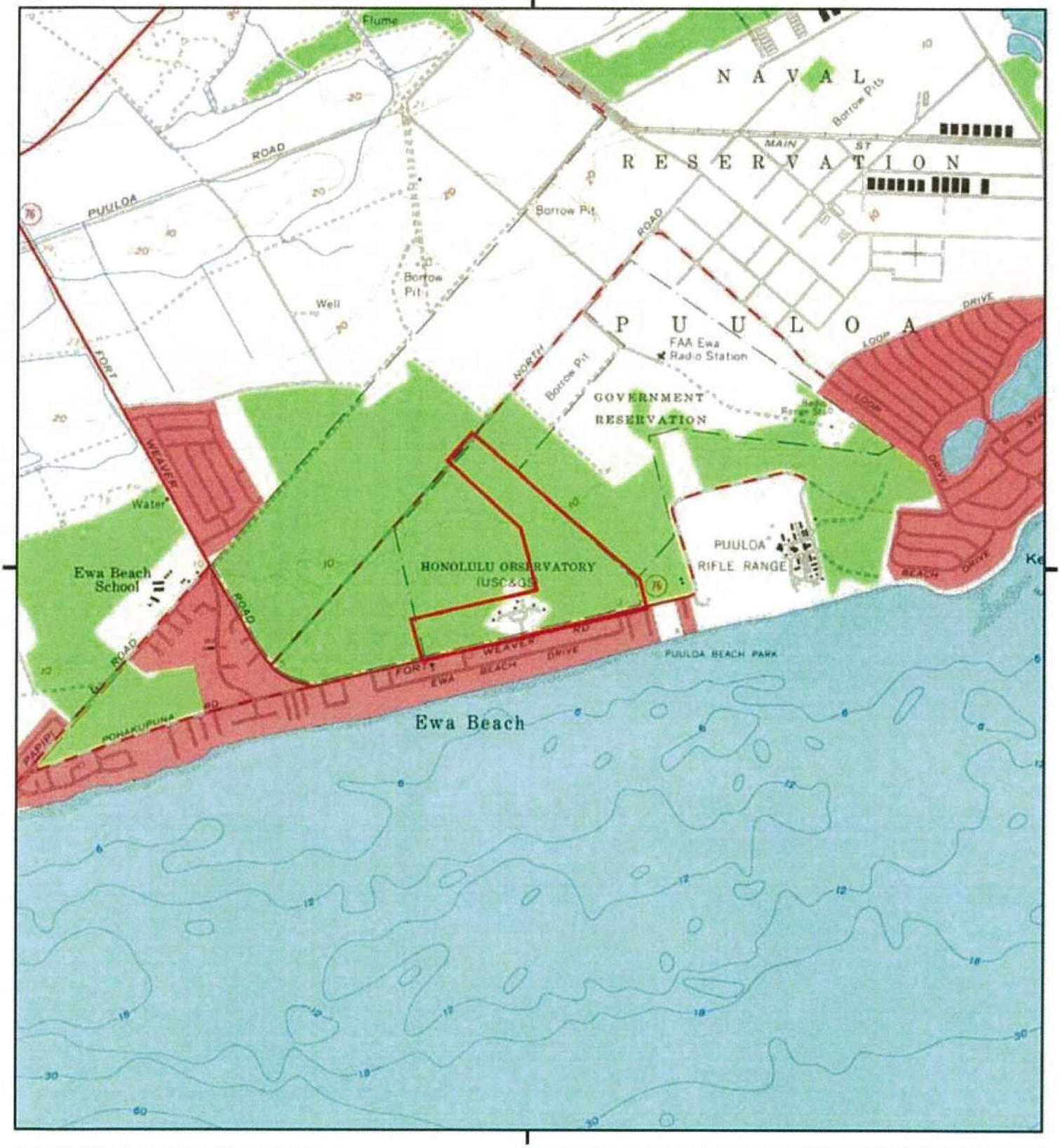
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Puuloa, 1968, 7.5-minute

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Puuloa, 1959, 7.5-minute

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, HONOLULUVICINITYSOUTH, 1954, 7.5-minute

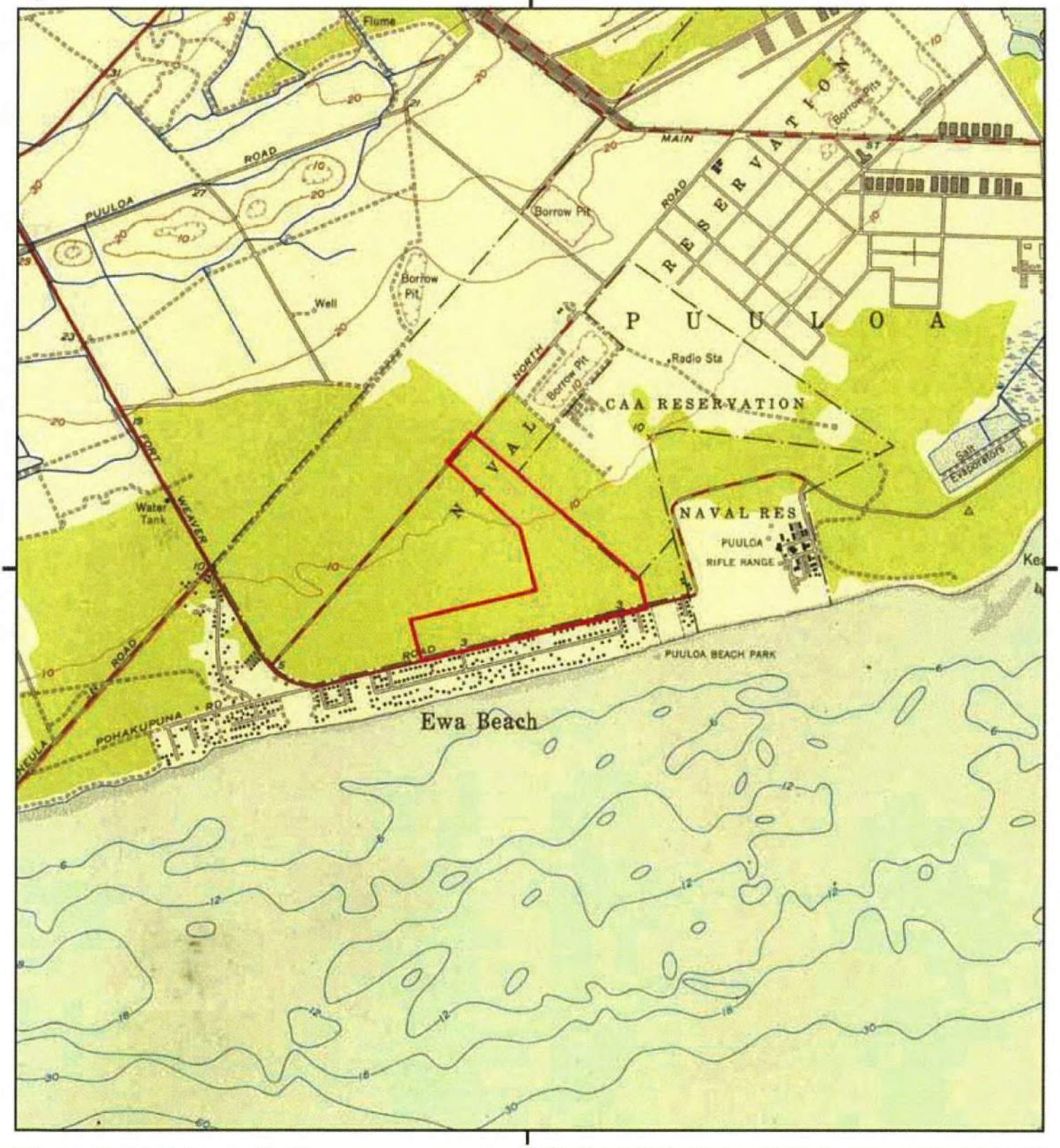
SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N

EDR

Historical Topo Map

1953



This report includes information from the following map sheet(s).

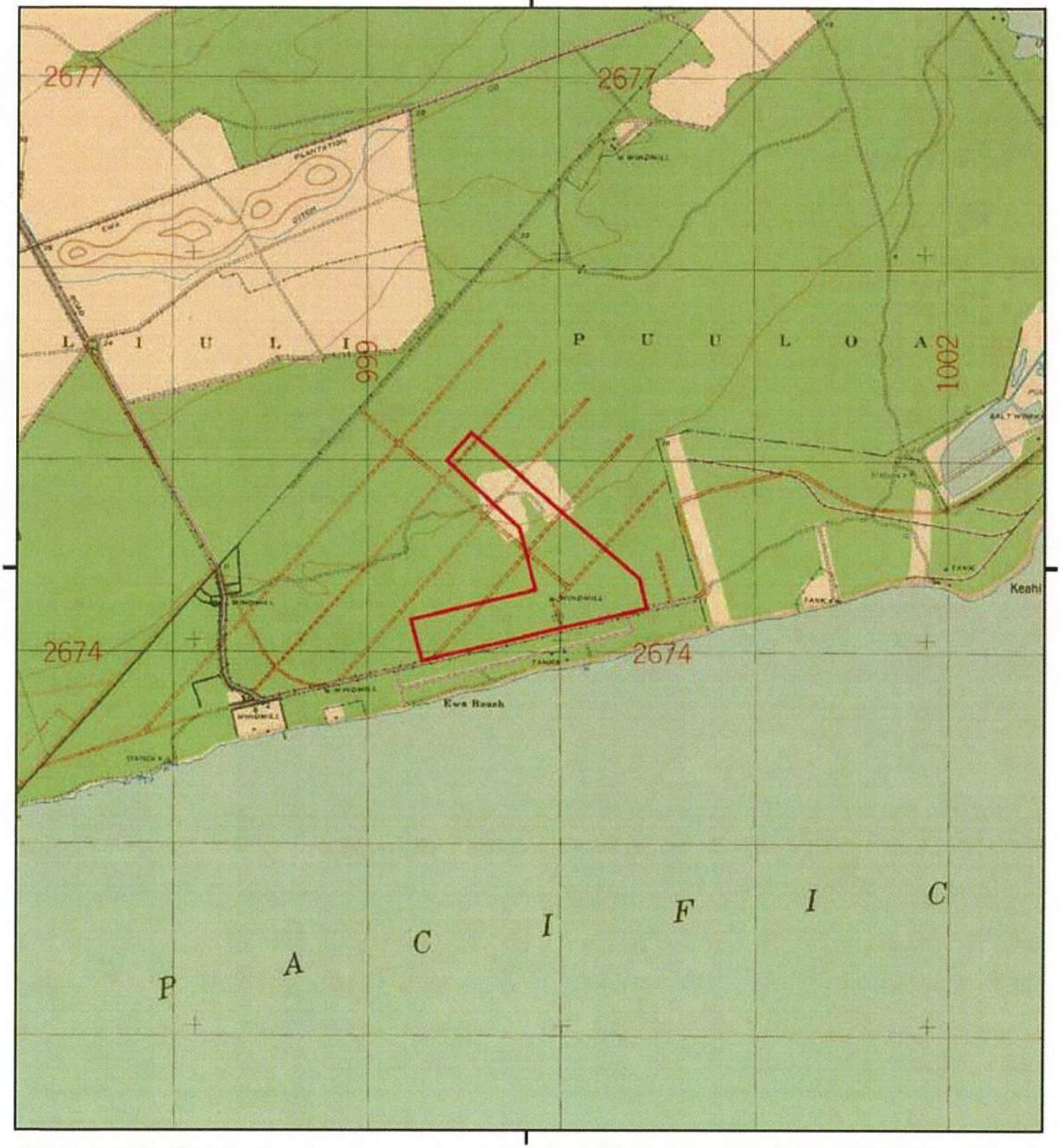
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Puuloa, 1953, 7.5-minute

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, EWA, 1930, 7.5-minute

SITE NAME: DHHL - Ewa Beach Surplus Land
ADDRESS: 91-270 Fort Weaver Road
Ewa Beach, HI 96706
CLIENT: Enviro Srvcs. and Trng. Center

N

DHHL - Ewa Beach Surplus Land
91-270 Fort Weaver Road
Ewa Beach, HI 96706

Inquiry Number: 6086882.2s
June 30, 2020

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	Default Area of Concern (Miles)*	property	1/10	> 1/10
Federal NPL site list	1.0	0	0	1
Federal Delisted NPL site list	1.0	0	0	0
Federal CERCLIS list	0.5	0	0	1
Federal CERCLIS NFRAP site list	0.5	0	0	0
Federal RCRA CORRACTS facilities list	1.0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list	0.5	0	0	0
Federal RCRA generators list	0.25	0	0	0
Federal institutional controls / engineering controls registries	0.5	0	0	1
Federal ERNS list	0.001	0	0	-
State- and tribal - equivalent NPL	not searched	-	-	-
State- and tribal - equivalent CERCLIS	1.0	0	0	0
State and tribal landfill and/or solid waste disposal site lists	0.5	0	0	0
State and tribal leaking storage tank lists	0.5	0	1	0
State and tribal registered storage tank lists	0.25	0	1	0
State and tribal institutional control / engineering control registries	0.5	0	0	0
State and tribal voluntary cleanup sites	0.5	0	0	0
State and tribal Brownfields sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS				
Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	0.001	0	0	-
Local Lists of Registered Storage Tanks	not searched	-	-	-
Local Land Records	0.001	0	0	-
Records of Emergency Release Reports	0.001	0	0	-
Other Ascertainable Records	1.0	0	1	3

EDR HIGH RISK HISTORICAL RECORDS				
EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	2	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	2	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

DHHL - EWA BEACH SURPLUS LAND
91-270 FORT WEAVER ROAD
EWA BEACH, HI 96706

COORDINATES

Latitude (North):	21.314496 - 21° 18′ 52.182312″
Longitude (West):	157.998446 - 157° 59′ 54.396973″
Elevation:	3 ft. above sea level

EXECUTIVE SUMMARY

SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
PEARL HARBOR NAVAL COMPLEX ROD: ROD PRP: PRP SEMS: SEMS US ENG CONTROLS: US ENG CONTROLS NPL: NPL US INST CONTROLS: US INST CONTROLS	US NAVAL COMMAND	1/10 - 1/3 E	Region	9
EWA BEACH PROFESSIONAL CENTER UST: UST LUST: LUST	91-102 FORT WEAVER RD	<1/10 E	▲ A4	57

ADDITIONAL ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
PEARL HARBOR NAVAL COMPLEX ROD: ROD PRP: PRP SEMS: SEMS US ENG CONTROLS: US ENG CONTROLS NPL: NPL US INST CONTROLS: US INST CONTROLS	US NAVAL COMMAND	1/10 - 1/3 E	Region	
PEARL HARBOR NAVAL STATION DOD: DOD	Not Reported	1/10 - 1/3 ENE	Region	55
JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING COMPLEX FINDS: FINDS ECHO: ECHO	91-980 NORTH ROAD	<1/10 NNW	▲ 3	56
PUULOA-EX NAS BAR POINT FUDS: FUDS	Not Reported	1/10 - 1/3 NNW	▲ 5	58

EDR HIGH RISK HISTORICAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

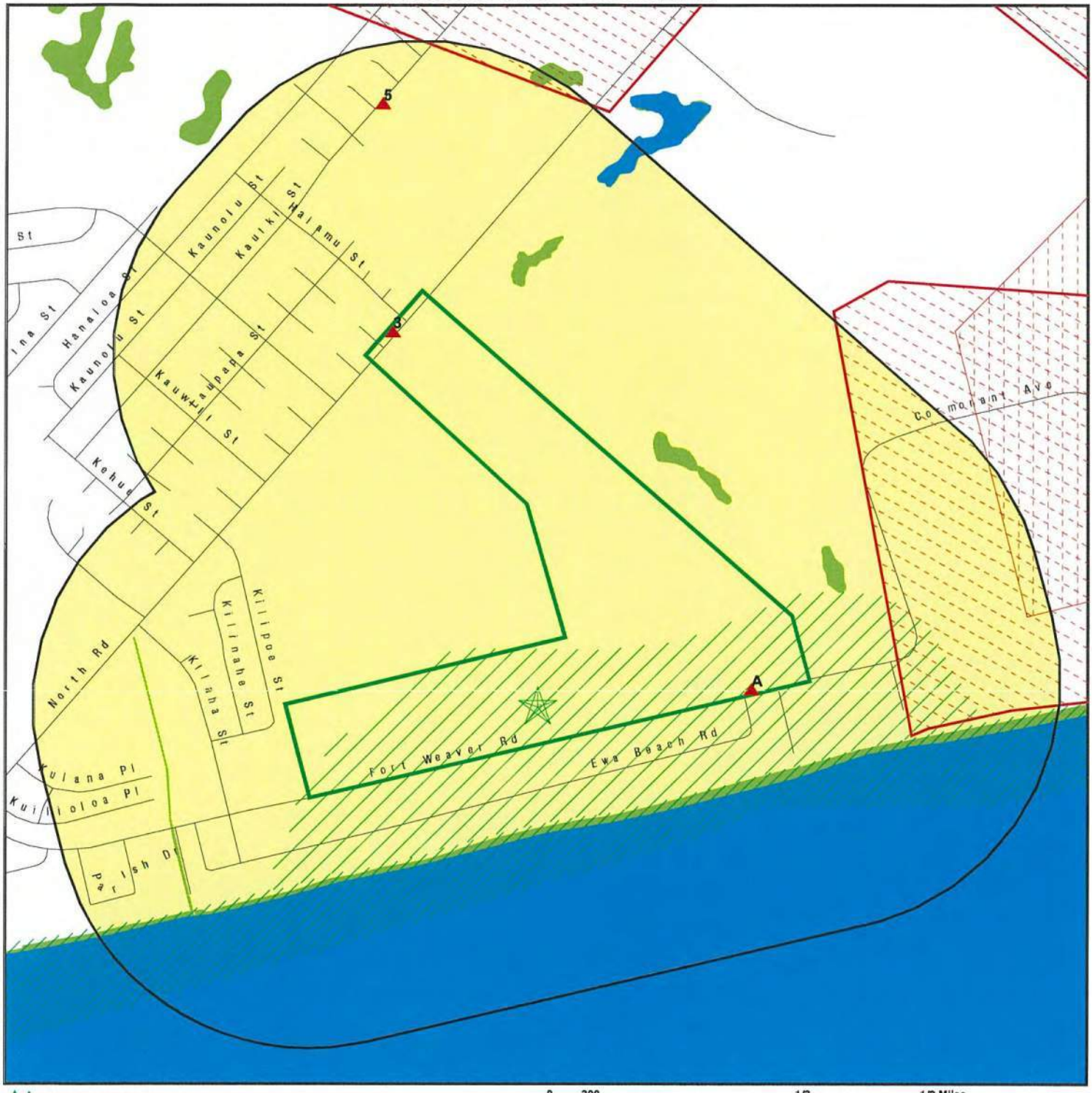
EDR RECOVERED GOVERNMENT ARCHIVES

Name	Address	Dist/Dir	Map ID	Page
EWA BEACH PROFESSIONAL CENTER RGA LUST: RGA LUST	91-102 FORT WEAVER ROAD	<1/10 E	▲ A1	56
EWA BEACH PROFESSIONAL CENTER RGA LUST: RGA LUST	91-102 FORT WEAVER RD	<1/10 E	▲ A2	56

EXECUTIVE SUMMARY

Name	Address	Dist/Dir	Map ID	Page

PRIMARY MAP - 6086882.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 300 1/3 1/2 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

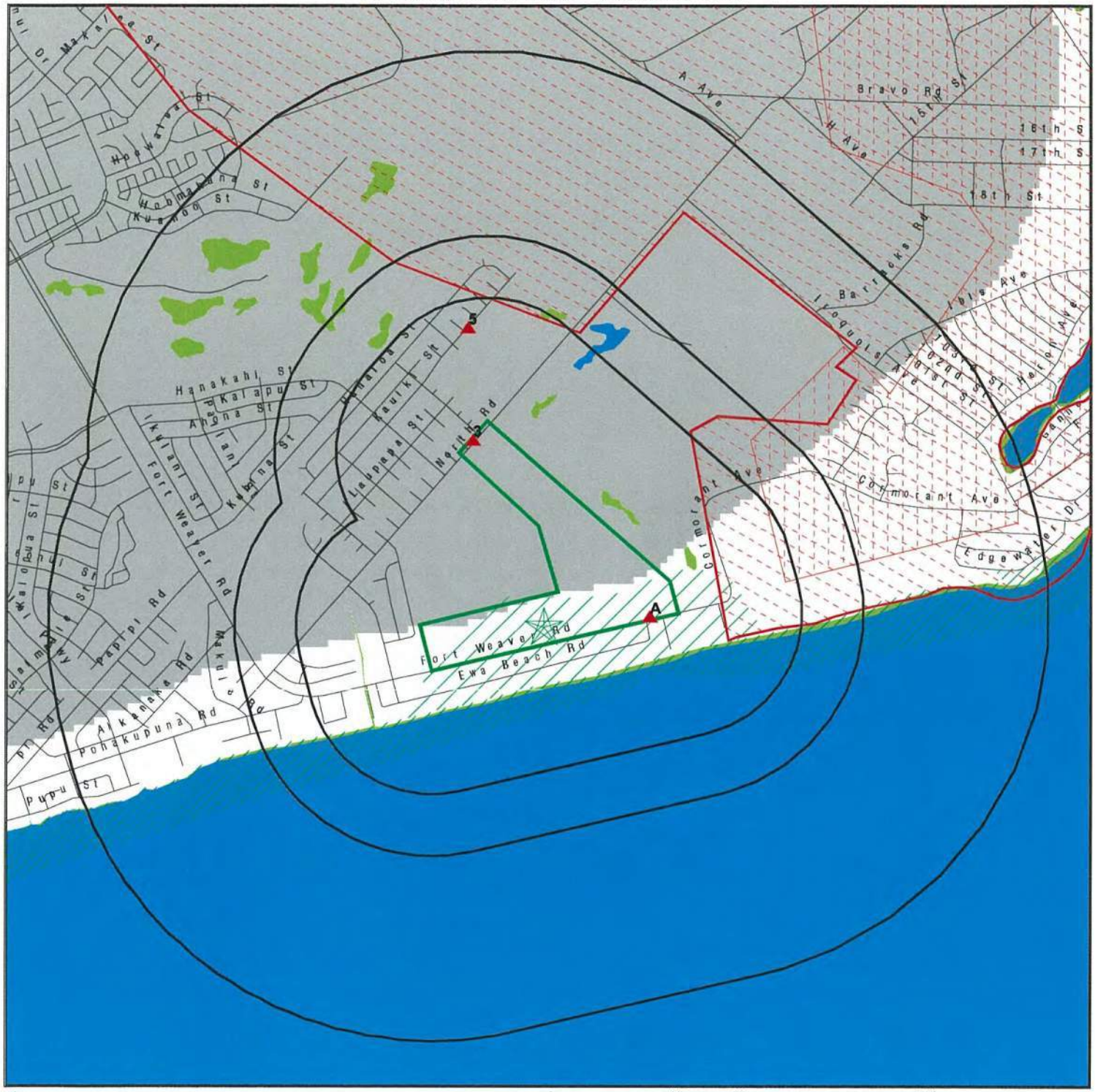
National Wetland Inventory

State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT:	Sharla Nakashima
		INQUIRY #:	6086882.2s
LAT/LONG:	21.314496 / 157.998446	DATE:	June 09, 2020 2:00 pm

SECONDARY MAP - 6086882.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/3 1/2 1 Miles

- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Upgradient Area

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT:	Sharla Nakashima
		INQUIRY #:	6086882.2s
LAT/LONG:	21.314496 / 157.998446	DATE:	June 09, 2020 1:59 pm

LEGEND

FACILITY NAME **FACILITY ADDRESS, CITY, ST, ZIP**		EDR SITE ID NUMBER
◆ **MAP ID#**	Direction Distance Range (Distance feet / miles) Relative Elevation Feet Above Sea Level	ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.
Worksheet: **Comments:** Comments may be added on the online Vapor Encroachment Worksheet.		

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

PEARL HARBOR NAVAL COMPLEX US NAVAL COMMAND, PEARL HARBOR, HI, 96860		1000707626
Region	E 1/10 - 1/3 (633 ft. / 0.12 mi.)	Federal NPL site list Federal CERCLIS list Federal institutional controls / engineering controls registries Other Ascertainable Records

Worksheet:

NPL: Federal NPL site list

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
EPA Region:	9
Federal:	Y
Final Date:	1992-10-14 00:00:00
Site ID:	904481
Latitude:	21.388888999999999
Site Score:	70.819999999999993
Longitude:	-157.98333299999999

NPL:

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Category Description:	Surface Water Adjacent To Site-Other-Unknown
Category Value:	WETLAND

NPL:

EPA ID:	HI4170090076
Site ID:	0904481
Site Status:	F

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Federal Site:	Y
EPA Region:	09
Date Proposed:	07/29/91
Date Deleted:	Not Reported
Date Finalized:	10/14/92

NPL:

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U220
Substance:	TOLUENE
CAS #:	108-88-3
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	2

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U228
Substance:	TRICHLOROETHYLENE (TCE)
CAS #:	79-01-6
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	2

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	Not Reported
Substance:	Not Reported
CAS #:	Not Reported
Pathway:	Not Reported
Scoring:	Not Reported

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	A023
Substance:	DDE
CAS #:	72-55-9
Pathway:	SURFACE WATER PATHWAY
Scoring:	3

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	A046
Substance:	POLYCHLORINATED BIPHENYLS
CAS #:	1336-36-3
Pathway:	SURFACE WATER PATHWAY
Scoring:	3

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	A059
Substance:	BROMODICHLOROMETHANE
CAS #:	75-27-4

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Pathway:	AIR PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	A059
Substance:	BROMODICHLOROMETHANE
CAS #:	75-27-4
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	4
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C049
Substance:	ETHYLBENZENE
CAS #:	100-41-4
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	2
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C315
Substance:	CHROMIC ACID
CAS #:	7738-94-5
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C320
Substance:	CHROMIUM, HEXAVALENT
CAS #:	18540-29-9
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C460
Substance:	MERCURY
CAS #:	7439-97-6
Pathway:	SURFACE WATER PATHWAY
Scoring:	4
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C497
Substance:	STODDARD SOLVENT
CAS #:	8052-41-3
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Substance ID:	C517
Substance:	XYLENE, M-
CAS #:	108-38-3
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	2
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C525
Substance:	BROMACIL
CAS #:	314-40-9
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	C573
Substance:	DIAZINON
CAS #:	333-41-5
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	D004
Substance:	ARSENIC
CAS #:	7440-38-2
Pathway:	GROUND WATER PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	P037
Substance:	DIELDRIN
CAS #:	60-57-1
Pathway:	NO PATHWAY INDICATED
Scoring:	1
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U028
Substance:	BIS(2-ETHYLHEXYL)PHTHALATE
CAS #:	117-81-7
Pathway:	SURFACE WATER PATHWAY
Scoring:	2
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U036
Substance:	CHLORDANE
CAS #:	57-74-9
Pathway:	SURFACE WATER PATHWAY
Scoring:	3

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U037
Substance:	CHLOROBENZENE
CAS #:	108-90-7
Pathway:	AIR PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U037
Substance:	CHLOROBENZENE
CAS #:	108-90-7
Pathway:	SURFACE WATER PATHWAY
Scoring:	2
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U061
Substance:	DDT
CAS #:	50-29-3
Pathway:	SURFACE WATER PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U079
Substance:	TRANS-DICHLOROETHYLENE, 1,2-
CAS #:	156-60-5
Pathway:	AIR PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U079
Substance:	TRANS-DICHLOROETHYLENE, 1,2-
CAS #:	156-60-5
Pathway:	GROUND WATER PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U079
Substance:	TRANS-DICHLOROETHYLENE, 1,2-
CAS #:	156-60-5
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	4
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

CAS #:	127-18-4
Pathway:	AIR PATHWAY
Scoring:	3
EPA ID:	HI4170090076
NPL Status:	Currently on the Final NPL
Substance ID:	U210
Substance:	TETRACHLOROETHENE
CAS #:	127-18-4
Pathway:	SOIL EXPOSURE PATHWAY
Scoring:	4

NPL:

EPA ID:	HI4170090076
Summary:	Conditions at Proposal July 29, 1991): The Pearl Harbor Naval Complex occupies at least 6,300 acres in Pearl Harbor on the Island of Oahu, Honolulu County, Hawaii. Land around the complex supports agriculture, aquaculture, industry, urban,
EPA ID:	HI4170090076
Summary:	In 1988, the Navy detected bis 2-ethylhexyl)phthalate in sediment samples taken from a National Wildlife Refuge that borders an abandoned Navy landfill. The refuge contains habitat for four Federally endangered species, as well as wetlands. Pe
EPA ID:	HI4170090076
Summary:	arl Harbor and nearby portions of the Pacific Ocean contain recreational and commercial fisheries, habitat for endangered species, wetlands, and water-contact recreation areas. The volatile organic compounds in on-site soil also create a
EPA ID:	HI4170090076
Summary:	potential for gases to be released to the atmosphere. Status October 1992): EPA and the Navy are planning to negotiate a Federal Facilities Agreement under CERCLA Section 120 to cover future activities at the site. The description
EPA ID:	HI4170090076
Summary:	of the site release) is based on information available at the time the site was scored. The description may change as additional information is gathered on the sources and extent of contamination. See FR 5600, February 11, 1991 or subsequent
EPA ID:	HI4170090076
Summary:	FR notices.)
EPA ID:	HI4170090076
Summary:	and commercial uses. The complex consists of these major facilities: Naval Shipyard, Naval Supply Center, Naval Station, Submarine Base, Public Works Center, Inactive Ships, and Navy Maga ine Lualualei Westlock Branch and Waipio Peninsula).
EPA ID:	HI4170090076
Summary:	The Pearl Harbor Naval Complex began operation in 1901 when the Navy received an appropriation to acquire land for a naval station. After the attack by the Japanese on December 7, 1941, industrial activity at the complex skyrocketed, reaching 2
EPA ID:	HI4170090076
Summary:	4,000 civilians by mid-1943. After World War II, activity declined and has fluctuated with the Navy s requirements. In 1983, the Navy identified 30 potential ha ardous waste sources within the six facilities. Subsequently, an additional
EPA ID:	HI4170090076
Summary:	source was identified. The 31 sources include unlined landfills, pesticide disposal pits, chromic acid disposal areas, PCB disposal areas, mercury-contaminated harbor sediments, leaking underground solvent tanks, waste oil facilities, and nume

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
Summary:	rous other types of sources resulting from industrial activities at the complex. Six of the sources were initially evaluated, based primarily on toxicity of contaminants present, availability of waste quantity information, sampling results, aff
EPA ID:	HI4170090076
Summary:	ected populations, and a documented release of a ha ardous substance. Many investigations have found ha ardous substances -- including mercury, chromium, PCBs, pesticides, trichloroethene, trans-1,2- dichloroethene, and other volatile orga
EPA ID:	HI4170090076
Summary:	nic compounds -- in soil in the six areas, thus exposing workers on the site less than 100) to potential contamination. Many of these chemicals have also been found at the remaining 25 areas identified to date.) Tetrachloroethene was fo
EPA ID:	HI4170090076
Summary:	und15.2 feet below ground surface in one area. Soils beneath the site are permeable, facilitating movement of contaminants into ground water. Approximately 110,700 people obtain drinking water from wells within 2 miles of the six sources.

NPL:

EPA ID:	HI4170090076
NPL Status:	Final
Proposed Date:	07/29/1991
Final Date:	10/14/1992
Deleted Date:	Not Reported

NPL:

EPA ID:	HI4170090076
NPL Name:	PEARL HARBOR NAVAL COMPLEX

SEMS: Federal CERCLIS list

Site ID:	0904481
EPA ID:	HI4170090076
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
Cong District:	01
FIPS Code:	15003
Latitude:	21.388889
Longitude:	-157.983333
FF:	Y
NPL:	Currently on the Final NPL
Non NPL Status:	Not Reported

SEMS Detail:

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

FF:	Y
OU:	00
Action Code:	AR
Action Name:	ADMIN REC
SEQ:	1
Start Date:	2000-10-24 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1991-07-29 04:00:00
Finish Date:	7/29/1991 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1980-10-01 04:00:00
Finish Date:	10/1/1980 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	09
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	2
Start Date:	1993-09-30 04:00:00

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LV
Action Name:	FF RV
SEQ:	4
Start Date:	1993-04-01 05:00:00
Finish Date:	4/1/1994 5:00:00 AM
Qual:	S
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	07
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	9
Start Date:	1993-09-30 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	LV
Action Name:	FF RV
SEQ:	5
Start Date:	2000-01-03 05:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	LZ
Action Name:	FF CR
SEQ:	1
Start Date:	2005-05-03 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	14
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	14
Start Date:	1999-05-15 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	16
Start Date:	1993-09-30 04:00:00
Finish Date:	7/12/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	16
Action Code:	LW
Action Name:	FF RI/FS

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

SEQ:	17
Start Date:	1993-09-30 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	12
Start Date:	1999-06-10 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	08
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	2006-09-28 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	10
Action Code:	RO
Action Name:	ROD
SEQ:	3
Start Date:	2006-09-28 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	06
Action Code:	RO
Action Name:	ROD
SEQ:	4
Start Date:	2010-07-02 04:00:00
Finish Date:	7/2/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2009-09-29 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	13
Action Code:	RO
Action Name:	ROD
SEQ:	6
Start Date:	2018-09-26 04:00:00
Finish Date:	9/26/2018 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action Code:	LV
Action Name:	FF RV
SEQ:	7
Start Date:	2005-12-14 05:00:00
Finish Date:	7/19/2006 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LV
Action Name:	FF RV
SEQ:	8
Start Date:	2006-06-02 04:00:00
Finish Date:	8/22/2006 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	RO
Action Name:	ROD
SEQ:	10
Start Date:	2010-09-27 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	12
Start Date:	2007-09-28 04:00:00
Finish Date:	9/28/2007 4:00:00 AM
Qual:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	13
Start Date:	2010-09-14 04:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	05
Action Code:	RO
Action Name:	ROD
SEQ:	15
Start Date:	2011-09-23 04:00:00
Finish Date:	9/23/2011 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	RO
Action Name:	ROD
SEQ:	17
Start Date:	2009-09-29 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

FF:	Y
OU:	14
Action Code:	RO
Action Name:	ROD
SEQ:	18
Start Date:	2010-09-27 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	RO
Action Name:	ROD
SEQ:	21
Start Date:	2012-07-12 04:00:00
Finish Date:	7/12/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	26
Action Code:	EE
Action Name:	EE/CA
SEQ:	2
Start Date:	2010-03-18 04:00:00
Finish Date:	3/18/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	26
Action Code:	LV
Action Name:	FF RV
SEQ:	10
Start Date:	2010-05-07 04:00:00

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Finish Date:	5/27/2011 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LX
Action Name:	FF RD
SEQ:	1
Start Date:	2010-09-27 04:00:00
Finish Date:	10/25/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LY
Action Name:	FF RA
SEQ:	1
Start Date:	2010-11-22 05:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LY
Action Name:	FF RA
SEQ:	2
Start Date:	2009-09-29 04:00:00
Finish Date:	1/20/2011 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	16
Action Code:	RO
Action Name:	ROD
SEQ:	14
Start Date:	2010-09-27 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	20
Start Date:	2009-03-03 05:00:00
Finish Date:	9/15/2014 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	LY
Action Name:	FF RA
SEQ:	4
Start Date:	2011-06-09 04:00:00
Finish Date:	7/11/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	28
Action Code:	LW
Action Name:	FF RI/FS

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

SEQ:	23
Start Date:	2011-03-29 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	27
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	24
Start Date:	2011-07-21 04:00:00
Finish Date:	8/22/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	06
Action Code:	LY
Action Name:	FF RA
SEQ:	3
Start Date:	2011-08-10 04:00:00
Finish Date:	8/27/2012 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	29
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	25
Start Date:	2011-08-17 04:00:00
Finish Date:	9/14/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	16
Action Code:	LV
Action Name:	FF RV
SEQ:	9
Start Date:	2007-08-24 04:00:00
Finish Date:	9/27/2007 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	22
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	21
Start Date:	2009-03-13 04:00:00
Finish Date:	9/23/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	RO
Action Name:	ROD
SEQ:	24
Start Date:	2014-09-15 04:00:00
Finish Date:	9/15/2014 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action Code:	LV
Action Name:	FF RV
SEQ:	3
Start Date:	1995-02-23 05:00:00
Finish Date:	4/1/1997 5:00:00 AM
Qual:	P
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	HR
Action Name:	HAZRANK
SEQ:	1
Start Date:	1991-07-25 04:00:00
Finish Date:	7/25/1991 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	4
Start Date:	1993-09-30 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	08
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	10
Start Date:	1993-09-30 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	06
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	8
Start Date:	1993-09-30 04:00:00
Finish Date:	7/2/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	10
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	1
Start Date:	1994-08-23 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1986-04-01 05:00:00
Finish Date:	4/1/1986 5:00:00 AM
Qual:	L
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

FF:	Y
OU:	06
Action Code:	LV
Action Name:	FF RV
SEQ:	1
Start Date:	1995-07-17 04:00:00
Finish Date:	8/23/1996 4:00:00 AM
Qual:	P
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	NF
Action Name:	NPL FINL
SEQ:	1
Start Date:	1992-10-14 04:00:00
Finish Date:	10/14/1992 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	LX
Action Name:	FF RD
SEQ:	2
Start Date:	2012-07-12 04:00:00
Finish Date:	12/13/2014 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	LY
Action Name:	FF RA
SEQ:	5
Start Date:	2014-12-13 05:00:00

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Finish Date:	3/23/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	30
Action Code:	RO
Action Name:	ROD
SEQ:	25
Start Date:	2013-03-29 04:00:00
Finish Date:	3/29/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	22
Action Code:	RO
Action Name:	ROD
SEQ:	26
Start Date:	2013-09-23 04:00:00
Finish Date:	9/23/2013 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	27
Action Code:	RO
Action Name:	ROD
SEQ:	27
Start Date:	2016-08-22 04:00:00
Finish Date:	8/22/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	29
Action Code:	RO
Action Name:	ROD
SEQ:	29
Start Date:	2016-09-14 04:00:00
Finish Date:	9/14/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	11
Start Date:	1995-08-01 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	13
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	13
Start Date:	1995-09-19 04:00:00
Finish Date:	9/26/2018 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	05
Action Code:	LY
Action Name:	FF RA

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

SEQ:	7
Start Date:	2011-09-23 04:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LY
Action Name:	FF RA
SEQ:	6
Start Date:	2014-09-14 04:00:00
Finish Date:	10/9/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LX
Action Name:	FF RD
SEQ:	3
Start Date:	2014-09-15 04:00:00
Finish Date:	6/30/2015 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LY
Action Name:	FF RA
SEQ:	8
Start Date:	2009-09-29 04:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	35
Action Code:	NI
Action Name:	FF FS
SEQ:	1
Start Date:	2017-03-10 05:00:00
Finish Date:	3/10/2017 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	35
Action Code:	RO
Action Name:	ROD
SEQ:	31
Start Date:	2017-03-10 05:00:00
Finish Date:	3/10/2017 5:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LV
Action Name:	FF RV
SEQ:	2
Start Date:	1995-03-13 05:00:00
Finish Date:	10/30/1996 5:00:00 AM
Qual:	P
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action Code:	LW
Action Name:	FF RI/FS
SEQ:	5
Start Date:	1993-09-30 04:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	02
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	3
Start Date:	1993-09-30 04:00:00
Finish Date:	4/5/2016 4:00:00 AM
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	1989-08-21 04:00:00
Finish Date:	8/21/1989 4:00:00 AM
Qual:	H
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	05
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	7
Start Date:	1993-09-30 04:00:00
Finish Date:	9/23/2011 4:00:00 AM
Qual:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	15
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	15
Start Date:	1993-09-30 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	20
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	18
Start Date:	2006-06-26 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	21
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	19
Start Date:	2008-04-28 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

FF:	Y
OU:	09
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	22
Start Date:	2009-05-29 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	31
Action Code:	BD
Action Name:	PRP RI/FS
SEQ:	1
Start Date:	2016-05-29 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	25
Action Code:	EE
Action Name:	EE/CA
SEQ:	1
Start Date:	2009-09-28 04:00:00
Finish Date:	Not Reported
Qual:	Not Reported
Current Action Lead:	EPA Ovrsght

Site: Federal institutional controls / engineering controls registries

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
Event Code:	Not Reported
Action Taken Date:	03/10/2017
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	31
Operable Unit:	35
Action Completion Date:	05/19/2017
Contaminated Media:	Groundwater
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

Media:

EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	1
Action Completion Date:	03/17/2017
Operable Unit:	03
Action Name:	FF ESD
Action Taken Date:	02/11/2016
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	10
Action Completion Date:	09/30/2010
Operable Unit:	03
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/27/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

EPA ID:	HI4170090076
Contaminated Media:	Soil Gas
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	26
Action Completion Date:	09/30/2013
Operable Unit:	22
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2013
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Surface Water
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	2
Action Completion Date:	09/30/2006
Operable Unit:	08
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	3
Action Completion Date:	09/30/2006
Operable Unit:	10
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	5
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Liquid Waste
Site ID:	0904481
Action ID:	17
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	21
Action Completion Date:	06/30/2013
Operable Unit:	17
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	07/12/2012
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	29
Action Completion Date:	12/16/2016
Operable Unit:	29
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/14/2016
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	4
Action Completion Date:	09/30/2010
Operable Unit:	06
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	07/02/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	3
Action Completion Date:	09/30/2006
Operable Unit:	10
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	17
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	14
Action Completion Date:	09/30/2010
Operable Unit:	16
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	09/27/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	27
Action Completion Date:	11/15/2016
Operable Unit:	27
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	08/22/2016
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Debris
Site ID:	0904481
Action ID:	12
Action Completion Date:	09/30/2007
Operable Unit:	01
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2007
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	2
Action Completion Date:	09/30/2006
Operable Unit:	08
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	14
Action Completion Date:	09/30/2010
Operable Unit:	16
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	09/27/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	17
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	10
Action Completion Date:	09/30/2010
Operable Unit:	03
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/27/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	27
Action Completion Date:	11/15/2016
Operable Unit:	27
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	08/22/2016
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	25
Action Completion Date:	04/30/2013
Operable Unit:	30
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	03/29/2013
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Debris
Site ID:	0904481
Action ID:	24
Action Completion Date:	09/15/2014
Operable Unit:	24
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/15/2014
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	24
Action Completion Date:	09/15/2014
Operable Unit:	24
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/15/2014
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	4
Action Completion Date:	09/30/2010
Operable Unit:	06
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	07/02/2010
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Solid Waste
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	12
Action Completion Date:	09/30/2007
Operable Unit:	01
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2007
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	5
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

US INST CONTROLS: Federal institutional controls / engineering controls registries

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	18
Operable Unit:	14
Action Completion Date:	09/30/2010
Actual Date:	09/27/2010
Contaminated Media:	Soil
Event Code:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	24
Operable Unit:	24
Action Completion Date:	09/15/2014
Actual Date:	09/15/2014
Contaminated Media:	Soil
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	24
Operable Unit:	24
Action Completion Date:	09/15/2014
Actual Date:	09/15/2014
Contaminated Media:	Debris
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	5
Operable Unit:	12
Action Completion Date:	09/30/2009
Actual Date:	09/29/2009
Contaminated Media:	Soil
Event Code:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	4
Operable Unit:	06
Action Completion Date:	09/30/2010
Actual Date:	07/02/2010
Contaminated Media:	Soil
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	13
Operable Unit:	01
Action Completion Date:	09/30/2010
Actual Date:	09/14/2010
Contaminated Media:	Soil
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	15
Operable Unit:	05
Action Completion Date:	09/30/2011
Actual Date:	09/23/2011
Contaminated Media:	Soil
Event Code:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	21
Operable Unit:	17
Action Completion Date:	06/30/2013
Actual Date:	07/12/2012
Contaminated Media:	Soil
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	18
Operable Unit:	14
Action Completion Date:	09/30/2010
Actual Date:	09/27/2010
Contaminated Media:	Groundwater
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	13
Operable Unit:	01
Action Completion Date:	09/30/2010
Actual Date:	09/14/2010
Contaminated Media:	Buildings/Structures
Event Code:	Not Reported

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not Reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	5
Operable Unit:	12
Action Completion Date:	09/30/2009
Actual Date:	09/29/2009
Contaminated Media:	Groundwater
Event Code:	Not Reported
Contact Name:	Not Reported
Contact Telephone:	Not Reported
Event:	Not Reported

ROD: Other Ascertainable Records

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ESD
Operable Unit Number:	PWC- MAKALAPA RINSATE PIT
SEQ ID:	1
Action Completion:	2016-02-11 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WESTLOCH BLDG 49
SEQ ID:	2
Action Completion:	2006-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	MANANA STORAGE
SEQ ID:	3
Action Completion:	2006-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	NSY DRY DOCK #3
SEQ ID:	4
Action Completion:	2010-07-02 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD IS HAZ SITES (SANS LF)
SEQ ID:	5
Action Completion:	2009-09-29 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PH SEDIMENT
SEQ ID:	6
Action Completion:	2018-09-26 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PWC- MAKALAPA RINSATE PIT
SEQ ID:	10
Action Completion:	2010-09-27 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PCB THERMAL DESORPTION SITES
SEQ ID:	12
Action Completion:	2007-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PCB THERMAL DESORPTION SITES
SEQ ID:	13
Action Completion:	2010-09-14 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD ISLAND LANDFILL
SEQ ID:	15
Action Completion:	2011-09-23 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD IS HAZ SITES (SANS LF)
SEQ ID:	17
Action Completion:	2009-09-29 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PEARL CITY JUNCTION
SEQ ID:	18
Action Completion:	2010-09-27 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	NSY BLDG 6, FORMER FOUNDRY
SEQ ID:	21
Action Completion:	2012-07-12 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WEST LOCH 4TH ST. CORAL PIT LF
SEQ ID:	24
Action Completion:	2014-09-15 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PWC BUILDING 35 - PAINT SHOP
SEQ ID:	26
Action Completion:	2013-09-23 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WEST LOCH OTTO FUEL WASTE STOR
SEQ ID:	27
Action Completion:	2016-08-22 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	BUILDING 992 OPEN AREA
SEQ ID:	29
Action Completion:	2016-09-14 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WEST LOCH VEHICLE MAINTENANCE
SEQ ID:	31
Action Completion:	2017-03-10 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860

PEARL HARBOR NAVAL COMPLEX, US NAVAL COMMAND, PEARL HARBOR, HI 96860 (Continued)

EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	GOVT Decision Document (ROD)
Operable Unit Number:	RICHARDSON- FFTF
SEQ ID:	14
Action Completion:	2010-09-27 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	GOVT Decision Document (ROD)
Operable Unit Number:	RAA 11 AND 13
SEQ ID:	25
Action Completion:	2013-03-29 00:00:00
NPL Status:	Final
Non NPL Status:	Not Reported

PRP: Other Ascertainable Records

PRP Name:	OAHU SUGAR COMPANY, LLC
	OAHU SUGAR COMPANY, LLC

PEARL HARBOR NAVAL STATION Not Reported, , HI,		CUSA147752
Region	ENE 1/10 - 1/3 (1589 ft. / 0.301 mi.)	Other Ascertainable Records

Worksheet:

DOD: Other Ascertainable Records

Feature 1:	Navy DOD
Feature 2:	Not Reported
Feature 3:	Not Reported
URL:	Not Reported
Name 1:	Pearl Harbor Naval Station
Name 2:	Not Reported
Name 3:	Not Reported
State:	HI
DOD Site:	Yes
Tile name:	HIHONOLULU

EWA BEACH PROFESSIONAL CENTER 91-102 FORT WEAVER ROAD, EWA BEACH, HI,			S116401375
▲ A1	E <1/10	(0 ft. / 0 mi.)	Exclusive Recovered Govt. Archives
	Equal Elevation	3 ft. Above Sea Level	

Worksheet:

RGA LUST: Exclusive Recovered Govt. Archives

1995	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER ROAD

EWA BEACH PROFESSIONAL CENTER 91-102 FORT WEAVER RD, EWA BEACH, HI,			S116401374
▲ A2	E <1/10	(0 ft. / 0 mi.)	Exclusive Recovered Govt. Archives
	Equal Elevation	3 ft. Above Sea Level	

Worksheet:

RGA LUST: Exclusive Recovered Govt. Archives

2012	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2011	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2010	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2009	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2008	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2007	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2006	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2005	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2004	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
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2001	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2000	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
1999	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
1998	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
1997	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD

JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING COMPLEX 91-980 NORTH ROAD, EWA BEACH, HI, 96706			1024012929
▲ 3	NNW <1/10	(0 ft. / 0 mi.)	Other Ascertainable Records
	10 ft. Higher Elevation	13 ft. Above Sea Level	

Worksheet:

JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING COMPLEX, 91-980 NORTH ROAD, EWA BEACH, HI 96706 (Continued)

FINDS: Other Ascertainable Records

Registry ID:	110070107960
Facility URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110070107960

Environmental Interest/Information System:

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

The Click here to access additional FINDS: detail in the EDR Site Report. database contains
http://www.edrnet.com/srf2/FinalSiteReport.aspx?ID=4g64KIgIb6F62.uKNZIWb980ldLbHg3DdF.Y6gn2sd.8zuqg3CKNhuZVL746WVGbu53AM8V
H0IQAaqd6oLq.22VHUwgS.40GgHH6qc2xKKvBIRi8JRlm7bIG2dCFK56WP8CA.fTuu32fnNOtZlhBjnWadbbQ43m8wq0wa2FJdZpLZM4tjgj.68t3
GUK.eIrY2iflyvboK8cGFjm6f923W.w6ukkAsgN64ZLv8edW8ubemAdA8oT0edAzSdoyLUE4uHHWfgik1ubDLEdwk4oc.8NYm2ufOgjSnS74N8gq
W6KC3bNKfmI7D2i8lYGbAH38VFdg6cz2OE.5EuOZ4ArNNjZY46aTWwFbup2bs8sZ0nL34Bdo7LhW4sYHoUgJQBGQDffdtr4Fa.q8YaXBFhgZqn
SC2 additional records for this site. Please contact your EDR Account Executive for more information.

ECHO: Other Ascertainable Records

Envid:	1024012929
Registry ID:	110070107960
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070107960
Name:	JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING COMPLEX
Address:	91-980 NORTH ROAD
City,State,Zip:	EWA BEACH, HI 96706

EWA BEACH PROFESSIONAL CENTER 91-102 FORT WEAVER RD, EWA BEACH, HI, 96706		U003222129	
▲ A4	E <1/10	(0 ft. / 0 mi.)	State and tribal leaking storage tank lists State and tribal registered storage tank lists
	Equal Elevation	3 ft. Above Sea Level	

Worksheet:

LUST: State and tribal leaking storage tank lists

Facility ID:	9-202893
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	11/08/1995
Release ID:	940079
Project Officer:	Steven Okoji

UST: State and tribal registered storage tank lists

Facility ID:	9-202893
Owner:	ESTATE OF JAMES CAMPBELL
Owner Address:	1001 KAMOKILA BOULEVARD
Owner City,St,Zip:	Ewa Beach, 96706 96706
Latitude:	21.31457
Longitude:	-157.99381
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching

EWA BEACH PROFESSIONAL CENTER, 91-102 FORT WEAVER RD, EWA BEACH, HI 96706 (Continued)

Tank ID:	R-1
Date Installed:	Not Reported
Tank Status:	**Permanently Out of Use**
Date Closed:	01/22/1994
Tank Capacity:	550
Substance:	Diesel

PUULOA-EX NAS BAR POINT Not Reported, EWA, HI,		1024902149	
▲ 5	NNW 1/10 - 1/3	(1333 ft. / 0.252 mi.)	Other Ascertainable Records
	13 ft. Higher Elevation	16 ft. Above Sea Level	

Worksheet:

FUDS: Other Ascertainable Records

EPA Region:	09
Installation ID:	HI99799F410600
Congressional District Number:	01
Facility Name:	PUULOA-EX NAS BAR POINT
FUDS Number:	H09HI0398
City:	EWA
State:	HI
County:	HONOLULU
Object ID:	6640
USACE District:	Honolulu District (POH)
Status:	Properties with all projects at site closeout
Current Owner:	Private Sector
EMS Map Link:	https://fudsportal.usace.army.mil/ems/ems/inventory/map/map?id=54173
Eligibility:	Eligible
Has Projects:	Yes
NPL Status:	Not Listed
Latitude:	21.326111109999900
Longitude:	-158.001666669999000

FUDS Detail as of Jan 2015:

Fiscal Year:	2013
Federal Facility ID:	HI9799F4106
RAB:	Not Reported
NPL Status:	Not Listed
Description:	The site consists of a 20.52-acre dump and was transferredfrom the Navy to Campbell Esate in 2/27/51. The dunp iste consist of a borrow pit and used for aircraft disposal. Twenty-one buildings were constructed. Site visit on 13 July 1995 revealed the dump site was mixed wastes. Other information from former studies indicate that household waste, batteries, and other debris were found.
History:	The project iste was part of the Barbers Point Naval Air Station and was part of the Plane Division Aircraft Storage Area. The borrow pit was used as an aircraft disposal area; hwoever, it is noted that other debris from the landowner was also included and therefore a potential PRP is proposed.
CTC:	25.399999999999999
Current Program:	Not Reported
Future Program:	Not Reported
Institutional ID:	54173

PUULOA-EX NAS BAR POINT, Not Reported, EWA, HI (Continued)

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	04/27/2020	05/06/2020	05/28/2020
US	Proposed NPL	Proposed National Priority List Sites	EPA	04/27/2020	05/06/2020	05/28/2020
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	04/27/2020	05/06/2020	05/28/2020
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	03/23/2020	03/25/2020	05/21/2020
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/23/2020	03/25/2020	05/21/2020
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/23/2020	03/25/2020	05/21/2020
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/23/2020	03/25/2020	05/21/2020
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	03/23/2020	03/25/2020	05/21/2020
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	11/04/2019	11/13/2019	01/28/2020
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	02/13/2020	02/20/2020	05/15/2020
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	02/13/2020	02/20/2020	05/15/2020
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	12/16/2019	12/19/2019	03/06/2020
State and tribal - equivalent CERCLIS						
HI	SHWS	Sites List	Department of Health	04/17/2019	05/21/2019	05/30/2019
State and tribal landfill / solid waste disposal						
HI	SWF/LF	Permitted Landfills in the State of Hawaii	Department of Health	02/09/2020	03/13/2020	05/29/2020
State and tribal leaking storage tank lists						
HI	LUST	Leaking Underground Storage Tank Database	Department of Health	02/25/2020	02/26/2020	05/01/2020
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/04/2019	12/04/2019	02/27/2020
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	10/01/2019	12/04/2019	02/10/2020
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	10/02/2019	12/04/2019	02/10/2020
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/01/2019	12/04/2019	02/10/2020
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	10/15/2019	12/17/2019	02/10/2020
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	10/10/2019	12/05/2019	02/10/2020
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	10/11/2019	12/04/2019	02/10/2020
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/03/2019	12/04/2019	02/14/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
State and tribal registered storage tank lists						
HI	UST	Underground Storage Tank Database	Department of Health	02/25/2020	02/26/2020	05/01/2020
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	10/11/2019	12/04/2019	02/10/2020
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/01/2019	12/04/2019	02/10/2020
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	10/10/2019	12/05/2019	02/10/2020
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	10/01/2019	12/04/2019	02/10/2020
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	10/02/2019	12/04/2019	02/10/2020
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	10/11/2019	12/04/2019	02/10/2020
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/03/2019	12/04/2019	02/14/2020
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/04/2019	12/04/2019	02/27/2020
US	FEMA UST	Underground Storage Tank Listing	FEMA	08/27/2019	08/28/2019	11/11/2019
State and tribal institutional control / engineering control registries						
HI	ENG CONTROLS	Engineering Control Sites	Department of Health	04/17/2019	05/21/2019	05/30/2019
HI	INST CONTROL	Sites with Institutional Controls	Department of Health	04/17/2019	05/21/2019	05/30/2019
State and tribal voluntary cleanup sites						
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
HI	VCP	Voluntary Response Program Sites	Department of Health	04/17/2019	05/21/2019	05/30/2019
State and tribal Brownfields sites						
HI	BROWNFIELDS	Brownfields Sites	Department of Health	04/17/2019	05/21/2019	05/30/2019
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	12/31/2019	01/17/2020	03/06/2020
US	ROD	Records Of Decision	EPA	04/27/2020	05/06/2020	05/28/2020
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	04/27/2020	05/06/2020	05/28/2020
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2018	12/04/2019	01/15/2020
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	04/27/2020	05/06/2020	05/28/2020
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	12/16/2019	12/19/2019	02/27/2020
US	Delisted NPL	National Priority List Deletions	EPA	04/27/2020	05/06/2020	05/28/2020
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	04/27/2020	05/06/2020	05/28/2020
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/23/2020	03/25/2020	05/21/2020
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	12/05/2019	12/06/2019	02/14/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	01/02/2020	01/28/2020	04/17/2020
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	12/02/2019	12/16/2019	03/06/2020
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	01/28/2020	02/19/2020	05/14/2020
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/30/2019	11/15/2019	01/28/2020
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	02/11/2020	02/25/2020	05/21/2020
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	03/31/2020	04/01/2020	05/21/2020
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	01/16/2018	02/28/2020	05/22/2020
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	01/30/2020	02/06/2020	02/14/2020
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2018	02/05/2020	04/24/2020
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	SSTS	Section 7 Tracking Systems	EPA	05/01/2019	10/23/2019	01/15/2020
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	10/09/2019	10/11/2019	12/20/2019
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	10/25/2019	10/25/2019	01/15/2020
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	02/03/2020	03/03/2020	05/28/2020
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	11/05/2019	11/20/2019	04/17/2020
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	03/05/2020	03/06/2020	05/29/2020
HI	AIRS	List of Permitted Facilities	Department of Health	03/20/2020	03/24/2020	06/08/2020
HI	CDL	Clandestine Drug Lab Listing	Department of Health	08/04/2010	09/10/2010	10/22/2010
HI	DRYCLEANERS	Permitted Drycleaner Facility Listing	Department of Health	03/20/2020	03/24/2020	06/08/2020
HI	Financial Assurance	Financial Assurance Information Listing	Department of Health	03/11/2020	03/12/2020	05/22/2020
HI	LEAD	Lead Inspection Listing	Department of Health	03/05/2020	03/06/2020	05/15/2020
HI	SPILLS	Release Notifications	Department of Health	11/18/2019	11/19/2019	01/21/2020
HI	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	03/10/2012	01/03/2013	02/11/2013
HI	UIC	Underground Injection Wells Listing	Department of Health	02/07/2013	02/12/2013	04/09/2013
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
HI	SWRCY	SWRCY	Department of Health	02/09/2020	03/13/2020	05/28/2020
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	01/05/2020	01/07/2020	03/06/2020
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/18/2020	02/19/2020	05/14/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
HISTORICAL USE RECORDS						
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
HI	RGA HWS	Recovered Government Archive State Hazardous Waste Facilitie	Department of Health		07/01/2013	01/08/2014
HI	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Health		07/01/2013	01/17/2014
HI	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	Department of Health		07/01/2013	01/03/2014

STREET AND ADDRESS INFORMATION

ASTM PRACTICE E 1527-13 USER/CLIENT QUESTIONNAIRE

Former NOAA NWS PTWS Ewa Beach HI Campus

91-270 Fort Weaver Road

Ewa Beach, Oahu, Hawaii

TMK [1] 9-1-001: Parcel 001 (portion)

To be returned to EnviroServices & Training Center with the authorized proposal

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the Brownfields Amendments), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete. The user may consult with an Environmental Attorney if they desire further information regarding these issues.

REQUIRED INFORMATION

1. Name/Title/Phone Number of Person Completing Form:

   Darrell Ing, Real Estate Development Specialist
   (808) 620-9276

2. Business Name and Type of Operation:

   Department of Hawaiian Home Lands
   State Government

3. Property Name and Address (include known current and former address[es] and parcel no.):

   Former NOAA NWS PTWS Ewa Beach HI Campus
   91-270 Fort Weaver Road
   Ewa Beach, Oahu, Hawaii
   Portion of TMK (1) 9-1-001: 001

4. Property Acreage:

   Approximately 80 acres

5. Current Property Type: (Designate property type and list current tenants)

   a. Residential: _____

   b. Commercial: _____

   c. Industrial: _____

   d. Other: _____

   NOAA National Weather Service: currently unused offices, housing, and storage.

6. Type of Property Transaction with respect to User:

   Fee simple conveyance from U.S. GSA.

7. Reason for Conducting Phase I ESA:

   Potential acquisition due diligence.

8. Contact Information (Name, Phone Number)

   a. Subject Property Manager:
   Wesley Lum, NOAA Facilities Engineering Branch Chief 348-5861

   b. Subject Property Occupant:
   (none)

   c. Subject Property Owner:
   Tamas Doszkocs, GSA, (619) 557-5029

9. Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?

   a. No: X

   b. Yes (If "Yes" provide further information): _____

10. Are you aware of any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

    a. No: X

    b. Yes (If "Yes" provide further information): _____

11. As the user of this environmental site assessment (ESA), do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes by this business?

    a. No: X

    b. Yes (If "Yes" provide further information): _____

12. Does the purchase price being paid for this property reasonably reflect the fair market value of the property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

    a. Yes: X

    b. No (If "No" provide further information): _____

13. Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as the user,

    a. Do you know the past uses of the property? If so, please describe.
    US NOAA Honolulu Magnetic Observatory

    b. Do you know of specific chemicals that are present or once were present at the property? If so, please describe.
    No.

    c. Do you know of spills or other chemical releases that have taken place at the property? If so, please describe.
    No.

    d. Do you know of any environmental cleanups that have taken place at the property? If so, please describe.
    No.

14. As the user of the ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence of likely presence of contamination at the property?

    No.

15. Are you aware of any of the following:

    a. Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?

        i. No: X

        ii. Yes (If "Yes" provide further information): _____

    b. Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?

        i. No: X

        ii. Yes (If "Yes" provide further information): _____

c. Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?

i. No: X

ii. Yes (If "Yes" provide further information): ____

16. Any additional concerns regarding the property or any adjoining properties?

No.

SIGNATURE

Print/Type Name: Darrell Ing

Signature: _____ Date: 6/3/20

APPENDIX IV
REGULATORY RECORDS DOCUMENTATION *(EDR Radius Map Report)*

DHHL - Ewa Beach Surplus Land
91-270 Fort Weaver Road
Ewa Beach, HI 96706

Inquiry Number: 6086882.2s
June 09, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

91-270 FORT WEAVER ROAD
EWA BEACH, HI 96706

COORDINATES

Latitude (North):	21.3144960 - 21° 18' 52.18"
Longitude (West):	157.9984460 - 157° 59' 54.40"
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	603876.2
UTM Y (Meters):	2357145.8
Elevation:	3 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5941087 PEARL HARBOR, HI
Version Date:	2013

MAPPED SITES SUMMARY

Target Property Address:
91-270 FORT WEAVER ROAD
EWA BEACH, HI 96706

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	PEARL HARBOR NAVAL S		DOD	Same	1589, 0.301, ENE
Reg	PEARL HARBOR NAVAL C	US NAVAL COMMAND	NPL, SEMS, US ENG CONTROLS, US INST CONTROLS, ROD	Same	633, 0.120, East
A1	EWA BEACH PROFESSION	91-102 FORT WEAVER R	RGA LUST	Higher	1 ft.
A2	EWA BEACH PROFESSION	91-102 FORT WEAVER R	RGA LUST	Higher	1 ft.
3	JAMES CAMPBELL HIGH	91-980 NORTH ROAD	FINDS, ECHO	Higher	1 ft.
A4	EWA BEACH PROFESSION	91-102 FORT WEAVER R	LUST, UST	Higher	1 ft.
5	EWA BEACH GOLF CLUB	91-1153 NORTH RD	UST, Financial Assurance	Higher	473, 0.090, North
6	GENTRY HOMES LTD ARE	91-500 FT WEAVER RD	LUST, UST	Higher	577, 0.109, WSW
7	PUULOA-EX NAS BAR PO		FUDS	Higher	1333, 0.252, NNW
8	C&CH EWA BEACH FIRE	91-832 POHAKUPUNA RD	LUST, UST	Higher	2223, 0.421, WSW
9	PUULOA RIFLE RANGE	BLDG 48 TANK 19	LUST, UST, Financial Assurance	Higher	2535, 0.480, ENE
10	EWA BEACH CHEVRON	91-909 FORT WEAVER R	SHWS, SPILLS	Higher	3362, 0.637, West
11	FORT WEAVER MILITARY		FUDS	Higher	4974, 0.942, East

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

Proposed NPL ..... Proposed National Priority List Sites
NPL LIENS ..... Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ..... National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ..... Federal Facility Site Information listing

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ..... Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ..... Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ..... RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ..... RCRA - Large Quantity Generators
RCRA-SQG ..... RCRA - Small Quantity Generators
RCRA-VSQG ..... RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ..... Land Use Control Information System

Federal ERNS list

ERNS ..... Emergency Response Notification System

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ..... Permitted Landfills in the State of Hawaii

State and tribal leaking storage tank lists

INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

ENG CONTROLS ..... Engineering Control Sites
INST CONTROL ..... Sites with Institutional Controls

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Response Program Sites

State and tribal Brownfields sites

BROWNFIELDS ..... Brownfields Sites

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY ..... SWRCY
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
CDL ..... Clandestine Drug Lab Listing
US CDL ..... National Clandestine Laboratory Register

Local Land Records

LIENS 2 ..... CERCLA Lien Information

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System

SPILLS ..... Release Notifications
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program
UMTRA ..... Uranium Mill Tailings Sites
LEAD SMELTERS ..... Lead Smelter Sites
US AIRS ..... Aerometric Information Retrieval System Facility Subsystem
US MINES ..... Mines Master Index File
ABANDONED MINES ..... Abandoned Mines
DOCKET HWC ..... Hazardous Waste Compliance Docket Listing
UXO ..... Unexploded Ordnance Sites
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
AIRS ..... List of Permitted Facilities
DRYCLEANERS ..... Permitted Drycleaner Facility Listing
Financial Assurance ..... Financial Assurance Information Listing
LEAD ..... LEAD
UIC ..... Underground Injection Wells Listing
MINES MRDS ..... Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS ..... Recovered Government Archive State Hazardous Waste Facilities List

RGA LF..... Recovered Government Archive Solid Waste Facilities List

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 04/27/2020 has revealed that there is 1 NPL site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL C Cerclis ID:: 904481 EPA Id: HI4170090076	***US NAVAL COMMAND***	***E 0 - 1/8 (0.120 mi.)***	***0***	***8***

Federal CERCLIS list

SEMS: SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the SEMS list, as provided by EDR, and dated 04/27/2020 has revealed that there is 1 SEMS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL C Site ID: 0904481 EPA Id: HI4170090076	***US NAVAL COMMAND***	***E 0 - 1/8 (0.120 mi.)***	***0***	***8***

Federal institutional controls / engineering controls registries

US ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the US ENG CONTROLS list, as provided by EDR, and dated 02/13/2020 has revealed that there is 1 US ENG CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL C	***US NAVAL COMMAND***	***E 0 - 1/8 (0.120 mi.)***	***0***	***8***
EPA ID:: HI4170090076				
EPA ID:: HI4170090076				

US INST CONTROLS: A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

A review of the US INST CONTROLS list, as provided by EDR, and dated 02/13/2020 has revealed that there is 1 US INST CONTROLS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL C	***US NAVAL COMMAND***	***E 0 - 1/8 (0.120 mi.)***	***0***	***8***
EPA ID:: HI4170090076				

State- and tribal - equivalent CERCLIS

SHWS: The State Hazardous Waste Sites records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. The data come from the Department of Health.

A review of the SHWS list, as provided by EDR, and dated 04/17/2019 has revealed that there is 1 SHWS site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EWA BEACH CHEVRON	***91-909 FORT WEAVER R***	***W 1/2 - 1 (0.637 mi.)***	***10***	***56***

State and tribal leaking storage tank lists

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the Department of Health's Active Leaking Underground Storage Tank Log Listing.

A review of the LUST list, as provided by EDR, and dated 02/25/2020 has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EWA BEACH PROFESSION	***91-102 FORT WEAVER R***	***0 - 1/8 (0.000 mi.)***	***A4***	***51***

Release ID: 940079
Facility Id: 9-202893
Facility Status: Site Cleanup Completed (NFA)

GENTRY HOMES LTD ARE	***91-500 FT WEAVER RD***	***WSW 0 - 1/8 (0.109 mi.)***	***6***	***53***
Release ID: 940169 Facility Id: 9-202975 Facility Status: Site Cleanup Completed (NFA)				
C&CH EWA BEACH FIRE	***91-832 POHAKUPUNA RD***	***WSW 1/4 - 1/2 (0.421 mi.)***	***8***	***54***
Release ID: 940178 Facility Id: 9-200071 Facility Status: Site Cleanup Completed (NFA)				
PUULOA RIFLE RANGE	***BLDG 48 TANK 19***	***ENE 1/4 - 1/2 (0.480 mi.)***	***9***	***55***
Release ID: 920061 Facility Id: 9-202092 Facility Status: Site Cleanup Completed (NFA)				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the Department of Health's Listing of Underground Storage Tanks.

A review of the UST list, as provided by EDR, and dated 02/25/2020 has revealed that there are 3 UST sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EWA BEACH PROFESSION	***91-102 FORT WEAVER R***	***0 - 1/8 (0.000 mi.)***	***A4***	***51***
Tank Status: Permanently Out of Use Facility Id: 9-202893 Date Closed: 01/22/1994				
EWA BEACH GOLF CLUB	***91-1153 NORTH RD***	***N 0 - 1/8 (0.090 mi.)***	***5***	***52***
Tank Status: Currently in Use Facility Id: 9-102514				
GENTRY HOMES LTD ARE	***91-500 FT WEAVER RD***	***WSW 0 - 1/8 (0.109 mi.)***	***6***	***53***
Tank Status: Permanently Out of Use Facility Id: 9-202975 Date Closed: 07/22/1994				

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

FUDS: The Listing includes locations of Formerly Used Defense Sites Properties where the US Army Corps Of Engineers is actively working or will take necessary cleanup actions.

A review of the FUDS list, as provided by EDR, and dated 01/28/2020 has revealed that there are 2

FUDS sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PUULOA-EX NAS BAR PO		NNW 1/4 - 1/2 (0.252 mi.)	7	54
FORT WEAVER MILITARY		E 1/2 - 1 (0.942 mi.)	11	58

DOD: Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

A review of the DOD list, as provided by EDR, and dated 12/31/2005 has revealed that there is 1 DOD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL S		ENE 1/4 - 1/2 (0.301 mi.)	0	8

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 04/27/2020 has revealed that there is 1 ROD site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PEARL HARBOR NAVAL C EPA ID:: HI4170090076	***US NAVAL COMMAND***	***E 0 - 1/8 (0.120 mi.)***	***0***	***8***

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 02/03/2020 has revealed that there is 1 FINDS site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JAMES CAMPBELL HIGH Registry ID:: 110070107960	***91-980 NORTH ROAD***	***0 - 1/8 (0.000 mi.)***	***3***	***51***

ECHO: ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

A review of the ECHO list, as provided by EDR, and dated 01/05/2020 has revealed that there is 1 ECHO site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JAMES CAMPBELL HIGH Registry ID: 110070107960	***91-980 NORTH ROAD***	***0 - 1/8 (0.000 mi.)***	***3***	***51***

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RGA LUST: The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

A review of the RGA LUST list, as provided by EDR, has revealed that there are 2 RGA LUST sites within approximately 0.001 miles of the target property.

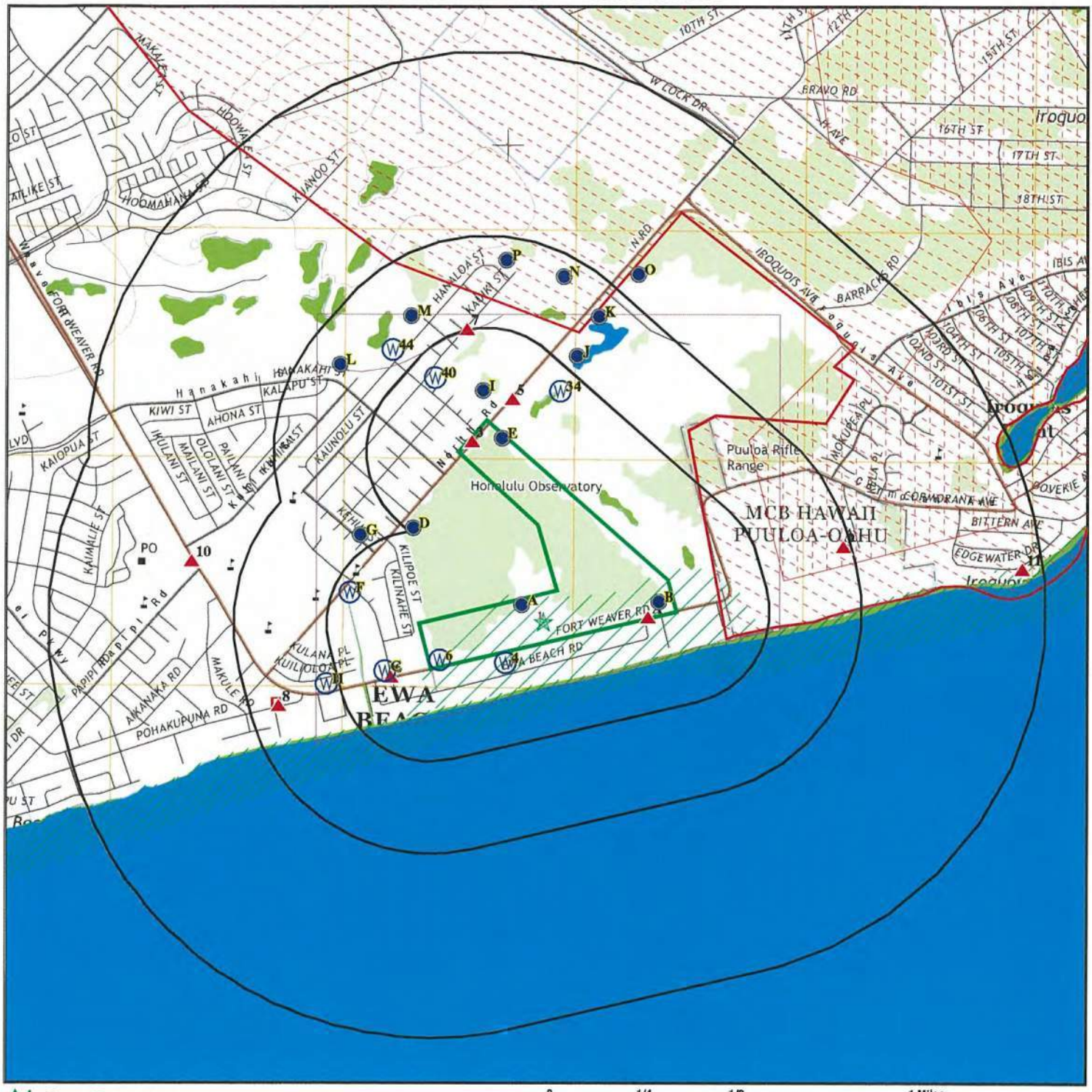
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EWA BEACH PROFESSION Facility ID: 9-202893	91-102 FORT WEAVER R	0 - 1/8 (0.000 mi.)	A1	50
EWA BEACH PROFESSION Facility ID: 9-202893	91-102 FORT WEAVER R	0 - 1/8 (0.000 mi.)	A2	50

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 2 records.

Site Name	Database(s)
BHP GAS EXPRESS STATION 43 ZIPPY'S	SHWS
JACKSON CONSTRUCTION LANDFILL	SHWS

OVERVIEW MAP - 6086882.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT:	Sharla Nakashima
		INQUIRY #:	6086882.2s
LAT/LONG:	21.314496 / 157.998446	DATE:	June 09, 2020 2:00 pm

DETAIL MAP - 6086882.2S

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT:	Sharla Nakashima
LAT/LONG:	21.314496 / 157.998446	INQUIRY #:	6086882.2s
		DATE:	June 09, 2020 2:00 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		1	0	0	0	NR	1
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		1	0	0	NR	NR	1
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		1	0	0	NR	NR	1
US INST CONTROLS	0.500		1	0	0	NR	NR	1
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent CERCLIS								
SHWS	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		2	0	2	NR	NR	4
INDIAN LUST	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
UST	0.250		3	0	NR	NR	NR	3
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
SWRCY	0.500		0	0	0	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	0.001		0	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
SPILLS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	1	1	NR	2
DOD	1.000		0	0	1	0	NR	1
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		1	0	0	0	NR	1
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		1	NR	NR	NR	NR	1
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		1	NR	NR	NR	NR	1
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		1	NR	NR	NR	NR	1
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
AIRS	0.001		0	NR	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
LEAD	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA HWS	0.001		0	NR	NR	NR	NR	0
RGA LF	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LUST	0.001		2	NR	NR	NR	NR	2
- Totals --		0	15	0	4	2	0	21

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

DOD **PEARL HARBOR NAVAL STATION** **DOD** **CUSA147752**
Region **N/A**
ENE **PEARL HARBOR NAVAL STATIO (County), HI**
1/4-1/2
1589 ft.

DOD:
- Feature 1: Navy DOD
- Feature 2: Not reported
- Feature 3: Not reported
- URL: Not reported
- Name 1: Pearl Harbor Naval Station
- Name 2: Not reported
- Name 3: Not reported
- State: HI
- DOD Site: Yes
- Tile name: HIHONOLULU

NPL **PEARL HARBOR NAVAL COMPLEX** **NPL** **1000707626**
Region **US NAVAL COMMAND** **SEMS** **HI4170090076**
East **PEARL HARBOR, HI 96860** **US ENG CONTROLS**
< 1/8 **US INST CONTROLS**
633 ft. **ROD**
PRP

NPL:
- Name: PEARL HARBOR NAVAL COMPLEX
- Address: US NAVAL COMMAND
- City,State,Zip: PEARL HARBOR, HI 96860
- EPA ID: HI4170090076
- EPA Region: 9
- Federal: Y
- Final Date: 1992-10-14 00:00:00
- Site ID: 904481
- Latitude: 21.388888999999999
- Site Score: 70.819999999999993
- Longitude: -157.98333299999999

NPL:
- EPA ID: HI4170090076
- NPL Status: Currently on the Final NPL
- Category Description: Surface Water Adjacent To Site-Other-Unknown
- Category Value: WETLAND

NPL:
- EPA ID: HI4170090076
- Site ID: 0904481
- Site Status: F
- Federal Site: Y
- EPA Region: 09
- Date Proposed: 07/29/91
- Date Deleted: Not reported
- Date Finalized: 10/14/92

NPL:
- EPA ID: HI4170090076
- NPL Status: Currently on the Final NPL
- Substance ID: U220
- Substance: TOLUENE

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

CAS #: 108-88-3
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U228
Substance: TRICHLOROETHYLENE (TCE)
CAS #: 79-01-6
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: Not reported
Substance: Not reported
CAS #: Not reported
Pathway: Not reported
Scoring: Not reported

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: A023
Substance: DDE
CAS #: 72-55-9
Pathway: SURFACE WATER PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: A046
Substance: POLYCHLORINATED BIPHENYLS
CAS #: 1336-36-3
Pathway: SURFACE WATER PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: A059
Substance: BROMODICHLOROMETHANE
CAS #: 75-27-4
Pathway: AIR PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: A059
Substance: BROMODICHLOROMETHANE
CAS #: 75-27-4
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 4

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C049
Substance: ETHYLBENZENE
CAS #: 100-41-4

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Pathway: SOIL EXPOSURE PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C315
Substance: CHROMIC ACID
CAS #: 7738-94-5
Pathway: NO PATHWAY INDICATED
Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C320
Substance: CHROMIUM, HEXAVALENT
CAS #: 18540-29-9
Pathway: NO PATHWAY INDICATED
Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C460
Substance: MERCURY
CAS #: 7439-97-6
Pathway: SURFACE WATER PATHWAY
Scoring: 4

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C497
Substance: STODDARD SOLVENT
CAS #: 8052-41-3
Pathway: NO PATHWAY INDICATED
Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C517
Substance: XYLENE, M-
CAS #: 108-38-3
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C525
Substance: BROMACIL
CAS #: 314-40-9
Pathway: NO PATHWAY INDICATED
Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: C573
Substance: DIAZINON
CAS #: 333-41-5
Pathway: NO PATHWAY INDICATED

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: D004
Substance: ARSENIC
CAS #: 7440-38-2
Pathway: GROUND WATER PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: P037
Substance: DIELDRIN
CAS #: 60-57-1
Pathway: NO PATHWAY INDICATED
Scoring: 1

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U028
Substance: BIS(2-ETHYLHEXYL)PHTHALATE
CAS #: 117-81-7
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U036
Substance: CHLORDANE
CAS #: 57-74-9
Pathway: SURFACE WATER PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U037
Substance: CHLOROBENZENE
CAS #: 108-90-7
Pathway: AIR PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U037
Substance: CHLOROBENZENE
CAS #: 108-90-7
Pathway: SURFACE WATER PATHWAY
Scoring: 2

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U061
Substance: DDT
CAS #: 50-29-3
Pathway: SURFACE WATER PATHWAY
Scoring: 3

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U079
Substance: TRANS-DICHLOROETHYLENE, 1,2-
CAS #: 156-60-5
Pathway: AIR PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U079
Substance: TRANS-DICHLOROETHYLENE, 1,2-
CAS #: 156-60-5
Pathway: GROUND WATER PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U079
Substance: TRANS-DICHLOROETHYLENE, 1,2-
CAS #: 156-60-5
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 4

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: AIR PATHWAY
Scoring: 3

EPA ID: HI4170090076
NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: SOIL EXPOSURE PATHWAY
Scoring: 4

NPL:
EPA ID: HI4170090076
Summary: Conditions at Proposal July 29, 1991): The Pearl Harbor Naval Complex occupies at least 6,300 acres in Pearl Harbor on the Island of Oahu, Honolulu County, Hawaii. Land around the complex supports agriculture, aquaculture, industry, urban,

EPA ID: HI4170090076
Summary: In 1988, the Navy detected bis 2-ethylhexyl)phthalate in sediment samples taken from a National Wildlife Refuge that borders an abandoned Navy landfill. The refuge contains habitat for four Federally endangered species, as well as wetlands. Pe

EPA ID: HI4170090076
Summary: arl Harbor and nearby portions of the Pacific Ocean contain recreational and commercial fisheries, habitat for endangered species, wetlands, and water-contact recreation areas. The

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

volatile organic compounds in on-site soil also create a

EPA ID: HI4170090076
Summary: potential for gases to be released to the atmosphere. Status October 1992): EPA and the Navy are planning to negotiate a Federal Facilities Agreement under CERCLA Section 120 to cover future activities at the site. The description

EPA ID: HI4170090076
Summary: of the site release) is based on information available at the time the site was scored. The description may change as additional information is gathered on the sources and extent of contamination. See FR 5600, February 11, 1991 or subsequent

EPA ID: HI4170090076
Summary: FR notices.)

EPA ID: HI4170090076
Summary: and commercial uses. The complex consists of these major facilities: Naval Shipyard, Naval Supply Center, Naval Station, Submarine Base, Public Works Center, Inactive Ships, and Navy Maga ine Lualualei Westlock Branch and Waipio Peninsula).

EPA ID: HI4170090076
Summary: The Pearl Harbor Naval Complex began operation in 1901 when the Navy received an appropriation to acquire land for a naval station. After the attack by the Japanese on December 7, 1941, industrial activity at the complex skyrocketed, reaching 2

EPA ID: HI4170090076
Summary: 4,000 civilians by mid-1943. After World War II, activity declined and has fluctuated with the Navy s requirements. In 1983, the Navy identified 30 potential ha ardous waste sources within the six facilities. Subsequently, an additional

EPA ID: HI4170090076
Summary: source was identified. The 31 sources include unlined landfills, pesticide disposal pits, chromic acid disposal areas, PCB disposal areas, mercury-contaminated harbor sediments, leaking underground solvent tanks, waste oil facilities, and nume

EPA ID: HI4170090076
Summary: rous other types of sources resulting from industrial activities at the complex. Six of the sources were initially evaluated, based primarily on toxicity of contaminants present, availability of waste quantity information, sampling results, aff

EPA ID: HI4170090076
Summary: ected populations, and a documented release of a ha ardous substance. Many investigations have found ha ardous substances -- including mercury, chromium, PCBs, pesticides, trichloroethene, trans-1,2- dichloroethene, and other volatile orga

EPA ID: HI4170090076
Summary: nic compounds -- in soil in the six areas, thus exposing workers on the site less than 100) to potential contamination. Many of these chemicals have also been found at the remaining 25 areas identified

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

to date.) Tetrachloroethene was fo

EPA ID: HI4170090076
Summary: und15.2 feet below ground surface in one area. Soils beneath the site are permeable, facilitating movement of contaminants into ground water. Approximately 110,700 people obtain drinking water from wells within 2 miles of the six sources.

NPL:
EPA ID: HI4170090076
NPL Status: Final
Proposed Date: 07/29/1991
Final Date: 10/14/1992
Deleted Date: Not reported

NPL:
EPA ID: HI4170090076
NPL Name: PEARL HARBOR NAVAL COMPLEX

SEMS:
Site ID: 0904481
EPA ID: HI4170090076
Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
Address 2: Not reported
City,State,Zip: PEARL HARBOR, HI 96860
Cong District: 01
FIPS Code: 15003
Latitude: 21.388889
Longitude: -157.983333
FF: Y
NPL: Currently on the Final NPL
Non NPL Status: Not reported

SEMS Detail:
Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 00
Action Code: AR
Action Name: ADMIN REC
SEQ: 1
Start Date: 2000-10-24 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Perf

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

FF:	Y
OU:	00
Action Code:	NP
Action Name:	PROPOSED
SEQ:	1
Start Date:	1991-07-29 04:00:00
Finish Date:	7/29/1991 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1980-10-01 04:00:00
Finish Date:	10/1/1980 4:00:00 AM
Qual:	Not reported
Current Action Lead:	EPA Perf
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	09
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	2
Start Date:	1993-09-30 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LV
Action Name:	FF RV
SEQ:	4
Start Date:	1993-04-01 05:00:00
Finish Date:	4/1/1994 5:00:00 AM
Qual:	S
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	07
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	9
Start Date:	1993-09-30 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	LV
Action Name:	FF RV
SEQ:	5
Start Date:	2000-01-03 05:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	LZ
Action Name:	FF CR
SEQ:	1
Start Date:	2005-05-03 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	14
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	14
Start Date:	1999-05-15 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	16
Start Date:	1993-09-30 04:00:00
Finish Date:	7/12/2012 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	16
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	17
Start Date:	1993-09-30 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	12
Start Date:	1999-06-10 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	08
Action Code:	RO
Action Name:	ROD
SEQ:	2
Start Date:	2006-09-28 04:00:00
Finish Date:	9/28/2006 4:00:00 AM

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	10
Action Code:	RO
Action Name:	ROD
SEQ:	3
Start Date:	2006-09-28 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	06
Action Code:	RO
Action Name:	ROD
SEQ:	4
Start Date:	2010-07-02 04:00:00
Finish Date:	7/2/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	RO
Action Name:	ROD
SEQ:	5
Start Date:	2009-09-29 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	13
Action Code:	RO
Action Name:	ROD

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

SEQ: 6
Start Date: 2018-09-26 04:00:00
Finish Date: 9/26/2018 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 12
Action Code: LV
Action Name: FF RV
SEQ: 7
Start Date: 2005-12-14 05:00:00
Finish Date: 7/19/2006 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 12
Action Code: LV
Action Name: FF RV
SEQ: 8
Start Date: 2006-06-02 04:00:00
Finish Date: 8/22/2006 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 03
Action Code: RO
Action Name: ROD
SEQ: 10
Start Date: 2010-09-27 04:00:00
Finish Date: 9/27/2010 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	12
Start Date:	2007-09-28 04:00:00
Finish Date:	9/28/2007 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	RO
Action Name:	ROD
SEQ:	13
Start Date:	2010-09-14 04:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	05
Action Code:	RO
Action Name:	ROD
SEQ:	15
Start Date:	2011-09-23 04:00:00
Finish Date:	9/23/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	RO
Action Name:	ROD
SEQ:	17
Start Date:	2009-09-29 04:00:00
Finish Date:	9/29/2009 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	14
Action Code:	RO
Action Name:	ROD
SEQ:	18
Start Date:	2010-09-27 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	RO
Action Name:	ROD
SEQ:	21
Start Date:	2012-07-12 04:00:00
Finish Date:	7/12/2012 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	26
Action Code:	EE
Action Name:	EE/CA
SEQ:	2
Start Date:	2010-03-18 04:00:00
Finish Date:	3/18/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	26
Action Code:	LV
Action Name:	FF RV
SEQ:	10
Start Date:	2010-05-07 04:00:00
Finish Date:	5/27/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LX
Action Name:	FF RD
SEQ:	1
Start Date:	2010-09-27 04:00:00
Finish Date:	10/25/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LY
Action Name:	FF RA
SEQ:	1
Start Date:	2010-11-22 05:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LY
Action Name:	FF RA
SEQ:	2
Start Date:	2009-09-29 04:00:00
Finish Date:	1/20/2011 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	16
Action Code:	RO
Action Name:	ROD
SEQ:	14
Start Date:	2010-09-27 04:00:00
Finish Date:	9/27/2010 4:00:00 AM

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	20
Start Date:	2009-03-03 05:00:00
Finish Date:	9/15/2014 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	LY
Action Name:	FF RA
SEQ:	4
Start Date:	2011-06-09 04:00:00
Finish Date:	7/11/2012 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	28
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	23
Start Date:	2011-03-29 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	27
Action Code:	LW
Action Name:	FF RI/FS

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

SEQ: 24
Start Date: 2011-07-21 04:00:00
Finish Date: 8/22/2016 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 06
Action Code: LY
Action Name: FF RA
SEQ: 3
Start Date: 2011-08-10 04:00:00
Finish Date: 8/27/2012 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 29
Action Code: LW
Action Name: FF RI/FS
SEQ: 25
Start Date: 2011-08-17 04:00:00
Finish Date: 9/14/2016 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 16
Action Code: LV
Action Name: FF RV
SEQ: 9
Start Date: 2007-08-24 04:00:00
Finish Date: 9/27/2007 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

OU:	22
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	21
Start Date:	2009-03-13 04:00:00
Finish Date:	9/23/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	RO
Action Name:	ROD
SEQ:	24
Start Date:	2014-09-15 04:00:00
Finish Date:	9/15/2014 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LV
Action Name:	FF RV
SEQ:	3
Start Date:	1995-02-23 05:00:00
Finish Date:	4/1/1997 5:00:00 AM
Qual:	P
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	HR
Action Name:	HAZRANK
SEQ:	1
Start Date:	1991-07-25 04:00:00
Finish Date:	7/25/1991 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	03
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	4
Start Date:	1993-09-30 04:00:00
Finish Date:	9/27/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	08
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	10
Start Date:	1993-09-30 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	06
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	8
Start Date:	1993-09-30 04:00:00
Finish Date:	7/2/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	10
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	1
Start Date:	1994-08-23 04:00:00
Finish Date:	9/28/2006 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 00
Action Code: PA
Action Name: PA
SEQ: 1
Start Date: 1986-04-01 05:00:00
Finish Date: 4/1/1986 5:00:00 AM
Qual: L
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 06
Action Code: LV
Action Name: FF RV
SEQ: 1
Start Date: 1995-07-17 04:00:00
Finish Date: 8/23/1996 4:00:00 AM
Qual: P
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 00
Action Code: NF
Action Name: NPL FINL
SEQ: 1
Start Date: 1992-10-14 04:00:00
Finish Date: 10/14/1992 4:00:00 AM
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 17
Action Code: LX
Action Name: FF RD
SEQ: 2
Start Date: 2012-07-12 04:00:00
Finish Date: 12/13/2014 5:00:00 AM

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	17
Action Code:	LY
Action Name:	FF RA
SEQ:	5
Start Date:	2014-12-13 05:00:00
Finish Date:	3/23/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	30
Action Code:	RO
Action Name:	ROD
SEQ:	25
Start Date:	2013-03-29 04:00:00
Finish Date:	3/29/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	22
Action Code:	RO
Action Name:	ROD
SEQ:	26
Start Date:	2013-09-23 04:00:00
Finish Date:	9/23/2013 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	27
Action Code:	RO
Action Name:	ROD

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

SEQ:	27
Start Date:	2016-08-22 04:00:00
Finish Date:	8/22/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	29
Action Code:	RO
Action Name:	ROD
SEQ:	29
Start Date:	2016-09-14 04:00:00
Finish Date:	9/14/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	11
Start Date:	1995-08-01 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	13
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	13
Start Date:	1995-09-19 04:00:00
Finish Date:	9/26/2018 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

OU:	05
Action Code:	LY
Action Name:	FF RA
SEQ:	7
Start Date:	2011-09-23 04:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LY
Action Name:	FF RA
SEQ:	6
Start Date:	2014-09-14 04:00:00
Finish Date:	10/9/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	24
Action Code:	LX
Action Name:	FF RD
SEQ:	3
Start Date:	2014-09-15 04:00:00
Finish Date:	6/30/2015 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	12
Action Code:	LY
Action Name:	FF RA
SEQ:	8
Start Date:	2009-09-29 04:00:00
Finish Date:	8/23/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	35
Action Code:	NI
Action Name:	FF FS
SEQ:	1
Start Date:	2017-03-10 05:00:00
Finish Date:	3/10/2017 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	35
Action Code:	RO
Action Name:	ROD
SEQ:	31
Start Date:	2017-03-10 05:00:00
Finish Date:	3/10/2017 5:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	11
Action Code:	LV
Action Name:	FF RV
SEQ:	2
Start Date:	1995-03-13 05:00:00
Finish Date:	10/30/1996 5:00:00 AM
Qual:	P
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	01
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	5
Start Date:	1993-09-30 04:00:00
Finish Date:	9/14/2010 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	02
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	3
Start Date:	1993-09-30 04:00:00
Finish Date:	4/5/2016 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	00
Action Code:	SI
Action Name:	SI
SEQ:	1
Start Date:	1989-08-21 04:00:00
Finish Date:	8/21/1989 4:00:00 AM
Qual:	H
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	05
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	7
Start Date:	1993-09-30 04:00:00
Finish Date:	9/23/2011 4:00:00 AM
Qual:	Not reported
Current Action Lead:	Fed Fac

Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	15
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	15
Start Date:	1993-09-30 04:00:00
Finish Date:	Not reported

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	20
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	18
Start Date:	2006-06-26 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	21
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	19
Start Date:	2008-04-28 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	09
Action Code:	LW
Action Name:	FF RI/FS
SEQ:	22
Start Date:	2009-05-29 04:00:00
Finish Date:	Not reported
Qual:	Not reported
Current Action Lead:	Fed Fac
Region:	09
Site ID:	0904481
EPA ID:	HI4170090076
Site Name:	PEARL HARBOR NAVAL COMPLEX
NPL:	F
FF:	Y
OU:	31
Action Code:	BD
Action Name:	PRP RI/FS

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

SEQ: 1
Start Date: 2016-05-29 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: Fed Fac

Region: 09
Site ID: 0904481
EPA ID: HI4170090076
Site Name: PEARL HARBOR NAVAL COMPLEX
NPL: F
FF: Y
OU: 25
Action Code: EE
Action Name: EE/CA
SEQ: 1
Start Date: 2009-09-28 04:00:00
Finish Date: Not reported
Qual: Not reported
Current Action Lead: EPA Ovrsght

SIte:
Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
Address 2: Not reported
City,State,Zip: PEARL HARBOR, HI 96860
Event Code: Not reported
Action Taken Date: 03/10/2017
EPA ID: HI4170090076
Site ID: 0904481
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action ID: 31
Operable Unit: 35
Action Completion Date: 05/19/2017
Contaminated Media: Groundwater
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Media:
EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 1
Action Completion Date: 03/17/2017
Operable Unit: 03
Action Name: FF ESD
Action Taken Date: 02/11/2016
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Action ID:	10
Action Completion Date:	09/30/2010
Operable Unit:	03
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/27/2010
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

EPA ID:	HI4170090076
Contaminated Media:	Soil Gas
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	26
Action Completion Date:	09/30/2013
Operable Unit:	22
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2013
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

EPA ID:	HI4170090076
Contaminated Media:	Surface Water
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	2
Action Completion Date:	09/30/2006
Operable Unit:	08
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	3
Action Completion Date:	09/30/2006
Operable Unit:	10
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	5
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Liquid Waste
Site ID:	0904481
Action ID:	17
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	21
Action Completion Date:	06/30/2013
Operable Unit:	17
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	07/12/2012
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 29
Action Completion Date: 12/16/2016
Operable Unit: 29
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 09/14/2016
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 4
Action Completion Date: 09/30/2010
Operable Unit: 06
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 07/02/2010
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 3
Action Completion Date: 09/30/2006
Operable Unit: 10
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 09/28/2006
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 17
Action Completion Date: 09/30/2009
Operable Unit: 12
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 09/29/2009
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 14
Action Completion Date: 09/30/2010

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Operable Unit:	16
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	09/27/2010
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	27
Action Completion Date:	11/15/2016
Operable Unit:	27
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	08/22/2016
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Debris
Site ID:	0904481
Action ID:	12
Action Completion Date:	09/30/2007
Operable Unit:	01
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2007
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	2
Action Completion Date:	09/30/2006
Operable Unit:	08
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/28/2006
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not reported
Contact Name:	Not reported

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	14
Action Completion Date:	09/30/2010
Operable Unit:	16
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	09/27/2010
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	17
Action Completion Date:	09/30/2009
Operable Unit:	12
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/29/2009
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Site ID:	0904481
Action ID:	10
Action Completion Date:	09/30/2010
Operable Unit:	03
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/27/2010
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	27
Action Completion Date:	11/15/2016
Operable Unit:	27
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	08/22/2016
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	25
Action Completion Date:	04/30/2013
Operable Unit:	30
Action Name:	GOVT Decision Document (ROD)
Action Taken Date:	03/29/2013
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Debris
Site ID:	0904481
Action ID:	24
Action Completion Date:	09/15/2014
Operable Unit:	24
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/15/2014
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	24
Action Completion Date:	09/15/2014
Operable Unit:	24
Action Name:	FF ROD (RCRA Statement of Basis/RTC)

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Action Taken Date:	09/15/2014
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Groundwater
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	15
Action Completion Date:	09/30/2011
Operable Unit:	05
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	09/23/2011
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Soil
Site ID:	0904481
Action ID:	4
Action Completion Date:	09/30/2010
Operable Unit:	06
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	07/02/2010
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
EPA ID:	HI4170090076
Contaminated Media:	Solid Waste
Site ID:	0904481
Action ID:	31
Action Completion Date:	05/19/2017
Operable Unit:	35
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date:	03/10/2017
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 12
Action Completion Date: 09/30/2007
Operable Unit: 01
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 09/28/2007
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

EPA ID: HI4170090076
Contaminated Media: Soil
Site ID: 0904481
Action ID: 5
Action Completion Date: 09/30/2009
Operable Unit: 12
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action Taken Date: 09/29/2009
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

US INST CONTROLS:
Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
Address 2: Not reported
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
Site ID: 0904481
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action ID: 18
Operable Unit: 14
Action Completion Date: 09/30/2010
Actual Date: 09/27/2010
Contaminated Media: Soil
Event Code: Not reported
Contact Name: Not reported
Contact Telephone: Not reported
Event: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
Address 2: Not reported
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
Site ID: 0904481
Action Name: FF ROD (RCRA Statement of Basis/RTC)
Action ID: 24
Operable Unit: 24
Action Completion Date: 09/15/2014
Actual Date: 09/15/2014
Contaminated Media: Soil

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	24
Operable Unit:	24
Action Completion Date:	09/15/2014
Actual Date:	09/15/2014
Contaminated Media:	Debris
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	5
Operable Unit:	12
Action Completion Date:	09/30/2009
Actual Date:	09/29/2009
Contaminated Media:	Soil
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	4
Operable Unit:	06
Action Completion Date:	09/30/2010
Actual Date:	07/02/2010
Contaminated Media:	Soil
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	13
Operable Unit:	01
Action Completion Date:	09/30/2010
Actual Date:	09/14/2010
Contaminated Media:	Soil
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	15
Operable Unit:	05
Action Completion Date:	09/30/2011
Actual Date:	09/23/2011
Contaminated Media:	Soil
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	21
Operable Unit:	17
Action Completion Date:	06/30/2013
Actual Date:	07/12/2012
Contaminated Media:	Soil
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Action ID:	18
Operable Unit:	14
Action Completion Date:	09/30/2010
Actual Date:	09/27/2010
Contaminated Media:	Groundwater
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	13
Operable Unit:	01
Action Completion Date:	09/30/2010
Actual Date:	09/14/2010
Contaminated Media:	Buildings/Structures
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
Address 2:	Not reported
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
Site ID:	0904481
Action Name:	FF ROD (RCRA Statement of Basis/RTC)
Action ID:	5
Operable Unit:	12
Action Completion Date:	09/30/2009
Actual Date:	09/29/2009
Contaminated Media:	Groundwater
Event Code:	Not reported
Contact Name:	Not reported
Contact Telephone:	Not reported
Event:	Not reported

ROD:

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ESD
Operable Unit Number:	PWC- MAKALAPA RINSATE PIT
SEQ ID:	1
Action Completion:	2016-02-11 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WESTLOCH BLDG 49
SEQ ID:	2
Action Completion:	2006-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	MANANA STORAGE
SEQ ID:	3
Action Completion:	2006-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	NSY DRY DOCK #3
SEQ ID:	4
Action Completion:	2010-07-02 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD IS HAZ SITES (SANS LF)
SEQ ID:	5
Action Completion:	2009-09-29 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported

Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PH SEDIMENT
SEQ ID:	6
Action Completion:	2018-09-26 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PWC- MAKALAPA RINSATE PIT
SEQ ID:	10
Action Completion:	2010-09-27 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PCB THERMAL DESORPTION SITES
SEQ ID:	12
Action Completion:	2007-09-28 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PCB THERMAL DESORPTION SITES
SEQ ID:	13
Action Completion:	2010-09-14 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD ISLAND LANDFILL
SEQ ID:	15
Action Completion:	2011-09-23 00:00:00

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	FORD IS HAZ SITES (SANS LF)
SEQ ID:	17
Action Completion:	2009-09-29 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	PEARL CITY JUNCTION
SEQ ID:	18
Action Completion:	2010-09-27 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	NSY BLDG 6, FORMER FOUNDRY
SEQ ID:	21
Action Completion:	2012-07-12 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND
City,State,Zip:	PEARL HARBOR, HI 96860
EPA ID:	HI4170090076
RG:	9
Site ID:	904481
Action:	FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number:	WEST LOCH 4TH ST. CORAL PIT LF
SEQ ID:	24
Action Completion:	2014-09-15 00:00:00
NPL Status:	Final
Non NPL Status:	Not reported
Name:	PEARL HARBOR NAVAL COMPLEX
Address:	US NAVAL COMMAND

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: PWC BUILDING 35 - PAINT SHOP
SEQ ID: 26
Action Completion: 2013-09-23 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: WEST LOCH OTTO FUEL WASTE STOR
SEQ ID: 27
Action Completion: 2016-08-22 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: BUILDING 992 OPEN AREA
SEQ ID: 29
Action Completion: 2016-09-14 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: FF ROD (RCRA Statement of Basis/RTC)
Operable Unit Number: WEST LOCH VEHICLE MAINTENANCE
SEQ ID: 31
Action Completion: 2017-03-10 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: GOVT Decision Document (ROD)

PEARL HARBOR NAVAL COMPLEX (Continued) **1000707626**

Operable Unit Number: RICHARDSON- FFTF
SEQ ID: 14
Action Completion: 2010-09-27 00:00:00
NPL Status: Final
Non NPL Status: Not reported

Name: PEARL HARBOR NAVAL COMPLEX
Address: US NAVAL COMMAND
City,State,Zip: PEARL HARBOR, HI 96860
EPA ID: HI4170090076
RG: 9
Site ID: 904481
Action: GOVT Decision Document (ROD)
Operable Unit Number: RAA 11 AND 13
SEQ ID: 25
Action Completion: 2013-03-29 00:00:00
NPL Status: Final
Non NPL Status: Not reported

PRP:
PRP Name: OAHU SUGAR COMPANY, LLC
OAHU SUGAR COMPANY, LLC

A1 **EWA BEACH PROFESSIONAL CENTER** **RGA LUST** **S116401375**
91-102 FORT WEAVER ROAD **N/A**
< 1/8 **EWA BEACH, HI**
1 ft.

Site 1 of 3 in cluster A

Relative: Higher RGA LUST:

1995	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER ROAD

Actual: 3 ft.

A2 **EWA BEACH PROFESSIONAL CENTER** **RGA LUST** **S116401374**
91-102 FORT WEAVER RD **N/A**
< 1/8 **EWA BEACH, HI**
1 ft.

Site 2 of 3 in cluster A

Relative: Higher RGA LUST:

Actual: 3 ft.

2012	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2011	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2010	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2009	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2008	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2007	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2006	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2005	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2004	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2003	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2002	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2001	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
2000	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
1999	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD
1998	EWA BEACH PROFESSIONAL CENTER	91-102 FORT WEAVER RD

EWA BEACH PROFESSIONAL CENTER (Continued) **S116401374**

1997 EWA BEACH PROFESSIONAL CENTER 91-102 FORT WEAVER RD

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3 **JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING** **FINDS 1024012929**
91-980 NORTH ROAD **ECHO N/A**
< 1/8 **EWA BEACH, HI 96706**
1 ft.

Relative: Higher
Actual: 13 ft.

FINDS:
Registry ID: 110070107960
Facility URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110070107960

Environmental Interest/Information System:
US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1024012929
Registry ID: 110070107960
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070107960
Name: JAMES CAMPBELL HIGH SCHOOL NEW CLASSROOM BUILDING COMPLEX
Address: 91-980 NORTH ROAD
City,State,Zip: EWA BEACH, HI 96706

A4 **EWA BEACH PROFESSIONAL CENTER** **LUST U003222129**
91-102 FORT WEAVER RD **UST N/A**
< 1/8 **EWA BEACH, HI 96706**
1 ft.

Site 3 of 3 in cluster A

Relative: Higher
Actual: 3 ft.

LUST:
Facility ID: 9-202893
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 11/08/1995
Release ID: 940079
Project Officer: Steven Okoji

UST:
Facility ID: 9-202893
Owner: ESTATE OF JAMES CAMPBELL
Owner Address: 1001 KAMOKILA BOULEVARD
Owner City,St,Zip: Ewa Beach, 96706 96706
Latitude: 21.31457
Longitude: -157.99381
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: Not reported

EWA BEACH PROFESSIONAL CENTER (Continued) **U003222129**

Tank Status:	**Permanently Out of Use**
Date Closed:	01/22/1994
Tank Capacity:	550
Substance:	Diesel

5
North
< 1/8
0.090 mi.
473 ft.

Relative:
Higher

Actual:
13 ft.

EWA BEACH GOLF CLUB MAINTENANCE **UST** **U003346368**
91-1153 NORTH RD **Financial Assurance** **N/A**
EWA BEACH, HI 96706

UST:

Facility ID:	9-102514
Owner:	YHB Ewa LLC dta Ewa Beach Golf Club
Owner Address:	91-050 FT. WEAVER ROAD
Owner City,St,Zip:	Ewa Beach, 96706 96706
Latitude:	21.32695
Longitude:	-157.99590000000001
Horizontal Reference Datum Name:	NAD27
Horizontal Collection Method Name:	GPS
Tank ID:	1
Date Installed:	08/30/1991
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	1000
Substance:	Gasohol
Tank ID:	2
Date Installed:	08/30/1991
Tank Status:	**Currently in Use**
Date Closed:	Not reported
Tank Capacity:	1000
Substance:	Diesel

HI Financial Assurance:

Name:	EWA BEACH GOLF CLUB MAINTENANCE
Address:	91-1153 NORTH RD
City,State,Zip:	EWA BEACH, HI 96706
Alt Facility ID:	9-102514
Tank Id:	2
Tank Status:	Currently in Use
FRTYPE:	Insurance
Expiration Date:	10/18/2012
Name:	EWA BEACH GOLF CLUB MAINTENANCE
Address:	91-1153 NORTH RD
City,State,Zip:	EWA BEACH, HI 96706
Alt Facility ID:	9-102514
Tank Id:	1
Tank Status:	Currently in Use
FRTYPE:	Insurance
Expiration Date:	10/18/2012
Name:	EWA BEACH GOLF CLUB MAINTENANCE
Address:	91-1153 NORTH RD

EWA BEACH GOLF CLUB MAINTENANCE (Continued) **U003346368**

City,State,Zip: EWA BEACH, HI 96706
Alt Facility ID: 9-102514
Tank Id: 2
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 10/14/2019

Name: EWA BEACH GOLF CLUB MAINTENANCE
Address: 91-1153 NORTH RD
City,State,Zip: EWA BEACH, HI 96706
Alt Facility ID: 9-102514
Tank Id: 1
Tank Status: Currently in Use
FRTYPE: Insurance
Expiration Date: 10/14/2019

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6 **GENTRY HOMES LTD AREA 27** **LUST U003222131**
WSW **91-500 FT WEAVER RD** **UST N/A**
< 1/8 **EWA BEACH, HI 96706**
0.109 mi.
577 ft.

Relative:
Higher

Actual:
3 ft.

LUST:
Facility ID: 9-202975
Facility Status: Site Cleanup Completed (NFA)
Facility Status Date: 12/08/1994
Release ID: 940169
Project Officer: Lene Ichinotsubo

UST:
Facility ID: 9-202975
Owner: GENTRY HOMES, LTD.
Owner Address: 560 N NIMITZ HWY, SUITE 213
Owner City,St,Zip: Ewa Beach, 96706 96706
Latitude: 21.312013
Longitude: -158.005347
Horizontal Reference Datum Name: NAD83
Horizontal Collection Method Name: Address Matching

Tank ID: R-1
Date Installed: Not reported
Tank Status: **Permanently Out of Use**
Date Closed: 07/22/1994
Tank Capacity: 500
Substance: Diesel

7
NNW
1/4-1/2
0.252 mi.
1333 ft.

PUULOA-EX NAS BAR POINT
EWA, HI

FUDS **1024902149**
N/A

Relative:
Higher

Actual:
16 ft.

FUDS:

EPA Region:	09
Installation ID:	HI99799F410600
Congressional District Number:	01
Facility Name:	PUULOA-EX NAS BAR POINT
FUDS Number:	H09HI0398
City:	EWA
State:	HI
County:	HONOLULU
Object ID:	6640
USACE District:	Honolulu District (POH)
Status:	Properties with all projects at site closeout
Current Owner:	Private Sector
EMS Map Link:	https://fudsportal.usace.army.mil/ems/ems/inventory/map/map?id=54173
Eligibility:	Eligible
Has Projects:	Yes
NPL Status:	Not Listed
Latitude:	21.326111109999900
Longitude:	-158.001666669999000

FUDS Detail as of Jan 2015:

Fiscal Year:	2013
Federal Facility ID:	HI9799F4106
RAB:	Not reported
NPL Status:	Not Listed
Description:	The site consists of a 20.52-acre dump and was transferredfrom the Navy to Campbell Esate in 2/27/51. The dunp iste consist of a borrow pit and used for aircraft disposal. Twenty-one buildings were constructed. Site visit on 13 July 1995 revealed the dump site was mixed wastes. Other information from former studies indicate that household waste, batteries, and other debris were found.
History:	The project iste was part of the Barbers Point Naval Air Station and was part of the Plane Division Aircraft Storage Area. The borrow pit was used as an aircraft disposal area; hwoever, it is noted that other debris from the landowner was also included and therefore a potential PRP is proposed.
CTC:	25.399999999999999
Current Program:	Not reported
Future Program:	Not reported
Institutional ID:	54173

8
WSW
1/4-1/2
0.421 mi.
2223 ft.

C&CH EWA BEACH FIRE STATION
91-832 POHAKUPUNA RD
EWA BEACH, HI 96706

LUST **U004109509**
UST **N/A**

Relative:
Higher

Actual:
3 ft.

LUST:

Facility ID:	9-200071
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	12/26/2001
Release ID:	940178
Project Officer:	Shunsheng Fu

C&CH EWA BEACH FIRE STATION (Continued) **U004109509**

UST:

Facility ID:	9-200071
Owner:	C&C HNL Fire Dept
Owner Address:	560 South King Street
Owner City,St,Zip:	Ewa Beach, 96706 96706
Latitude:	21.31129
Longitude:	-158.00956600000001
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-1
Date Installed:	06/01/1977
Tank Status:	**Permanently Out of Use**
Date Closed:	09/22/1993
Tank Capacity:	1000
Substance:	Diesel

---

9 **PUULOA RIFLE RANGE** **LUST U001236490**
ENE **BLDG 48 TANK 19** **UST N/A**
1/4-1/2 **EWA BEACH, HI 96706** **Financial Assurance**
0.480 mi.
2535 ft.

Relative:
Higher

Actual:
3 ft.

LUST:

Facility ID:	9-202092
Facility Status:	Site Cleanup Completed (NFA)
Facility Status Date:	09/25/1998
Release ID:	920061
Project Officer:	Richard Takaba

UST:

Facility ID:	9-202092
Owner:	USMC - CAMP H.M. SMITH
Owner Address:	P.O. BOX 64122 BLDG 600
Owner City,St,Zip:	Ewa Beach, 96706 96706
Latitude:	21.318542000000001
Longitude:	-157.985479
Horizontal Reference Datum Name:	NAD83
Horizontal Collection Method Name:	Address Matching
Tank ID:	R-19
Date Installed:	04/29/1944
Tank Status:	**Permanently Out of Use**
Date Closed:	10/23/1991
Tank Capacity:	500
Substance:	Diesel

HI Financial Assurance:

Name:	PUULOA RIFLE RANGE
Address:	BLDG 48 TANK 19
City,State,Zip:	EWA BEACH, HI 96706
Alt Facility ID:	9-202092
Tank Id:	R-19
Tank Status:	Permanently Out of Use
FRTYPE:	Trust Fund
Expiration Date:	Not reported

10
West
1/2-1
0.637 mi.
3362 ft.

EWA BEACH CHEVRON
91-909 FORT WEAVER RD
EWA BEACH, HI 96706

SHWS S106816998
SPILLS N/A

Relative:
Higher

Actual:
10 ft.

SHWS:

Organization:	Not reported
Supplemental Location:	Not reported
Island:	Oahu
Environmental Interest:	Service Bay Hydraulic lift and Grease Trap
HID Number:	Not reported
Facility Registry Identifier:	110013781390
Lead Agency:	HEER
Program:	State
Project Manager:	Mark Sutterfield
Hazard Priority:	NFA
Potential Hazards And Controls:	No Hazard
Island:	Oahu
SDAR Environmental Interest Name:	Service Bay Hydraulic lift and Grease Trap
HID Number:	Not reported
Facility Registry Identifier:	110013781390
Lead Agency:	HEER
Potential Hazard And Controls:	No Hazard
Priority:	NFA
Assessment:	Response Not Necessary
Response:	Response Complete
Nature of Contamination:	Found: Hydraulic Fluid
Nature of Residual Contamination:	Confirmation soil sampling in the two hydraulic lift pits, and the sand and grease trap revealed that all analytes were below HDOH Tier I Action levels.
Use Restrictions:	No Hazard Present For Unrestricted Residential Use
Engineering Control:	Not reported
Description of Restrictions:	Not reported
Institutional Control:	Not reported
Within Designated Areawide Contamination:	Not reported
Site Closure Type:	No Further Action Letter - Unrestricted Residential Use
Document Date:	10/05/2004
Document Number:	2004-408-MS
Document Subject:	NFA for Ewa Beach Chevron
Project Manager:	Mark Sutterfield
Contact Information:	(808) 586-4249 2385 Waimano Home Rd, Pearl City, HI 96782

SPILLS:

Name:	EWA BEACH CHEVRON
Address:	91-909 FORT WEAVER RD
Address 2:	Not reported
City,State,Zip:	EWA BEACH, HI 96706
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20031103-1101
Facility Registry ID:	110013781390
HID Number:	Not reported
Lead and Program:	HEER EP&R
ER:	Not reported
Less Or Greater Than:	Not reported
Units:	Service Bay Hydraulic lift and Grease Trap
Activity Type:	Response
Activity Lead:	Liz Galvez

EWA BEACH CHEVRON (Continued) **S106816998**

Assignment End Date:	Not reported
Result:	Refer to ISST
File Under:	Chevron Products Company
Substances:	Petroleum Hydrocarbon
Quanity:	Not reported
Units:	Not reported
Reported Date:	Not reported
Release Date:	Not reported
Release Duration:	Not reported
Media:	Not reported
Waterbody:	Not reported
Summary:	Not reported
Is Noteworthy for Reports:	Not reported
Is the Release a Fugitive Dumping:	Not reported
Tax Map Key:	Not reported
Assigned SOSC:	Not reported
Notified Agencies:	Not reported
Response Measures Taken:	Not reported
Incident Report Number:	Not reported
Coordination Needed:	Not reported
Tier II Facility:	Not reported
RMP:	Not reported
Follow-up Received On:	Not reported
Cost Recovery:	Not reported
Invoice To:	Not reported
Closed Date:	Not reported
Comments:	Not reported
Latitude:	21.336314000000002
Longitude:	-158.022425

Name:	EWA BEACH CHEVRON
Address:	91-909 FORT WEAVER RD
Address 2:	Not reported
City,State,Zip:	EWA BEACH, HI 96706
Island:	Oahu
Supplemental Loc. Text:	Not reported
Case Number:	20031103-1101
Facility Registry ID:	110013781390
HID Number:	Not reported
Lead and Program:	HEER EP&R
ER:	Not reported
Less Or Greater Than:	Not reported
Units:	Service Bay Hydraulic lift and Grease Trap
Activity Type:	Response
Activity Lead:	Liz Galvez
Assignment End Date:	Not reported
Result:	Refer to ISST
File Under:	Chevron Products Company
Substances:	Petroleum Hydrocarbon
Quanity:	Not reported
Units:	Not reported
Reported Date:	Not reported
Release Date:	Not reported
Release Duration:	Not reported
Media:	Not reported
Waterbody:	Not reported
Summary:	Not reported

EWA BEACH CHEVRON (Continued) **S106816998**

Is Noteworthy for Reports:	Not reported
Is the Release a Fugitive Dumping:	Not reported
Tax Map Key:	Not reported
Assigned SOSC:	Not reported
Notified Agencies:	Not reported
Response Measures Taken:	Not reported
Incident Report Number:	Not reported
Coordination Needed:	Not reported
Tier II Facility:	Not reported
RMP:	Not reported
Follow-up Received On:	Not reported
Cost Recovery:	Not reported
Invoice To:	Not reported
Closed Date:	Not reported
Comments:	Not reported
Latitude:	21.317233000000002
Longitude:	-158.01326399999999

11
East
1/2-1
0.942 mi.
4974 ft.

FORT WEAVER MILITARY RESERVATION **FUDS** **1024901942**
N/A

EWA BEACH, HI

Relative:
Higher

Actual:
3 ft.

FUDS:

EPA Region:	09
Installation ID:	HI99799F383200
Congressional District Number:	01
Facility Name:	FORT WEAVER MILITARY RESERVATION
FUDS Number:	H09HI0092
City:	EWA BEACH
State:	HI
County:	HONOLULU
Object ID:	2961
USACE District:	Honolulu District (POH)
Status:	Properties without projects
Current Owner:	Other Federal Government
EMS Map Link:	https://fudsportal.usace.army.mil/ems/ems/inventory/map/map?id=62371
Eligibility:	Ineligible
Has Projects:	No
NPL Status:	Not Listed
Latitude:	21.316666670000000
Longitude:	-157.978333329999000

Count: 2 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
EWA BEACH	S121405852	BHP GAS EXPRESS STATION 43 ZIPPY'S	91-1669 FORT WEAVER RD	96706	SHWS
EWA BEACH	S118422815	JACKSON CONSTRUCTION LANDFILL	91-891 HAHANUI ST	96706	SHWS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: N/A
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/27/2020
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/27/2020
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/13/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 76

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/14/2020
Next Scheduled EDR Contact: 08/24/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/15/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/15/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System
Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 78

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/24/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

SHWS: Sites List
Facilities, sites or areas in which the Office of Hazard Evaluation and Emergency Response has an interest, has investigated or may investigate under HRS 128D (includes CERCLIS sites).

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Semi-Annually

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: Permitted Landfills in the State of Hawaii
Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/09/2020
Date Data Arrived at EDR: 03/13/2020
Date Made Active in Reports: 05/29/2020
Number of Days to Update: 77

Source: Department of Health
Telephone: 808-586-4245
Last EDR Contact: 03/05/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Varies

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 02/25/2020
Date Data Arrived at EDR: 02/26/2020
Date Made Active in Reports: 05/01/2020
Number of Days to Update: 65

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 05/29/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Semi-Annually

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 12/17/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019
Date Data Arrived at EDR: 08/28/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 75

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Varies

UST: Underground Storage Tank Database
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 02/25/2020
Date Data Arrived at EDR: 02/26/2020
Date Made Active in Reports: 05/01/2020
Number of Days to Update: 65

Source: Department of Health
Telephone: 808-586-4228
Last EDR Contact: 05/29/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Semi-Annually

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 68

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 72

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 85

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 05/20/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Control Sites
A listing of sites with engineering controls in place.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Department of Health
Telephone: 404-586-4249
Last EDR Contact: 05/26/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls
Voluntary Remediation Program and Brownfields sites with institutional controls in place.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/18/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Response Program Sites
Sites participating in the Voluntary Response Program. The purpose of the VRP is to streamline the cleanup process in a way that will encourage prospective developers, lenders, and purchasers to voluntarily cleanup properties.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Brownfields Sites
With certain legal exclusions and additions, the term 'brownfield site' means real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

Date of Government Version: 04/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/26/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/02/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: SWRCY
A listing of recycling and drop-off facilities located in Hawaii.

Date of Government Version: 02/09/2020
Date Data Arrived at EDR: 03/13/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 76

Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 03/05/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/16/2020
Next Scheduled EDR Contact: 08/10/2020
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/09/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 05/01/2020
Next Scheduled EDR Contact: 08/10/2020
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Listing
A listing of clandestine drug lab site locations.

Date of Government Version: 08/04/2010
Date Data Arrived at EDR: 09/10/2010
Date Made Active in Reports: 10/22/2010
Number of Days to Update: 42

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs
A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System
Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/05/2019
Date Data Arrived at EDR: 12/06/2019
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 70

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/24/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

SPILLS: Release Notifications
Releases of hazardous substances to the environment reported to the Office of Hazard Evaluation and Emergency Response since 1988.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/21/2020
Number of Days to Update: 63

Source: Department of Health
Telephone: 808-586-4249
Last EDR Contact: 05/14/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

SPILLS 90: SPILLS90 data from FirstSearch
Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 03/10/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/11/2013
Number of Days to Update: 39

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/23/2020
Date Data Arrived at EDR: 03/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/28/2020
Date Data Arrived at EDR: 02/19/2020
Date Made Active in Reports: 05/14/2020
Number of Days to Update: 85

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/10/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/06/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/15/2020
Next Scheduled EDR Contact: 08/24/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/19/2019
Date Made Active in Reports: 02/27/2020
Number of Days to Update: 70

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/24/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 05/04/2020
Next Scheduled EDR Contact: 08/17/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/08/2020
Next Scheduled EDR Contact: 08/17/2020
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/20/2020
Next Scheduled EDR Contact: 06/29/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 02/05/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 79

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/21/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/05/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 149

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/15/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 01/30/2020
Date Data Arrived at EDR: 02/06/2020
Date Made Active in Reports: 02/14/2020
Number of Days to Update: 8

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 08/17/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/26/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/10/2020
Next Scheduled EDR Contact: 08/03/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/05/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 06/01/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/08/2020
Next Scheduled EDR Contact: 08/17/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/01/2019
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/28/2020
Next Scheduled EDR Contact: 08/10/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees
Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/17/2020
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 49

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/26/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System
The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/25/2020
Next Scheduled EDR Contact: 07/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/10/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program
DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/29/2020
Next Scheduled EDR Contact: 08/17/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites
Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 04/27/2020
Date Data Arrived at EDR: 05/06/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 22

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites
A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)
The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data
A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 03/31/2020
Date Data Arrived at EDR: 04/01/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 50

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 05/27/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Quarterly

US MINES: Mines Master Index File
Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/11/2020
Date Data Arrived at EDR: 02/25/2020
Date Made Active in Reports: 05/21/2020
Number of Days to Update: 86

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 02/28/2020
Date Made Active in Reports: 05/22/2020
Number of Days to Update: 84

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/05/2020
Date Data Arrived at EDR: 03/06/2020
Date Made Active in Reports: 05/29/2020
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2020
Date Data Arrived at EDR: 03/03/2020
Date Made Active in Reports: 05/28/2020
Number of Days to Update: 86

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 06/02/2020
Next Scheduled EDR Contact: 09/14/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/03/2020
Next Scheduled EDR Contact: 07/27/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/05/2020
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/06/2020
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/07/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 02/19/2020
Date Made Active in Reports: 05/14/2020
Number of Days to Update: 85

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/19/2020
Next Scheduled EDR Contact: 08/31/2020
Data Release Frequency: Quarterly

AIRS: List of Permitted Facilities
A listing of permitted facilities in the state.

Date of Government Version: 03/20/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/08/2020
Number of Days to Update: 76

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 03/20/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Varies

DRYCLEANERS: Permitted Drycleaner Facility Listing
A listing of permitted drycleaner facilities in the state.

Date of Government Version: 03/20/2020
Date Data Arrived at EDR: 03/24/2020
Date Made Active in Reports: 06/08/2020
Number of Days to Update: 76

Source: Department of Health
Telephone: 808-586-4200
Last EDR Contact: 03/20/2020
Next Scheduled EDR Contact: 07/13/2020
Data Release Frequency: Varies

Financial Assurance: Financial Assurance Information Listing
A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 03/11/2020
Date Data Arrived at EDR: 03/12/2020
Date Made Active in Reports: 05/22/2020
Number of Days to Update: 71

Source: Department of Health
Telephone: 808-586-4226
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

LEAD: Lead Inspection Listing
Lead inspections

Date of Government Version: 03/05/2020
Date Data Arrived at EDR: 03/06/2020
Date Made Active in Reports: 05/15/2020
Number of Days to Update: 70

Source: Department of Health
Telephone: 808-586-5800
Last EDR Contact: 06/03/2020
Next Scheduled EDR Contact: 09/21/2020
Data Release Frequency: Varies

UIC: Underground Injection Wells Listing
A listing of underground injection well locations.

Date of Government Version: 02/07/2013
Date Data Arrived at EDR: 02/12/2013
Date Made Active in Reports: 04/09/2013
Number of Days to Update: 56

Source: Department of Health
Telephone: 808-586-4258
Last EDR Contact: 05/18/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/26/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/26/2020
Next Scheduled EDR Contact: 07/20/2020
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/21/2020
Next Scheduled EDR Contact: 09/07/2020
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/09/2020
Next Scheduled EDR Contact: 06/22/2020
Data Release Frequency: Semi-Annually

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA HWS: Recovered Government Archive State Hazardous Waste Facilities List

The EDR Recovered Government Archive State Hazardous Waste database provides a list of SHWS incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/08/2014
Number of Days to Update: 191

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/17/2014
Number of Days to Update: 200

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank
The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in Hawaii.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/03/2014
Number of Days to Update: 186

Source: Department of Health
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

DHHL - EWA BEACH SURPLUS LAND
91-270 FORT WEAVER ROAD
EWA BEACH, HI 96706

TARGET PROPERTY COORDINATES

Latitude (North):	21.314496 - 21° 18' 52.19"
Longitude (West):	157.998446 - 157° 59' 54.41"
Universal Tranverse Mercator:	Zone 4
UTM X (Meters):	603876.2
UTM Y (Meters):	2357145.8
Elevation:	3 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5941087 PEARL HARBOR, HI
Version Date:	2013

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

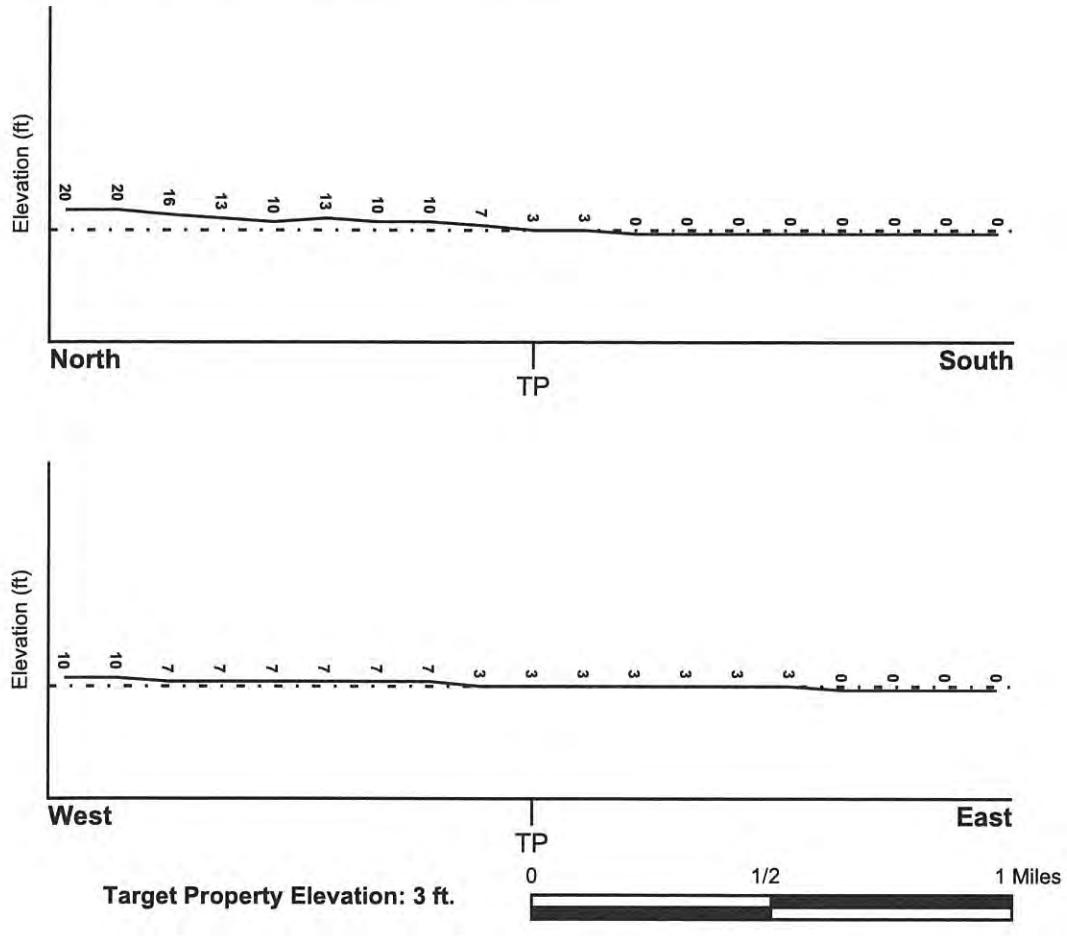
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General SSE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
15003C0328G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
1500010110D	FEMA Q3 Flood data
15003C0329G	FEMA FIRM Flood data
1500010135C	FEMA Q3 Flood data
15003C0336G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

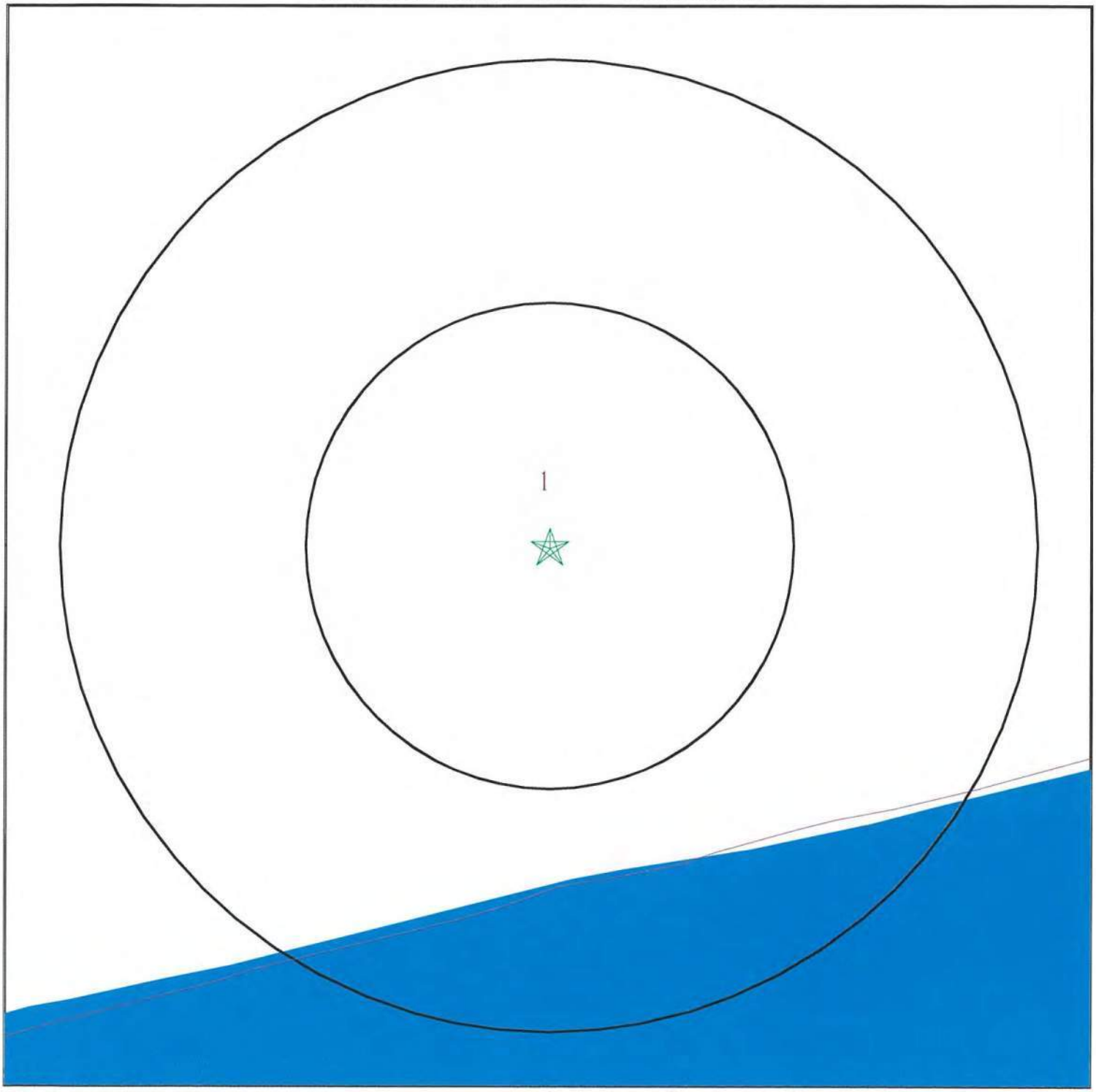
ROCK STRATIGRAPHIC UNIT

Era:	-
System:	-
Series:	-
Code:	N/A *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: -

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).



SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT: INQUIRY #:	Sharla Nakashima 6086882.2s
LAT/LONG:	21.314496 / 157.998446	DATE:	June 09, 2020 2:00 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Coral outcrop

Soil Surface Texture: bedrock

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	59 inches	bedrock	Not reported	Not reported	Max: 42 Min: 1.41	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000269766	0 - 1/8 Mile NW
4	USGS40000269744	1/8 - 1/4 Mile SW
B5	USGS40000269765	1/4 - 1/2 Mile East
B9	USGS40000269770	1/4 - 1/2 Mile East
B10	USGS40000269769	1/4 - 1/2 Mile ENE
C12	USGS40000269743	1/4 - 1/2 Mile WSW
D13	USGS40000269803	1/4 - 1/2 Mile NW
C14	USGS40000269745	1/4 - 1/2 Mile WSW
C15	USGS40000269746	1/4 - 1/2 Mile WSW
C16	USGS40000269747	1/4 - 1/2 Mile WSW
C18	USGS40000269732	1/4 - 1/2 Mile WSW
C19	USGS40000269741	1/4 - 1/2 Mile WSW
E20	USGS40000269809	1/2 - 1 Mile NNW
F22	USGS40000269774	1/2 - 1 Mile West
F24	USGS40000269775	1/2 - 1 Mile West
G25	USGS40000269797	1/2 - 1 Mile WNW
H27	USGS40000269736	1/2 - 1 Mile WSW
H28	USGS40000269735	1/2 - 1 Mile WSW
H29	USGS40000269734	1/2 - 1 Mile WSW
H30	USGS40000269737	1/2 - 1 Mile WSW
H31	USGS40000269740	1/2 - 1 Mile WSW
H32	USGS40000269739	1/2 - 1 Mile WSW
H33	USGS40000269738	1/2 - 1 Mile WSW
I35	USGS40000269824	1/2 - 1 Mile NNW
I37	USGS40000269825	1/2 - 1 Mile NNW
J41	USGS40000269837	1/2 - 1 Mile North
K43	USGS40000269845	1/2 - 1 Mile North
L48	USGS40000269835	1/2 - 1 Mile NW
N49	USGS40000269860	1/2 - 1 Mile North
M50	USGS40000269848	1/2 - 1 Mile NNW
N51	USGS40000269859	1/2 - 1 Mile North
N54	USGS40000269875	1/2 - 1 Mile North
O56	USGS40000269872	1/2 - 1 Mile NNE
P58	USGS40000269876	1/2 - 1 Mile North

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	HI1100000000865	0 - 1/8 Mile NW
A3	HI1100000000854	0 - 1/8 Mile NW
6	HI1100000000650	1/4 - 1/2 Mile WSW

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
B7	HI1100000000995	1/4 - 1/2 Mile East
B8	HI1100000000994	1/4 - 1/2 Mile ENE
B11	HI1100000000996	1/4 - 1/2 Mile ENE
D17	HI1100000000856	1/4 - 1/2 Mile NW
E21	HI1100000000857	1/2 - 1 Mile NNW
E23	HI1100000000858	1/2 - 1 Mile North
G26	HI1100000000853	1/2 - 1 Mile WNW
34	HI1100000000864	1/2 - 1 Mile North
I36	HI1100000000851	1/2 - 1 Mile NNW
I38	HI1100000000849	1/2 - 1 Mile NNW
J39	HI1100000000997	1/2 - 1 Mile North
40	HI1100000000863	1/2 - 1 Mile NNW
J42	HI1100000000850	1/2 - 1 Mile North
44	HI1100000000861	1/2 - 1 Mile NNW
K45	HI1100000000993	1/2 - 1 Mile North
L46	HI1100000000860	1/2 - 1 Mile NW
M47	HI1100000000862	1/2 - 1 Mile NNW
N52	HI1100000000847	1/2 - 1 Mile North
N53	HI1100000000848	1/2 - 1 Mile North
N55	HI1100000000846	1/2 - 1 Mile North
O57	HI1100000000991	1/2 - 1 Mile NNE
P59	HI1100000000852	1/2 - 1 Mile North

PHYSICAL SETTING SOURCE MAP - 6086882.2S

0 1/4 1/2 1 Miles

- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- (GI) Indeterminate Groundwater Flow at Location
- (GV) Groundwater Flow Varies at Location

No contour lines were detected within this map area.

SITE NAME:	DHHL - Ewa Beach Surplus Land	CLIENT:	Enviro Srvcs. and Trng. Center
ADDRESS:	91-270 Fort Weaver Road Ewa Beach HI 96706	CONTACT:	Sharla Nakashima
		INQUIRY #:	6086882.2s
LAT/LONG:	21.314496 / 157.998446	DATE:	June 09, 2020 2:00 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
A1 **NW** **0 - 1/8 Mile** **Higher**	**HI WELLS**	**HI1100000000865**

Well ID:	3-1900-023	Well Name:	Pac Tsunami Cntr
Well Owner:	National Weather Service		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	0	Year Drillled:	1999
Original Well Name:	Not Reported		
Driller:	Curtis Wong (Naval Facilities Engineering Command Hawaii, Asset Management, NAVFAC Hawaii)		
Well Construction Type:	Rotary	Casing Diameter (in):	8
Ground Elevation (ft):	Not Reported	Well Depth (ft):	9
Solid Casing Depth:	9	Perforated Casing Depth:	Not Reported
Major Well Use:	Landscape/Water Features	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	Not Reported	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

---

A2 **NW** **0 - 1/8 Mile** **Higher**	**FED USGS**	**USGS40000269766**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-12 W272-28 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19620316
Well Depth:	25	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

A3 **NW** **0 - 1/8 Mile** **Higher**	**HI WELLS**	**HI1100000000854**

Well ID:	3-1900-012	Well Name:	Ewa Beach
Well Owner:	Pacific Islands Water Science Center, USGS, U.S. Geological Survey		
Land Owner:	Not Reported	Pump Rate (g/m):	Not Reported
Year Drillled:	1962	Original Well Name:	Not Reported
Driller:	Layne International	Well Construction Type:	Not Reported
Casing Diameter (in):	20	Ground Elevation (ft):	5
Well Depth (ft):	25	Solid Casing Depth:	6
Perforated Casing Depth:	Not Reported	Major Well Use:	Observation
Inital Water Level (ft):	0.3	Water Level After Drilling:	Not Reported

Water Level After Install:	Not Reported	Chloride Content (mg/L):	1120
Date Tested:	Not Reported	Test Pump Rate (g/m):	100
Test Drawdown Rate (ft):	2.7	Test Chloride Content (MG/L):	1150
Test Water Temp:	Not Reported	Temp Unit:	Not Reported
Max Chloride Level:	Not Reported	Minimum Chloride Level:	Not Reported
Draft Year:	Not Reported	Hole Bottom Elevation:	-20
Solid Casing Bottom Elevation:	-1	Year Installed:	Not Reported
Pump Capacity (MM gal/day):	Not Reported	Pump Intake Depth:	Not Reported
Latest Head:	Not Reported	Latest WCR1 Report:	1/1/1962
Latest WCR2 Report:	Not Reported	Transmissivity:	Not Reported
Min to pump 5 volumes:	Not Reported		

4
SW
1/8 - 1/4 Mile
Higher

FED USGS **USGS40000269744**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800-01	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720119
Well Depth:	106	Well Depth Units:	ft
Well Hole Depth:	106	Well Hole Depth Units:	ft

B5
East
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269765**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1959-06 T133-1 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19660625
Well Depth:	290	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

6
WSW
1/4 - 1/2 Mile
Higher

HI WELLS **HI1100000000650**

Well ID:	3-1800-001	Well Name:	Ewa Beach B
Well Owner:	National Weather Service	Land Owner:	Not Reported
Pump Rate (g/m):	0	Year Drillled:	1972
Original Well Name:	Not Reported	Driller:	Continental Drilling Hawaii, Inc
Well Construction Type:	Not Reported	Casing Diameter (in):	4
Ground Elevation (ft):	Not Reported	Well Depth (ft):	106
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported

Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/19/1972	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

---

B7
East
1/4 - 1/2 Mile
Higher

HI WELLS **HI1100000000995**

Well ID:	3-1959-006	Well Name:	Ft Weaver Rd
Well Owner:	Department of the Navy, Navy Region Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	0	Year Drillled:	1966
Original Well Name:	Not Reported	Driller:	Layne International
Well Construction Type:	Not Reported	Casing Diameter (in):	3
Ground Elevation (ft):	6	Well Depth (ft):	290
Solid Casing Depth:	290	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-284	Solid Casing Bottom Elevation:	-284
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1966	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

---

B8
ENE
1/4 - 1/2 Mile
Higher

HI WELLS **HI1100000000994**

Well ID:	3-1959-005	Well Name:	Ft Weaver Rd
Well Owner:	Department of the Navy, Navy Region Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	0	Year Drillled:	1966
Original Well Name:	Not Reported	Driller:	Layne International
Well Construction Type:	Not Reported	Casing Diameter (in):	10
Ground Elevation (ft):	6	Well Depth (ft):	1111
Solid Casing Depth:	290	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	5.3
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	17600	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-1105	Solid Casing Bottom Elevation:	-284

Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1966	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

---

B9
East
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269770**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1959-05 Fort Weaver Road, Oahu, HI		
Type:	Well	Description:	former local no. T133
HUC:	20060000	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Hawaii volcanic-rock aquifers
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19660725	Well Depth:	1110
Well Depth Units:	ft	Well Hole Depth:	1110
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	25	Level reading date:	2002-09-23
Feet below surface:	Not Reported	Feet to sea level:	1.60
Note:	Not Reported		

Level reading date:	2002-08-13	Feet below surface:	Not Reported
Feet to sea level:	1.69	Note:	Not Reported

Level reading date:	2002-05-29	Feet below surface:	Not Reported
Feet to sea level:	1.89	Note:	Not Reported

Level reading date:	2002-05-29	Feet below surface:	Not Reported
Feet to sea level:	1.84	Note:	Not Reported

Level reading date:	2002-03-15	Feet below surface:	Not Reported
Feet to sea level:	1.69	Note:	Not Reported

Level reading date:	2002-01-14	Feet below surface:	Not Reported
Feet to sea level:	1.41	Note:	Not Reported

Level reading date:	2001-11-01	Feet below surface:	Not Reported
Feet to sea level:	1.09	Note:	Not Reported

Level reading date:	2001-09-19	Feet below surface:	Not Reported
Feet to sea level:	0.91		
Note:	Water level was affected by tide stage.		

Level reading date:	2001-08-09	Feet below surface:	Not Reported
Feet to sea level:	0.94		
Note:	Water level was affected by tide stage.		

Level reading date:	2001-06-22	Feet below surface:	Not Reported
Feet to sea level:	1.14		
Note:	Water level was affected by tide stage.		

Level reading date:	2001-04-18	Feet below surface:	Not Reported
Feet to sea level:	1.42		
Note:	Water level was affected by tide stage.		

Level reading date:	2000-12-20	Feet below surface:	Not Reported
Feet to sea level:	1.55		
Note:	Water level was affected by tide stage.		
Level reading date:	2000-10-30	Feet below surface:	Not Reported
Feet to sea level:	1.42		
Note:	Water level was affected by tide stage.		
Level reading date:	2000-09-01	Feet below surface:	Not Reported
Feet to sea level:	1.53	Note:	Not Reported
Level reading date:	2000-08-01	Feet below surface:	Not Reported
Feet to sea level:	1.45	Note:	Not Reported
Level reading date:	2000-05-30	Feet below surface:	Not Reported
Feet to sea level:	1.91	Note:	Not Reported
Level reading date:	2000-03-15	Feet below surface:	Not Reported
Feet to sea level:	1.97	Note:	Not Reported
Level reading date:	2000-01-14	Feet below surface:	Not Reported
Feet to sea level:	2.17	Note:	Not Reported
Level reading date:	1999-11-10	Feet below surface:	Not Reported
Feet to sea level:	1.99	Note:	Not Reported
Level reading date:	1999-09-01	Feet below surface:	Not Reported
Feet to sea level:	1.80	Note:	Not Reported
Level reading date:	1999-08-03	Feet below surface:	Not Reported
Feet to sea level:	2.04	Note:	Not Reported
Level reading date:	1999-06-04	Feet below surface:	Not Reported
Feet to sea level:	1.87	Note:	Not Reported
Level reading date:	1999-02-05	Feet below surface:	Not Reported
Feet to sea level:	1.90	Note:	Not Reported
Level reading date:	1998-12-02	Feet below surface:	Not Reported
Feet to sea level:	1.70	Note:	Not Reported
Level reading date:	1998-10-19	Feet below surface:	Not Reported
Feet to sea level:	1.29	Note:	Not Reported

B10
ENE
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269769**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1959-07 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720113
Well Depth:	106	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

B11
ENE
1/4 - 1/2 Mile
Higher

HI WELLS **HI1100000000996**

Well ID:	3-1959-007	Well Name:	Ewa Beach A
Well Owner:	National Weather Service	Land Owner:	Not Reported
Pump Rate (g/m):	0	Year Drillled:	1972
Original Well Name:	Not Reported	Driller:	Continental Drilling Hawaii, Inc
Well Construction Type:	Not Reported	Casing Diameter (in):	4
Ground Elevation (ft):	6	Well Depth (ft):	106
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-100	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/13/1972	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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C12
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269743**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.04B	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720805
Well Depth:	65	Well Depth Units:	ft
Well Hole Depth:	65	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	2	Level reading date:	1972-08-01
Feet below surface:	5.75	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1972-08-01	Feet below surface:	5.75
Feet to sea level:	Not Reported	Note:	Not Reported

D13
NW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269803**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-14 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported

Contrib Drainage Area:	Not Reported	Contrib Drainage Area Units:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720121
Well Depth:	106	Well Depth Units:	ft
Well Hole Depth:	106	Well Hole Depth Units:	ft

C14
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269745**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.01A	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Units:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19710101
Well Depth:	50	Well Depth Units:	ft
Well Hole Depth:	50	Well Hole Depth Units:	ft

C15
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269746**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.01B	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Units:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19710101
Well Depth:	50	Well Depth Units:	ft
Well Hole Depth:	50	Well Hole Depth Units:	ft

C16
WSW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000269747**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.01C	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Units:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19710101
Well Depth:	50	Well Depth Units:	ft
Well Hole Depth:	50	Well Hole Depth Units:	ft

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
D17 **NW** **1/4 - 1/2 Mile** **Higher**	**HI WELLS**	**HI1100000000856**

Well ID:	3-1900-014	Well Name:	Ewa Beach C
Well Owner:	National Weather Service	Land Owner:	Not Reported
Pump Rate (g/m):	0	Year Drillled:	1972
Original Well Name:	Not Reported	Driller:	Continental Drilling Hawaii, Inc
Well Construction Type:	Not Reported	Casing Diameter (in):	4
Ground Elevation (ft):	Not Reported	Well Depth (ft):	106
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/21/1972	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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	Database	EDR ID Number
C18 **WSW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000269732**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.03A-H	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720101
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1972-01-01
Feet below surface:	6.00	Feet to sea level:	Not Reported
Note:	Not Reported		

	Database	EDR ID Number
C19 **WSW** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000269741**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.04A	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720805

Well Depth:	43	Well Depth Units:	ft
Well Hole Depth:	75	Well Hole Depth Units:	ft
Ground water levels,Number of Measurements:	1	Level reading date:	1972-08-01
Feet below surface:	5.75	Feet to sea level:	Not Reported
Note:	Not Reported		

E20
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269809**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-15 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19720127
Well Depth:	126	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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E21
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000857**

Well ID:	3-1900-015	Well Name:	Ewa Beach D
Well Owner:	National Weather Service	Land Owner:	Not Reported
Pump Rate (g/m):	0	Year Drillled:	1972
Original Well Name:	Not Reported	Driller:	Continental Drilling Hawaii, Inc
Well Construction Type:	Not Reported	Casing Diameter (in):	4
Ground Elevation (ft):	Not Reported	Well Depth (ft):	126
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Observation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/27/1972	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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F22
West
1/2 - 1 Mile
Higher

FED USGS **USGS40000269774**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900.01A	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported

Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19740101
Well Depth:	83	Well Depth Units:	ft
Well Hole Depth:	83	Well Hole Depth Units:	ft

E23
North
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000858**

Well ID:	3-1900-016	Well Name:	New Ewa Intl G C
Well Owner:	Sogo Hawaii, Inc.	Land Owner:	YHB Ewa LLC
Pump Rate (g/m):	Not Reported	Year Drillled:	1988
Original Well Name:	Not Reported	Driller:	Roscoe Moss Hawaii Inc
Well Construction Type:	Percussion	Casing Diameter (in):	8
Ground Elevation (ft):	14	Well Depth (ft):	33
Solid Casing Depth:	13	Perforated Casing Depth:	33
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	2.12
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	3/18/1988
Test Pump Rate (g/m):	350	Test Drawdown Rate (ft):	3.7
Test Chloride Content (MG/L):	540	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-19	Solid Casing Bottom Elevation:	-1
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	3/1/1988	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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F24
West
1/2 - 1 Mile
Higher

FED USGS **USGS40000269775**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900.01B	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19740101
Well Depth:	50	Well Depth Units:	ft
Well Hole Depth:	50	Well Hole Depth Units:	ft

G25
WNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269797**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-11 W272-24 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported

Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410711
Well Depth:	50	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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G26
WNW
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000853**

Well ID:	3-1900-011	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1941
Original Well Name:	Not Reported	Driller:	W. Mullin
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	Not Reported	Well Depth (ft):	50
Solid Casing Depth:	22	Perforated Casing Depth:	Not Reported
Major Well Use:	Unused	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	1070	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1941	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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H27
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269736**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02C	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

H28
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269735**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02B	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported

Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

H29
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269734**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02A	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19710101
Well Depth:	60	Well Depth Units:	ft
Well Hole Depth:	60	Well Hole Depth Units:	ft

Ground water levels,Number of Measurements:	1	Level reading date:	1971-01-01
Feet below surface:	6.00	Feet to sea level:	Not Reported
Note:	Not Reported		

H30
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269737**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02D	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

H31
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269740**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02G	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

Map ID
Direction
Distance
Elevation

Database | EDR ID Number

H32
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269739**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02F	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

H33
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269738**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1800.02E	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19730731
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	30	Well Hole Depth Units:	ft

34
North
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000864**

Well ID:	3-1900-022	Well Name:	Dug C
Well Owner:	Ewa Beach Golf Club	Land Owner:	YHB Ewa LLC
Pump Rate (g/m):	Not Reported	Year Drillled:	1988
Original Well Name:	Not Reported	Driller:	Not Reported
Well Construction Type:	Dug	Casing Diameter (in):	Not Reported
Ground Elevation (ft):	Not Reported	Well Depth (ft):	12
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1988	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
I35 **NNW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000269824**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-09 W272-19 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410610
Well Depth:	31	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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I36 **NNW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI1100000000851**	
Well ID:	3-1900-009	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	YHB Ewa LLC	Pump Rate (g/m):	Not Reported
Year Drillled:	1941	Original Well Name:	Not Reported
Driller:	Layne International	Well Construction Type:	Not Reported
Casing Diameter (in):	6	Ground Elevation (ft):	Not Reported
Well Depth (ft):	31	Solid Casing Depth:	26
Perforated Casing Depth:	Not Reported	Major Well Use:	Unused
Inital Water Level (ft):	Not Reported	Water Level After Drilling:	Not Reported
Water Level After Install:	Not Reported	Chloride Content (mg/L):	1050
Date Tested:	Not Reported	Test Pump Rate (g/m):	Not Reported
Test Drawdown Rate (ft):	Not Reported	Test Chloride Content (MG/L):	Not Reported
Test Water Temp:	Not Reported	Temp Unit:	Not Reported
Max Chloride Level:	Not Reported	Minimum Chloride Level:	Not Reported
Draft Year:	Not Reported	Hole Bottom Elevation:	Not Reported
Solid Casing Bottom Elevation:	Not Reported	Year Installed:	Not Reported
Pump Capacity (MM gal/day):	Not Reported	Pump Intake Depth:	Not Reported
Latest Head:	Not Reported	Latest WCR1 Report:	1/1/1941
Latest WCR2 Report:	Not Reported	Transmissivity:	Not Reported
Min to pump 5 volumes:	Not Reported		

I37 **NNW** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000269825**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-07 W272-17 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410603
Well Depth:	31	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
I38 **NNW** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI1100000000849**

Well ID:	3-1900-007	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	YHB Ewa LLC	Pump Rate (g/m):	Not Reported
Year Drillled:	1941	Original Well Name:	Not Reported
Driller:	Layne International	Well Construction Type:	Not Reported
Casing Diameter (in):	6	Ground Elevation (ft):	Not Reported
Well Depth (ft):	31	Solid Casing Depth:	29
Perforated Casing Depth:	Not Reported	Major Well Use:	Unused
Inital Water Level (ft):	Not Reported	Water Level After Drilling:	Not Reported
Water Level After Install:	Not Reported	Chloride Content (mg/L):	0
Date Tested:	Not Reported	Test Pump Rate (g/m):	Not Reported
Test Drawdown Rate (ft):	30	Test Chloride Content (MG/L):	Not Reported
Test Water Temp:	Not Reported	Temp Unit:	Not Reported
Max Chloride Level:	Not Reported	Minimum Chloride Level:	Not Reported
Draft Year:	Not Reported	Hole Bottom Elevation:	Not Reported
Solid Casing Bottom Elevation:	Not Reported	Year Installed:	Not Reported
Pump Capacity (MM gal/day):	Not Reported	Pump Intake Depth:	Not Reported
Latest Head:	Not Reported	Latest WCR1 Report:	1/1/1941
Latest WCR2 Report:	Not Reported	Transmissivity:	Not Reported
Min to pump 5 volumes:	Not Reported		

	Database	EDR ID Number
J39 **North** **1/2 - 1 Mile** **Higher**	**HI WELLS**	**HI1100000000997**

Well ID:	3-1959-008	Well Name:	Dug D
Well Owner:	Ewa Beach Golf Club	Land Owner:	YHB Ewa LLC
Pump Rate (g/m):	Not Reported	Year Drillled:	1988
Original Well Name:	Not Reported	Driller:	Not Reported
Well Construction Type:	Dug	Casing Diameter (in):	Not Reported
Ground Elevation (ft):	Not Reported	Well Depth (ft):	12
Solid Casing Depth:	Not Reported	Perforated Casing Depth:	Not Reported
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1988	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
HI WELLS	HI1100000000863

40
NNW
1/2 - 1 Mile
Higher

Well ID:	3-1900-021	Well Name:	New Ewa Intl G C
Well Owner:	Ewa Beach Golf Club	Land Owner:	YHB Ewa LLC
Pump Rate (g/m):	180	Year Drillled:	1991
Original Well Name:	Not Reported	Driller:	Roscoe Moss Hawaii Inc
Well Construction Type:	Percussion	Casing Diameter (in):	12
Ground Elevation (ft):	18	Well Depth (ft):	30
Solid Casing Depth:	15	Perforated Casing Depth:	30
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	1
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	4/3/1991
Test Pump Rate (g/m):	250	Test Drawdown Rate (ft):	4.1
Test Chloride Content (MG/L):	420	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-12	Solid Casing Bottom Elevation:	3
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	0.259
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	4/1/1991	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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J41
North
1/2 - 1 Mile
Higher

Database	EDR ID Number
FED USGS	USGS40000269837

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-08 W272-18 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410606
Well Depth:	31	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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J42
North
1/2 - 1 Mile
Higher

Database	EDR ID Number
HI WELLS	HI1100000000850

Well ID:	3-1900-008	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	YHB Ewa LLC	Pump Rate (g/m):	Not Reported
Year Drillled:	1941	Original Well Name:	Not Reported
Driller:	Layne International	Well Construction Type:	Not Reported
Casing Diameter (in):	6	Ground Elevation (ft):	Not Reported
Well Depth (ft):	28	Solid Casing Depth:	26
Perforated Casing Depth:	Not Reported	Major Well Use:	Unused
Inital Water Level (ft):	Not Reported	Water Level After Drilling:	Not Reported
Water Level After Install:	Not Reported	Chloride Content (mg/L):	1080
Date Tested:	Not Reported	Test Pump Rate (g/m):	Not Reported

Test Drawdown Rate (ft):	Not Reported	Test Chloride Content (MG/L):	Not Reported
Test Water Temp:	Not Reported	Temp Unit:	Not Reported
Max Chloride Level:	Not Reported	Minimum Chloride Level:	Not Reported
Draft Year:	Not Reported	Hole Bottom Elevation:	Not Reported
Solid Casing Bottom Elevation:	Not Reported	Year Installed:	Not Reported
Pump Capacity (MM gal/day):	Not Reported	Pump Intake Depth:	Not Reported
Latest Head:	Not Reported	Latest WCR1 Report:	1/1/1941
Latest WCR2 Report:	Not Reported	Transmissivity:	Not Reported
Min to pump 5 volumes:	Not Reported		

K43
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269845**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1959-04 W272-22 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410619
Well Depth:	60	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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44
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000861**

Well ID:	3-1900-019	Well Name:	Haw Prince Irr 4
Well Owner:	Hawaii Prince Golf Club	Land Owner:	Hawaii Prince Hotel Waikiki LLC
Pump Rate (g/m):	210	Year Drillled:	1990
Original Well Name:	Not Reported	Driller:	Roscoe Moss Hawaii Inc
Well Construction Type:	Percussion	Casing Diameter (in):	15
Ground Elevation (ft):	20	Well Depth (ft):	25
Solid Casing Depth:	17	Perforated Casing Depth:	25
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	1.3
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	1/15/1990
Test Pump Rate (g/m):	210	Test Drawdown Rate (ft):	1.7
Test Chloride Content (MG/L):	560	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-5	Solid Casing Bottom Elevation:	3
Year Installed:	1992	Pump Capacity (MM gal/day):	0.302
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1990	Latest WCR2 Report:	1/22/1992
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
HI WELLS	HI1100000000993

K45
North
1/2 - 1 Mile
Higher

Well ID:	3-1959-004	Well Name:	Puuloa
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1941
Original Well Name:	Not Reported	Driller:	W. Mullin
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	Not Reported	Well Depth (ft):	60
Solid Casing Depth:	17	Perforated Casing Depth:	Not Reported
Major Well Use:	Unused	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	1010	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1941	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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L46
NW
1/2 - 1 Mile
Higher

Database	EDR ID Number
HI WELLS	HI1100000000860

Well ID:	3-1900-018	Well Name:	Haw Prince Irr 3
Well Owner:	Hawaii Prince Golf Club	Land Owner:	Hawaii Prince Hotel Waikiki LLC
Pump Rate (g/m):	210	Year Drillled:	1990
Original Well Name:	Not Reported	Driller:	Roscoe Moss Hawaii Inc
Well Construction Type:	Percussion	Casing Diameter (in):	15
Ground Elevation (ft):	20	Well Depth (ft):	25
Solid Casing Depth:	17	Perforated Casing Depth:	25
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	0.5
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	1/12/1990
Test Pump Rate (g/m):	210	Test Drawdown Rate (ft):	0.8
Test Chloride Content (MG/L):	700	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-5	Solid Casing Bottom Elevation:	3
Year Installed:	1992	Pump Capacity (MM gal/day):	0.302
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1990	Latest WCR2 Report:	1/22/1992
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database | EDR ID Number

M47
NNW
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000862**

Well ID:	3-1900-020	Well Name:	Haw Prince Irr 5
Well Owner:	Hawaii Prince Golf Club	Land Owner:	Hawaii Prince Hotel Waikiki LLC
Pump Rate (g/m):	210	Year Drillled:	1990
Original Well Name:	Not Reported	Driller:	Roscoe Moss Hawaii Inc
Well Construction Type:	Percussion	Casing Diameter (in):	15
Ground Elevation (ft):	20	Well Depth (ft):	25
Solid Casing Depth:	17	Perforated Casing Depth:	25
Major Well Use:	Golf Course Irrigation	Inital Water Level (ft):	0.8
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	0	Date Tested:	1/17/1990
Test Pump Rate (g/m):	210	Test Drawdown Rate (ft):	0.5
Test Chloride Content (MG/L):	600	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-5	Solid Casing Bottom Elevation:	3
Year Installed:	1992	Pump Capacity (MM gal/day):	0.302
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1990	Latest WCR2 Report:	1/27/1992
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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L48
NW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269835**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-19 HAWAII PRINCE W-4		
Type:	Well	Description:	Not Reported
HUC:	20060000	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19900113	Well Depth:	25
Well Depth Units:	ft	Well Hole Depth:	25
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1990-01-15
Feet below surface:	18.6	Feet to sea level:	Not Reported
Note:	Not Reported		

N49
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269860**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-05 W272-14 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported

Aquifer Type:	Not Reported	Construction Date:	19410206
Well Depth:	28	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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M50
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000269848**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-20 HAWAII PRINCE W-5		
Type:	Well	Description:	Not Reported
HUC:	20060000	Drainage Area:	Not Reported
Drainage Area Units:	Not Reported	Contrib Drainage Area:	Not Reported
Contrib Drainage Area Unts:	Not Reported	Aquifer:	Not Reported
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19900116	Well Depth:	25
Well Depth Units:	ft	Well Hole Depth:	25
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	2	Level reading date:	1990-01-17
Feet below surface:	19.3	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1990-01-17	Feet below surface:	19.3
Feet to sea level:	Not Reported	Note:	Not Reported

N51
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269859**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-06 W272-15 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410208
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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N52
North
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000847**

Well ID:	3-1900-005	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1941
Original Well Name:	Not Reported	Driller:	Layne International
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	Not Reported	Well Depth (ft):	28
Solid Casing Depth:	20	Perforated Casing Depth:	Not Reported
Major Well Use:	Abandoned-Lost	Inital Water Level (ft):	Not Reported

Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	1050	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1941	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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N53
North
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000848**

Well ID:	3-1900-006	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1941
Original Well Name:	Not Reported	Driller:	Layne International
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	Not Reported	Well Depth (ft):	30
Solid Casing Depth:	22	Perforated Casing Depth:	Not Reported
Major Well Use:	Abandoned-Lost	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	1100	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1941	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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N54
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269875**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-04 W272-6 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19390101
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Map ID
Direction
Distance
Elevation

Database	EDR ID Number
HI WELLS	HI1100000000846

N55
North
1/2 - 1 Mile
Higher

Well ID:	3-1900-004	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1939
Original Well Name:	Not Reported	Driller:	W. Mullin
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	15	Well Depth (ft):	37
Solid Casing Depth:	20	Perforated Casing Depth:	Not Reported
Major Well Use:	Abandoned-Lost	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	905	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-22	Solid Casing Bottom Elevation:	-5
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1939	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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O56
NNE
1/2 - 1 Mile
Higher

Database	EDR ID Number
FED USGS	USGS40000269872

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1959-02 W272-5 EWA	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19390101
Well Depth:	30	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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O57
NNE
1/2 - 1 Mile
Higher

Database	EDR ID Number
HI WELLS	HI1100000000991

Well ID:	3-1959-002	Well Name:	Puuloa
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1939
Original Well Name:	Not Reported	Driller:	W. Mullin
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	15	Well Depth (ft):	30
Solid Casing Depth:	20	Perforated Casing Depth:	Not Reported
Major Well Use:	Unused	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported

Chloride Content (mg/L):	1110	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	-15	Solid Casing Bottom Elevation:	-5
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1939	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

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P58
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000269876**

Organization ID:	USGS-HI	Organization Name:	USGS Hawaii Water Science Center
Monitor Location:	3-1900-10 W272-20 EW	Type:	Well
Description:	Not Reported	HUC:	20060000
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Not Reported	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19410616
Well Depth:	32	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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P59
North
1/2 - 1 Mile
Higher

HI WELLS **HI1100000000852**

Well ID:	3-1900-010	Well Name:	Barbers Point
Well Owner:	Naval Facilities Engineering Command Hawaii, Environmental, NAVFAC Hawaii		
Land Owner:	Department of the Navy, Navy Region Hawaii		
Pump Rate (g/m):	Not Reported	Year Drillled:	1941
Original Well Name:	Not Reported	Driller:	Layne International
Well Construction Type:	Not Reported	Casing Diameter (in):	6
Ground Elevation (ft):	Not Reported	Well Depth (ft):	32
Solid Casing Depth:	26	Perforated Casing Depth:	Not Reported
Major Well Use:	Abandoned-Lost	Inital Water Level (ft):	Not Reported
Water Level After Drilling:	Not Reported	Water Level After Install:	Not Reported
Chloride Content (mg/L):	1020	Date Tested:	Not Reported
Test Pump Rate (g/m):	Not Reported	Test Drawdown Rate (ft):	Not Reported
Test Chloride Content (MG/L):	Not Reported	Test Water Temp:	Not Reported
Temp Unit:	Not Reported	Max Chloride Level:	Not Reported
Minimum Chloride Level:	Not Reported	Draft Year:	Not Reported
Hole Bottom Elevation:	Not Reported	Solid Casing Bottom Elevation:	Not Reported
Year Installed:	Not Reported	Pump Capacity (MM gal/day):	Not Reported
Pump Intake Depth:	Not Reported	Latest Head:	Not Reported
Latest WCR1 Report:	1/1/1941	Latest WCR2 Report:	Not Reported
Transmissivity:	Not Reported	Min to pump 5 volumes:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for HONOLULU County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 96706

Number of sites tested: 6

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	-0.150 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	-0.200 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetlands Inventory
Source: Office of Planning
Telephone: 808-587-2895

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Well Index Database
Source: Commission on Water Resource Management
Telephone: 808-587-0214
CWRM maintains a Well Index Database to track specific information pertaining to the construction and installation of production wells in Hawaii.

OTHER STATE DATABASE INFORMATION

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

APPENDIX V
QUALIFICATIONS OF THE ENVIRONMENTAL PROFESSIONAL

PROFESSIONAL QUALIFICATIONS

Name: **Doug Heard**

Title: Environmental Scientist

Education: BS, Geology, California State University Fresno, 1988

Training: OSHA 40 Hour HAZWOPER
California Professional Geologist, PG No. 7071, June 2000

Experience: EnviroServices & Training Center, LLC, Environmental Scientist, 2019 to Present.
BSK Associates, Senior Geologist, 2018 - 2019.
Geocon Consultants Inc. Senior Geologist, 2017 – 2018
Kleinfelder Inc., Staff and Senior Geologist, 1988 - 2017

Mr. Heard has worked extensively as client liaison with various regulatory agencies and has strong technical and project management skills in working with both public and private sector clients including municipal, industrial, agricultural, public utility, and commercial sites. He has conducted, managed and provided technical oversight on numerous soil, soil vapor and groundwater investigation and remediation projects, Phase I & II Environmental Site Assessments and Preliminary Environmental Assessments. Mr. Heard's experience includes expert witness deposition and testimony, development of various work plans, corrective action plans, problem assessment reports, waste discharge reports (WDRs) and implementing monitoring and reporting programs (M&RPs). Mr. Heard's project management responsibilities include supervision of drilling operations, preparation of groundwater sampling and laboratory analysis programs for environmental clients, and technical oversight of staff.

PAST PROJECT EXPERIENCE

Doug Heard

Phase I Environmental Site Assessments on the Islands of Oahu, Hawaii, and California; Environmental Professional. Mr. Heard has conducted numerous Phase I environmental site assessments throughout the State of California and recently in Hawaii in accordance with generally accepted Phase I industry protocol as described in the ASTM E-1527 standard and to satisfy "all appropriate inquiry" as defined in 42 United States Code (U.S.C.) §9601(35)(B). Work sites included commercial, industrial, agricultural, condemned, and residential land ranging in size from small properties (less than 2.0 acres) to larger properties (greater than 300.0 acres).

Phase II Environmental Site Assessments/Site Screening Assessments on the Island of Oahu and in California; Project Manager. Mr. Heard has performed numerous Phase II environmental site assessments and site screening assessments throughout the State of California and recently in Hawaii. Projects included surface soil investigation utilizing both multi-incremental and discrete sampling protocols and subsurface soil/groundwater investigations using hand tools, direct-push rig, and hollow-stem augering techniques. Contaminants investigated included petroleum/petroleum-related compounds, chlorinated solvents, heavy metals, pesticides/herbicides, PCBs, and dioxins/furans.

Underground Storage Tank (UST) Closure and Release Response; Project Manager. Mr. Heard has closed numerous UST systems throughout the State of California. Closure and release response activities were performed in accordance with the Regional Water Quality Control Board (RWQCB) and various county Department of Health Regulations. Duties included coordination and management of various subcontractors, documentation of closure (both removal and close in place), release assessment sample collection, site remediation, waste profiling/disposal, communication with State and County regulators, and report preparation.

Preliminary Environmental Assessments (PEAs); Senior Geologist/Project Manager. Mr. Heard managed numerous PEA-related projects, primarily for proposed school sites or school expansion areas and a metal plating facility. The PEA projects were conducted based on the Cal/EPA Department of Toxic Substances Control (DTSC) guidelines and protocol and were conducted with DTSC review and approval during the PEA process. The PEAs included Phase I Assessments, development of workplans, implementation of approved workplans, reporting, and if needed development of remedial action workplans, projected costs and implementation of a remedial option.

Wastewater Related Projects, Senior Geologist. Mr. Heard has developed workplans for and implemented various Monitoring and Reporting (M&RPs) and Waste Discharge Requirements (WDRs) programs for various wastewater applications. Mr. Heard's has managed wastewater projects for sewer districts, wineries, canneries, and sugar processing facilities with wastewater ponds, wastewater treatment and land application areas. Mr. Heard's duties including project management, technical expertise, litigation services and field work supervision for said work. Mr. Heard coordinated with developers, civil engineers, lawyers, and regulators.

Transportation Projects, Senior Geologist/Project Manager. Mr. Heard has managed various Phase I, Phase II and remedial work in the design and construction phase of various transportation projects trending though residential, agricultural and industrial properties. During these projects Mr. Heard has managed encountering of old wrecking yards, unknown stockpiles and fill material, USTs, pile/drilling spoils, aerially deposited lead, gas stations, petroleum bulk storage and dust cropping operations. Mr. Heard has developed workplans, corrective action plans, in-situ remedial and mitigation measures, regulatory compliance and reporting.

Landfill Related Project Experience, Senior Geologist/Project Manager. Mr. Heard is experience in performing various environmental investigations for permitted and unpermitted landfill and land disposal projects. Mr. Heards experience includes evaluation of landfill waste and burn-dumps, evaluation of constituents of potential concern, soil gas monitoring and evaluation, and oversight of remedial measures (capping).

APPENDIX H
Limited Hazardous Materials Survey Report

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LIMITED HAZARDOUS MATERIALS SURVEY REPORT

FORMER NOAA NWS PTWC
EWA BEACH HI CAMPUS
91-270 FORT WEAVER ROAD
EWA BEACH, OAHU, HAWAII

Prepared for:
STATE OF HAWAII – DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. Box 1879
Honolulu, Hawaii 96805

Prepared by:
ENVIROSERVICES & TRAINING CENTER, LLC
505 Ward Avenue, Suite 202
Honolulu, Hawaii 96814
tel: (808) 839-7222

ETC Project No. 20-2014

July 10, 2020

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APPENDICES

1.0 CERTIFICATIONS AND LIMITATIONS

EnviroServices & Training Center, LLC (ETC) has completed a Limited Hazardous Materials Survey (Survey) at the Former NOAA NWS PTWC, located at 91-270 Fort Weaver Road, Ewa Beach, Oahu, Hawaii (Subject Site). ETC's findings and recommendations contained herein are based on site observations, government regulations and laboratory data, which were gathered at the time and location of the study. Opinions stated in this report do not apply to changes that may have occurred after the services were performed.

ETC has performed specified services for this project with the degree of care, skill and diligence ordinarily exercised by professional consultants performing the same or similar services. No other warranty, guarantee, or representation, expressed or implied, is included or intended; unless otherwise specifically agreed to in writing by both ETC and ETC's Client.

This report is intended for the sole use of the State of Hawaii Department of Hawaiian Home Lands (DHHL) exclusively for the Subject Site. The DHHL may use and release this report, including making and retaining copies, provided such use is limited to the particular site and project for which this report is provided. However, the services performed may not be appropriate for satisfying the needs of other users. Release of this report to third-parties will be at the sole risk of ETC's Client and/or said user, and ETC shall not be liable for any claims or damages resulting from or connected with such release or any third party's use or reuse of this report.

Surveyed & Prepared By: 

Sara Marvin
State of Hawaii Asbestos Building Inspector # HIASB-4316
State of Hawaii Lead Risk Assessor # PB-0973

2.0 EXECUTIVE SUMMARY

EnviroServices & Training Center, LLC (ETC) conducted a Limited Hazardous Materials Survey (Survey) at the Former NOAA NWS PTWC, located at 91-270 Fort Weaver Road, Ewa Beach, Oahu, Hawaii (Subject Site). The Survey was limited to employee housing (Buildings 1, 2, 3, 4 & 14), Building 5 (Administration Building), (Building 15 (Annex) and Building 16 (Well house), as specified to ETC by Mr. Darrell Ing of the State of Hawaii Department of Hawaiian Home Lands (Client). The following hazardous materials were identified during ETC's survey:

2.1 Summary of Asbestos Containing Materials Survey

Laboratory analysis determined that one (1) of the one hundred seventy-eight (178) suspected materials sampled contain asbestos above the regulatory limit of 1%. These materials are listed below.

Homogeneous Area	Material	Asbestos Content	Estimated Quantity
Bldg. 2 – Kitchen floor	Black mastic under 12"x12" ceramic floor tile	2% Chrysotile	500 ft^2

2.2 Summary of Lead Paint Survey

In October 2015, BGES, Inc conducted a Lead-Based Paint Survey and Risk Assessment, funded by NOAA. ETC reviewed the Survey, which identified Lead-Based painted surfaces, and inspected the site for additional painted components not identified in the Survey. No additional painted components were identified, and no samples were collected. Lead-Based Paint was identified in the BGES survey. A summary of the results from the Risk Assessment is located in Appendix V. For lead-containing paint results refer to the 2015 BGES Lead-Based Paint Assessment Report.

2.3 Summary of Arsenic Survey

Laboratory results indicated the canec ceiling panels in the residences and administration building was found to contain detectable levels of arsenic above the laboratory detection limit of 13.0 mg/kg.

Location	Homogeneous Area	Material	Condition	Arsenic Content	Estimated Quantity
Building 1 -	Ceiling panels throughout	Canec	Intact	220 mg/kg	2,000 ft^2
Building 2 -	Ceiling panels throughout	Canec	Intact	260 mg/kg	2,000 ft^2
Building 3 -	Ceiling panels in living room and bedrooms	Canec	Intact	1900 mg/kg	2,000 ft^2
Building 4 -	Ceiling panels in living room and bedrooms	Canec	Intact	520 mg/kg	2,000 ft^2
Building 5 -	Ceiling panels throughout	Canec	Intact	450 mg/kg	1,500 ft^2

3.0 INTRODUCTION/PURPOSE

The purpose of this Survey was to inspect the Subject Site for the presence of suspected hazardous materials that may be affected by future construction. The Survey was conducted on June 10, 11 & 12, 2020 and was limited to employee housing (Buildings 1, 2, 3, 4 & 14), Building 5 (Administration Building), Building 15 (Annex) and Building 16 (Well house), as specified to ETC by the Client.

Specifically, ETC completed the following tasks:

- Performed site reconnaissance at the Subject Site;
- Collected five hundred thirty-four (534) samples of suspected ACM from one hundred seventy-eight (178) materials at the Subject Site;
- Submitted the 534 samples of suspected ACM to EMC Laboratories, Inc. (EMC) for analysis of asbestos via Polarized Light Microscopy (PLM) in accordance with the Environmental Protection Agency (EPA) Method 600/R-93/116;
- Reviewed the Lead-Based Paint Survey and Risk Assessment conducted in October 2015 and inspected the site for additional painted components that were not identified in the Lead-Based Paint Survey.
- Collected zero (0) paint chip samples due to no additional painted components identified.
- Collected seven (7) samples of seven (7) suspected Arsenic-Containing Materials (AsCM) from the Subject Site,
- Submitted the 7 samples of AsCM to NVL Labs for analysis of arsenic via Inductively Couple Plasma (ICP-M2) EPA Method 3051/6010D;
- Prepared this report documenting the field activities and the results of the investigation including analytical results, conclusions, and recommendations.

4.0 METHODOLOGY

4.1 Asbestos

ETC personnel collected five hundred thirty-four (534) samples from one hundred seventy-eight (178) suspected ACM for asbestos analysis. Samples were collected from various areas of the Subject Site in accordance with EPA guidelines and recommendations.

The suspected ACM were wetted with amended water before sample collection. A small piece was then carefully cut out and placed into a labeled, re-sealable plastic bag. The sampling equipment was cleaned between each sample collection to avoid cross-contamination between samples. The approximate quantity of each suspected ACM was noted. Sample locations were randomly selected in accordance with EPA protocols and recommendations.

Samples were logged and recorded following strict chain-of-custody procedures, and sent to EMC located in Phoenix, Arizona, for analysis by PLM in accordance with EPA Method 600/R-93/116. EMC is accredited for bulk asbestos analysis through successful participation in the National Voluntary Lab Accreditation Program (NVLAP).

4.2 Lead Paint

ETC personnel inspected the site for additional painted components not identified in the October 2015 Lead-Based Paint Survey and Risk Assessment conducted by BGES, Inc. No additional painted components were identified at the time of the inspection.

4.3 Arsenic

ETC personnel collected seven (7) samples of suspected arsenic-containing materials from the Subject Site. The suspected arsenic treated material samples were collected in accordance with EPA guidelines and recommendations.

The suspected arsenic treated material was wetted with amended water before sample collection. Small pieces were then carefully cut out and placed into a labeled, re-sealable plastic bag.

The samples were logged and recorded following strict chain of custody procedures and submitted to NVL Labs located in Seattle, Washington, for analysis by EPA Method 6010. NVL Labs is accredited for bulk asbestos analysis through successful participation in the NVLAP.

5.0 RESULTS

5.1 Asbestos

A total of five hundred thirty-four (534) suspect asbestos samples were collected and submitted for analysis via PLM. Of the materials sampled, one (1) was found to contain levels of asbestos above the regulatory limit of greater than 1%. Results of these analyses are presented in Table 1 found in Appendix I.

In accordance with federal and state regulations and industry standard practice, ETC determined homogenous areas of each suspect material and collected multiple representative samples of the material from each homogenous area. Typically, all samples for a suspect material will have similar laboratory results. When the results differ, a single result above the regulatory limit is sufficient to determine that the material within the homogenous area is ACM and the entirety of the homogenous area should be treated as ACM. Thus, ETC may request that the laboratory stops analyzing when the first sample in the set is determined to have asbestos content above one percent. For this reason, two samples were not analyzed.

In addition, twenty-four (24) samples were found to contain Fibrous Glass. Although materials containing such fibers are not specifically regulated, it is ETC's recommendation to handle materials containing such fibers with appropriate protective equipment.

The asbestos analytical laboratory report is included in Appendix II. Asbestos photographic documentation is included in Appendix III.

5.2 Lead Paint

No paint chip samples were collected for the subject site or analyzed as part of this survey due to no additional painted components identified.

The comprehensive 2015 BGES Lead Based Paint Risk Assessment report identified lead-based paint in Buildings 1, 2, 3, & 4. A detailed description is included in Appendix V. For lead-containing paint results refer to the 2015 BGES Lead-Based Paint Risk Assessment report.

5.3 Arsenic

ETC personnel collected seven (7) samples of suspected arsenic-containing materials from the Subject Site. Five (5) of the materials were found to contain arsenic above the laboratory detection limit of 13 mg/kg. Any detectable amount of arsenic is considered hazardous to human health and the environment.

Arsenic in building materials does not have a regulated action level, however based on available scientific evidence, OSHA concludes that employees exposed to elemental arsenic and to inorganic compounds have an increased risk of developing cancer. OSHA limits occupational exposure to air contaminated with arsenic at 10 micrograms per cubic meter (mg/m^3) of air, averaged over any 8-hour period.

The arsenic analytical laboratory report is included in Appendix II. Arsenic photographic documentation is included in Appendix III.

6.0 DISCUSSION AND RECOMMENDATIONS

The findings and recommendations of ETC's limited hazardous materials survey extended only to those areas that were accessible at the time of the site reconnaissance. Any areas that were inaccessible either due to physical restraints (i.e. areas within walls, excessive heights, hidden materials, etc.) are not covered under the scope of this survey and should be evaluated for hazardous materials separately prior to any disturbance.

Based on ETC's visual inspection of the facility and laboratory data, ETC recommends the following:

- Manage and/or remove and dispose of hazardous and regulated materials in accordance with applicable federal, state, and local regulations, prior to renovation and/or demolition activities that may disturb these materials.
- Any material that is suspected to contain a hazardous contaminant but was not tested as part of this survey should be tested prior to disturbance.
- All ACM must be removed and disposed of by a qualified asbestos abatement contractor prior to renovation or demolition.
- Remove and dispose of all AsCM that maybe disturbed during renovation/demolition activities in accordance with applicable federal, state, and local regulations.
- Handle materials containing glass fibers with appropriate protective equipment to prevent inhalation or ingestion of fibers and contact with skin and mucous membranes.
- All ACM to remain at the facility should be treated and/or maintained in good condition to prevent exposure to users of the facility.
- Remove and dispose of (abate) all loose and flaking (deteriorated) lead-based and lead-containing paint that may be disturbed during renovation/demolition activities in accordance with applicable federal, state, and local regulations.
- All LCP waste and debris generated from the removal must either be recycled in accordance with applicable regulatory requirements, where available (e.g. metal components), or undergo Toxicity Characteristic Leaching Procedure (TCLP)-Lead analysis prior to disposal.
- Treat all LCP that is to remain at the facility in a manner that will prevent a lead paint hazard. Such treatments may include, but are not limited to, paint stabilization, encapsulation, and enclosure.
- The services of a qualified consultant should be obtained to monitor and inspect the removal activities to ensure compliance with applicable EPA and OSHA regulations pertaining to the handling of ACM, AsCM and LCP.
- Conduct air monitoring for asbestos fibers, arsenic fibers and lead dust by qualified personnel during abatement and general renovation/demolition activities of areas that were determined to contain these contaminants.

Appendix I

DATA TABLES

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-1-A01	1	Int - ceiling throughout	Canec panels	Good	Misc	Friable	ND	1,750 ft^2
2014-1-A02							ND	
2014-1-A03							ND	
2014-1-A04	1	Int - ceiling/walls kitchen	Drywall	Good	Misc	NF I	ND	150 ft^2
2014-1-A05							ND	
2014-1-A06							ND	
2014-1-A07	1	Int - walls	Concrete	Good	Misc	NF I	ND	800 ft^2
2014-1-A08							ND	
2014-1-A09							ND	
2014-1-A10	1	Int - walls	CMU	Good	Misc	NF I	ND	1,800 ft^2
2014-1-A11							ND	
2014-1-A12							ND	
2014-1-A13	1	Int - wood trim on walls	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-1-A14							ND	
2014-1-A15							ND	
2014-1-A16	1	Int - walls throughout	6" brown cove base and mastic	Damaged	Misc	NF I	ND	1,500 l.f
2014-1-A17							ND	
2014-1-A18							ND	
2014-1-A19	1	Int - master bathroom walls	4" pink ceramic wall tiles	Good	Misc	NF I	ND	100 ft^2
2014-1-A20							ND	
2014-1-A21							ND	
2014-1-A22	1	Int - master bathroom shower walls	4" white ceramic wall tiles	Good	Misc	NF I	ND	50 ft^2
2014-1-A23							ND	
2014-1-A24							ND	
2014-1-A25	1	Int - master bathroom floor	2" white ceramic floor tiles	Good	Misc	NF I	ND	75 ft^2
2014-1-A26							ND	
2014-1-A27							ND	
2014-1-A28	1	Int - master bathroom shower floor	1" white ceramic floor tiles	Good	Misc	NF I	ND	25 ft^2
2014-1-A29							ND	
2014-1-A30							ND	
2014-1-A31	1	Int - bathroom walls	White caulking	Good	Misc	NF I	ND	300 l.f
2014-1-A32							ND	
2014-1-A33							ND	
2014-1-A34	1	Int - window frames	Black caulking	Good	Misc	NF I	ND	1,600 l.f
2014-1-A35							ND	
2014-1-A36							ND	
2014-1-A37	1	Int - main bathroom walls	4" blue ceramic wall tile	Good	Misc	NF I	ND	120 ft^2
2014-1-A38							ND	
2014-1-A39							ND	
2014-1-A40	1	Int - main bathroom floors	2" blue ceramic floor tile	Good	Misc	NF I	ND	120 ft^2
2014-1-A41							ND	
2014-1-A42							ND	

*ND = None Detected
NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-1-A43	1	Int - floors throughout	Carpet mastic	Good	Misc	NF I	ND	1,500 ft^2
2014-1-A44							ND	
2014-1-A45							ND	
2014-1-A46	1	Int - floors kitchen, solarium, entry	8" cream terra cotta tiles	Good	Misc	NF I	ND	500 ft^2
2014-1-A47							ND	
2014-1-A48							ND	
2014-1-A49	1	Ext - walls	Concrete	Good	Misc	NF I	ND	800 ft^2
2014-1-A50							ND	
2014-1-A51							ND	
2014-1-A52	1	Ext - walls	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-1-A53							ND	
2014-1-A54							ND	
2014-1-A55	1	Ext - window frames	Black caulking	Good	Misc	NF I	ND	1,600 l.f
2014-1-A56							ND	
2014-1-A57							ND	
2014-1-A58	1	Attic	Insulation	Good	TSI	NF I	ND	2,000 ft^2
2014-1-A59							ND	
2014-1-A60							ND	
2014-1-A61	1	Roof	Roofing material	Good	Misc	NF I	ND	2,000 ft^2
2014-1-A62							ND	
2014-1-A63							ND	
2014-1-A64	1	Roof - gutters	Tan caulking	Good	Misc	NF I	ND	100 l.f
2014-1-A65							ND	
2014-1-A66							ND	
2014-1-A67	1	Roof - peaks	White caulking	Good	Misc	NF I	ND	100 l.f
2014-1-A68							ND	
2014-1-A69							ND	
2014-1-A70	1	Roof - base of solar	Beige/clear caulking	Good	Misc	NF I	ND	5 l.f
2014-1-A71							ND	
2014-1-A72							ND	
2014-1-A73	1	Roof - solar	Foam pipe insulation	Good	TSI	Friable	ND	20 l.f
2014-1-A74							ND	
2014-1-A75							ND	
2014-2-A01	2	Int - ceiling throughout	Canec panels	Good	Misc	Friable	ND	2,000 ft^2
2014-2-A02							ND	
2014-2-A03							ND	
2014-2-A04	2	Int - walls throughout	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-2-A05							ND	
2014-2-A06							ND	
2014-2-A07	2	Int - wood trim on walls	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-2-A08							ND	
2014-2-A09							ND	

*ND = None Detected
NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-2-A10	2	Int - walls throughout	6" brown cove base and mastic	Damaged	Misc	NF I	ND	1,500 l.f
2014-2-A11							ND	
2014-2-A12							ND	
2014-2-A13	2	Int - floors solarium, entry	8" cream terra cotta tiles	Good	Misc	NF I	ND	250 ft^2
2014-2-A14							ND	
2014-2-A15							ND	
2014-2-A16	2	Int - bathroom walls	4" white ceramic wall tile	Good	Misc	NF I	ND	350 ft^2
2014-2-A17							ND	
2014-2-A18							ND	
2014-2-A19	2	Int - bathroom floors	2" white ceramic floor tile	Good	Misc	NF I	ND	150 ft^2
2014-2-A20							ND	
2014-2-A21							ND	
2014-2-A22	2	Int - floors throughout	Carpet mastic	Good	Misc	NF I	ND	1,500 ft^2
2014-2-A23							ND	
2014-2-A24							ND	
2014-2-A25	2	Int - window frames throughout	Black caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-2-A26							ND	
2014-2-A27							ND	
2014-2-A28	**2**	**Int - kitchen floor**	**12" beige ceramic floor tile/black mastic**	**Damaged**	**Misc**	**NF I**	**2% Chrysotile**	**100 ft^2**
2014-2-A29							**NA**	
2014-2-A30							**NA**	
2014-2-A31	2	Int - bathrooms	Sink caulking	Good	Misc	NF I	ND	350 l.f
2014-2-A32							ND	
2014-2-A33							ND	
2014-2-A34	2	Attic	Insulation	Good	TSI	Friable	ND	2,000 ft^2
2014-2-A35							ND	
2014-2-A36							ND	
2014-2-A37	2	Ext - entry	12" brown terra cotta tiles	Damaged	Misc	NF I	ND	75 ft^2
2014-2-A38							ND	
2014-2-A39							ND	
2014-2-A40	2	Ext - window frames	Black caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-2-A41							ND	
2014-2-A42							ND	
2014-2-A43	2	Roof	Roofing material	Good	Misc	NF I	ND	2,000 ft^2
2014-2-A44							ND	
2014-2-A45							ND	
2014-2-A46	2	Roof - gutters	Tan caulking	Good	Misc	NF I	ND	100 l.f
2014-2-A47							ND	
2014-2-A48							ND	
2014-2-A49	2	Roof - peaks	White caulking	Good	Misc	NF I	ND	100 l.f
2014-2-A50							ND	
2014-2-A51							ND	

*ND = None Detected
NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-2-A52	2	Roof - pipe penetrations	O-ring spacer	Good	Misc	NF I	ND	3 ft^2
2014-2-A53							ND	
2014-2-A54							ND	
2014-2-A55	2	Roof - solar panels base	Black caulking	Good	Misc	NF I	ND	3 l.f
2014-2-A56							ND	
2014-2-A57							ND	
2014-2-A58	2	Roof - solar	Tan caulking	Good	Misc	NF I	ND	3 l.f
2014-2-A59							ND	
2014-2-A60							ND	
2014-2-A61	2	Roof - vents	Grey caulking	Good	Misc	NF I	ND	3 l.f
2014-2-A62							ND	
2014-2-A63							ND	
2014-2-A64	2	Ext - walls	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-2-A65							ND	
2014-2-A66							ND	
2014-2-A67	2	Ext - walkways	Concrete	Good	Misc	NF I	ND	2,200 ft^2
2014-2-A68							ND	
2014-2-A69							ND	
2014-2-A70	2	Roof - solar pipes	Foam insulation	Damaged	TSI	NF I	ND	20 l.f
2014-2-A71							ND	
2014-2-A72							ND	
2014-3-A01	3	Int - ceiling living room, bedrooms	Canec panels	Good	Misc	Friable	ND	1,100 ft^2
2014-3-A02							ND	
2014-3-A03							ND	
2014-3-A04	3	Int - ceiling kitchen, hallway, bathrooms	Drywall	Good	Misc	NF I	ND	900 ft^2
2014-3-A05							ND	
2014-3-A06							ND	
2014-3-A07	3	Int - walls kitchen, hallway, bathrooms	Drywall	Good	Misc	NF I	ND	1,100 ft^2
2014-3-A08							ND	
2014-3-A09							ND	
2014-3-A10	3	Int - walls living room, bedrooms	CMU	Good	Misc	NF I	ND	900 ft^2
2014-3-A11							ND	
2014-3-A12							ND	
2014-3-A13	3	Int - wood trim on walls	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-3-A14							ND	
2014-3-A15							ND	
2014-3-A16	3	Int - window frames throughout	Black caulking	Good	Misc	NF I	ND	1,600 l.f
2014-3-A17							ND	
2014-3-A18							ND	

*ND = None Detected
NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-3-A19	3	Int - bathrooms	White caulking	Good	Misc	NF I	ND	450 l.f
2014-3-A20							ND	
2014-3-A21							ND	
2014-3-A22	3	Int - kitchen	4" cove base and mastic	Damaged	Misc	NF I	ND	120 l.f
2014-3-A23							ND	
2014-3-A24							ND	
2014-3-A25	3	Int - bathroom floors	12" off-white ceramic floor tile	Good	Misc	NF I	ND	450 ft^2
2014-3-A26							ND	
2014-3-A27							ND	
2014-3-A28	3	Int - floors kitchen, entry, solarium	8" cream terra cotta floor tile	Good	Misc	NF I	ND	500 ft^2
2014-3-A29							ND	
2014-3-A30							ND	
2014-3-A31	3	Int - floor throughout	Carpet mastic	Good	Misc	NF I	ND	1,500 ft^2
2014-3-A32							ND	
2014-3-A33							ND	
2014-3-A34	3	Ext - walls	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-3-A35							ND	
2014-3-A36							ND	
2014-3-A37	3	Ext - wall base	Concrete	Good	Misc	NF I	ND	2,000 ft^2
2014-3-A38							ND	
2014-3-A39							ND	
2014-3-A40	3	Ext - window frames	Black caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-3-A41							ND	
2014-3-A42							ND	
2014-3-A43	3	Ext - walkway, patio	Concrete	Good	Misc	NF I	ND	500 ft^2
2014-3-A44							ND	
2014-3-A45							ND	
2014-3-A46	3	Roof	Roofing material	Good	Misc	NF I	ND	2,000 ft^2
2014-3-A47							ND	
2014-3-A48							ND	
2014-3-A49	3	Roof - gutters	Tan caulking	Good	Misc	NF I	ND	150 l.f
2014-3-A50							ND	
2014-3-A51							ND	
2014-3-A52	3	Roof - peaks	White caulking	Good	Misc	NF I	ND	75 l.f
2014-3-A53							ND	
2014-3-A54							ND	
2014-3-A55	3	Roof - solar base	Black caulking	Good	Misc	NF I	ND	15 l.f
2014-3-A56							ND	
2014-3-A57							ND	
2014-3-A58	3	Roof - solar pipes	Foam insulation	Damaged	TSI	Friable	ND	20 l.f
2014-3-A59							ND	
2014-3-A60							ND	

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NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-3-A61	3	Roof - solar pipe penetrations	Pipe wrap	Damaged	Misc	NF I	ND	15 l.f
2014-3-A62							ND	
2014-3-A63							ND	
2014-4-A01	4	Int - ceiling living room, solarium, bedrooms	Canec panels	Good	Misc	Friable	ND	1,200 ft^2
2014-4-A02							ND	
2014-4-A03							ND	
2014-4-A04	4	Int - ceiling kitchen, hallway, bathrooms	Drywall/joint compound	Good	Misc	NF I	ND	700 ft^2
2014-4-A05							ND	
2014-4-A06							ND	
2014-4-A07	4	Int - walls kitchen, bathrooms, hall, master bedroom	Drywall/joint compound	Good	Misc	NF I	ND	1,000 ft^2
2014-4-A08							ND	
2014-4-A09							ND	
2014-4-A10	4	Int - walls solarium	CMU	Good	Misc	NF I	ND	250 ft^2
2014-4-A11							ND	
2014-4-A12							ND	
2014-4-A13	4	Int - walls living room, master bedroom	Plaster/skim coat	Damaged	Misc	NF I	ND	1,500 ft^2
2014-4-A14							ND	
2014-4-A15							ND	
2014-4-A16	4	Int - wood trim on walls	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-4-A17							ND	
2014-4-A18							ND	
2014-4-A19	4	Int - window frames	Black caulking	Good	Misc	NF I	ND	1,600 l.f
2014-4-A20							ND	
2014-4-A21							ND	
2014-4-A22	4	Int - walls throughout	6" brown cove base and mastic	Damaged	Misc	Friable	ND	1,100 l.f
2014-4-A23							ND	
2014-4-A24							ND	
2014-4-A25	4	Int - walls kitchen	4" beige cove base and mastic	Damaged	Misc	Friable	ND	150 l.f
2014-4-A26							ND	
2014-4-A27							ND	
2014-4-A28	4	Int - floor solarium, entry, kitchen	8" cream terra cotta floor tile	Good	Misc	NF I	ND	500 ft^2
2014-4-A29							ND	
2014-4-A30							ND	
2014-4-A31	4	Int - floors bathrooms	12" blue ceramic floor tile	Good	Misc	NF I	ND	600 ft^2
2014-4-A32							ND	
2014-4-A33							ND	
2014-4-A34	4	Int - walls bathrooms	7"x12" white ceramic wall tile	Good	Misc	NF I	ND	400 ft^2
2014-4-A35							ND	
2014-4-A36							ND	
2014-4-A37	4	Int - walls master bedroom	6" dark brown cove base and mastic	Damaged	Misc	Friable	ND	400 l.f
2014-4-A38							ND	
2014-4-A39							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-4-A40	4	Int - bathrooms	Sink/toilet caulking	Good	Misc	NF I	ND	15 l.f
2014-4-A41							ND	
2014-4-A42							ND	
2014-4-A43	4	Int - floors living room, hallway, bedrooms	Carpet mastic	Good	Misc	NF I	ND	1,200 ft^2
2014-4-A44							ND	
2014-4-A45							ND	
2014-4-A46	4	Int - kitchen counters	White caulking	Good	Misc	NF I	ND	700 l.f
2014-4-A47							ND	
2014-4-A48							ND	
2014-4-A49	4	Ext - walls	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-4-A50							ND	
2014-4-A51							ND	
2014-4-A52	4	Ext - walls	Concrete	Good	Misc	NF I	ND	800 ft^2
2014-4-A53							ND	
2014-4-A54							ND	
2014-4-A55	4	Ext - window frames	Black caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-4-A56							ND	
2014-4-A57							ND	
2014-4-A58	4	Ext - patio door	Caulking	Good	Misc	NF I	ND	10 l.f
2014-4-A59							ND	
2014-4-A60							ND	
2014-4-A61	4	Ext - north wall pipe	Foam insulation	Damaged	TSI	Friable	ND	20 l.f
2014-4-A62							ND	
2014-4-A63							ND	
2014-4-A64	4	Ext - south wall AC frame	Caulking	Good	Misc	NF I	ND	5 l.f
2014-4-A65							ND	
2014-4-A66							ND	
2014-4-A67	4	Ext - walkways	Concrete	Good	Misc	NF I	ND	1,200 ft^2
2014-4-A68							ND	
2014-4-A69							ND	
2014-4-A70	4	Roof	Roofing material	Good	Misc	NF I	ND	2,000 ft^2
2014-4-A71							ND	
2014-4-A72							ND	
2014-4-A73	4	Roof - gutters	Tan caulking	Good	Misc	NF I	ND	150 l.f
2014-4-A74							ND	
2014-4-A75							ND	
2014-4-A76	4	Roof - peaks	White caulking	Good	Misc	NF I	ND	15 l.f
2014-4-A77							ND	
2014-4-A78							ND	
2014-4-A79	4	Roof - pipe penetrations	O-ring spacer	Good	Misc	NF I	ND	3 ft^2
2014-4-A80							ND	
2014-4-A81							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-4-A82	4	Roof - vent	White caulking	Good	Misc	NF I	ND	5 l.f
2014-4-A83							ND	
2014-4-A84							ND	
2014-4-A85	4	Roof - solar pipe	Foam insulation	Damaged	Misc	Friable	ND	15 l.f
2014-4-A86							ND	
2014-4-A87							ND	
2014-4-A88	4	Roof - solar base	Tan caulking	Good	Misc	NF I	ND	5 l.f
2014-4-A89							ND	
2014-4-A90							ND	
2014-4-A91	4	Roof - solar base	Black caulking	Good	Misc	NF I	ND	5 l.f
2014-4-A92							ND	
2014-4-A93							ND	
2014-4-A94	4	Attic	Insulation	Good	TSI	Friable	ND	2,000 ft^2
2014-4-A95							ND	
2014-4-A96							ND	
2014-15-A01	15	Int - ceiling throughout	Pressboard acoustic tile	Good	Misc	Friable	ND	1,500 ft^2
2014-15-A02							ND	
2014-15-A03							ND	
2014-15-A04	15	Int - AC system	Duct insulation	Good	Misc	NF I	ND	1,000 ft^2
2014-15-A05							ND	
2014-15-A06							ND	
2014-15-A07	15	Int - above suspended ceiling	Insulation	Good	TSI	Friable	ND	1,500 ft^2
2014-15-A08							ND	
2014-15-A09							ND	
2014-15-A10	15	Int - walls	Pressboard vinyl wall	Good	Misc	NF I	ND	900 ft^2
2014-15-A11							ND	
2014-15-A12							ND	
2014-15-A13	15	Int - walls	Drywall/joint compound	Good	Misc	NF I	ND	2,000 ft^2
2014-15-A14							ND	
2014-15-A15							ND	
2014-15-A16	15	Entrance door frames	Caulking	Good	Misc	NF I	ND	40 l.f
2014-15-A17							ND	
2014-15-A18							ND	
2014-15-A19	15	Int - kitchen area counter tops	Sink caulking	Good	Misc	NF I	ND	50 l.f
2014-15-A20							ND	
2014-15-A21							ND	
2014-15-A22	15	Int - kitchen area sink	Insulation	Good	TSI	NF I	ND	5 ft^2
2014-15-A23							ND	
2014-15-A24							ND	
2014-15-A25	15	Int - wall vent frame	Vent caulking	Good	Misc	NF I	ND	5 l.f
2014-15-A26							ND	
2014-15-A27							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-15-A28	15	Int - bathroom	Sink/toilet caulking	Good	Misc	NF I	ND	20 l.f
2014-15-A29							ND	
2014-15-A30							ND	
2014-15-A31	15	Int - bathroom walls	6" beige cove base and mastic	Good	Misc	NF I	ND	40 l.f
2014-15-A32							ND	
2014-15-A33							ND	
2014-15-A34	15	Int - walls throughtout	4" blue cove base and mastic	Good	Misc	NF I	ND	250 l.f
2014-15-A35							ND	
2014-15-A36							ND	
2014-15-A37	15	Int - bathroom floor	Vinyl sheet flooring	Good	Misc	NF I	ND	100 ft^2
2014-15-A38							ND	
2014-15-A39							ND	
2014-15-A40	15	Int - floor throughout	Carpet mastic	Good	Misc	NF I	ND	1,300 ft^2
2014-15-A41							ND	
2014-15-A42							ND	
2014-15-A43	15	Ext - window and door frames	Caulking	Good	Misc	NF I	ND	600 l.f
2014-15-A44							ND	
2014-15-A45							ND	
2014-15-A46	15	Ext - walls	Insulation	Damaged	TSI	Friable	ND	2,000 ft^2
2014-15-A47							ND	
2014-15-A48							ND	
2014-15-A49	15	Ext - light sconce	Spacer	Good	Misc	NF I	ND	4 ft^2
2014-15-A50							ND	
2014-15-A51							ND	
2014-15-A52	15	Ext - railing	Caulking	Good	Misc	NF I	ND	4 ft^2
2014-15-A53							ND	
2014-15-A54							ND	
2014-15-A55	15	Ext - steps	Non-skid pads	Damaged	Misc	NF I	ND	18 ft^2
2014-15-A56							ND	
2014-15-A57							ND	
2014-15-A58	15	Ext - walkways	Concrete	Good	Misc	NF I	ND	600 ft^2
2014-15-A59							ND	
2014-15-A60							ND	
2014-15-A61	15	Roof	Roofing material	Good	Misc	NF I	ND	1,500 ft^2
2014-15-A62							ND	
2014-15-A63							ND	
2014-15-A64	15	Roof - pipe penetrations	O-ring space/mastic	Good	Misc	NF I	ND	4 ft^2
2014-15-A65							ND	
2014-15-A66							ND	
2014-16-A01	16	Walls	CMU	Good	Misc	NF I	ND	60 ft^2
2014-16-A02							ND	
2014-16-A03							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-16-A04	16	Walls	Caulking	Damaged	Misc	NF I	ND	2 l.f
2014-16-A05							ND	
2014-16-A06							ND	
2014-16-A07	16	Roof - corrugated metal	Foam spacer	Damaged	Misc	NF I	ND	12 l.f
2014-16-A08							ND	
2014-16-A09							ND	
2014-14-A01	14	Int - ceiling throughout	Drywall/joint compound	Good	Misc	NF I	ND	2,560 ft^2
2014-14-A02							ND	
2014-14-A03							ND	
2014-14-A04	14	Int - wood trim on walls	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-14-A05							ND	
2014-14-A06							ND	
2014-14-A07	14	Attic	Insulation	Good	TSI	Friable	ND	2,560 ft^2
2014-14-A08							ND	
2014-14-A09							ND	
2014-14-A10	14	Int - walls throughout	Drywall/joint compound	Good	Misc	NF I	ND	2,000 ft^2
2014-14-A11							ND	
2014-14-A12							ND	
2014-14-A13	14	Int - garage walls	CMU	Good	Misc	NF I	ND	560 ft^2
2014-14-A14							ND	
2014-14-A15							ND	
2014-14-A16	14	Int - window and door frames	White caulking	Good	Misc	NF I	ND	1,500 l.f
2014-14-A17							ND	
2014-14-A18							ND	
2014-14-A19	14	Int - garage floor	Yellow vinyl floor sheeting	Damaged	Misc	NF I	ND	300 ft^2
2014-14-A20							ND	
2014-14-A21							ND	
2014-14-A22	14	Int - garage, kitchen walls	4" off-white cove base and mastic	Good	Misc	NF I	ND	300 l.f
2014-14-A23							ND	
2014-14-A24							ND	
2014-14-A25	14	Int - kitchen, bathroom, entry floors	12" white ceramic floor tile	Good	Misc	NF I	ND	850 ft^2
2014-14-A26							ND	
2014-14-A27							ND	
2014-14-A28	14	Int - living room, hall, bedrooms	Carpet mastic	Good	Misc	NF I	ND	1,100 ft^2
2014-14-A29							ND	
2014-14-A30							ND	
2014-14-A31	14	Int - kitchen walls/cabinets	White caulking	Good	Misc	NF I	ND	300 l.f
2014-14-A32							ND	
2014-14-A33							ND	
2014-14-A34	14	Int - bathroom showers	White caulking	Good	Misc	NF I	ND	150 l.f
2014-14-A35							ND	
2014-14-A36							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-14-A37	14	Int - bathrooms	Toilet caulking	Good	Misc	NF I	ND	10 l.f
2014-14-A38							ND	
2014-14-A39							ND	
2014-14-A40	14	Int - bedroom closets	Shelf caulking	Good	Misc	NF I	ND	150 l.f
2014-14-A41							ND	
2014-14-A42							ND	
2014-14-A43	14	Ext - walls	CMU	Good	Misc	NF I	ND	2,560 ft^2
2014-14-A44							ND	
2014-14-A45							ND	
2014-14-A46	14	Ext - walls/soffits	Caulking	Good	Misc	NF I	ND	1,500 l.f
2014-14-A47							ND	
2014-14-A48							ND	
2014-14-A49	14	Ext - window frames	Black caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-14-A50							ND	
2014-14-A51							ND	
2014-14-A52	14	Ext - AC system pipes	Foam insulation	Damaged	TSI	Friable	ND	15 l.f
2014-14-A53							ND	
2014-14-A54							ND	
2014-14-A55	14	Ext - walkways/ driveway	Concrete	Good	Misc	NF I	ND	1,500 ft^2
2014-14-A56							ND	
2014-14-A57							ND	
2014-14-A58	14	Roof	Roofing material	Good	Misc	NF I	ND	2,560 ft^2
2014-14-A59							ND	
2014-14-A60							ND	
2014-14-A61	14	Roof - pipe penetrations	Mastic	Good	Misc	NF I	ND	5 l.f
2014-14-A62							ND	
2014-14-A63							ND	
2014-14-A64	14	Roof - peaks	Beige caulking	Good	Misc	NF I	ND	15 l.f
2014-14-A65							ND	
2014-14-A66							ND	
2014-14-A67	14	Roof - solar base	Brown caulking	Good	Misc	NF I	ND	5 l.f
2014-14-A68							ND	
2014-14-A69							ND	
2014-14-A70	14	Roof - solar base	Clear caulking	Good	Misc	NF I	ND	5 l.f
2014-14-A71							ND	
2014-14-A72							ND	
2014-14-A73	14	Roof - solar pipes	Foam insulation	Damaged	TSI	Friable	ND	15 l.f
2014-14-A74							ND	
2014-14-A75							ND	
2014-5-A01	5	Int - throughtout	Pressboard acoustic tile	Good	Misc	Friable	ND	1,850 ft^2
2014-5-A02							ND	
2014-5-A03							ND	

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Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-5-A04	5	Int - throughout above suspended ceiling	Canec tiles	Good	Misc	Friable	ND	2,000 ft^2
2014-5-A05							ND	
2014-5-A06							ND	
2014-5-A07	5	Int - above suspended ceiling	AC duct insulation	Good	TSI	Friable	ND	500 ft^2
2014-5-A08							ND	
2014-5-A09							ND	
2014-5-A10	5	Int - soffit/ac unit	Drywall/joint compound	Good	Misc	NF I	ND	800 ft^2
2014-5-A11							ND	
2014-5-A12							ND	
2014-5-A13	5	Int - walls	Drywall/joint compound	Good	Misc	NF I	ND	1,200 ft^2
2014-5-A14							ND	
2014-5-A15							ND	
2014-5-A16	5	Int - walls	CMU	Good	Misc	NF I	ND	800 ft^2
2014-5-A17							ND	
2014-5-A18							ND	
2014-5-A19	5	Int - window frames	Grey caulking	Good	Misc	NF I	ND	1,600 ft^2
2014-5-A20							ND	
2014-5-A21							ND	
2014-5-A22	5	Int - door frames	White caulking	Good	Misc	NF I	ND	70 l.f
2014-5-A23							ND	
2014-5-A24							ND	
2014-5-A25	5	Int - restroom sink/toilet	White caulking	Damaged	Misc	NF I	ND	5 l.f
2014-5-A26							ND	
2014-5-A27							ND	
2014-5-A28	5	Int - walls	4" grey cove base and mastic	Good	Misc	NF I	ND	1,200 l.f
2014-5-A29							ND	
2014-5-A30							ND	
2014-5-A31	5	Int - command center floors	2' fiberboard tile	Good	Misc	NF I	ND	800 ft^2
2014-5-A32							ND	
2014-5-A33							ND	
2014-5-A34	5	Int - throughout	12" light blue vinyl floor tile	Good	Misc	NF I	ND	600 ft^2
2014-5-A35							ND	
2014-5-A36							ND	
2014-5-A37	5	Int - thresholds	Brown mastic	Good	Misc	NF I	ND	25 l.f
2014-5-A38							ND	
2014-5-A39							ND	
2014-5-A40	5	Int - office floors	Carpet mastic	Good	Misc	NF I	ND	1,600 ft^2
2014-5-A41							ND	
2014-5-A42							ND	
2014-5-A43	5	Int - ramps	Non-skid pads	Good	Misc	NF I	ND	25 ft^2
2014-5-A44							ND	
2014-5-A45							ND	

*ND = None Detected
NA = Not Analyzed

Table 1
Former NOAA NWS PTWC
Asbestos Survey Results

Sample ID	*Building*	*Homogeneous Area*	*Material*	*Condition*	*Category*	*Friability*	*Asbestos Content**	*Estimated Quantity*
2014-5-A46	5	Ext - walls	CMU	Good	Misc	NF I	ND	2,000 ft^2
2014-5-A47							ND	
2014-5-A48							ND	
2014-5-A49	5	Ext - door and window frames	White caulking	Good	Misc	NF I	ND	1,600 l.f
2014-5-A50							ND	
2014-5-A51							ND	
2014-5-A52	5	Ext - foundation	Concrete	Good	Misc	NF I	ND	2,000 ft^2
2014-5-A53							ND	
2014-5-A54							ND	
2014-5-A55	5	Ext - north side AC unit	Vibration cloth	Good	Misc	NF I	ND	10 ft^2
2014-5-A56							ND	
2014-5-A57							ND	
2014-5-A58	5	Ext - north side AC unit	Beige caulking	Good	Misc	NF I	ND	50 l.f
2014-5-A59							ND	
2014-5-A60							ND	
2014-5-A61	5	Ext - walkway	Concrete	Damaged	Misc	NF I	ND	1,200 ft^2
2014-5-A62							ND	
2014-5-A63							ND	
2014-5-A64	5	Ext - south side AC unit	Pipe insulation	Damaged	TSI	Friable	ND	50 l.f
2014-5-A65							ND	
2014-5-A66							ND	
2014-5-A67	5	Int - office walls	4" blue cove base and mastic	Good	Misc	NF I	ND	150 l.f
2014-5-A68							ND	
2014-5-A69							ND	
2014-5-A70	5	Roof	Roofing material	Good	Misc	NF I	ND	2,000 ft^2
2014-5-A71							ND	
2014-5-A72							ND	
2014-5-A73	5	Roof - pipe penetrations	Mastic	Good	Misc	NF I	ND	5 ft^2
2014-5-A74							ND	
2014-5-A75							ND	
2014-5-A76	5	Roof - peaks	Bolt caulking	Good	Misc	NF I	ND	5 l.f
2014-5-A77							ND	
2014-5-A78							ND	

*ND = None Detected
NA = Not Analyzed

Table 3
Former NOAA NWS PTWC
Arsenic Survey Results

Sample ID	*Homogeneous Area*	*Material*	*Condition*	*Arsenic Content*	*Estimated Quantity*
2014-1-As01	Ceiling	Canec panels	Good	220 mg/kg	1,899 ft^2
2014-2-As01	Ceiling	Canec panels	Good	260 mg/kg	1,899 ft^2
2014-3-As01	Ceiling	Canec panels	Good	1900 mg/kg	1,899 ft^2
2014-4-As01	Ceiling	Canec panels	Good	520 mg/kg	1,899 ft^2
2014-5-As01	Ceiling	Canec panels	Good	450 mg/kg	1,260 ft^2
2014-5-As02	Ceiling	Pressboard acoustic tile	Good	< 13.0 mg/kg	1,200 ft^2
2014-15-As01	Ceiling	Pressboard acoustic tile	Good	< 13.0 mg/kg	1,440 ft^2

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APPENDIX I
Magnetic Anomaly Survey Report

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DUDEK

970 NORTH KALAHEO AVENUE
KAILUA, HAWAII 96734
T 808.202.0022 F 808.892.2001

August 4, 2020

Darrell Ing
Land Development Division
Department of Hawaiian Home Lands

Subject: Report on UAV-Based Magnetic survey for the purpose of UXO and other ferrous material detection in the Ewa Beach site.

Aloha Darrell:

This report describes a UAV-Based UXO and infrastructure detection survey carried out by DUDEK at the project site located in Ewa Beach, HI, (21.316085°, -157.996306°) approximately 82 acres.

The principal geophysical sensors included a Geometrics MFAM magnetometer system mounted on a UAV platform and a Gem Systems GSM-19 Overhauser Proton Procession magnetometer used as a base station.

The total survey distance for the Ewa Beach site was ~75 line k/m (5m line spacing). The survey work described in this report took place July 6th to July 10th, 2020. The data was examined for highly susceptible ferro-metallic object magnetic anomalies, which display the potential to be buried waste or Unexploded Ordinance (UXO). A discussion of the results is presented in the Interpretation section of this report, along with an Analytic Signal Map and list of identified anomalies.

Sincerely,

Steven Hochart

Practice Director

Mapping and Surveying Division, Dudek

PROJECT SITE

The site is located in Ewa Beach HI, (21.316085°, -157.996306°). The property was formerly used as a weather observation site and tsunami warning center.

The site is mostly flat with terrain elevation changes approximately 3-meters in Northing and 1-meter Easting.

The site is mostly hard volcanic soil and rock that is heavily treed over the majority of the site with the exception of the South central portion which is primarily structures and other infrastructure related to a previously operating weather/ tsunami warning center.

The site was accessed by vehicle to a central site location where the UAV operations were conducted from.

Flight operations were conducted at a nominal line spacing of 5 meters at an altitude of approximately 19 meters AGL (sensor height). The altitude was selected based on highest tree height within the survey area plus a margin of safety.

Aerial data collection was conducted between July 8th and July 10th 2020. The weather during collection was mostly light winds between 5mph and 12mph with average temperatures around 85 degrees F. Aerial data collection was terminated if winds exceeded 14 mph.

FLIGHT OPERATIONS

The daily survey procedure consisted of an early morning safety and survey plan meeting. The GSM-19W Overhauser Base Station was set up, and the crew travelled to the designated takeoff and landing position. Access to the takeoff and landing zones was facilitated by on-site road access.

Prior to takeoff, pre-flight briefing and safety hazards were discussed. All flight equipment was assembled and pre-flight checked and prior to the flight logging was initiated on the MFAM sensor package. The UAV flight was initiated manually, and the ground crew monitored the ground control station, and maintained visual line of sight with the UAV during flight.

The position and altitude of the aircraft and magnetometer payload was achieved autonomously using a combination of Barometric Pressure Measurement, GPS, Compass, Inertial Measurement Unit (IMU) and RADAR altimeter. Altitudes above ground level of the senor payload were 19 meters AGL. Above ground altitude was maintained using a combination of RADAR altitude measurement and barometric pressure readings.

Upon survey flight completion, the UAV returned to the predefined landing position, was taken over by manual flight control, and landed to ensure a safe position of the sensor payload. Between flights, the UAV was brought back to the staging area to swap batteries and check the sensor operation and data. The landing zone was marked with high visibility cones.

Raw survey data was downloaded at the completion of each flight and quality checked.

The magnetometer was suspended from the UAV in a fixed orientation by a vibration isolated mounting system at a sensor distance of approximately 1.3 meters to reduce UAV noise and magnetic interference. Nominal survey speed was maintained at 5 meters per second ground speed. Scan rates for data acquisition was 1000 hertz (Hz) for the magnetometer and 1 Hz for GPS positioning. Data was collected with a line spacing of 5m for Ewa Beach site.

Navigation of the UAV was maintained by the onboard GPS-Compass system. Pre-programmed flight plans were uploaded to the UAV prior to takeoff, and the aircraft flew the flight lines autonomously, returning to its takeoff location, or a pre-programed landing location once the lines were completed. Landing and Takeoff were conducted manually by the UAV pilot and ground crew.

The operator was responsible for ensuring the MFAM magnetometer was properly warmed up and oriented prior to departure and that the instruments operated properly during flight.

The data was recorded for each flight and stored in real-time on-board the UAV with solid state memory. On return of the craft, the magnetometer was shut off and data were downloaded and checked for errors.

AIRCRAFT EQUIPMENT

The unmanned aircraft used was a Hexacopter. The platform has a maximum takeoff weight of 55lbs and contains various onboard systems specifically developed for use in geophysical surveys while providing the highest level of safety possible. Some of these features are: Triple redundant IMUs, Barometers, and Compass Systems. Dual GPS system, dual battery systems and redundant power management systems. The aircraft has 6 propulsion motors which can maintain flight in the event of a motor failure. The aircraft also has emergency features such as autonomous return to home, battery failsafe and Autoland.

AIRBORNE MAGNETOMETER SYSTEM:

The Magnetometer payload is centered around a Geometrics Micro Fabricated Atomic Magnetometer (MFAM) sensor package. It is a dual sensor 1000 hz logging rate device with onboard SD logging, GPS and Wi-Fi capabilities. Specifications listed below.

Operating Principle: Laser pumped cesium vapor (Cs133 non-radioactive) total field scalar magnetometer.

Operating Range: 20,000 to 100,000 nT.

Gradient Tolerance: 10,000nT/m.

Operating Zones: Configured for operation anywhere in the world without dead zones.

Dead Zone: None.

Noise/Sensitivity: 0.005nT/ Hzrms typical.

Sample Rate: 1000 Hz. synchronized to GPS 1PPS.

Bandwidth: 400Hz.

Heading Error: ± 5 nT over entire 360° equatorial and polar spins typical.

Output: WiFi data download over 2.4GHz WiFi access point.

GPS: Commercial grade with typical 1 m accuracy.

USB Port: Port for USB flash drive. Used for field upgrades.

Data Logger: Built in Data Logger.

Data Storage: 32 Gbyte Micro SD card, U3 speed class

MAGNETOMETER BASE STATION

A Gem Systems GSM-19W Overhauser base station magnetometer was set up each day at least 30 min prior to surveying to record the diurnal variations of the Earth's magnetic field. The base station was automatically time synchronized to UTC time using a GPS-integrated GSM-19 mobile magnetometer by Gem Systems. The base station collected data at a rate of one reading every 4 seconds.

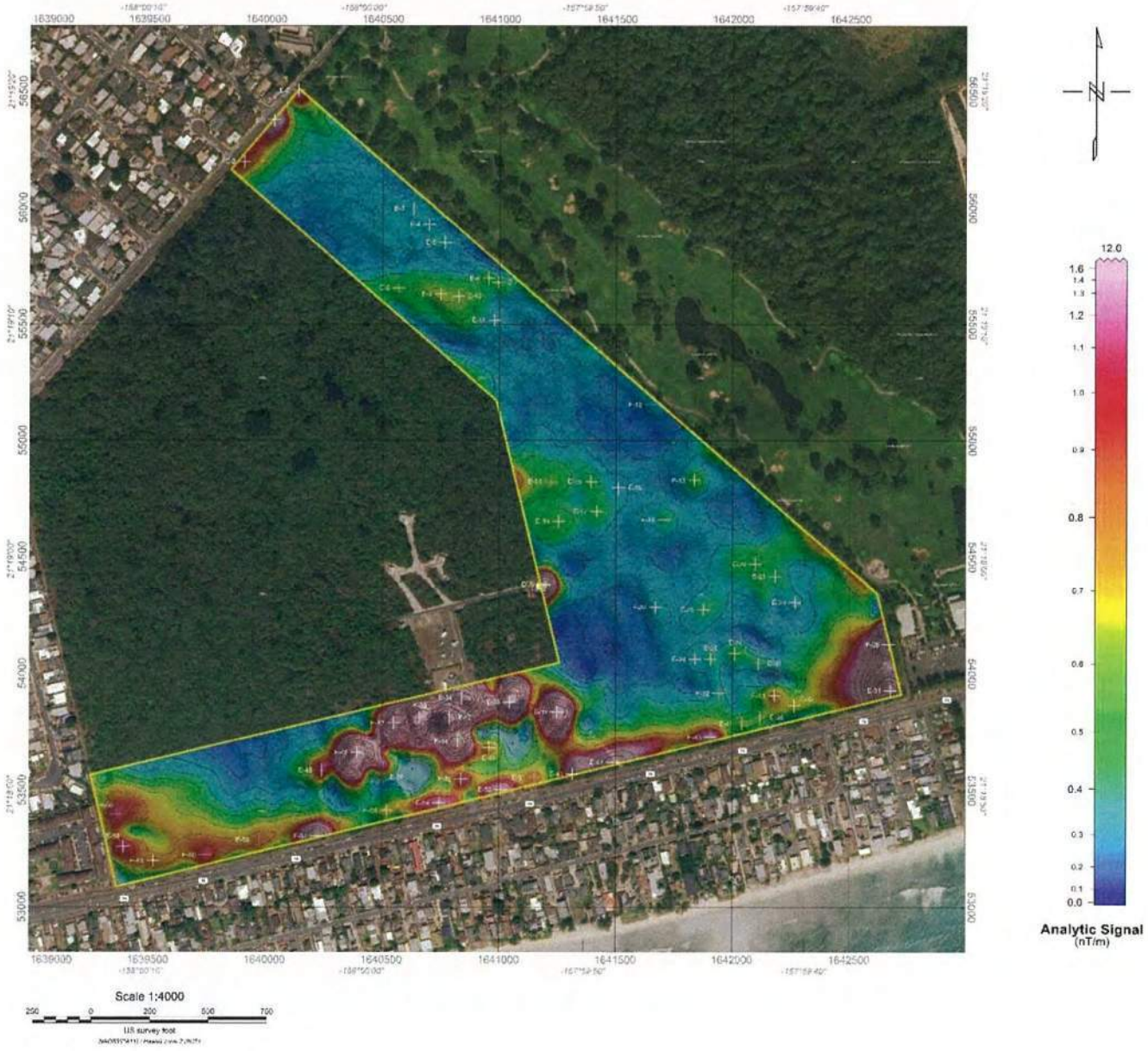
DATA PROCESSING

For each mission, raw data files were initially batch processed into a single comma-delimited file using custom software.

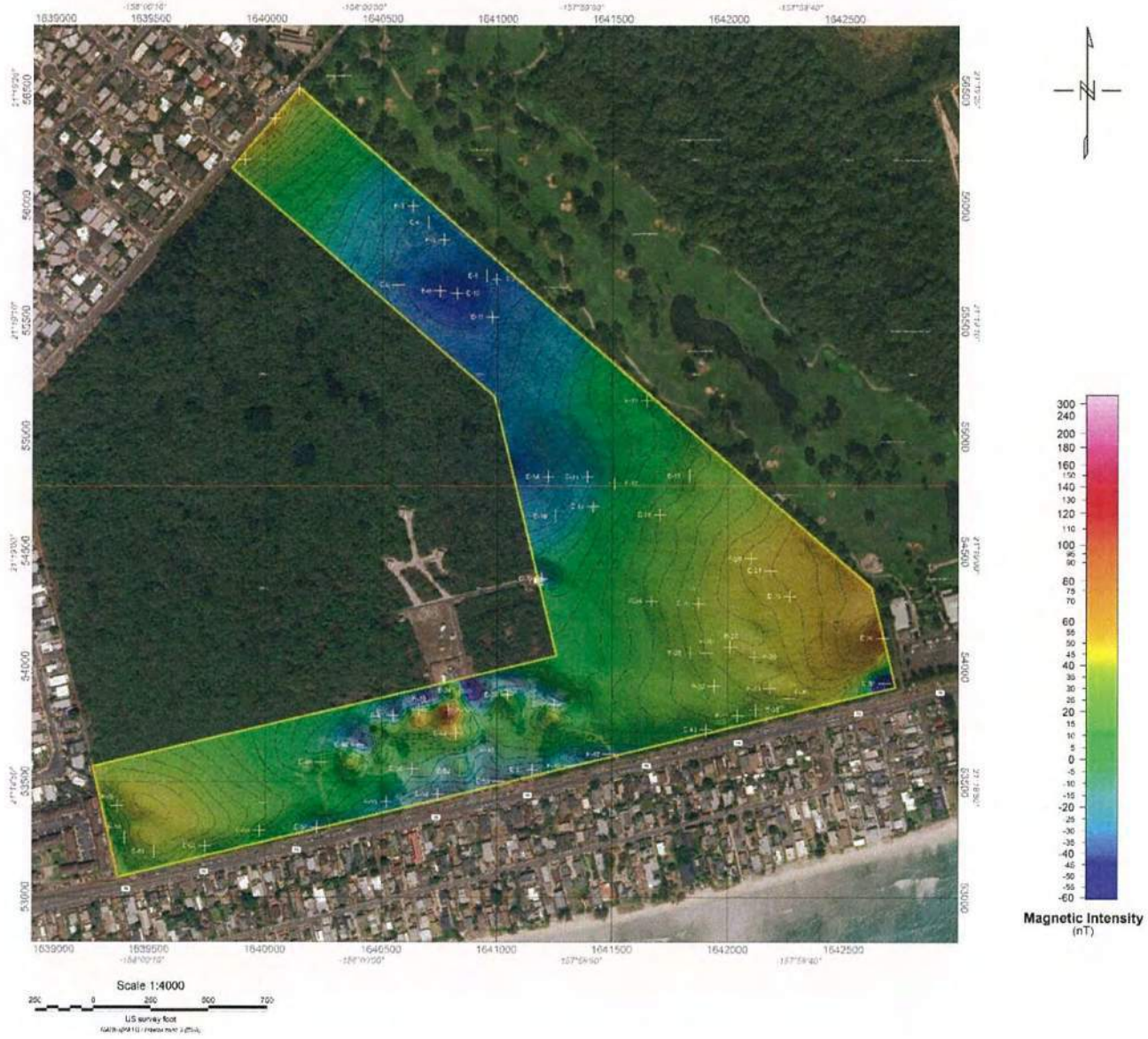
- The concatenated files from each mission were imported into Oasis Montaj for all remaining processing.
- Applied corrections:
    - Instrument Lag
    - Magnetic Heading
    - Major attitude noise due to wind
    - Diurnal variation
    - 1D filtering
    - Combining sorties into one dataset
    - Trend removal filter
    - Analytic signal grid filter
    - Other 2D smoothing filters
- Two maps for each site were published:
    - Magnetic intensity map
        - Best reflects the real-world magnetic field without major geologic trends.
        - Both negative and positive anomalies are visible
        - Units are nT (nanotesla)
    - Analytic Signal
        - Analytic Signal is a 2D grid filter applied to the gridded Total Magnetic Intensity data (measured by the sensor in nanoTeslas). The calculation is performed using this formula: Analytic Signal = sqrt (dx*dx + dy*dy + dz*dz) (2019 Geosoft Inc.). The output grid contains all positive values (in nanoTeslas per meter) and better resolves the source location of dipolar and monopolar anomalies, especially where the Earth's magnetic inclination is low and/or remanence of the anomaly source is unknown.
        - Used to pick magnetic anomaly peak locations with minimum thresholds determined based on the statistics of each data set.
        - The minimum selection threshold for the Ewa Beach site is 0.38 nT/m

- Estimated positional error:
  - Approximately +/- 1m in the direction of flight (N-S)
- Less than or equal to half the line spacing orthogonal to flight lines (E-W).
  - +/- 2.5m for the Ewa Beach site.

Ewa Beach Site: Analytic Signal Map



Ewa Beach Site: Magnetic Intensity Map



LIST OF ANOMALIES

A total of 62 analytic signal anomalies for the Ewa Beach site (denoted E-0 through E-61)

Anomaly_ID	Analytic_Signal	SPC_Easting_HI_zone3_NAD83_PA11	SPC_Northing_HI_zone3_NAD83_PA11	UTM_Easting_zone_4N_WGS84	UTM_Northing_zone_4N_WGS84	Longitude	Latitude
E-0	1.504384756	1640140.25	56504.06874	603623.8	2358137.6	-158.00081	21.32222
E-1	1.880594134	1640037.051	56376.73571	603592.6	2358098.6	-158.00112	21.32187
E-2	0.96491462	1639907.931	56198.37196	603553.6	2358044	-158.00149	21.32138
E-3	0.386829138	1640631.922	55997.52884	603774.6	2357984.2	-157.99937	21.32082
E-4	0.397096813	1640699.746	55928.83815	603795.4	2357963.4	-157.99917	21.32063
E-5	0.395543754	1640767.516	55851.61528	603816.2	2357940	-157.99897	21.32042
E-6	0.543107748	1640954.25	55696.84469	603873.4	2357893.2	-157.99842	21.32
E-7	0.52928108	1640996.802	55679.50958	603886.4	2357888	-157.9983	21.31995
E-8	0.542110026	1640570.031	55656.62039	603756.4	2357880.2	-157.99955	21.31988
E-9	0.642864227	1640749.044	55629.88674	603811	2357872.4	-157.99902	21.31981
E-10	0.629874527	1640825.78	55620.86723	603834.4	2357869.8	-157.9988	21.31979
E-11	0.402870357	1640978.709	55517.50636	603881.2	2357838.6	-157.99835	21.3195
E-12	0.393343389	1641650.478	55154.87724	604086.6	2357729.4	-157.99638	21.3185
E-13	0.553815663	1641836.128	54829.46327	604143.8	2357630.6	-157.99583	21.31761
E-14	0.604966164	1641221.757	54824.82929	603956.6	2357628	-157.99763	21.31759
E-15	0.519343257	1641392.401	54823.74646	604008.6	2357628	-157.99713	21.31759
E-16	0.421364367	1641511.689	54797.39193	604045	2357620.2	-157.99678	21.31752
E-17	0.503987491	1641417.185	54695.60131	604016.4	2357589	-157.99706	21.31724
E-18	0.471346229	1641707.063	54659.6318	604104.8	2357578.6	-157.99621	21.31714
E-19	0.545874953	1641254.803	54653.96907	603967	2357576	-157.99754	21.31712
E-20	0.527797818	1642098.352	54469.43344	604224.4	2357521.4	-157.99506	21.31662
E-21	0.462246329	1642183.349	54417.69898	604250.4	2357505.8	-157.99481	21.31647
E-22	3.127064466	1641193.345	54381.31819	603948.8	2357492.8	-157.99772	21.31637
E-23	0.417576164	1642267.967	54306.2393	604276.4	2357472	-157.99456	21.31617
E-24	0.430784523	1641670.552	54284.43244	604094.4	2357464.2	-157.99632	21.31611
E-25	0.490911663	1641875.27	54274.60095	604156.8	2357461.6	-157.99571	21.31608
E-26	4.778552055	1642667.842	54124.51916	604398.6	2357417.4	-157.99339	21.31567
E-27	0.500160098	1642010.594	54086.02683	604198.4	2357404.4	-157.99532	21.31556
E-28	0.434455663	1641839.788	54061.51302	604146.4	2357396.6	-157.99582	21.31549
E-29	0.475313514	1641908.045	54061.07993	604167.2	2357396.6	-157.99562	21.31549
E-30	0.470175385	1642112.709	54042.7163	604229.6	2357391.4	-157.99502	21.31544
E-31	12.32973957	1642675.129	53928.22504	604401.2	2357357.6	-157.99336	21.31513
E-32	0.440909117	1641941.254	53915.81635	604177.6	2357352.4	-157.99552	21.31509
E-33	0.88869828	1642180.1	53905.76838	604250.4	2357349.8	-157.99482	21.31506
E-34	7.951717377	1640840.44	53897.20329	603842.2	2357344.6	-157.99876	21.31504
E-35	4.241899967	1641045.104	53878.83967	603904.6	2357339.4	-157.99815	21.31499
E-36	0.767869949	1642265.152	53862.56614	604276.4	2357336.8	-157.99457	21.31495
E-37	4.203312874	1641249.606	53834.87951	603967	2357326.4	-157.99755	21.31487
E-38	0.659694254	1642119.78	53812.29338	604232.2	2357321.2	-157.995	21.31481
E-39	7.135710239	1640660.722	53813.01827	603787.6	2357318.6	-157.99928	21.31481
E-40	13.10620689	1640788.705	53812.20624	603826.6	2357318.6	-157.99891	21.31481
E-41	0.688394248	1642042.828	53787.18406	604208.8	2357313.4	-157.99522	21.31474
E-42	4.432692528	1640549.642	53788.12546	603753.8	2357310.8	-157.99961	21.31474
E-43	1.547911525	1641905.934	53728.32497	604167.2	2357295.2	-157.99562	21.31458
E-44	5.89821434	1640822.184	53709.60348	603837	2357287.4	-157.99881	21.31452
E-45	0.911513329	1640958.537	53683.14077	603878.6	2357279.6	-157.99841	21.31445
E-46	4.286837578	1640395.25	53661.11706	603707	2357271.8	-158.00006	21.31439
E-47	2.375426531	1641487.153	53620.05919	604039.8	2357261.4	-157.99686	21.31428
E-48	1.238784909	1640241.184	53585.30176	603660.2	2357248.4	-158.00052	21.31418
E-49	2.356275558	1641316.185	53569.94877	603987.8	2357245.8	-157.99736	21.31414
E-50	0.396917105	1640633.502	53557.21506	603779.8	2357240.6	-157.99936	21.31411
E-51	0.902366221	1641153.965	53553.91294	603938.4	2357240.6	-157.99783	21.3141
E-52	1.213528156	1640838.22	53547.38368	603842.2	2357238	-157.99876	21.31408
E-53	1.62030983	1641008.593	53503.64009	603894.2	2357225	-157.99826	21.31396
E-54	1.380733609	1640743.717	53445.59291	603813.6	2357206.8	-157.99904	21.3138
E-55	0.710113764	1640521.663	53412.8716	603746	2357196.4	-157.99969	21.31371
E-56	1.254532695	1639361.123	53394.63701	603392.4	2357188.6	-158.0031	21.31366
E-57	2.766536951	1640222.333	53303.84776	603655	2357162.6	-158.00057	21.31341
E-58	0.924865067	1639974.791	53288.3532	603579.6	2357157.4	-158.0013	21.31337
E-59	1.229219079	1639394.385	53257.90535	603402.8	2357147	-158.003	21.31328
E-60	1.156757712	1639743.989	53221.5572	603509.4	2357136.6	-158.00198	21.31318
E-61	0.950094402	1639521.989	53197.36802	603441.8	2357128.8	-158.00263	21.31311

Ewa Beach

- Possible higher priority targets at Ewa Beach: E-13, 14, 15, 19, 20, 27, 23

- Large anomalies parallel to road on south, west, and northwest edges (E-1, 43, 53, 54,56, 57, 59, 60 notable)

- Large anomalies due to steel structures: E-22, 34, 35, 37, 39, 40, 42, 44, 46

- Very large unknown negative anomaly E-31 in SE corner

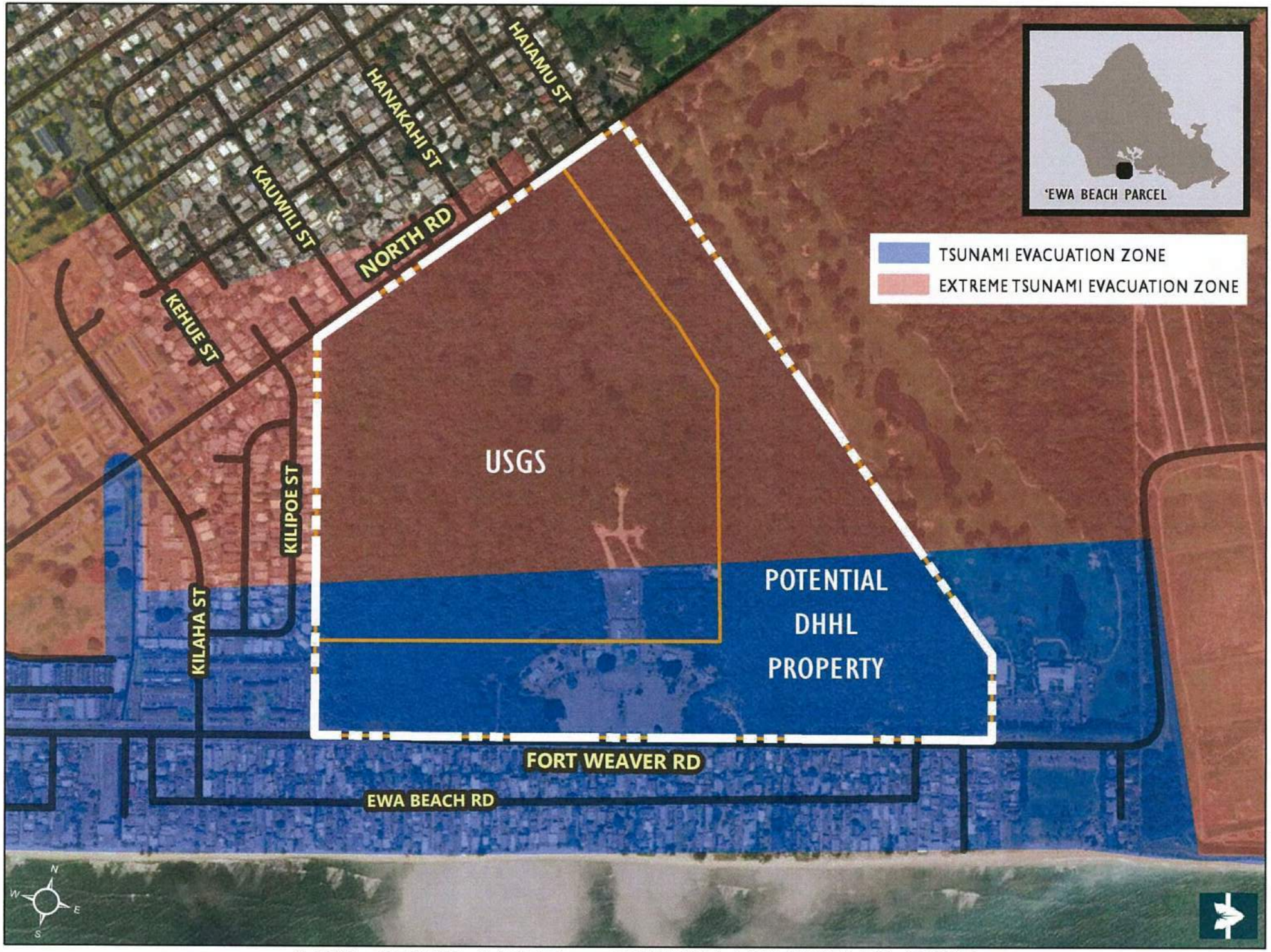
- Broad features like E-6 through E-11 may be geologic, consider possible investigation

- E52, 45 could be steel pipes related to the irrigation system in the front lawn

DISCLAIMER AND RELEASE OF LIABILITY

The enclosed report, data, results and interpretation were conducted as a wide area survey to aid in the identification of both buried infrastructure and potential UXO objects within the Ewa Beach sites. The user of this data, results, report and provided interpretations, agrees to release DUDEK and its personnel of any and all liability related to the use and reliance upon the contained results. Furthermore, the users agree to release liabilities, perceived or otherwise, toward DUDEK, caused by actions or recommendations or lack thereof related to the discovery, deliberate or accidental of any UXO objects within the surveyed sites.

Exhibit E



'EWA BEACH PARCEL - TSUNAMI EVACUATION ZONE

U.S. Fish and Wildlife Service

National Wetlands Inventory

GSA Ewa Beach

Exhibit F

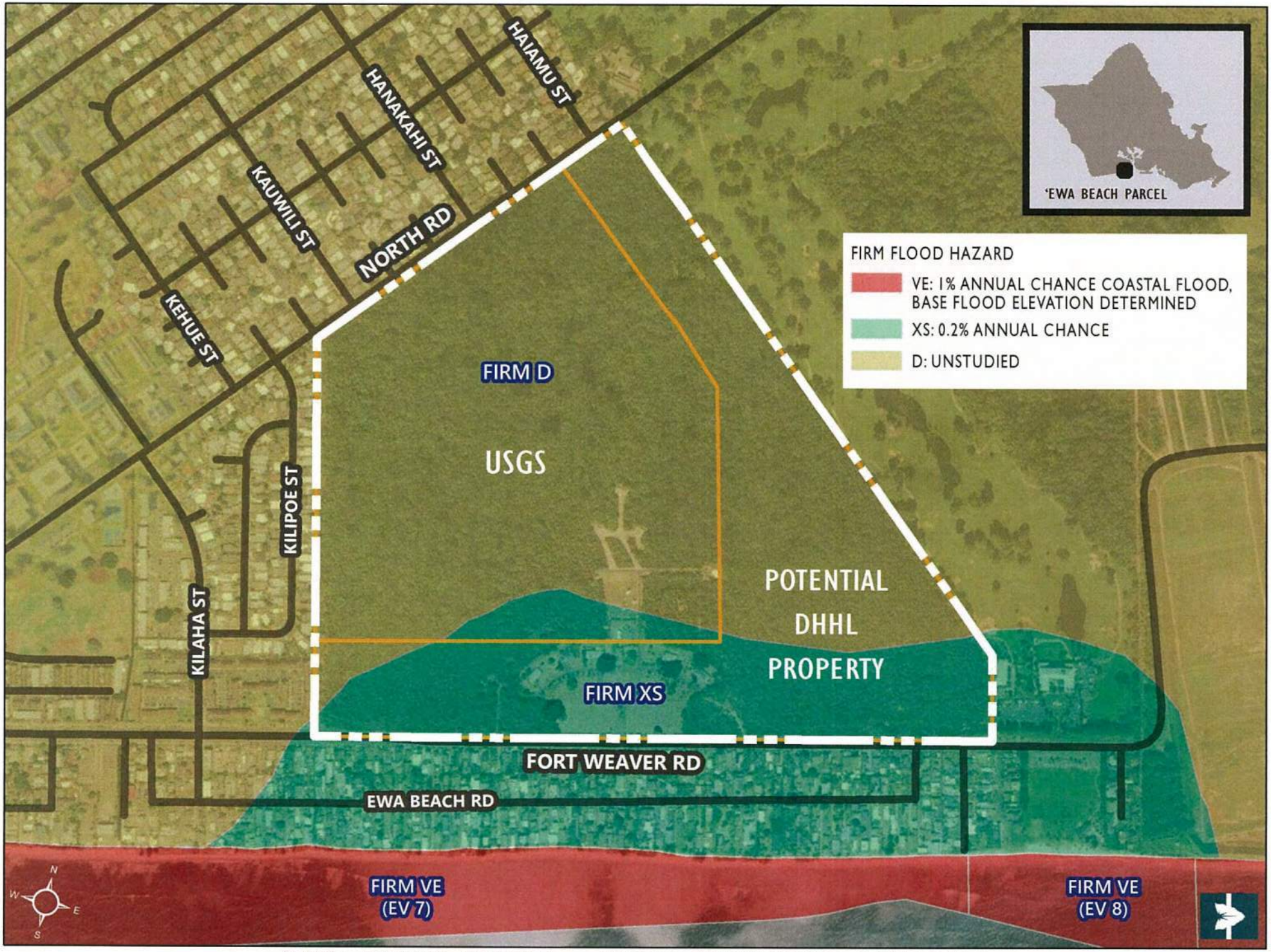
May 8, 2020

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper



'EWA BEACH PARCEL - FLOOD INSURANCE RATE MAP

Appendix II

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY FORMS

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238938

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/11/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-001 2014-1-A01		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0238938-002 2014-1-A02		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0238938-003 2014-1-A03		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	85% 15%
0238938-004 2014-1-A04		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Carbonates Mica	12% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected	Carbonates Mica Quartz Binder/Filler	 100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238938

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/11/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-005 2014-1-A05		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected		Cellulose Fiber	12%
						Gypsum Quartz Carbonates	
						Mica	88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected			
						Carbonates Mica Quartz Perlite	
						Binder/Filler	100%
0238938-006 2014-1-A06		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected		Cellulose Fiber	12%
						Gypsum Quartz Carbonates	
						Mica	88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected			
						Carbonates Mica Quartz	
						Binder/Filler	100%
0238938-007 2014-1-A07		LAYER 1 Concrete Wall, Gray	No	None Detected			
						Carbonates Quartz Gypsum Mica	
						Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected			
						Carbonates Quartz	
						Binder/Filler	100%

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Laboratory Report
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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/11/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-008 2014-1-A08		LAYER 1 Concrete Wall, Beige/ Tan	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
		LAYER 2 Paint, White/ Lt. Green	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-009 2014-1-A09		LAYER 1 Concrete Wall, Beige/ Tan	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
		LAYER 2 Paint, White/ Lt. Green	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-010 2014-1-A10		LAYER 1 CMU, Beige/ Tan	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-011 2014-1-A11		LAYER 1 CMU, Beige/ Tan	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-012 2014-1-A12		LAYER 1 CMU, Beige/ Tan	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-013 2014-1-A13		Trim Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-014 2014-1-A14		Trim Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238938-015 2014-1-A15		Trim Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-016 2014-1-A16		LAYER 1 Cove Base, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 3 Mastic, Brown	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-017 2014-1-A17		LAYER 1 Cove Base, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-018 2014-1-A18		LAYER 1 Cove Base, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-019 2014-1-A19		LAYER 1 Ceramic Wall Tile, Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 3 Thin Set, Gray	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
0238938-020 2014-1-A20		LAYER 1 Ceramic Wall Tile, Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%
0238938-021 2014-1-A21		LAYER 1 Ceramic Wall Tile, Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Quartz Gypsum Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-022 2014-1-A22		LAYER 1 Ceramic Wall Tile, White/ Pink/ Off White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Carbonates Quartz Gypsum Binder/Filler	100%
0238938-023 2014-1-A23		LAYER 1 Ceramic Wall Tile, White/ Pink/ Off White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Carbonates Quartz Gypsum Binder/Filler	100%
0238938-024 2014-1-A24		LAYER 1 Ceramic Wall Tile, White/ Pink/ Off White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Carbonates Quartz Gypsum Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-025 2014-1-A25		LAYER 1 Ceramic Floor Tile, Lt. Pink	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Quartz Gypsum Mica Carbonates Binder/Filler	100%
0238938-026 2014-1-A26		LAYER 1 Ceramic Floor Tile, Lt. Pink	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Quartz Gypsum Mica Carbonates Binder/Filler	100%
0238938-027 2014-1-A27		LAYER 1 Ceramic Floor Tile, Lt. Pink	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Quartz Gypsum Mica Carbonates Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-028 2014-1-A28		LAYER 1 Ceramic Floor Tile, Lt. Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-029 2014-1-A29		LAYER 1 Ceramic Floor Tile, Lt. Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-030 2014-1-A30		LAYER 1 Ceramic Floor Tile, Lt. Pink/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-031 2014-1-A31		Bathroom Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-032 2014-1-A32		Bathroom Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-033 2014-1-A33		Bathroom Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-034 2014-1-A34		Window Frame Caulking, Off White/ Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-035 2014-1-A35		Window Frame Caulking, Off White/ Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-036 2014-1-A36		Window Frame Caulking, Off White/ Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-037 2014-1-A37		Ceramic Wall Tile, Lt. Blue/ White	No	None Detected	Quartz Gypsum Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-038 2014-1-A38		LAYER 1 Ceramic Wall Tile, Lt. Blue/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Gypsum Quartz Carbonates Binder/Filler	100%
0238938-039 2014-1-A39		LAYER 1 Ceramic Wall Tile, Lt. Blue/ White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White/ Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-040 2014-1-A40		LAYER 1 Ceramic Floor Tile, Lt. Blue/ White	No	None Detected		Quartz Gypsum Carbonates Binder/Filler	100%
		LAYER 2 Thin Set, Off White	No	None Detected		Synthetic Fiber Quartz Gypsum Carbonates Mica Binder/Filler	1% 99%

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Address:		Submitted By:	BRIAN CARROLL
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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-041 2014-1-A41		LAYER 1 Ceramic Floor Tile, Lt. Blue/ White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Thin Set, Off White	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238938-042 2014-1-A42		LAYER 1 Ceramic Floor Tile, Lt. Blue/ White	No	None Detected	Quartz Gypsum Carbonates Binder/Filler	100%
		LAYER 2 Thin Set, Off White	No	None Detected	Synthetic Fiber Quartz Gypsum Carbonates Mica Binder/Filler	1% 99%
0238938-043 2014-1-A43		Carpet Mastic, Yellow/ White	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238938-044 2014-1-A44		Carpet Mastic, Yellow/ White	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238938-045 2014-1-A45		Carpet Mastic, Yellow/ White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-046 2014-1-A46		LAYER 1 Ceramic Floor Tile, Beige/ Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Beige	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238938-047 2014-1-A47		Ceramic Floor Tile, Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
0238938-048 2014-1-A48		LAYER 1 Ceramic Floor Tile, Beige/ Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Beige	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%

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Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-049 2014-1-A49		LAYER 1 Concrete Wall, Gray	No	None Detected	Carbonates Quartz Gypsum Mica Binder/Filler	100%
		LAYER 2 Concrete Wall, Brown	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Paint, Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-050 2014-1-A50		Concrete Wall, Beige/ Gray	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238938-051 2014-1-A51		Concrete Wall, Beige/ Brown	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238938-052 2014-1-A52		CMU Wall, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-053 2014-1-A53		CMU Wall, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-054 2014-1-A54		CMU Wall, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-055 2014-1-A55		Window Frame Caulking, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-056 2014-1-A56		Window Frame Caulking, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-057 2014-1-A57		Window Frame Caulking, Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-058 2014-1-A58		Attic Insulation, Yellow	No	None Detected	Fibrous Glass	100%
0238938-059 2014-1-A59		Attic Insulation, Yellow	No	None Detected	Fibrous Glass	100%
0238938-060 2014-1-A60		Attic Insulation, Yellow	No	None Detected	Fibrous Glass	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-061		LAYER 1	No	None Detected	Fibrous Glass	20%
2014-1-A61		Roofing Material, Tan/White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 2	No	None Detected	Fibrous Glass	20%
		Roofing Material, Tan/White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 3	No	None Detected	Fibrous Glass	20%
		Roofing Material, White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 4	No	None Detected	Cellulose Fiber	<1%
		Roofing Material, Clear			Carbonates	
					Quartz	
					Binder/Filler	99%
0238938-062		LAYER 1	No	None Detected	Fibrous Glass	20%
2014-1-A62		Roofing Material, Tan/White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 2	No	None Detected	Fibrous Glass	20%
		Roofing Material, Tan/White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 3	No	None Detected	Fibrous Glass	20%
		Roofing Material, White/Black			Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 4	No	None Detected	Fibrous Glass	<1%
		Roofing Material, Clear			Carbonates	
					Quartz	
					Binder/Filler	99%

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Laboratory Report
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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/11/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-063 2014-1-A63		LAYER 1 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Clear	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238938-064 2014-1-A64		Rain Gutter Caulking, White	No	None Detected	Silicone	100%
0238938-065 2014-1-A65		Rain Gutter Caulking, White	No	None Detected	Silicone	100%
0238938-066 2014-1-A66		Rain Gutter Caulking, White	No	None Detected	Silicone	100%
0238938-067 2014-1-A67		Roof Peak Caulking, Lt. Tan	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238938-068 2014-1-A68		Roof Peak Caulking, Lt. Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-069 2014-1-A69		Roof Peak Caulking, Lt. Tan	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238938-070 2014-1-A70		Solar Roof Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	3% 97%
0238938-071 2014-1-A71		Solar Roof Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%
0238938-072 2014-1-A72		Solar Roof Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	3% 97%
0238938-073 2014-1-A73		Solar Foam Pipe Insulation, Black	No	None Detected	Foam	100%
0238938-074 2014-1-A74		Solar Foam Pipe Insulation, Black	No	None Detected	Foam	100%
0238938-075 2014-1-A75		Solar Foam Pipe Insulation, Black	No	None Detected	Foam	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents

Analyst - Octavio Gavarreteayestas

Signatory - Lab Director - Kurt Kettler

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-001 2014-2-A01		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	85% 15%
0238937-002 2014-2-A02		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	85% 15%
0238937-003 2014-2-A03		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	85% 15%
0238937-004 2014-2-A04		LAYER 1 CMU Wall, Beige	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
		LAYER 2 Paint/ Coating, White/ Lt. Green	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238937-005 2014-2-A05		LAYER 1 CMU Wall, Beige	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
		LAYER 2 Paint/ Coating, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-006 2014-2-A06		LAYER 1 CMU Wall, Beige	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint/ Coating, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-007 2014-2-A07		Trim Caulking, White/ Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-008 2014-2-A08		Trim Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-009 2014-2-A09		Trim Caulking, White/ Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-010 2014-2-A10		LAYER 1 Cove Base, Tan	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Cove Base Mastic, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-011 2014-2-A11		LAYER 1 Cove Base, Tan	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Cove Base Mastic, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 3 Cove Base Mastic, Brown	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-012 2014-2-A12		LAYER 1 Cove Base, Tan	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Cove Base Mastic, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-013 2014-2-A13		LAYER 1 Ceramic Floor Tile, Lt. Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Red	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-014 2014-2-A14		LAYER 1 Ceramic Floor Tile, Lt. Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Red	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238937-015 2014-2-A15		LAYER 1 Ceramic Floor Tile, Lt. Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Red	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238937-016 2014-2-A16		LAYER 1 Ceramic Wall Tile, White/ Lt. Gray	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, White	No	None Detected		Gypsum Carbonates Quartz Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-017 2014-2-A17		LAYER 1 Ceramic Wall Tile, White/ Lt. Gray	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, White	No	None Detected		Gypsum Carbonates Quartz Binder/Filler	100%
0238937-018 2014-2-A18		LAYER 1 Ceramic Wall Tile, White/ Lt. Gray	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, White	No	None Detected		Gypsum Carbonates Quartz Binder/Filler	100%
0238937-019 2014-2-A19		LAYER 1 Ceramic Floor Tile, White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Cellulose Fiber Quartz Gypsum Carbonates Mica Binder/Filler	<1% 99%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-020 2014-2-A20		LAYER 1 Ceramic Floor Tile, White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238937-021 2014-2-A21		LAYER 1 Ceramic Floor Tile, White	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected	Cellulose Fiber Quartz Gypsum Carbonates Mica Binder/Filler	<1% 99%
0238937-022 2014-2-A22		Carpet Mastic, Tan	No	None Detected	Fibrous Glass Carbonates Gypsum Quartz Binder/Filler	5% 95%
0238937-023 2014-2-A23		Carpet Mastic, Tan	No	None Detected	Fibrous Glass Carbonates Gypsum Quartz Binder/Filler	5% 95%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-024 2014-2-A24		Carpet Mastic, Tan	No	None Detected	Fibrous Glass Carbonates Gypsum Quartz Binder/Filler	5% 95%
0238937-025 2014-2-A25		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238937-026 2014-2-A26		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238937-027 2014-2-A27		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-028 2014-2-A28		LAYER 1 Ceramic Floor Tile, Lt. Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Red	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Thin Set, Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 4 Mastic, Black	Yes	Chrysotile	2%	Carbonates Gypsum Quartz Binder/Filler	98%
0238937-029 2014-2-A29		LAYER 1 Ceramic Floor Tile, Lt. Tan Note: *Not analyzed per client request					
		LAYER 2 Grout, Red Note: *Not analyzed per client request					
		LAYER 3 Thin Set, Gray Note: *Not analyzed per client request					
		LAYER 4 Mastic, Black Note: *Not analyzed per client request					

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-030 2014-2-A30		LAYER 1 Ceramic Floor Tile, Lt. Tan Note: *Not analyzed per client request LAYER 2 Grout, Red Note: *Not analyzed per client request LAYER 3 Thin Set, Gray Note: *Not analyzed per client request LAYER 4 Mastic, Black Note: *Not analyzed per client request					
0238937-031 2014-2-A31		Bathroom Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-032 2014-2-A32		Bathroom Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-033 2014-2-A33		Bathroom Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-034 2014-2-A34		LAYER 1 Insulation (Attic), Pink	No	None Detected	Fibrous Glass	100%
		LAYER 2 Wrap, Silver	No	None Detected	Fibrous Glass	<1%
					Aluminum Carbonates Gypsum Quartz	
					Binder/Filler	99%
0238937-035 2014-2-A35		LAYER 1 Insulation (Attic), Pink	No	None Detected	Fibrous Glass	100%
		LAYER 2 Wrap, Silver	No	None Detected	Fibrous Glass	1%
					Aluminum Carbonates Gypsum Quartz	
					Binder/Filler	99%
0238937-036 2014-2-A36		LAYER 1 Insulation (Attic), Pink	No	None Detected	Fibrous Glass	100%
		LAYER 2 Wrap, Silver	No	None Detected	Fibrous Glass	<1%
					Aluminum Carbonates Gypsum Quartz	
					Binder/Filler	99%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-037 2014-2-A37		LAYER 1 Terra Cotta Tile, Lt. Tan	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238937-038 2014-2-A38		LAYER 1 Terra Cotta Tile, Lt. Tan	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238937-039 2014-2-A39		LAYER 1 Terra Cotta Tile, Lt. Tan	No	None Detected	Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-040 2014-2-A40		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238937-041 2014-2-A41		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238937-042 2014-2-A42		Window Caulking, Dk. Brown	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238937-043 2014-2-A43		LAYER 1 Roofing Material, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	10% 90%
		LAYER 2 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	30% 70%

EMC LABS, INC.

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Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238937

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/24/2020
Collected:	06/11/2020	Date Reported:	06/24/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-044 2014-2-A44		LAYER 1 Roofing Material, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%
		LAYER 2 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	30% 70%
0238937-045 2014-2-A45		LAYER 1 Roofing Material, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%
		LAYER 2 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	30% 70%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-046 2014-2-A46		LAYER 1 Rain Gutter Caulking, Clear	No	None Detected		Silicone	100%
		LAYER 2 Rain Gutter Caulking, White	No	None Detected		Silicone	100%
0238937-047 2014-2-A47		Rain Gutter Caulking, White	No	None Detected		Silicone	100%
0238937-048 2014-2-A48		Rain Gutter Caulking, White	No	None Detected		Silicone	100%
0238937-049 2014-2-A49		LAYER 1 Side Peak Caulking, Cream	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Side Peak Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	10% 90%
0238937-050 2014-2-A50		LAYER 1 Side Peak Caulking, Cream	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Side Peak Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	10% 90%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238937-051 2014-2-A51		LAYER 1 Side Peak Caulking, Cream	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Side Peak Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	10% 90%
0238937-052 2014-2-A52		O-Ring Spacer, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-053 2014-2-A53		O-Ring Spacer, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-054 2014-2-A54		O-Ring Spacer, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238937-055 2014-2-A55		Solar Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%
0238937-056 2014-2-A56		Solar Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-057 2014-2-A57		LAYER 1 Solar Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	3% 97%
		LAYER 2 Solar Caulking, White/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
0238937-058 2014-2-A58		Solar Caulking, Tan	No	None Detected	Carbonates Quartz Silicone	 100%
0238937-059 2014-2-A59		Solar Caulking, Tan	No	None Detected	Carbonates Quartz Silicone	 100%
0238937-060 2014-2-A60		Solar Caulking, Tan	No	None Detected	Carbonates Quartz Silicone	 100%
0238937-061 2014-2-A61		Vent Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	7% 93%
0238937-062 2014-2-A62		Vent Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%

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Collected:	06/11/2020	Date Reported:	06/24/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-063 2014-2-A63		Vent Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	5% 95%
0238937-064 2014-2-A64		CMU Wall, Beige/ Lt. Pink	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238937-065 2014-2-A65		CMU Wall, Beige/ Lt. Pink	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238937-066 2014-2-A66		CMU Wall, Beige/ Lt. Pink	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238937-067 2014-2-A67		Concrete Walkway, Gray/ Red	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	 100%
0238937-068 2014-2-A68		Concrete Walkway, Gray/ Red	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238937-069 / 2014-2-A69		Concrete Walkway, Gray/ Red	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	100%
0238937-070 / 2014-2-A70		Solar Foam Insulation, Black	No	None Detected	Foam	100%
0238937-071 / 2014-2-A71		Solar Foam Insulation, Black	No	None Detected	Foam	100%
0238937-072 / 2014-2-A72		Solar Foam Insulation, Black	No	None Detected	Foam	100%

Analyst - Dustin White

Signatory - Lab Director - Kurt Kettler

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 23 8937
TAT: 3-5day
Rec'd: JUN 17 P.M.

COMPANY NAME:	ENVIROSERVICES & TRAINING CENTER, LLC	BILL TO:	(If Different Location)
	505 Ward Ave. Suite #202		Trina Oshiro
	Honolulu, HI 96814		505 Ward Ave Suite 202
CONTACT:	Antonie Gabriel, Sara Marvin,		Honolulu, Hawaii 96814
Phone/Fax:	(808) 839-7222 ext 232/ (808) 839-4455		
Email:	agabriel@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com, smarvin@gotoetc.com,		

Now Accepting: VISA – MASTERCARD **Price Quoted: $ _____ / Sample $_____ / Layers**

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [Same Day RUSH] [1-Day] [2-Day] (3-4-5 Day) [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. TYPE OF ANALYSIS: (Bulk-PLM) [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]

3. DISPOSAL INSTRUCTIONS: (Dispose of samples at EMC) / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

(72)

4. Project Name: DHHL – Former NOAA NWS PTWC Project Number: 20-2014

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
1-3	2014-2-A01 thru A03	6/11/20	Canec ceiling	(Y) N
4-6	2014-2-A04 thru A06	6/11/20	CMU wall	Y N
7-9	2014-2-A07 thru A09	6/11/20	Trim caulking	Y N
10-12	2014-2-A10 thru A12	6/11/20	Cove base mastic	Y N
13-15	2014-2-A13 thru A15	6/11/20	Ceramic floor tile	Y N
16-18	2014-2-A16 thru A18	6/11/20	Ceramic wall tile	Y N
19-21	2014-2-A19 thru A21	6/11/20	Ceramic floor tile	Y N
22-24	2014-2-A22 thru A24	6/11/20	Carpet mastic	Y N
25-27	2014-2-A25 thru A27	6/11/20	Window caulking	Y N
28-30	2014-2-A28 thru A30	6/11/20	Ceramic floor tile	Y N
31-33	2014-2-A31 thru A33	6/11/20	Bathroom caulking	Y N
34-36	2014-2-A34 thru A36	6/11/20	Attic insulation	Y N
37-39	2014-2-A37 thru A39	6/11/20	Terra cotta tile	Y N
40-42	2014-2-A40 thru A42	6/11/20	Window caulking	Y N
43-45	2014-2-A43 thru A45	6/11/20	Roofing material	Y N
46-48	2014-2-A46 thru A48	6/11/20	Rain gutter caulking	Y N
49-51	2014-2-A49 thru A51	6/11/20	Side peak caulking	Y N
52-54	2014-2-A52 thru A54	6/11/20	O-ring spacer	(Y) N

Complete Stop @ 1st Positive

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
55-57	2014-2-A55 thru A57	6/11/20	Solar black caulking	Y N
58-60	2014-2-A58 thru A60	6/11/20	Solar tan caulking	
61-63	2014-2-A61 thru A63	6/11/20	Vent caulking	
64-66	2014-2-A64 thru A66	6/11/20	CMU wall	
67-69	2014-2-A67 thru A69	6/11/20	Concrete walkway	
70-72	2014-2-A70 thru A72	6/11/20	Solar foam insulation	

SPECIAL INSTRUCTIONS: Stop at first positive

Sample Collector: (Print) Brian Carroll (Signature) [signature]

Relinquished by BC Date/Time: 6/12/20 Received by: Diana Federico Date/Time: 6/17/20 925

Relinquished by: Diana Federico Date/Time: 6/17/20 3:35 Received by: [signature] Date/Time: 6/17/2020 1831

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Rev. 09/27/08

EMC LABS, INC.

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Laboratory Report
0238936

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-001 2014-3-A01		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	80% 20%
0238936-002 2014-3-A02		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	80% 20%
0238936-003 2014-3-A03		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	80% 20%
0238936-004 2014-3-A04		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Joint Compound, Off White	No	None Detected	Carbonates Mica Quartz Perlite Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-005 2014-3-A05		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Joint Compound, Off White	No	None Detected	Carbonates Mica Quartz Perlite Binder/Filler	 100%
0238936-006 2014-3-A06		Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
0238936-007 2014-3-A07		Drywall Wall, White/ Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Carbonates Mica	12% 88%
0238936-008 2014-3-A08		LAYER 1 Drywall Wall, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Joint Compound, Off White	No	None Detected	Carbonates Mica Quartz Perlite Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-009 2014-3-A09		LAYER 1 Drywall Wall, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Joint Compound, Off White	No	None Detected	Carbonates Gypsum Mica Quartz Perlite Binder/Filler	 100%
0238936-010 2014-3-A10		CMU, Beige	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-011 2014-3-A11		CMU, Beige	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-012 2014-3-A12		CMU, Beige	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-013 2014-3-A13		Trim Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-014 2014-3-A14		Trim Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-015 2014-3-A15		Trim Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-016 2014-3-A16		Window Caulk, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-017 2014-3-A17		Window Caulk, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-018 2014-3-A18		Window Caulk, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-019 2014-3-A19		Sink Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-020 2014-3-A20		Sink Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-021 2014-3-A21		Sink Caulking, White	No	None Detected			
						Carbonates Quartz Binder/Filler	100%
0238936-022 2014-3-A22		LAYER 1 Covebase, Cream	No	None Detected			
						Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected			
						Carbonates Quartz Binder/Filler	100%
0238936-023 2014-3-A23		LAYER 1 Covebase, Cream	No	None Detected			
						Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected		Cellulose Fiber	<1%
						Carbonates Quartz Binder/Filler	99%
0238936-024 2014-3-A24		LAYER 1 Covebase, Cream	No	None Detected			
						Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected		Cellulose Fiber	<1%
						Carbonates Quartz Binder/Filler	99%

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	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/11/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-025 2014-3-A25		LAYER 1 Ceramic Floor Tile, White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Mortar, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238936-026 2014-3-A26		Mortar, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238936-027 2014-3-A27		LAYER 1 Ceramic Floor Tile, White	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Mortar, Off White	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 3 Leveling Compound, Off White	No	None Detected		Gypsum Mica Carbonates Quartz Perlite Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238936

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

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Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/11/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-028 2014-3-A28		LAYER 1 Ceramic Floor Tile, Beige	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Tan	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Mortar, Off White	No	None Detected		Quartz Carbonates Gypsum Mica Binder/Filler	100%
0238936-029 2014-3-A29		LAYER 1 Ceramic Floor Tile, Beige	No	None Detected		Quartz Gypsum Carbonates Binder/Filler	100%
		LAYER 2 Grout, Tan	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Mortar, Off White	No	None Detected		Quartz Carbonates Gypsum Mica Binder/Filler	100%

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NVLAP#101926-0

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	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/11/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-030 2014-3-A30		LAYER 1 Ceramic Floor Tile, Beige	No	None Detected		Quartz Gypsum Carbonates Binder/Filler	100%
		LAYER 2 Grout, Tan	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Mortar, Off White	No	None Detected		Quartz Carbonates Gypsum Mica Binder/Filler	100%
0238936-031 2014-3-A31		LAYER 1 Carpet, Beige	No	None Detected		Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Carpet Mastic, Off White	No	None Detected		Synthetic Fiber Carbonates Quartz Binder/Filler	<1% 99%
		LAYER 3 Pads, Green/ Yellow	No	None Detected		Foam	100%

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	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/11/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-032		LAYER 1	No	None Detected	Synthetic Fiber	85%
2014-3-A32		Carpet, Beige			Carbonates	
					Binder/Filler	15%
		LAYER 2	No	None Detected	Synthetic Fiber	1%
		Carpet Mastic, Off White			Carbonates	
					Quartz	
					Binder/Filler	99%
		LAYER 3	No	None Detected		
		Pads, Green/ Yellow			Foam	100%
0238936-033		LAYER 1	No	None Detected	Synthetic Fiber	85%
2014-3-A33		Carpet, Beige			Carbonates	
					Binder/Filler	15%
		LAYER 2	No	None Detected	Synthetic Fiber	<1%
		Carpet Mastic, Off White			Carbonates	
					Quartz	
					Binder/Filler	99%
		LAYER 3	No	None Detected		
		Pads, Green/ Yellow			Foam	100%
0238936-034		CMU Wall, Tan	No	None Detected	Cellulose Fiber	<1%
2014-3-A34					Carbonates	
					Gypsum	
					Quartz	
					Binder/Filler	99%
0238936-035		CMU Wall, Tan	No	None Detected		
2014-3-A35					Carbonates	
					Gypsum	
					Quartz	
					Binder/Filler	100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-036 2014-3-A36		CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-037 2014-3-A37		Concrete Wall, Gray	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-038 2014-3-A38		Concrete Wall, Gray	No	None Detected	Cellulose Fiber Carbonates Gypsum Quartz Binder/Filler	<1% 99%
0238936-039 2014-3-A39		Concrete Wall, Gray	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238936-040 2014-3-A40		Window Caulk, Brown	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238936-041 2014-3-A41		Window Caulk, Brown	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-042 2014-3-A42		Window Caulk, Brown	No	None Detected		Carbonates Quartz Binder/Filler	 100%
0238936-043 2014-3-A43		Concrete, Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	 100%
0238936-044 2014-3-A44		Concrete, Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	 100%
0238936-045 2014-3-A45		Concrete, Green/ Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-046		LAYER 1	No	None Detected		Fibrous Glass	20%
2014-3-A46		Roofing, Black/ Off White				Carbonates Quartz Binder/Filler	80%
		LAYER 2	No	None Detected		Fibrous Glass	20%
		Roofing, Black/ Off White				Carbonates Quartz Binder/Filler	80%
		LAYER 3	No	None Detected		Fibrous Glass	20%
		Roofing, Black/ Gray				Carbonates Quartz Binder/Filler	80%
		LAYER 4	No	None Detected		Fibrous Glass	20%
		Roofing, Black/ Gray				Carbonates Quartz Binder/Filler	80%
		LAYER 5					
0238936-047		LAYER 1	No	None Detected		Fibrous Glass	20%
2014-3-A47		Roofing, Black/ Off White				Carbonates Quartz Binder/Filler	80%
		LAYER 2	No	None Detected		Fibrous Glass	20%
		Roofing, Black/ Off White				Carbonates Quartz Binder/Filler	80%
		LAYER 3	No	None Detected		Fibrous Glass	20%
		Roofing, Black				Carbonates Quartz Binder/Filler	80%
		LAYER 4	No	None Detected		Fibrous Glass	20%
		Roofing, Black				Carbonates Quartz Binder/Filler	80%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238936-048 2014-3-A48		LAYER 1 Roofing, Black/ Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing, Black/ Off White/ Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing, Black/ White/ Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing, Black/ White/ Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
0238936-049 2014-3-A49		Caulking, White/ Off White	No	None Detected	Silicone	100%
0238936-050 2014-3-A50		Caulking, White/ Off White	No	None Detected	Silicone	100%
0238936-051 2014-3-A51		Caulking, White/ Off White	No	None Detected	Silicone	100%
0238936-052 2014-3-A52		Caulking, White/ Tan	No	None Detected	Carbonates Silicone	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-053 2014-3-A53		Caulking, Gray	No	None Detected		Carbonates Quartz Binder/Filler	 100%
0238936-054 2014-3-A54		Caulking, Gray	No	None Detected		Carbonates Quartz Binder/Filler	 100%
0238936-055 2014-3-A55		Caulking, Black	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	3% 97%
0238936-056 2014-3-A56		Caulking, Black	No	None Detected		Carbonates Binder/Filler	 100%
0238936-057 2014-3-A57		Caulking, Black	No	None Detected		Carbonates Binder/Filler	 100%
0238936-058 2014-3-A58		Foam Insulation, Black	No	None Detected		Foam	100%
0238936-059 2014-3-A59		Foam Insulation, Black	No	None Detected		Foam	100%
0238936-060 2014-3-A60		Foam Insulation, Black	No	None Detected		Foam	100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238936-061 2014-3-A61		LAYER 1 Pipe Wrap Insulation, Beige/ Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Wrap, Silver	No	None Detected		Aluminum Carbonates Binder/Filler	100%
0238936-062 2014-3-A62		LAYER 1 Pipe Wrap Insulation, Beige/ Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Wrap, Silver	No	None Detected		Aluminum Carbonates Binder/Filler	100%
0238936-063 2014-3-A63		LAYER 1 Pipe Wrap Insulation, Beige/ Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Wrap, Silver	No	None Detected		Aluminum Carbonates Binder/Filler	100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents

Analyst - Kurt Kettler

Signatory - Lab Manager - Ken Scheske

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 238936
TAT: 3-5day
Rec'd: JUN 17 PM

COMPANY NAME:	ENVIROSERVICES & TRAINING CENTER, LLC	BILL TO:	(If Different Location)
	505 Ward Ave. Suite #202	Trina Oshiro	
	Honolulu, HI 96814	505 Ward Ave Suite 202	
CONTACT:	Antone Gabriel, Sara Marvin,	Honolulu, Hawaii 96814	
Phone/Fax:	(808) 839-7222 ext 232/(808) 839-4455		
Email:	agabriel@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com, smarvin@gotoetc.com,		

Now Accepting: VISA – MASTERCARD **Price Quoted: $ _____ / Sample $_____ / Layers**

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [Same Day RUSH] [1-Day] [2-Day] (3-4-5 Day) [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. TYPE OF ANALYSIS: (Bulk-PLM) [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]

3. DISPOSAL INSTRUCTIONS: (Dispose of samples at EMC) / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

(63)

4. Project Name: DHHL – Former NOAA NWS PTWC **Project Number:** 20-2014

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
1-3	2014-3-A01 thru A03	6/11/20	Canec ceiling	Y N
4-6	2014-3-A04 thru A06	6/11/20	Drywall ceiling	Y N
7-9	2014-3-A07 thru A09	6/11/20	Drywall wall	Y N
10-12	2014-3-A10 thru A12	6/11/20	CMU wall	Y N
13-15	2014-3-A13 thru A15	6/11/20	Trim caulking	Y N
16-18	2014-3-A16 thru A18	6/11/20	Window caulking	Y N
19-21	2014-3-A19 thru A21	6/11/20	Sink caulking	Y N
22-24	2014-3-A22 thru A24	6/11/20	Cove base/caulking	Y N
25-27	2014-3-A25 thru A27	6/11/20	Ceramic floor tile	Y N
28-30	2014-3-A28 thru A30	6/11/20	Ceramic floor tile	Y N
31-33	2014-3-A31 thru A33	6/11/20	Carpet mastic	Y N
34-36	2014-3-A34 thru A36	6/11/20	CMU wall	Y N
37-39	2014-3-A37 thru A39	6/11/20	Concrete wall	Y N
40-42	2014-3-A40 thru A42	6/11/20	Window caulking	Y N
43-45	2014-3-A43 thru A45	6/11/20	Concrete walkway	Y N
46-48	2014-3-A46 thru A48	6/11/20	Roofing material	Y N
49-51	2014-3-A49 thru A51	6/11/20	Rain gutter caulking	Y N
52-54	2014-3-A52 thru A54	6/11/20	Roof peak caulking	Y N

Complete Stop @ 1st Positive

EMC SAMPLE #	CLIENT 3AMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
55-57	2014-3-A55 thru A57	6/11/20	Solar black caulking	Y N
58-60	2014-3-A58 thru A60	6/11/20	Solar foam insulation	
61-63	2014-3-A61 thru A63	6/11/20	Pipe wrap insulation	

SPECIAL INSTRUCTIONS: Stop at first positive

Sample Collector: (Print) Brian Carroll (Signature) [signature]

Relinquished by BC Date/Time: 6/12/20 Received by: Diana Federico Date/Time: 6/17/20 9:25

Relinquished by: Diana Federico Date/Time: 6/17/20 3:35 Received by: [signature] Date/Time: 6/17/2020

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Rev. 09/27/08

EMC LABS, INC.

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Laboratory Report
0238935

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NVLAP#101926-0

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Collected:	06/12/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-001 2014-4-A01		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	90% 10%
0238935-002 2014-4-A02		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	90% 10%
0238935-003 2014-4-A03		Canec Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	90% 10%
0238935-004 2014-4-A04		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected	Carbonates Mica Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-005 2014-4-A05		LAYER 1 Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected	Gypsum Mica Carbonates Quartz Perlite Binder/Filler	 100%
0238935-006 2014-4-A06		Drywall Ceiling, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
0238935-007 2014-4-A07		LAYER 1 Drywall Wall, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected	Carbonates Mica Quartz Perlite Binder/Filler	 100%

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Laboratory Report
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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/25/2020
Collected:	06/12/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238935-008 2014-4-A08		LAYER 1 Drywall Wall, White/ Brown	No	None Detected		Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected		Carbonates Mica Quartz Perlite Binder/Filler	 100%
0238935-009 2014-4-A09		LAYER 1 Drywall Wall, White/ Brown	No	None Detected		Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
		LAYER 2 Texture/ Paint, White/ Off White	No	None Detected		Carbonates Mica Quartz Perlite Binder/Filler	 100%
0238935-010 2014-4-A10		LAYER 1 CMU Wall, Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	 100%
		LAYER 2 Paint, White	No	None Detected		Carbonates Quartz Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-011 2014-4-A11		LAYER 1 CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-012 2014-4-A12		LAYER 1 CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-013 2014-4-A13		Plaster-Skim Coat, Off White	No	None Detected	Gypsum Quartz Carbonates Mica Perlite	100%
0238935-014 2014-4-A14		LAYER 1 Plaster-Skim Coat, Off White	No	None Detected	Gypsum Quartz Carbonates Mica	100%
		LAYER 2 Paint, White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238935-015 2014-4-A15		LAYER 1 Plaster-Skim Coat, Off White	No	None Detected		Gypsum Quartz Carbonates Mica	100%
		LAYER 2 Paint, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-016 2014-4-A16		Trim Caulking, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-017 2014-4-A17		Trim Caulking, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-018 2014-4-A18		Trim Caulking, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-019 2014-4-A19		LAYER 1 Window Caulking, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Window Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	Asbestos (%)	Non-Asbestos Constituents	Non-Asbestos (%)
0238935-020 2014-4-A20		LAYER 1 Window Caulking, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Window Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-021 2014-4-A21		LAYER 1 Window Caulking, Black	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Window Caulking, White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-022 2014-4-A22		LAYER 1 Cove Base, Tan	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-023 2014-4-A23		LAYER 1 Cove Base, Tan	No	None Detected		Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-024 2014-4-A24		Cove Base, Tan	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
0238935-025 2014-4-A25		LAYER 1 Cove Base, Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber	1%
					Synthetic Fiber	<1%
					Carbonates	
					Quartz	
					Binder/Filler	98%
0238935-026 2014-4-A26		LAYER 1 Cove Base, Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber	1%
					Synthetic Fiber	<1%
					Carbonates	
					Quartz	
					Binder/Filler	98%
0238935-027 2014-4-A27		LAYER 1 Cove Base, Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber	2%
					Synthetic Fiber	<1%
					Carbonates	
					Quartz	
					Binder/Filler	97%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238935-028 2014-4-A28		LAYER 1 Ceramic Floor Tile, Tan/ Beige	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Thin Set, Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238935-029 2014-4-A29		Ceramic Floor Tile, Tan/ Beige	No	None Detected		Quartz Gypsum Binder/Filler	100%
0238935-030 2014-4-A30		LAYER 1 Ceramic Floor Tile, Tan/ Beige	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Tan	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
		LAYER 3 Thin Set, Gray	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238935-031 2014-4-A31		Ceramic Floor Tile, Off White/ Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
0238935-032 2014-4-A32		LAYER 1 Ceramic Floor Tile, Off White/ Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Off White	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238935-033 2014-4-A33		LAYER 1 Ceramic Floor Tile, Off White/ Brown	No	None Detected		Quartz Gypsum Binder/Filler	100%
		LAYER 2 Grout, Pink	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238935-034 2014-4-A34		Ceramic Wall Tile, White/ Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%
0238935-035 2014-4-A35		Ceramic Wall Tile, White/ Tan	No	None Detected		Quartz Gypsum Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-036 2014-4-A36		Ceramic Wall Tile, White/ Tan	No	None Detected	Quartz Gypsum Binder/Filler	100%
0238935-037 2014-4-A37		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-038 2014-4-A38		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-039 2014-4-A39		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-040 2014-4-A40		Sink Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-041 2014-4-A41		Sink Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-042 2014-4-A42		Sink Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-043 2014-4-A43		LAYER 1 Carpet, Beige	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Off White	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	1% 99%
		LAYER 3 Pads, Mauve	No	None Detected	Foam Carbonates	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-044 2014-4-A44		LAYER 1 Carpet, Beige	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Off White	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	<1% 99%
		LAYER 3 Pads, Mauve	No	None Detected	Foam Carbonates	100%
0238935-045 2014-4-A45		LAYER 1 Carpet, Beige	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Off White	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	1% 99%
		LAYER 3 Pads, Mauve	No	None Detected	Foam Carbonates	100%
0238935-046 2014-4-A46		Counter Top Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-047 2014-4-A47		Counter Top Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-048 2014-4-A48		Counter Top Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-049 2014-4-A49		CMU, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238935-050 2014-4-A50		LAYER 1 CMU, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
		LAYER 2 Paint, Tan	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-051 2014-4-A51		LAYER 1 CMU, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
		LAYER 2 Paint, Tan	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238935-052 2014-4-A52		LAYER 1 Concrete Wall, Gray	No	None Detected		Carbonates Gypsum Quartz Mica Binder/Filler	100%
		LAYER 2 Paint, Beige	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-053 2014-4-A53		LAYER 1 Concrete Wall, Gray	No	None Detected		Carbonates Gypsum Quartz Mica Binder/Filler	100%
		LAYER 2 Paint, Beige	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238935-054 2014-4-A54		LAYER 1 Concrete Wall, Tan	No	None Detected		Carbonates Gypsum Quartz Mica Binder/Filler	100%
		LAYER 2 Paint, Beige	No	None Detected		Carbonates Quartz Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-055 2014-4-A55		Window Caulking, Dk. Gray/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-056 2014-4-A56		Window Caulking, Dk. Gray/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-057 2014-4-A57		Window Caulking, Dk. Gray/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-058 2014-4-A58		Door Frame Caulk, White/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-059 2014-4-A59		Door Frame Caulk, White/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-060 2014-4-A60		Door Frame Caulk, White/ Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-061 2014-4-A61		Foam Insulation, Black	No	None Detected	Foam	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-062 2014-4-A62		Foam Insulation, Black	No	None Detected	Foam	100%
0238935-063 2014-4-A63		Foam Insulation, Black	No	None Detected	Foam	100%
0238935-064 2014-4-A64		LAYER 1 AC Frame Caulking, Grtay	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint, Beige	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-065 2014-4-A65		AC Frame Caulking, Beige/ White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-066 2014-4-A66		AC Frame Caulking, Beige/ White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-067 2014-4-A67		Concrete Walkways, Gray/Black	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	100%

EMC LABS, INC.

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Laboratory Report
0238935

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/25/2020
Collected:	06/12/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-068 2014-4-A68		Concrete Walkways, Gray/Black	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	100%
0238935-069 2014-4-A69		Concrete Walkways, Gray/Black	No	None Detected	Carbonates Gypsum Quartz Mica Binder/Filler	100%
0238935-070 2014-4-A70		LAYER 1 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-071 2014-4-A71		LAYER 1 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Black Note: Sample appears to be caulk	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-072 2014-4-A72		LAYER 1 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 3 Roofing Material, Tan/White/Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 4 Roofing Material, Black Note: Sample appears to be caulk	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238935-073 2014-4-A73		Rain Gutter Caulking, White	No	None Detected	Silicone	100%
0238935-074 2014-4-A74		Rain Gutter Caulking, White	No	None Detected	Silicone	100%
0238935-075 2014-4-A75		Rain Gutter Caulking, White	No	None Detected	Silicone	100%

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Collected:	06/12/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-076 2014-4-A76		Roof Peak Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-077 2014-4-A77		Roof Peak Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-078 2014-4-A78		Roof Peak Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-079 2014-4-A79		O-Ring Spacer, Black	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-080 2014-4-A80		O-Ring Spacer, Black	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-081 2014-4-A81		O-Ring Spacer, Black	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-082 2014-4-A82		Vent Caulking, Green/White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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	HONOLULU HI 96814	Date Analyzed:	06/25/2020
Collected:	06/12/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-083 2014-4-A83		Vent Caulking, Green/White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-084 2014-4-A84		Vent Caulking, Green/White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238935-085 2014-4-A85		Foam Insulation, Black	No	None Detected	Foam	100%
0238935-086 2014-4-A86		Foam Insulation, Black	No	None Detected	Foam	100%
0238935-087 2014-4-A87		Foam Insulation, Black	No	None Detected	Foam	100%
0238935-088 2014-4-A88		Caulking, Tan	No	None Detected	Silicone	100%
0238935-089 2014-4-A89		Caulking, Tan	No	None Detected	Silicone	100%
0238935-090 2014-4-A90		Caulking, Tan	No	None Detected	Silicone	100%
0238935-091 2014-4-A91		Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238935-092 2014-4-A92		Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%
0238935-093 2014-4-A93		Caulking, Black	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238935-094 2014-4-A94		Attic Insulation, Yellow	No	None Detected	Fibrous Glass Carbonates Gypsum	98% 2%
0238935-095 2014-4-A95		Attic Insulation, Yellow	No	None Detected	Fibrous Glass Carbonates Gypsum	98% 2%
0238935-096 2014-4-A96		Attic Insulation, Yellow	No	None Detected	Fibrous Glass Carbonates Gypsum	98% 2%

Analyst - Octavio Gavarreteayestas

Signatory - Lab Director - Kurt Kettler

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

LAB#: 038935
TAT: 3-5day
Rec'd: JUN 17 P.M.

COMPANY NAME:	ENVIROSERVICES & TRAINING CENTER, LLC	BILL TO:	(If Different Location)
	505 Ward Ave. Suite #202		Trina Oshiro
	Honolulu, HI 96814		505 Ward Ave Suite 202
CONTACT:	Antone Gabriel, Sara Marvin,		Honolulu, Hawaii 96814
Phone/Fax:	(808) 839-7222 ext 232/(808) 839-4455		
Email:	agabriel@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com, smarvin@gotoetc.com,		

Now Accepting: VISA – MASTERCARD **Price Quoted: $ _____ / Sample $_____ / Layers**

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [Same Day RUSH] [1-Day] [2-Day] (3-4-5 Day) [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. TYPE OF ANALYSIS: (Bulk-PLM) [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]

3. DISPOSAL INSTRUCTIONS: (Dispose of samples at EMC) / [Return samples to me at my expense]
(96) *(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)*

4. Project Name: DHHL – Former NOAA NWS PTWC **Project Number:** 20-2014

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
1-3	2014-4-A01 thru A03	6/12/20	Canec ceiling	(Y) N
4-6	2014-4-A04 thru A06	6/12/20	Drywall ceiling	Y N
7-9	2014-4-A07 thru A09	6/12/20	Drywall wall	Y N
10-12	2014-4-A10 thru A12	6/12/20	CMU wall	Y N
13-15	2014-4-A13 thru A15	6/12/20	Plaster skim coat on CMU wall	Y N
16-18	2014-4-A16 thru A18	6/12/20	Trim caulking	Y N
19-21	2014-4-A19 thru A21	6/12/20	Window caulking	Y N
22-24	2014-4-A22 thru A24	6/12/20	cove base/mastic	Y N
25-27	2014-4-A25 thru A27	6/12/20	cove base/mastic	Y N
28-30	2014-4-A28 thru A30	6/12/20	Ceramic floor tile	Y N
31-33	2014-4-A31 thru A33	6/12/20	Ceramic floor tile	Y N
34-36	2014-4-A34 thru A36	6/12/20	Ceramic wall tile	Y N
37-39	2014-4-A37 thru A39	6/12/20	Cove base/mastic	Y N
40-42	2014-4-A40 thru A42	6/12/20	Toile/sink caulking	Y N
43-45	2014-4-A43 thru A45	6/12/20	Carpet mastic	Y N
46-48	2014-4-A46 thru A48	6/12/20	Counter top caulking	Y N
49-51	2014-4-A49 thru A51	6/12/20	CMU wall	Y N
52-54	2014-4-A52 thru A54	6/12/20	Concrete wall	(Y) N

Comdete Stop @ 1st Positive

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
55-57	2014-4-A55 thru A57	6/12/20	Window caulking	Y N
58-60	2014-4-A58 thru A60	6/12/20	Door frame caulking	
61-63	2014-4-A61 thru A63	6/12/20	Foam insulation	
64-66	2014-4-A64 thru A66	6/12/20	AC frame caulking	
67-69	2014-4-A67 thru A69	6/12/20	Concrete walkways	
70-72	2014-4-A70 thru A72	6/12/20	Roofing material	
73-75	2014-4-A73 thru A75	6/12/20	Rain gutter caulking	
76-78	2014-4-A76 thru A78	6/12/20	Roof peak caulking	
79-81	2014-4-A79 thru A81	6/12/20	O-ring spacer	
82-84	2014-4-A82 thru A84	6/12/20	Vent caulking	
85-87	2014-4-A85 thru A87	6/12/20	Foam insulation	
88-90	2014-4-A88 thru A90	6/12/20	Tan caulking	
91-93	2014-4-A91 thru A93	6/12/20	Black caulking	
94-96	2014-4-A94 thru A96	6/12/20	Attic insulation	

SPECIAL INSTRUCTIONS: Stop at first positive

Sample Collector: (Print) Brian Carroll (Signature) [signature]

Relinquished by BC Date/Time: 6/12/20 Received by: Diana Federico Date/Time: 6/17/20 925

Relinquished by: Diana Federico Date/Time: 6/17/20 330p Received by: [signature] Date/Time: 6-17-2020

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Rev. 09/27/08

EMC LABS, INC.

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Laboratory Report
0238934

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

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	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-001 2014-5-A01		Ceiling Tile, White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Quartz Perlite Binder/Filler	50% 30% 20%
0238934-002 2014-5-A02		Ceiling Tile, White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Quartz Perlite Binder/Filler	50% 30% 20%
0238934-003 2014-5-A03		Ceiling Tile, White	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Quartz Perlite Binder/Filler	50% 30% 20%
0238934-004 2014-5-A04		Ceiling Tile, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
0238934-005 2014-5-A05		Ceiling Tile, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%
0238934-006 2014-5-A06		Ceiling Tile, White/ Brown	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	85% 15%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-007 2014-5-A07		Insulation, Yellow/Pink	No	None Detected	Fibrous Glass	100%
0238934-008 2014-5-A08		Insulation, Yellow/Pink	No	None Detected	Fibrous Glass	100%
0238934-009 2014-5-A09		Insulation, Yellow/Pink	No	None Detected	Fibrous Glass	100%
0238934-010 2014-5-A10		LAYER 1 Solffit, White	No	None Detected	Carbonates Mica Quartz Binder/Filler	100%
		LAYER 2 Drywall, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%
0238934-011 2014-5-A11		LAYER 1 Solffit, White	No	None Detected	Carbonates Mica Quartz Binder/Filler	100%
		LAYER 2 Drywall, White/ Brown	No	None Detected	Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	10% 2% 88%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238934-012 2014-5-A12		LAYER 1 Solffit, White	No	None Detected			
						Carbonates	
						Gypsum	
						Mica	
						Quartz	
						Binder/Filler	100%
		LAYER 2 Drywall, White/ Brown	No	None Detected		Cellulose Fiber	10%
						Fibrous Glass	2%
						Gypsum	
						Quartz	
						Carbonates	
						Mica	88%
0238934-013 2014-5-A13		Drywall, White/ Brown	No	None Detected		Cellulose Fiber	10%
						Fibrous Glass	2%
						Gypsum	
						Quartz	
						Carbonates	
						Mica	88%
0238934-014 2014-5-A14		Drywall, White/ Brown	No	None Detected		Cellulose Fiber	10%
						Fibrous Glass	2%
						Gypsum	
						Quartz	
						Carbonates	
						Mica	88%
0238934-015 2014-5-A15		Drywall, White/ Brown	No	None Detected		Cellulose Fiber	10%
						Fibrous Glass	2%
						Gypsum	
						Quartz	
						Carbonates	
						Mica	88%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-016 2014-5-A16		CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238934-017 2014-5-A17		CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238934-018 2014-5-A18		CMU Wall, Tan	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238934-019 2014-5-A19		Window Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-020 2014-5-A20		Window Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-021 2014-5-A21		Window Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-022 2014-5-A22		DoorFrame Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-023 2014-5-A23		DoorFrame Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-024 2014-5-A24		Note: No Sample in Container - Container Empty				
0238934-025 2014-5-A25		Toilet/Sink Caulking, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-026 2014-5-A26		Toilet/Sink Caulking, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-027 2014-5-A27		Toilet/Sink Caulking, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	Non-Asbestos Constituents	
0238934-028		LAYER 1	No	None Detected		
2014-5-A28		Cove Base, Gray			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected		
		Mastic, Yellow			Carbonates	
					Quartz	
					Binder/Filler	100%
0238934-029		LAYER 1	No	None Detected		
2014-5-A29		Cove Base, Gray			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected		
		Mastic, Yellow			Carbonates	
					Quartz	
					Binder/Filler	100%
0238934-030		LAYER 1	No	None Detected		
2014-5-A30		Cove Base, Gray			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected		
		Mastic, Yellow			Carbonates	
					Quartz	
					Binder/Filler	100%
0238934-031		LAYER 1	No	None Detected	Cellulose Fiber	90%
2014-5-A31		Fiber Board Tile, White w/Gray Streaks			Carbonates	
					Gypsum	
					Binder/Filler	10%
		LAYER 2	No	None Detected	Cellulose Fiber	1%
		Mastic, Yellow			Carbonates	
					Gypsum	
					Binder/Filler	99%

EMC LABS, INC.

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Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238934

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-032 / 2014-5-A32		LAYER 1 Fiber Board Tile, White w/Gray Streaks	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	90% 10%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	1% 99%
0238934-033 / 2014-5-A33		LAYER 1 Fiber Board Tile, White w/Gray Streaks	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	90% 10%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Gypsum Binder/Filler	3% 97%
0238934-034 / 2014-5-A34		LAYER 1 Vinyl Floor Tile, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238934-035 / 2014-5-A35		LAYER 1 Vinyl Floor Tile, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
		LAYER 2 Mastic, Yellow	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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NVLAP#101926-0

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	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-036 2014-5-A36		LAYER 1 Vinyl Floor Tile, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	1% <1% 98%
0238934-037 2014-5-A37		Thresthold Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%
0238934-038 2014-5-A38		Thresthold Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238934-039 2014-5-A39		Thresthold Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	1% <1% 98%
0238934-040 2014-5-A40		Carpet Mastic, Clear Note: Very small amount of mastic	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238934-041 2014-5-A41		Carpet Mastic, Clear Note: Very small amount of mastic	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%

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Bulk Asbestos Analysis by Polarized Light Microscopy

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	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-042 2014-5-A42		Carpet Mastic, Clear Note: Very small amount of mastic	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%
0238934-043 2014-5-A43		Skid Pad Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	3% <1% 96%
0238934-044 2014-5-A44		Skid Pad Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	3% <1% 96%
0238934-045 2014-5-A45		Skid Pad Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	2% <1% 97%
0238934-046 2014-5-A46		CMU Wall, Beige/ White	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%
0238934-047 2014-5-A47		CMU Wall, Beige/ White	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	 100%

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	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-048 2014-5-A48		CMU Wall, Beige/ White	No	None Detected	Carbonates Gypsum Quartz Binder/Filler	100%
0238934-049 2014-5-A49		Window/Doorframe Caulking, Gray/ White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-050 2014-5-A50		Window/Doorframe Caulking, Gray/ White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-051 2014-5-A51		Note: No Sample in Container - Container Empty				
0238934-052 2014-5-A52		Concrete Foundation, Gray/ White	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238934-053 2014-5-A53		Concrete Foundation, Gray/ White	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%

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Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	(%)
0238934-054 2014-5-A54		Concrete Foundation, Gray/ White	No	None Detected		Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238934-055 2014-5-A55		Vibration Cloth, White/ Beige	No	None Detected		Fibrous Glass Carbonates Quartz Binder/Filler	35% 65%
0238934-056 2014-5-A56		Vibration Cloth, White/ Beige	No	None Detected		Fibrous Glass Carbonates Quartz Binder/Filler	35% 65%
0238934-057 2014-5-A57		Vibration Cloth, White/ Beige	No	None Detected		Fibrous Glass Carbonates Quartz Binder/Filler	35% 65%
0238934-058 2014-5-A58		Ducting Caulking, Gray/ White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238934-059 2014-5-A59		Ducting Caulking, Gray/ White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238934-060 2014-5-A60		Ducting Caulking, White	No	None Detected		Silicone	100%

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	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-061 2014-5-A61		Concrete, Gray	No	None Detected	Quartz Gypsum Carbonates Mica Binder/Filler	100%
0238934-062 2014-5-A62		Concrete, Gray	No	None Detected	Quartz Gypsum Mica Carbonates Binder/Filler	100%
0238934-063 2014-5-A63		Note: No Sample in Container - Container Empty				
0238934-064 2014-5-A64		Pipe Insulation, Black/ Off White	No	None Detected	Foam	100%
0238934-065 2014-5-A65		Pipe Insulation, Black/ Off White	No	None Detected	Foam	100%
0238934-066 2014-5-A66		LAYER 1 Pipe Insulation, Black/ Off White	No	None Detected	Foam	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Carbonates Gypsum Binder/Filler	100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	Non-Asbestos Constituents	(%)
0238934-067 2014-5-A67		LAYER 1 Cove Base, Blue	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-068 2014-5-A68		LAYER 1 Cove Base, Blue	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-069 2014-5-A69		LAYER 1 Cove Base, Blue	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238934-070 2014-5-A70		LAYER 1 Roofing Material, Black/ Lt. Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Black/ Lt. Gray/ Tan	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%

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Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/29/2020
Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-071 2014-5-A71		LAYER 1 Roofing Material, Black/ Lt. Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Black/ Lt. Gray/ Tan	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	20% 80%
0238934-072 2014-5-A72		LAYER 1 Roofing Material, Black/ Lt. Gray	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	20% 80%
		LAYER 2 Roofing Material, Black/ Lt. Gray/ Tan	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	20% 80%
0238934-073 2014-5-A73		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238934-074 2014-5-A74		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238934-075 2014-5-A75		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Quartz Binder/Filler	 100%

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Collected:	06/10/2020	Date Reported:	06/29/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238934-076 / 2014-5-A76		Roof Peaik Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238934-077 / 2014-5-A77		Roof Peaik Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238934-078 / 2014-5-A78		Roof Peaik Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%

Analyst - Kurt Kettler

Signatory - Lab Manager - Ken Scheske

CHAIN OF CUSTODY

EMC Labs, Inc.
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

238434
TAT: 3-5day
Rec'd: JUN 17 P.M.

COMPANY NAME:	ENVIROSERVICES & TRAINING CENTER, LLC	BILL TO: (If Different Location)	
	505 Ward Ave. Suite #202		Trina Oshiro
	Honolulu, HI 96814		505 Ward Ave Suite 202
CONTACT:	Antone Gabriel, Sara Marvin,		Honolulu, Hawaii 96814
Phone/Fax:	(808) 839-7222 ext 232/(808) 839-4455		
Email:	agabriel@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com, smarvin@gotoetc.com,		

Now Accepting: VISA – MASTERCARD **Price Quoted: $ _____ / Sample $_____ / Layers**

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. TURNAROUND TIME: [Same Day RUSH] [1-Day] [2-Day] (3-4-5 Day) [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. TYPE OF ANALYSIS: (Bulk-PLM) [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]

3. DISPOSAL INSTRUCTIONS: (Dispose of samples at EMC) / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

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4. Project Name: DHHL – Former NOAA NWS PTWC **Project Number:** 20-2014

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
1-3	2014-5-A01 thru A03	6/10/20	Pressboard ceiling tile	(Y) N
4-6	2014-5-A04 thru A06	6/10/20	Canec ceiling tile	Y N
7-9	2014-5-A07 thru A09	6/10/20	Ducting insulation	Y N
10-12	2014-5-A10 thru A12	6/10/20	Soffit/AC unit drywall	Y N
13-15	2014-4-A13 thru A15	6/10/20	Drywall wall	Y N
16-18	2014-5-A16 thru A18	6/10/20	CMU wall	Y N
19-21	2014-5-A19 thru A21	6/10/20	Window caulking	Y N
22-24	2014-5-A22 thru A24	6/10/20	Doorframe caulking	Y N
25-27	2014-5-A25 thru A27	6/10/20	Toilet/sink caulking	Y N
28-30	2014-5-A28 thru A30	6/10/20	cove base/mastic	Y N
31-33	2014-5-A31 thru A33	6/10/20	Fiber board tile	Y N
34-36	2014-5-A34 thru A36	6/10/20	Vinyl floor tile	Y N
37-39	2014-5-A37 thru A39	6/10/20	Threshold mastic	Y N
40-42	2014-5-A40 thru A42	6/10/20	Carpet mastic	Y N
43-45	2014-5-A43 thru A45	6/10/20	Skid pad mastic	Y N
46-48	2014-5-A46 thru A48	6/10/20	CMU wall	Y N
49-51	2014-5-A49 thru A51	6/10/20	Window/doorframe caulking	Y N
52-54	2014-5-A52 thru A54	6/10/20	Concrete foundation	(Y) N

Complete stop @ 1st Positive

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
55-57	2014-5-A55 thru A57	6/10/20	Vibration cloth	(Y) N
58-60	2014-5-A58 thru A60	6/10/20	Ducting caulking	
61-63	2014-5-A61 thru A63	6/10/20	Concrete walkway	
64-66	2014-5-A64 thru A66	6/10/20	Pipe insulation	
67-69	2014-5-A67 thru A69	6/10/20	Covebase/mastic	
70-72	2014-5-A70 thru A72	6/11/20	Roofing material	
73-75	2014-5-A73 thru A75	6/11/20	Pipe penetration mastic	
76-78	2014-5-A76 thru A78	6/11/20	Roof peak caulking	

SPECIAL INSTRUCTIONS: Stop at first positive

Sample Collector: (Print) Brian Carroll (Signature) [signature]

Relinquished by BC Date/Time: 6/12/20 Received by Diana Federico Date/Time: 6/17/20 925

Relinquished by: Diana Federico Date/Time: 6/17/20 2305 Received by: [signature] Date/Time: 6/17/20

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Rev. 09/27/08

EMC LABS, INC.

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Laboratory Report
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NVLAP#101926-0

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Collected:	06/10/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	(%)
0238933-001 2014-14-A01		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%
0238933-002 2014-14-A02		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%
0238933-003 2014-14-A03		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%
0238933-004 2014-14-A04		Trim Caulking, White/ Tan	No	None Detected		Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238933-005 2014-14-A05		Trim Caulking, White/ Tan	No	None Detected		Carbonates Perlite Quartz Binder/Filler	100%
0238933-006 2014-14-A06		Trim Caulking, White/ Tan	No	None Detected		Carbonates Quartz Perlite Binder/Filler	100%
0238933-007 2014-14-A07		LAYER 1 Attic Insulation, Yellow	No	None Detected		Fibrous Glass Cellulose Fiber Carbonates	97% <1% 3%
		LAYER 2 Wrap, Silver	No	None Detected		Fibrous Glass Aluminum Carbonates Binder/Filler	2% 98%
0238933-008 2014-14-A08		LAYER 1 Attic Insulation, Yellow	No	None Detected		Fibrous Glass Cellulose Fiber Carbonates	97% <1% 3%
		LAYER 2 Wrap, Silver	No	None Detected		Fibrous Glass Aluminum Carbonates Binder/Filler	2% 98%
0238933-009 2014-14-A09		LAYER 1 Attic Insulation, Yellow	No	None Detected		Fibrous Glass Cellulose Fiber Carbonates	97% <1% 3%
		LAYER 2 Wrap, Silver	No	None Detected		Fibrous Glass Aluminum Carbonates Binder/Filler	2% 98%

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Laboratory Report
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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/10/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238933-010 2014-14-A10		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%
0238933-011 2014-14-A11		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%
0238933-012 2014-14-A12		LAYER 1 Drywall, Off White/ Brown	No	None Detected		Cellulose Fiber Gypsum Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected		Carbonates Mica Quartz Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238933-013 2014-14-A13		LAYER 1 CMU, Beige/ Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint/ Coating, White/ Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238933-014 2014-14-A14		LAYER 1 CMU, Beige/ Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint/ Coating, White/ Off White	No	None Detected		Carbonates Binder/Filler	100%
0238933-015 2014-14-A15		LAYER 1 CMU, Beige/ Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Paint/ Coating, White/ Off White	No	None Detected		Carbonates Binder/Filler	100%
0238933-016 2014-14-A16		Window/Door Frame Caulk, White	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-017 2014-14-A17		Window/Door Frame Caulk, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-018 2014-14-A18		Window/Door Frame Caulk, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-019 2014-14-A19		LAYER 1 Vinyl Floor Sheeting, Gray	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Quartz Binder/Filler	17% 3% 80%
		LAYER 2 Mastic, Lt. Yellow	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Binder/Filler	2% <1% 97%
0238933-020 2014-14-A20		LAYER 1 Vinyl Floor Sheeting, Gray	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Perlite Gypsum Binder/Filler	15% 2% 83%
		LAYER 2 Mastic, Lt. Yellow	No	None Detected	Cellulose Fiber Carbonates Binder/Filler	3% 97%
0238933-021 2014-14-A21		Vinyl Floor Sheeting, Gray Note: No Mastic Present	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Perlite Quartz Binder/Filler	18% 2% 80%

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	HONOLULU HI 96814	Date Analyzed:	06/26/2020
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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-022 2014-14-A22		LAYER 1 Covebase, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Quartz Carbonates Binder/Filler	2% 98%
0238933-023 2014-14-A23		LAYER 1 Covebase, Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Quartz Carbonates Binder/Filler	1% 99%
0238933-024 2014-14-A24		Covebase, Off White Note: No Mastic Present	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-025 2014-14-A25		LAYER 1 Ceramic Floor Tile, Cream	No	None Detected	Quartz Gypsum Carbonates	100%
		LAYER 2 Mortar, Gray	No	None Detected	Quartz Gypsum Mica Carbonates	100%
		LAYER 3 Mortar, White	No	None Detected	Cellulose Fiber Quartz Gypsum Mica Carbonates	<1% 99%
0238933-026 2014-14-A26		LAYER 1 Ceramic Floor Tile, Cream	No	None Detected	Quartz Gypsum Carbonates	100%
		LAYER 2 Mortar, White	No	None Detected	Cellulose Fiber Quartz Gypsum Mica Carbonates	<1% 99%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-027		LAYER 1	No	None Detected		
2014-14-A27		Ceramic Floor Tile, Cream			Quartz	
					Gypsum	
					Carbonates	100%
		LAYER 2	No	None Detected		
		Mortar, Gray			Quartz	
					Gypsum	
					Mica	
					Carbonates	100%
		LAYER 3	No	None Detected	Cellulose Fiber	<1%
		Mortar, White			Quartz	
					Gypsum	
					Mica	
					Carbonates	99%
0238933-028		LAYER 1	No	None Detected	Synthetic Fiber	85%
2014-14-A28		Carpet, White			Carbonates	15%
		LAYER 2	No	None Detected	Synthetic Fiber	5%
		Carpet Mastic, Off White			Carbonates	
					Binder/Filler	95%
		LAYER 3	No	None Detected	Synthetic Fiber	2%
		Pads, Green			Foam	
					Carbonates	98%
0238933-029		LAYER 1	No	None Detected	Synthetic Fiber	85%
2014-14-A29		Carpet, White			Carbonates	15%
		LAYER 2	No	None Detected	Synthetic Fiber	3%
		Carpet Mastic, Off White			Carbonates	
					Quartz	
					Binder/Filler	97%
		LAYER 3	No	None Detected	Synthetic Fiber	5%
		Pads, Green			Foam	
					Carbonates	
					Binder/Filler	95%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-030 2014-14-A30		LAYER 1 Carpet, White	No	None Detected	Synthetic Fiber Carbonates	85% 15%
		LAYER 2 Carpet Mastic, Off White	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	3% 97%
		LAYER 3 Pads, Green	No	None Detected	Synthetic Fiber Foam Carbonates Binder/Filler	3% 97%
0238933-031 2014-14-A31		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238933-032 2014-14-A32		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238933-033 2014-14-A33		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238933-034 2014-14-A34		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238933-035 2014-14-A35		Caulking, White	No	None Detected	Carbonates Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-036 2014-14-A36		Caulking, White	No	None Detected	Carbonates Binder/Filler	100%
0238933-037 2014-14-A37		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-038 2014-14-A38		Caulking, Cream	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-039 2014-14-A39		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-040 2014-14-A40		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-041 2014-14-A41		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238933-042 2014-14-A42		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents
0238933-043 2014-14-A43		CMU, Beige/ Gray	No	None Detected	Carbonates Quartz Gypsum 100%
0238933-044 2014-14-A44		CMU, Beige/ Gray	No	None Detected	Carbonates Quartz Gypsum 100%
0238933-045 2014-14-A45		CMU, Beige/ Gray	No	None Detected	Carbonates Quartz Gypsum 100%
0238933-046 2014-14-A46		Caulking, White	No	None Detected	Carbonates Quartz Binder/Filler 100%
0238933-047 2014-14-A47		Caulking, Clear	No	None Detected	Carbonates Quartz Binder/Filler 100%
0238933-048 2014-14-A48		Caulking, Clear	No	None Detected	Carbonates Quartz Binder/Filler 100%
0238933-049 2014-14-A49		Caulking, Off White	No	None Detected	Carbonates Quartz Binder/Filler 100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238933-050 2014-14-A50		Caulking, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238933-051 2014-14-A51		Caulking, Off White	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238933-052 2014-14-A52		LAYER 1 Foam Insulation, Black	No	None Detected		Foam Carbonates	100%
		LAYER 2 Foam Insulation, Lt. Brown	No	None Detected		Foam Carbonates Binder/Filler	100%
0238933-053 2014-14-A53		Foam Insulation, Black	No	None Detected		Foam Carbonates	100%
0238933-054 2014-14-A54		Foam Insulation, Black	No	None Detected		Foam Carbonates	100%
0238933-055 2014-14-A55		Concrete Walkway, Gray	No	None Detected		Cellulose Fiber Gypsum Quartz Mica Carbonates	<1% 99%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-056 2014-14-A56		Concrete Walkway, Gray	No	None Detected	Cellulose Fiber Gypsum Quartz Mica Carbonates	<1% 99%
0238933-057 2014-14-A57		Concrete Walkway, Gray	No	None Detected	Cellulose Fiber Gypsum Quartz Mica Carbonates	<1% 99%
0238933-058 2014-14-A58		LAYER 1 Roofing Material, White/ Red/ Black	No	None Detected	Fibrous Glass Quartz Carbonates Binder/Filler	15% 85%
		LAYER 2 Roofing Material, White/ Gray/ Black	No	None Detected	Fibrous Glass Quartz Carbonates Binder/Filler	15% 85%
0238933-059 2014-14-A59		LAYER 1 Roofing Material, White/ Red/ Black	No	None Detected	Fibrous Glass Quartz Carbonates Binder/Filler	15% 85%
		LAYER 2 Roofing Material, White/ Gray/ Black	No	None Detected	Fibrous Glass Quartz Carbonates Binder/Filler	15% 85%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-060 2014-14-A60		LAYER 1 Roofing Material, White/ Red/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
		LAYER 2 Roofing Material, White/ Gray/ Black	No	None Detected	Fibrous Glass Carbonates Quartz Binder/Filler	15% 85%
0238933-061 2014-14-A61		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Binder/Filler	 100%
0238933-062 2014-14-A62		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Binder/Filler	 100%
0238933-063 2014-14-A63		Pipe Penetration Mastic, Black	No	None Detected	Carbonates Binder/Filler	 100%
0238933-064 2014-14-A64		Roof Peak Caulking, Dk. Brown	No	None Detected	Carbonates Binder/Filler	 100%
0238933-065 2014-14-A65		Roof Peak Caulking, Dk. Brown	No	None Detected	Carbonates Binder/Filler	 100%
0238933-066 2014-14-A66		Roof Peak Caulking, Dk. Brown	No	None Detected	Carbonates Binder/Filler	 100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-067 2014-14-A67		Caulking, Brown	No	None Detected	Silicone	100%
0238933-068 2014-14-A68		Caulking, Brown/ Clear	No	None Detected	Silicone	100%
0238933-069 2014-14-A69		Caulking, Brown/ Clear	No	None Detected	Silicone	100%
0238933-070 2014-14-A70		Caulking, Clear	No	None Detected	Silicone Carbonates Binder/Filler	100%
0238933-071 2014-14-A71		Caulking, Clear	No	None Detected	Silicone Carbonates Binder/Filler	100%
0238933-072 2014-14-A72		Caulking, Clear	No	None Detected	Silicone Carbonates Binder/Filler	100%
0238933-073 2014-14-A73		LAYER 1 Foam Insulation, Black	No	None Detected	Foam Carbonates Binder/Filler	100%
		LAYER 2 Foam Insulation, White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238933-074		Foam Insulation, Black	No	None Detected		
2014-14-A74					Foam	
					Carbonates	
					Binder/Filler	100%
0238933-075		Foam Insulation, Black	No	None Detected		
2014-14-A75					Foam	
					Carbonates	
					Binder/Filler	100%

Analyst - Johann Hofer

Signatory - Lab Director - Kurt Kettler

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Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/26/2020
Collected:	06/10/2020	Date Reported:	06/26/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-001 2014-15-A01		Pressboard Tile, White/ Gray	No	None Detected	Cellulose Fiber Mineral Wool Carbonates Quartz Perlite Binder/Filler	40% 40% 20%
0238932-002 2014-15-A02		Pressboard Tile, White/ Gray	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Quartz Perlite Binder/Filler	45% 35% 20%
0238932-003 2014-15-A03		Pressboard Tile, White/ Gray	No	None Detected	Mineral Wool Cellulose Fiber Carbonates Quartz Perlite Binder/Filler	45% 35% 20%
0238932-004 2014-15-A04		LAYER 1 Duct Insulation, Red	No	None Detected	Fibrous Glass	100%
		LAYER 2 Duct Insulation, Black	No	None Detected	Carbonates Gypsum Binder/Filler	 100%
		LAYER 3 Duct Insulation, White	No	None Detected	Gypsum Binder/Filler	 100%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	(%)
0238932-005 2014-15-A05		LAYER 1 Duct Insulation, Red	No	None Detected		Fibrous Glass	100%
		LAYER 2 Duct Insulation, Black	No	None Detected		Carbonates Gypsum Binder/Filler	100%
		LAYER 3 Duct Insulation, White	No	None Detected		Gypsum Binder/Filler	100%
0238932-006 2014-15-A06		LAYER 1 Duct Insulation, Red	No	None Detected		Fibrous Glass	100%
		LAYER 2 Duct Insulation, Black	No	None Detected		Carbonates Gypsum Binder/Filler	100%
		LAYER 3 Duct Insulation, White	No	None Detected		Gypsum Binder/Filler	100%
0238932-007 2014-15-A07		LAYER 1 Ceiling Insulation, Brown	No	None Detected		Cellulose Fiber Carbonates Gypsum Binder/Filler	98% 2%
		LAYER 2 Ceiling Insulation, Black	No	None Detected		Gypsum Binder/Filler	100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238932-008 2014-15-A08		LAYER 1 Ceiling Insulation, Brown	No	None Detected		Cellulose Fiber Carbonates Gypsum Binder/Filler	98% 2%
		LAYER 2 Ceiling Insulation, Black	No	None Detected		Gypsum Binder/Filler	100%
0238932-009 2014-15-A09		LAYER 1 Ceiling Insulation, Brown	No	None Detected		Cellulose Fiber Carbonates Gypsum Binder/Filler	98% 2%
		LAYER 2 Ceiling Insulation, Black	No	None Detected		Gypsum Binder/Filler	100%
0238932-010 2014-15-A10		LAYER 1 Pressboard, Off White/ Brown	No	None Detected		Cellulose Fiber Fibrous Glass Gypsum Quartz Carbonates Mica	11% 1% 88%
		LAYER 2 Coating, White/ Off White	No	None Detected		Carbonates Quartz Binder/Filler	 100%
0238932-011 2014-15-A11		LAYER 1 Pressboard, Beige/ Tan	No	None Detected		Cellulose Fiber Gypsum Binder/Filler	98% 2%
		LAYER 2 Coating, White/ Off White	No	None Detected		Carbonates Quartz Binder/Filler	 100%

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Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-012 2014-15-A12		LAYER 1 Pressboard, Beige/ Tan	No	None Detected	Cellulose Fiber Gypsum Binder/Filler	98% 2%
		LAYER 2 Coating, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238932-013 2014-15-A13		LAYER 1 Drywall, Off White/ Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Carbonates Mica	12% 88%
		LAYER 2 Joint Compound, White/ Off White	No	None Detected	Carbonates Mica Quartz Binder/Filler	 100%
		LAYER 3 Texture, White/ Off White	No	None Detected	Cellulose Fiber Carbonates Mica Quartz Perlite Binder/Filler	<1% 99%
0238932-014 2014-15-A14		LAYER 1 Drywall, Off White/ Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Carbonates Mica	12% 88%
		LAYER 2 Texture, White/ Off White	No	None Detected	Carbonates Mica Quartz Perlite Binder/Filler	 100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-015 2014-15-A15		Drywall, Off White/ Brown	No	None Detected	Cellulose Fiber Gypsum Quartz Carbonates Mica	12% 88%
0238932-016 2014-15-A16		Door Frame Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238932-017 2014-15-A17		Door Frame Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238932-018 2014-15-A18		Door Frame Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238932-019 2014-15-A19		Sink Caulking, Clear	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-020 2014-15-A20		Sink Caulking, Clear	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-021 2014-15-A21		Sink Caulking, Clear	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-022 / 2014-15-A22		Sink Insulation, White/ Tan	No	None Detected	Cellulose Fiber	3%
					Carbonates	
					Mica	
					Quartz	
					Binder/Filler	97%
0238932-023 / 2014-15-A23		Sink Insulation, White/ Tan	No	None Detected	Cellulose Fiber	3%
					Carbonates	
					Mica	
					Quartz	
					Binder/Filler	97%
0238932-024 / 2014-15-A24		Sink Insulation, White/ Tan	No	None Detected	Cellulose Fiber	5%
					Carbonates	
					Mica	
					Quartz	
					Binder/Filler	95%
0238932-025 / 2014-15-A25		Vent Caulking, White/ Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
0238932-026 / 2014-15-A26		Vent Caulking, White/ Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
0238932-027 / 2014-15-A27		Vent Caulking, White/ Off White	No	None Detected		
					Carbonates	
					Quartz	
					Binder/Filler	100%
0238932-028 / 2014-15-A28		Caulking, White/ Off White	No	None Detected		
					Silicone	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-029 2014-15-A29		Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238932-030 2014-15-A30		Caulking, White/ Off White	No	None Detected	Silicone	100%
0238932-031 2014-15-A31		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, White/ Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238932-032 2014-15-A32		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, White/ Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238932-033 2014-15-A33		LAYER 1 Cove Base, Gray	No	None Detected	Carbonates Quartz Binder/Filler	100%
		LAYER 2 Mastic, White/ Yellow	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	Non-Asbestos Constituents	
0238932-034		LAYER 1	No	None Detected		
2014-15-A34		Cove Base, Blue			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected		
		Mastic, White/ Yellow			Carbonates	
					Quartz	
					Binder/Filler	100%
0238932-035		LAYER 1	No	None Detected		
2014-15-A35		Cove Base, Blue			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected	Cellulose Fiber	<1%
		Mastic, White/ Yellow			Carbonates	
					Quartz	
					Binder/Filler	99%
0238932-036		LAYER 1	No	None Detected		
2014-15-A36		Cove Base, Blue			Carbonates	
					Quartz	
					Binder/Filler	100%
		LAYER 2	No	None Detected		
		Mastic, White/ Yellow			Carbonates	
					Quartz	
					Binder/Filler	100%
0238932-037		LAYER 1	No	None Detected	Cellulose Fiber	17%
2014-15-A37		Sheet Flooring, White/ Gray			Fibrous Glass	3%
					Carbonates	
					Quartz	
					Binder/Filler	80%
		LAYER 2	No	None Detected	Cellulose Fiber	<1%
		Mastic, Yellow			Carbonates	
					Quartz	
					Binder/Filler	99%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-038 2014-15-A38		LAYER 1 Sheet Flooring, White/ Gray	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Quartz Binder/Filler	17% 3% 80%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	1% 99%
0238932-039 2014-15-A39		LAYER 1 Sheet Flooring, White/ Gray	No	None Detected	Cellulose Fiber Fibrous Glass Carbonates Quartz Binder/Filler	17% 3% 80%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-040 2014-15-A40		LAYER 1 Carpet, Black/ Off White/ Blue	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Yellow	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-041 2014-15-A41		LAYER 1 Carpet, Black/ Off White/ Blue	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Yellow	No	None Detected	Cellulose Fiber Synthetic Fiber Carbonates Quartz Binder/Filler	1% <1% 98%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-042 2014-15-A42		LAYER 1 Carpet, Black/ Off White/ Blue	No	None Detected	Synthetic Fiber Carbonates Binder/Filler	85% 15%
		LAYER 2 Mastic, Yellow	No	None Detected	Synthetic Fiber Carbonates Quartz Binder/Filler	1% 99%
0238932-043 2014-15-A43		Caulking, Gray	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-044 2014-15-A44		Caulking, Gray	No	None Detected	Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-045 2014-15-A45		Caulking, Gray	No	None Detected	Carbonates Quartz Binder/Filler	 100%
0238932-046 2014-15-A46		Wall Insulation Material, Beige/ Brown	No	None Detected	Gypsum Carbonates Mica Quartz Binder/Filler	 100%
0238932-047 2014-15-A47		Wall Insulation Material, Beige/ Brown	No	None Detected	Gypsum Carbonates Mica Quartz Binder/Filler	 100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-048 2014-15-A48		Wall Insulation Material, Beige/ Brown	No	None Detected	Gypsum Carbonates Mica Quartz Binder/Filler	100%
0238932-049 2014-15-A49		Sconce Spacer, Black	No	None Detected	Foam	100%
0238932-050 2014-15-A50		Sconce Spacer, Black	No	None Detected	Foam	100%
0238932-051 2014-15-A51		Sconce Spacer, Black	No	None Detected	Foam	100%
0238932-052 2014-15-A52		Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238932-053 2014-15-A53		Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%
0238932-054 2014-15-A54		Caulking, White/ Off White	No	None Detected	Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238932-055 2014-15-A55		Skid Pad, Black/ Green	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238932-056 2014-15-A56		Skid Pad, Black/ Green	No	None Detected		Carbonates Quartz Binder/Filler	100%
0238932-057 2014-15-A57		Skid Pad, Black/ Green	No	None Detected		Cellulose Fiber Carbonates Quartz Binder/Filler	<1% 99%
0238932-058 2014-15-A58		Concrete, Beige/ Gray	No	None Detected		Gypsum Carbonates Quartz Mica Binder/Filler	100%
0238932-059 2014-15-A59		Concrete, Beige/ Gray	No	None Detected		Gypsum Carbonates Quartz Mica Binder/Filler	100%
0238932-060 2014-15-A60		Concrete, Beige/ Gray	No	None Detected		Carbonates Quartz Binder/Filler	100%

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Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	(%)
0238932-061 2014-15-A61		LAYER 1 Roofing, Black/ Green	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
		LAYER 2 Roofing, Black/ Off White	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
0238932-062 2014-15-A62		LAYER 1 Roofing, Black/ Green	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
		LAYER 2 Roofing, Black/ Off White	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
0238932-063 2014-15-A63		LAYER 1 Roofing, Black/ Green	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
		LAYER 2 Roofing, Black/ Off White	No	None Detected		Fibrous Glass	20%
						Carbonates Quartz Binder/Filler	80%
0238932-064 2014-15-A64		Mastic, Black	No	None Detected		Cellulose Fiber	<1%
						Carbonates Quartz Binder/Filler	99%

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Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238932-065		Mastic, Black	No	None Detected	Cellulose Fiber	<1%
2014-15-A65					Carbonates	
					Quartz	
					Binder/Filler	99%
0238932-066		Mastic, Black	No	None Detected	Cellulose Fiber	<1%
2014-15-A66					Carbonates	
					Quartz	
					Binder/Filler	99%

Analyst - Dustin White

Signatory - Lab Director - Kurt Kettler

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238931

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/25/2020
Collected:	06/10/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type	(%)	Non-Asbestos Constituents	
0238931-001 2014-16-A01		LAYER 1 CMU, Beige/ Gray/ Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238931-002 2014-16-A02		LAYER 1 CMU, Beige/ Gray/ Tan	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected		Carbonates Gypsum Quartz Binder/Filler	100%
0238931-003 2014-16-A03		LAYER 1 CMU, Beige/ Gray/ Tan	No	None Detected		Carbonates Gypsum Quartz Mica Binder/Filler	100%
		LAYER 2 Grout, Gray	No	None Detected		Carbonates Gypsum Quartz Mica Binder/Filler	100%

EMC LABS, INC.

9830 S. 51st Street, Suite B109, Phoenix, AZ 85044
Phone: 800-362-3373 or 480-940-5294 - Fax: (480) 893-1726

Laboratory Report
0238931

Bulk Asbestos Analysis by Polarized Light Microscopy

NVLAP#101926-0

Client:	ENVIROSERVICES & TRAINING CENTER	Job# / P.O. #:	20-2014
Address:	505 WARD AVE, STE 202	Date Received:	06/17/2020
	HONOLULU HI 96814	Date Analyzed:	06/25/2020
Collected:	06/10/2020	Date Reported:	06/25/2020
Project Name:	DHHL-FORMER NOAA NWS PTWC	EPA Method:	EPA 600/R-93/116
Address:		Submitted By:	BRIAN CARROLL
		Collected By:	

Lab ID / Client ID	Sample Location	Layer Name / Sample Description	Asbestos Detected	Asbestos Type (%)	Non-Asbestos Constituents	
0238931-004 2014-16-A04		Sign Caulking, Clear	No	None Detected	Silicone	100%
0238931-005 2014-16-A05		Sign Caulking, Clear	No	None Detected	Silicone	100%
0238931-006 2014-16-A06		Sign Caulking, Clear	No	None Detected	Silicone	100%
0238931-007 2014-16-A07		Foam Spacer, Black	No	None Detected	Foam Carbonates Quartz	100%
0238931-008 2014-16-A08		Foam Spacer, Black	No	None Detected	Foam Carbonates Quartz	100%
0238931-009 2014-16-A09		Foam Spacer, Black	No	None Detected	Foam Carbonates Quartz	100%

Analyst - Kurt Kettler

Signatory - Lab Manager - Ken Scheske

EMC Labs, Inc.
9830 S. 51st St., Ste B-109
Phoenix, AZ 85044
(800) 362-3373 Fax (480) 893-1726

TAT: 3-5day
Rec'd: JUN 17 P.M.

COMPANY NAME:	ENVIROSERVICES & TRAINING CENTER, LLC	BILL TO: (If Different Location)	Trina Oshiro
	505 Ward Ave. Suite #202		505 Ward Ave Suite 202
	Honolulu, HI 96814		Honolulu, Hawaii 96814
CONTACT:	Antone Gabriel, Sara Marvin,		
Phone/Fax:	(808) 839-7222 ext 232/ (808) 839-4455		
Email:	agabriel@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com, smarvin@gotoetc.com,		

Now Accepting: VISA – MASTERCARD

Price Quoted: $ _____ / Sample $_____ / Layers

COMPLETE ITEMS 1-4: (Failure to complete any items may cause a delay in processing or analyzing your samples)

1. **TURNAROUND TIME:** [Same Day RUSH] [1-Day] [2-Day] [3-4-5 Day] [6-10 Day]

****Prior confirmation of turnaround time is required**
****Additional charges for rush analysis (please call marketing department for pricing details)**
****Laboratory analysis may be subject to delay if credit terms are not met**

2. **TYPE OF ANALYSIS:** [Bulk-PLM] [Air-PCM] [Lead] [Point Count] [Fungi: AOC, W-C, Bulk, Swab, Tape]
3. **DISPOSAL INSTRUCTIONS:** [Dispose of samples at EMC] / [Return samples to me at my expense]
(If you do not indicate preference, EMC will dispose of samples 60 days from analysis.)

4. **Project Name:** DHHL – Former NOAA NWS PTWC **Project Number: 20-2014**

EMC SAMPLE #	CLIENT SAMPLE #	DATE & TIME SAMPLED	LOCATION/MATERIAL TYPE	Samples Accepted Yes / No
		6/10/20	CMU/grout	Y N
1-3	2014-16-A01 thru A03	6/10/20	Sign caulking	Y N
4-6	2014-16-A04 thru A06	6/10/20	Foam spacer	Y N
7-9	2014-16-A07 thru A09	6/10/20		

SPECIAL INSTRUCTIONS: Stop at first positive

Sample Collector: (Print) Brian Carroll (Signature) [signature] 925

Relinquished by BC Date/Time: 6/12/20 Received by: Diana Federico Date/Time: 6/17/20

Relinquished by: Diana Federico Date/Time: 6/17/20 310pm Received by: [signature] Date/Time: 6/18/2020 1570

Relinquished by: _____ Date/Time _____ Received by: _____ Date/Time: _____

** In the event of any dispute between the above parties for these services or otherwise, parties agree that jurisdiction and venue will be in Phoenix, Arizona and prevailing party will be entitled to attorney's fees and court costs.

Rev. 09/27/08

NVL
INDUSTRIAL HYGIENE SERVICES
LABORATORY + MANAGEMENT + TRAINING

June 23, 2020

Antone Gabriel
EnviroServices & Training Center, LLC
505 Ward Avenue, Suite 202
Honolulu, HI 96814

NVL Batch # 2010339.00

RE: Total Metal Analysis
Method: EPA 6010 (price per analyte) <paint>
Item Code: ICP-M2

Client Project: 20-2014
Location: DHHL NWS PTWC Ewa Beach, Oahu HI

Dear Mr. Gabriel,

NVL Labs received 7 sample(s) for the said project on 6/18/2020. Preparation of these samples was conducted following protocol outlined in EPA 3051/6010D, unless stated otherwise. Analysis of these samples was performed using analytical instruments in accordance with EPA 6010 (price per analyte) <paint> . The results are usually expressed in mg/kg and ppm. Test results are not blank corrected.

For recent regulation updates pertaining to current regulatory levels or permissible exposure levels, please call your local regulatory agencies for more detail.

At NVL Labs all analyses are performed under strict guidelines of the Quality Assurance Program. This report is considered highly confidential and will not be released without your approval. Samples are archived after two weeks from the analysis date. Please feel free to contact us at 206-547-0100, in case you have any questions or concerns.

Sincerely,

Shalini Patel, Lab Supervisor

ANNIVERSARY 25 1995 - 2020

Enc.: Sample results

ilac-MRA

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE & ENVIRONMENTAL LEAD
ISO/IEC 17025:2005
LAB # 101861

Analysis Report

Total Metals

Client: EnviroServices & Training Center, LLC
Address: 505 Ward Avenue, Suite 202
Honolulu, HI 96814

Attention: **Mr. Antone Gabriel**
Project Location: DHHL NWS PTWC Ewa Beach, Oahu HI

Batch #: 2010339.00
Matrix: Bulk
Method: EPA 3051/6010D
Client Project #: 20-2014
Date Received: 6/18/2020
Samples Received: 7
Samples Analyzed: 7

Lab ID	Client Sample #	Elements	Sample wt (g)	RL mg / kg	Results in mg / kg	Results in ppm
20073051	2014-1-As01	Arsenic (As)	0.2967	13.0	220.0	220.0
20073052	2014-2-As01	Arsenic (As)	0.2973	13.0	260.0	260.0
20073053	2014-3-As01	Arsenic (As)	0.2975	13.0	1900.0	1900.0
20073054	2014-4-As01	Arsenic (As)	0.2976	13.0	520.0	520.0
20073055	2014-5-As01	Arsenic (As)	0.3155	13.0	450.0	450.0
20073056	2014-5-As02	Arsenic (As)	0.3023	13.0	< 13.0	< 13.0
20073057	2014-15-As01	Arsenic (As)	0.3002	13.0	< 13.0	< 13.0

Sampled by: Client
Analyzed by: Ruth Schumaker
Reviewed by: Shalini Patel

Date Analyzed: 06/22/2020
Date Issued: 06/23/2020

Shalini Patel, Lab Supervisor

mg/ kg = Milligrams per kilogram
ppm = Parts per million

RL = Reporting Limit
'<' = Below the reporting Limit

Note : Method QC results are acceptable unless stated otherwise.
Unless otherwise indicated, the condition of all samples was acceptable at time of receipt.

METAL LABORATORY SERVICES

NVL

Company EnviroServices & Training Center, LLC
Address 505 Ward Avenue, Suite 202
Honolulu, HI 96814
Project Manager Mr. Antone Gabriel
Phone (808) 839-7222

NVL Batch Number **2010339.00**
TAT 5 Days **AH** No
Rush TAT
Due Date 6/25/2020 **Time** 12:15 PM
Email agabriel@gotoetc.com
Fax (808) 839-4455

Project Name/Number: 20-2014 **Project Location:** DHHL NWS PTWC Ewa Beach, Oahu HI

Subcategory Inductively Coupled Plasma (ICP) - Group Tests
Item Code ICP-M2 EPA 6010 (price per analyte) <paint>
Metals Arsenic (As)

Total Number of Samples 7 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	20073051	2014-1-As01		A
2	20073052	2014-2-As01		A
3	20073053	2014-3-As01		A
4	20073054	2014-4-As01		A
5	20073055	2014-5-As01		A
6	20073056	2014-5-As02		A
7	20073057	2014-15-As01		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Fatima Khan		NVL	6/18/20	1215
Analyzed by	Ruth Schumaker		NVL	6/22/20	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 6/18/2020
Time: 1:20 PM
Entered By: Fatima Khan

NVL LABS
INDUSTRIAL HYGIENE SERVICES
Laboratory | Management | Training

METALS CHAIN OF CUSTODY

2010339

Turn Arou
q 2 Hour q 4 Hours q 24 Hours
q 2 Days q 3 Days q 4 Days
q 5 Days q 6-10 Days
Please call for TAT less than 24 Hours

Company: EnviroServices & Training Center LLC
505 Ward Ave Suite 202
Honolulu, HI 96814
Phone (808) 839- 7222

Project Manager Antone Gabriel
Cell (808) 839-7222
Email agabriel@gotoetc.com
Fax (808) 839- 4455

Project Name/Number 20-2014 | **Project Location** DHHL NWS PTWC Ewa Beach, Oahu HI

q Total Metals
q TCLP
q FAA (ppm
q ICP (PPM
q GFAA (ppb)
q CVAA (ppb)
q Air Filter
q Paint Chips (cm)
q Drinking Water
q Other
q Paint Chips (%)
q Dust Wipes
q Waste Water
q Soil

RCRA 8
q Barium q Chromium q Silver
q Arsenic q Mercury q Lead
q Selenium q Cadmium

RCRA 11
q Copper
q Zinc
q Other

Reporting Instructions
Call ( ) Fax ( )
q Email agabriel@gotoetc.com, smarvin@gotoetc.com, bcarroll@gotoetc.com, jsahib@gotoetc.com

Total Number of Samples 7

	Sample ID	Description	Time	L/min
1	2014-1-As01	Canec ceiling tile		
2	2014-2-As01	Canec ceiling tile		
3	2014-3-As01	Canec ceiling tile		
4	2014-4-As01	Canec ceiling tile		
5	2014-5-As01	Canec ceiling tile		
6	2014-5-As02	Fiber pressboard		
7	2014-15-As01	Fiber pressboard		
8				
9				
10				
11				
12				

	Print Name	Signature	Company	Date	Time
Sampled by	B. Carroll		EnviroServices & Training Center	6/15/20	
Relinquish by	B. Carroll		EnviroServices & Training Center	6/15/20	

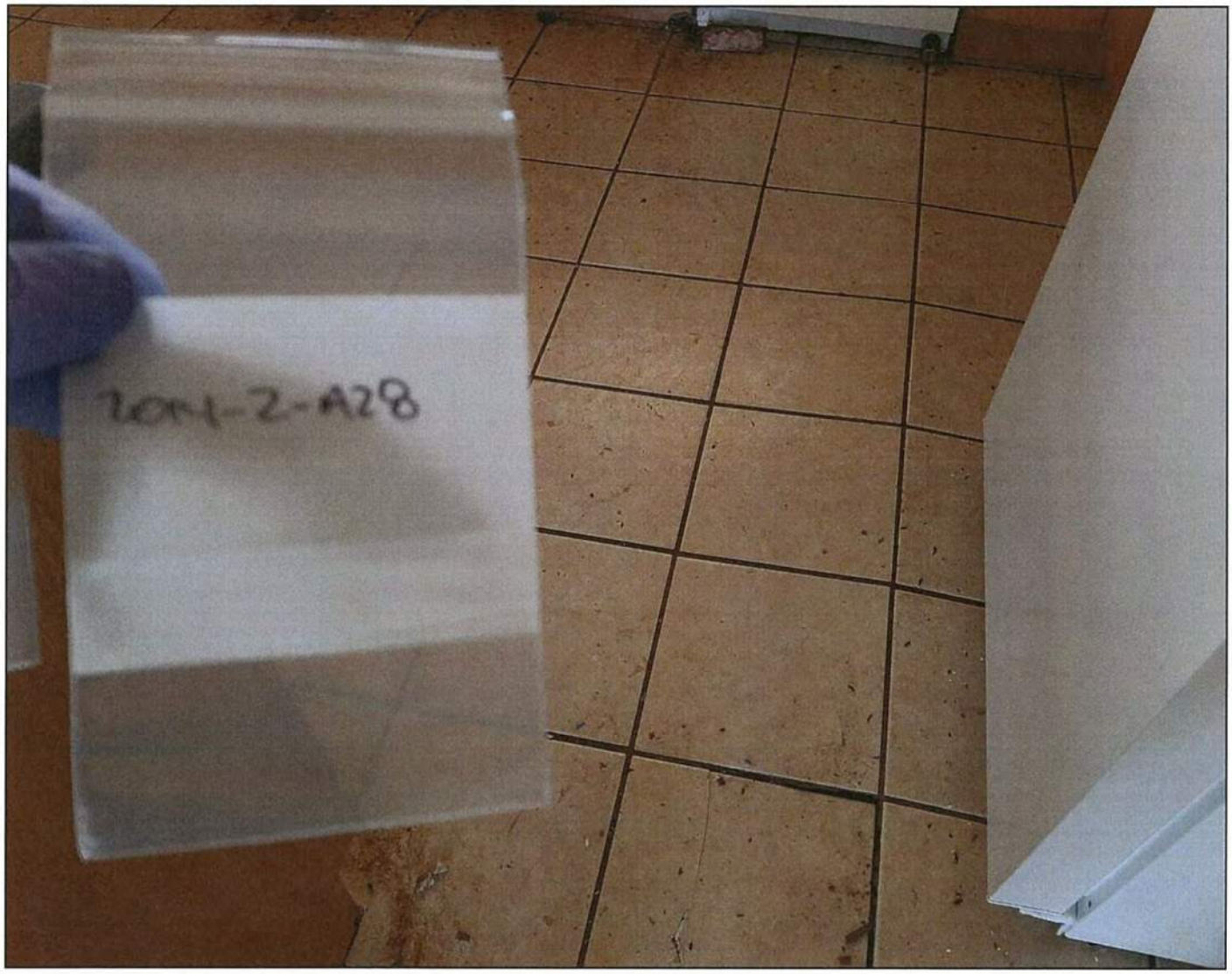
Office Use Only

	Print Name	Signature	Company	Date	Time
Received by				6/18/20	12:15 pdt
Analyzed by					
Called by					
Faxed/Email by					

Appendix III

PHOTOGRAPHIC DOCUMENTATION

Asbestos-Containing Materials

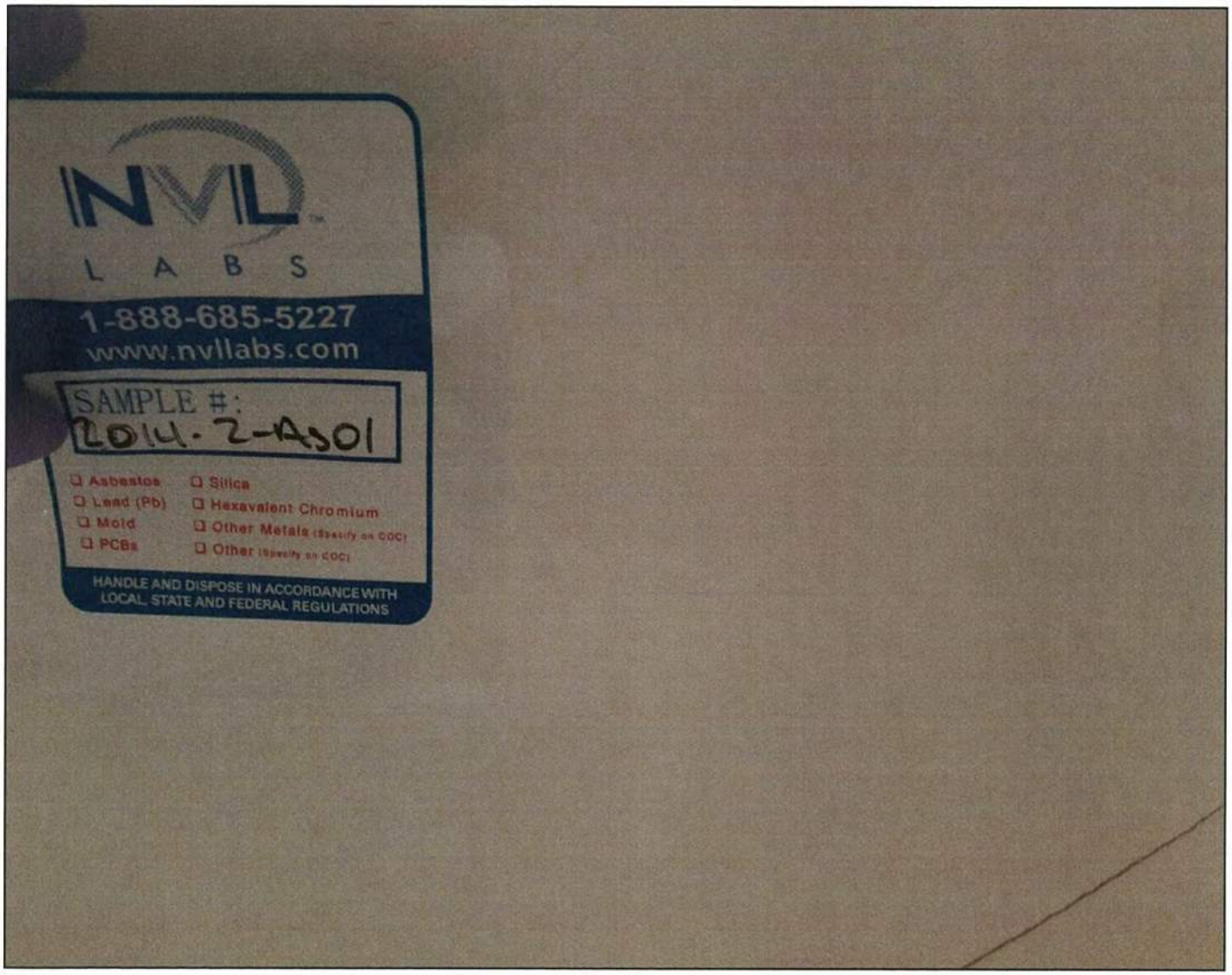


Photograph 1: Black mastic beneath 12" beige ceramic floor tile
Sample IDs 2014-2-A28 thru A30

Arsenic-Containing Materials

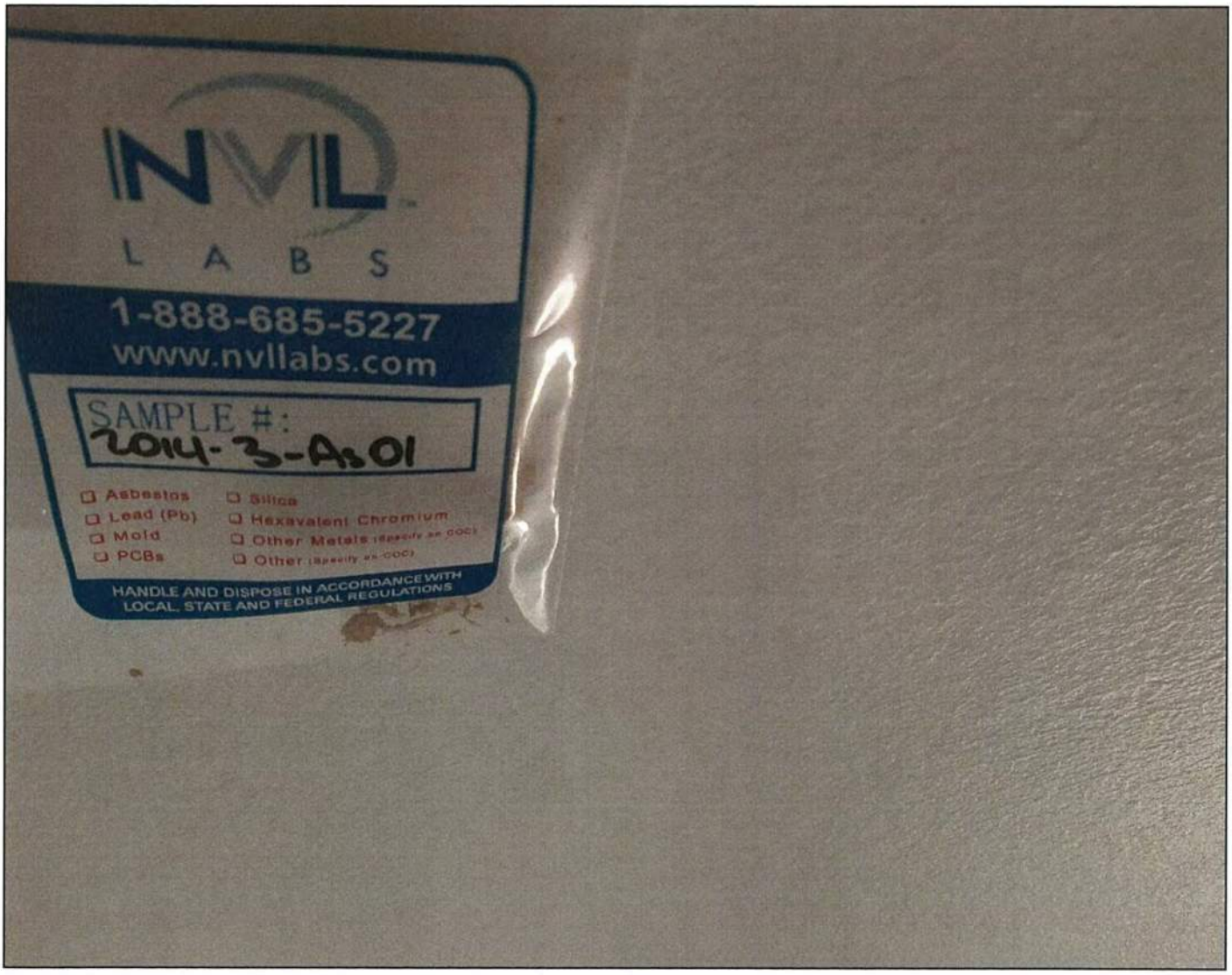
Photograph 1: Canec ceiling panels
Sample IDs 2014-1-As01

Arsenic-Containing Materials



Photograph 2: Canec ceiling panels
Sample IDs 2014-2-As01

Arsenic-Containing Materials



Photograph 3: Canec ceiling panels
Sample IDs 2014-3-As01

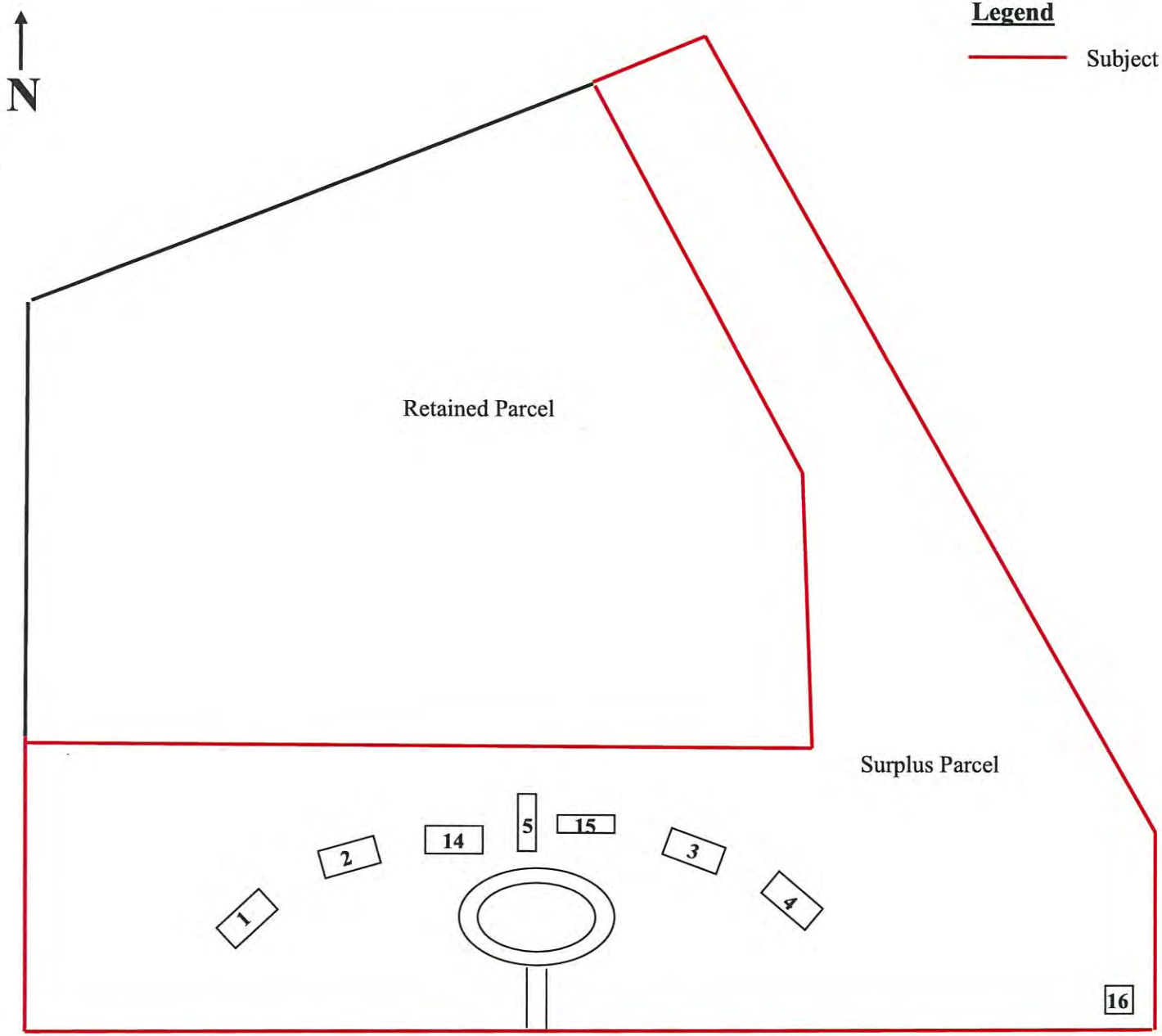
Photograph 4: Canec ceiling panels
Sample IDs 2014-4-As01

Arsenic-Containing Materials

Photograph 5: Canec ceiling panels
Sample IDs 2014-5-As01

Appendix IV

HOMOGENEOUS AREAS PLAN



enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

FORMER NOAA NWS PTWC EWA BEACH HI CAMPUS

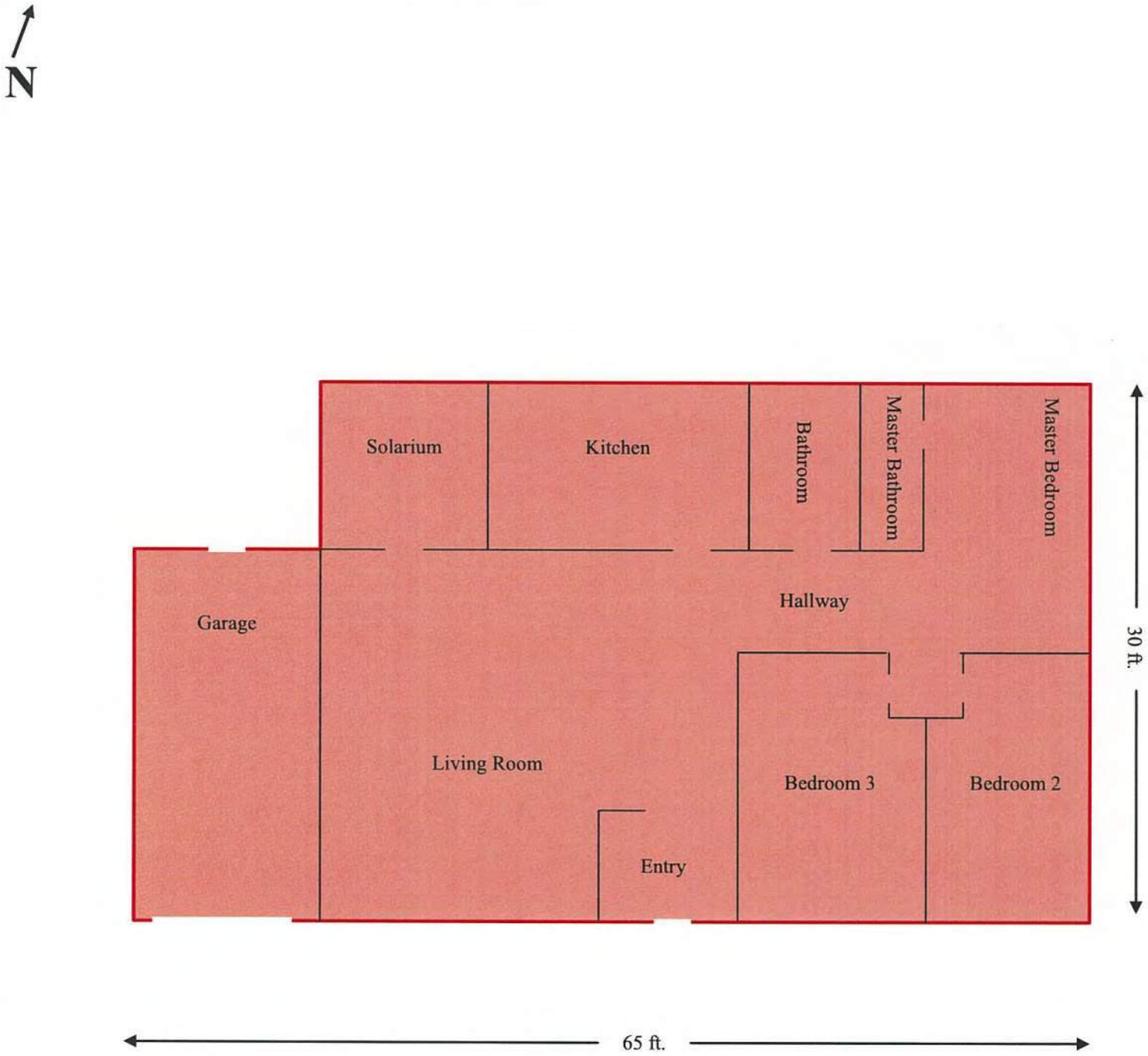
NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Buildings 1-5 and 14-16

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020



enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ARSENIC HOMOGENEOUS AREAS MAP

2014-1-As01 Canec panels

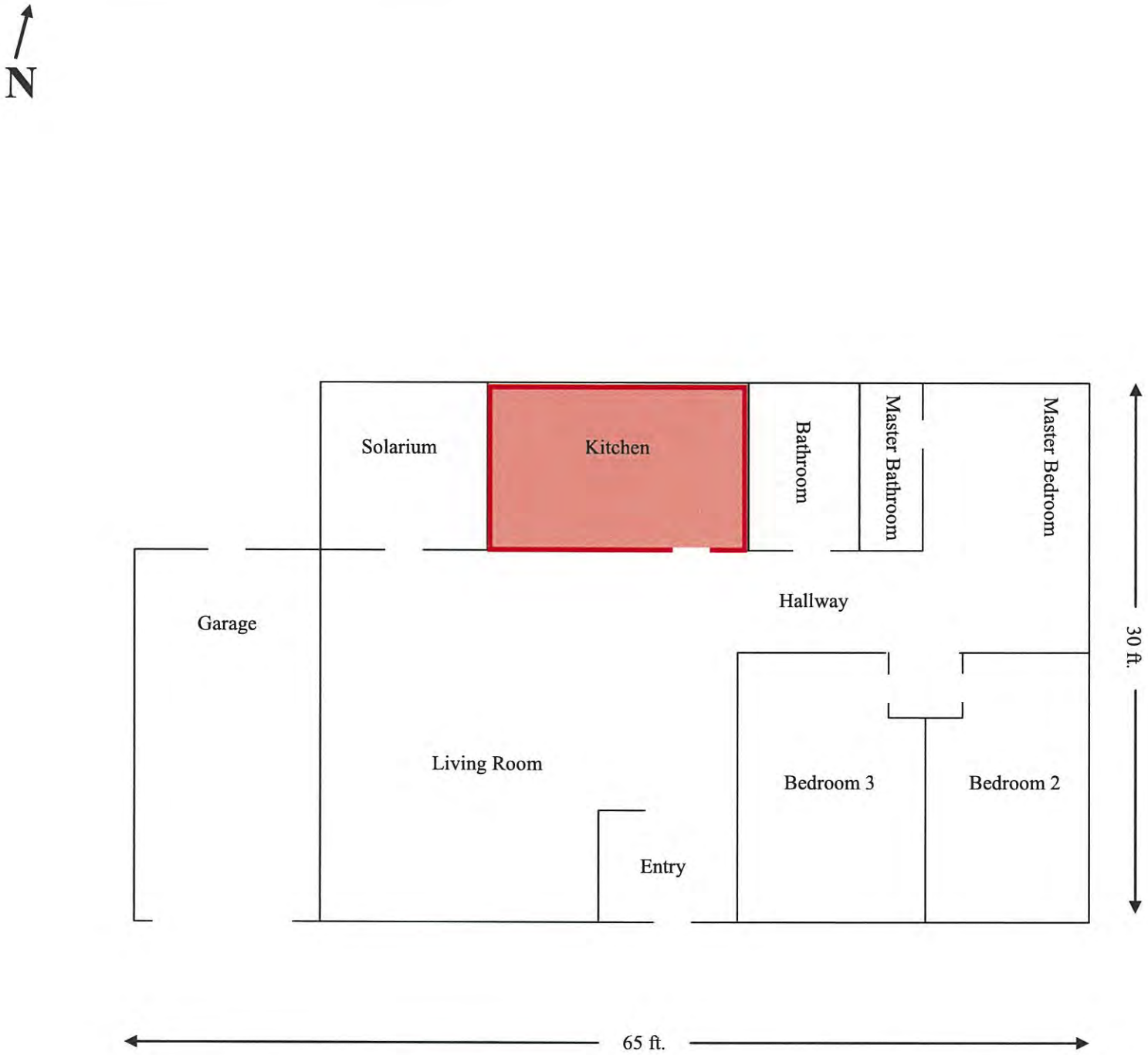
NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Building 1

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020



enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ASBESTOS HOMOGENEOUS AREAS MAP

2014-2-A28-A30	Black mastic on ceramic floor tile

NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Building 2

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020

enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ARSENIC HOMOGENEOUS AREAS MAP

2014-2-As01 Canec panels

NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Building 2

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020

enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ARSENIC HOMOGENEOUS AREAS MAP

2014-3-As01 Canec panels

NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Building 3

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020

enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ARSENIC HOMOGENEOUS AREAS MAP

2014-4-As01 Canec panels

NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

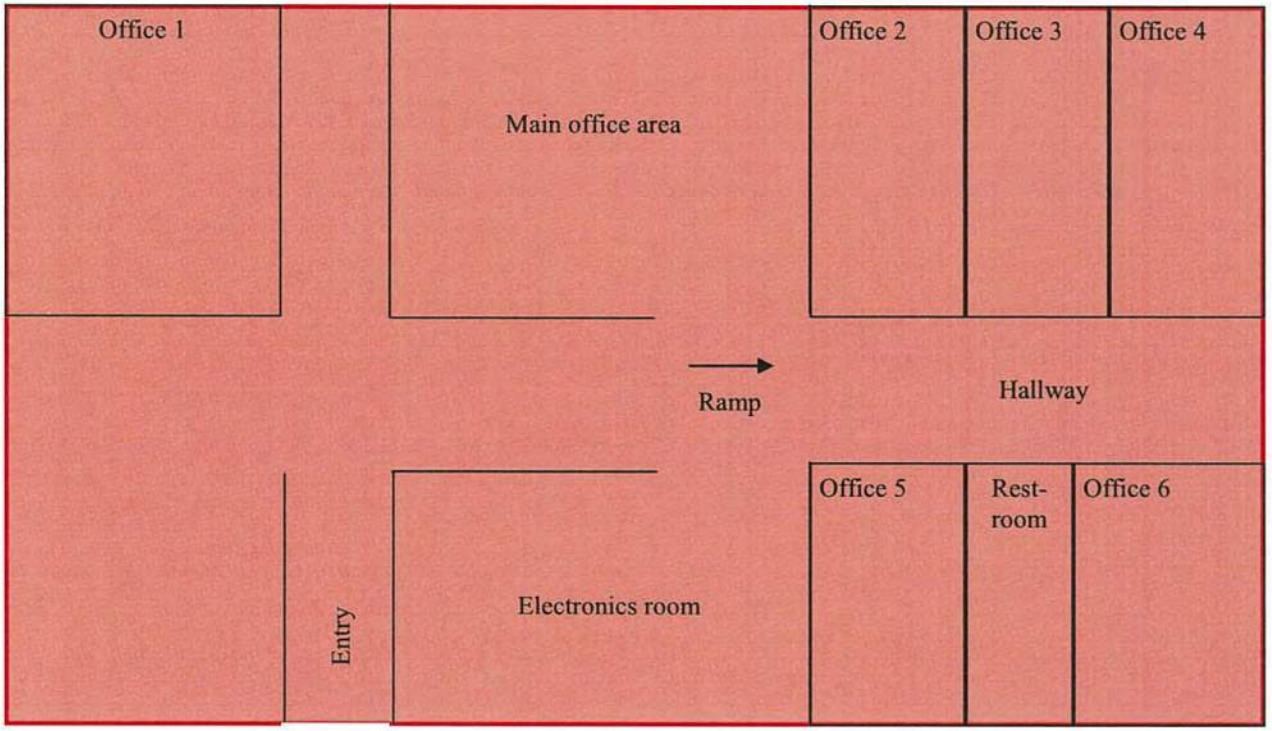
Building 4

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020

N →



enviro SERVICES & TRAINING CENTER, LLC

LIMITED HAZARDOUS MATERIALS SURVEY

ARSENIC HOMOGENEOUS AREAS MAP

2014-5-As01 Canec panels

NOAA Pacific Tsunami Warning Center
91-270 Fort Weaver Road
Ewa Beach, Hawaii 96706

Building 5

NOT TO SCALE

ETC Project No. 20-2014

June 30, 2020

Appendix V

RESULTS FROM BGES LEAD BASED PAINT RISK ASSESSMENT

Building 1 - Housing

Readings taken from the entry door frame and closet doors in the entryway; the interior and exterior window components, the south and east walls, and the sliding door on Wall A of the solarium (lanai); the closet doors in the hallway; the door frame, ceramic wall tiles, and bathtub in the main bathroom; the ceramic wall and shower tiles in the master bathroom; the closet doors in Bedrooms 2 and 3; the exterior soffits; the clothesline posts in the backyard; and the western wall framing, closet doors, and ceiling in the garage exceeded the EPA regulatory limit of 1.0 milligram (mg) of lead per square centimeter (cm^2); or 1.0 mg/cm^2.

Building 2 - Housing

Readings taken from the closet doors and floor tile in the entryway; the interior and exterior window components and the sliding door on Wall A of the solarium (lanai); the door frame on Side A of the kitchen; the closet doors in the hallway; the door frame, bathtub, and ceramic wall tiles in the main bathroom; the closet doors in the master bedroom; the ceramic wall and shower tile in the master bathroom; the closet doors in Bedrooms 2 and 3; the exterior soffits and fascia; the closet doors in the garage; and the clothesline posts in the backyard exceeded the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 3 - Housing

Readings taken from the exterior building foundation; the interior and exterior window components of the solarium (lanai); the front entryway door frame; the closet doors in the entryway; the closet doors in each of the three bedrooms; the doors to Bedrooms 2 and 3; the exterior soffits and fascia; and the western wall framing, closet doors, and ceiling in the garage exceeded the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 4 - Housing

Readings taken from the closet doors in the entryway; the interior window casings and the sliding door on the south side (Side A) of the solarium (lanai); the floor tiles in the main bathroom; the closet doors in the master bedroom; the closet doors and the entry doors to Bedrooms 2 and 3; the clothesline posts in the backyard; the western wall framing, closet doors, closet wall, and ceiling in the garage; and the exterior soffits exceeded the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 5 - Administration

None of the readings taken from Building 5 exceeded or were equal to the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 14 – Housing

None of the readings taken from Building 14 exceeded or were equal to the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 15 – Annex

None of the readings taken from Building 15 exceeded or were equal to the EPA regulatory limit of 1.0 mg/cm^2 of lead.

Building 16 – Well House

There were no painted surfaces in the Well House.

APPENDIX J
Pre-Assessment Consultation Comments and Responses

This page intentionally left blank.

DEPARTMENT OF COMMUNITY SERVICES
KA 'OIHANA LAWELAWE KAIĀULU
CITY AND COUNTY OF HONOLULU
925 DILLINGHAM BOULEVARD, SUITE 200 • HONOLULU, HAWAI'I 96817
PHONE: (808) 768-7762 • FAX: (808) 768-7792 • WEB: www.honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

ANTON C. KRUCKY
DIRECTOR
PO'O

AEDWARD LOS BANOS
DEPUTY DIRECTOR
HOPE PO'O

July 16, 2024

SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817
Attn: Jennifer Scheffel

Dear Ms. Scheffel:

SUBJECT: Pre-Consultation: DRAFT Environmental Assessment
DHHL 'Ewa Beach Homestead Project
TMKs: (1) 9-1-001:001 (por.)

Thank you for notifying us that SSFM International, Inc. is preparing a Draft Environmental Assessment for the above-named project on behalf of the Department of Hawaiian Home Lands, pursuant to both Chapter 343, Hawai'i Revised Statutes and 24 Code of Federal Regulations Part 58.

Our review indicates that the proposed project should have no adverse impacts on any Department of Community Services activities or projects in the surrounding neighborhood. Nevertheless, we ask that the applicant take into consideration the health, safety, accessibility, and long-term wellbeing of area residents and others living nearby and/or involved with activities in the project vicinity.

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

Sincerely,

for Anton C. Krucky
Director

SSFM International
Innovate | Adapt | Sustain

September 16, 2024

SSFM 2021_144.000

Mr. Anton C. Krucky, Director
City & County of Honolulu
Department of Community Services
925 Dillingham Blvd., Suite 200
Honolulu, HI 96817

SUBJECT: DHHL ʻEwa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, Oʻahu, Hawaiʻi
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Krucky,

Thank you for your letter dated July 16, 2024, regarding the subject project. The Department of Hawaiian Home Lands has noted that the City & County of Honolulu Department of Community Services indicates that the project should have no adverse impacts on Department of Community Services activities or projects in the surrounding neighborhood. The project currently and will continue to take into consideration of the health, safety, accessibility, and long-term wellbeing of the residents in the area and others living nearby or involved with activities in the project vicinity does not have any comments at this time.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Jennifer Scheffel

From: Greg Kawachi <Greg.Kawachi@hawaiiantel.com>
Sent: Tuesday, July 30, 2024 2:08 PM
To: Jennifer Scheffel; Michael Harley
Cc: HT-Plan Reviews; Cody Jaramillo
Subject: DHHL Ewa Beach Homestead Project - Pre-Assessment Consultation for EA 9-1-001:001 (POR)

Aloha Jennifer,

We received your folks letter and wanted to reach out to advise you that this is assigned and under review. Please let us know if there's any updates or if you folks have any further questions. Thank you!

Greg Kawachi
Manager II – Network OSP
O: 808.546.7666
C: 808.779.8324

SSFM International
Innovate | Adapt | Sustain

September 16, 2024

SSFM 2021_144.000

Mr. Greg Kawachi
Hawaiian Telcom

VIA EMAIL: Greg.kawachi@hawaiiantel.com

SUBJECT: DHHL ʻEwa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, Oʻahu, Hawaiʻi
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Kawachi,

Thank you for your email dated July 30, 2024, regarding the subject project. As of the date of this letter, we have not received comments from Hawaiian Telcom. The Department of Hawaiian Home Lands will look forward to any comments your office may have on the project during the next comment period, which will coincide with the publication of the Draft Environmental Assessment (EA). The Draft EA will be published September 23, 2024, and there will be a 30 day comment period.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

BOARD OF WATER SUPPLY
KA 'OIHANA WAI
CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96843
Phone: (808) 748-5000 • www.boardofwatersupply.com

RICK BLANGIARDI
MAYOR
MEIA

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MANAGER AND CHIEF ENGINEER
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July 31, 2024

Ms. Jennifer M. Scheffel
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

Dear Ms. Scheffel:

Subject: Your Letter Dated July 10, 2024 Requesting Comments on the Environmental Assessment Pre-Consultation for the Department of Hawaiian Home Lands 'Ewa Beach Homestead Project off Fort Weaver Road – Tax Map Key: 9-1-001: 001

Thank you for your letter regarding the proposed 220-unit single-family, 120- to 160-unit low-rise multi-family, and 27-acre general community purpose project.

The Board of Water Supply (BWS) has the following comments:

1. The existing water system is generally adequate to accommodate the proposed residential development. However, due to the nature and scale of the proposed project, the developer will be required to submit a water master plan for our review and approval. The water master plan shall address items including, but not limited to, proposed water system improvements and connections, estimated potable and nonpotable water demand requirements, off-site fire protection requirements, and a site development plan indicating proposed subdivisions, easements, legal access, and construction phasing.

2. The proposed project is located at a dead end of our existing water system. Therefore, the developer should investigate installing a pipeline through the development interconnecting Fort Weaver Road and North Road to create a pipeline loop system to ensure service reliability.

3. Please be advised that this information is based upon current data, and therefore, the BWS 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.

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

5. 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.

6. The developer will be required to investigate the feasibility of using nonpotable water for irrigation of roadway landscaping, median strips, common areas, and other landscaped areas within the proposed development. If nonpotable water is either unavailable or infeasible, a report of the investigation including proposed irrigation demands should be submitted to us before we will consider the use of potable water. For your information, the BWS Recycled Water System is located approximately 1,800 linear feet away from the proposed development along Hahanui Street and services the Ewa Beach Golf Course.

7. Subdivided road parcels that will allow legal access from the BWS water system to all subdivided parcels may be required. All water mains should be located within City Right-of-Ways or private streets and roads that are built to City standards and maintained by the City and County of Honolulu in accordance with Chapter 14-17: Maintenance of Private Streets and Roads, Revised Ordinances of Honolulu.

8. Individual water meters will be allowed for each subdivided dwelling lot; however, meters will be issued separately upon final approval of the individual building permits. One master meter for the entire single-family portion of the development, with submeters to individual dwellings, will also be allowed.

9. Proposed mixed-use developments are required to install separate domestic water meters and laterals to serve the residential and non-residential spaces.

10. The proposed project is subject to BWS Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

11. The construction drawings should be submitted for our approval, and the construction schedule should be coordinated to minimize impact to the water system.

12. 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 Daniel Koge, Project Review Branch of our Water Resources Division at (808) 748-5444.

Very truly yours,

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

SSFM International
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September 16, 2024

SSFM 2021_144.000

Mr. Ernest Y. W. Lau, P.E., Manager and Chief Engineer
City and County of Honolulu Board of Water Supply
630 South Beretania Street
Honolulu, Hawai‘i 96843

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Lau,

Thank you for your letter dated July 31, 2024, regarding the subject project. The Department of Hawaiian Home Lands has reviewed your comments and will incorporate them wherever applicable in both the Draft Environmental Assessment and the Master Plan for the project. The Department of Hawaiian Home Lands appreciates the detailed information provided in your letter and will look forward to working with your office further during the design phase of the project.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

HONOLULU POLICE DEPARTMENT
KA 'OIHANA MĀKA'I O HONOLULU
CITY AND COUNTY OF HONOLULU
801 SOUTH BERETANIA STREET • HONOLULU, HAWAI'I 96813
TELEPHONE: (808) 529-3111 • WEBSITE: www.honolulupd.org

RICK BLANGIARDI
MAYOR
MEIA

ARTHUR J. LOGAN
CHIEF
KAHU MĀKA'I

KEITH K. HORIKAWA
RADE K. VANIC
DEPUTY CHIEFS
HOPE LUNA NUI MĀKA'I

OUR REFERENCE EO-SH

August 7, 2024

SENT VIA EMAIL

Ms. Jennifer M. Scheffel
jscheffel@ssfm.com

Dear Ms. Scheffel:

This is in response to your correspondence dated July 10, 2024, requesting for comments regarding the development of the State Department of Hawaiian Home Lands 'Ewa Beach Homestead project.

Based on the information provided, the Honolulu Police Department recommends assessing the increased demand for emergency services, which this project would significantly affect with the addition of a new community. We recommend that the necessary infrastructure are in place adequately to ensure that the safety and well-being of the residents are not compromised.

Thank you for the opportunity to review this project. If there are any questions, please call Major Gail Beckley of our District 8 (Kapolei, Wai'anae) at (808) 723-8400.

Sincerely,

GLENN HAYASHI
Assistant Chief of Police
Support Services Bureau

SSFM International
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September 16, 2024

SSFM 2021_144.000

Mr. Glenn Hayashi, Assistant Chief of Police
Honolulu Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawai‘i 96813

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Hayashi,

Thank you for your letter dated August 7, 2024, regarding the subject project. Per your comment, the Department of Hawaiian Home Lands will assess the increased demand for emergency services in the Draft Environmental Assessment and propose minimization measures accordingly.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Jennifer Scheffel

From: Kanehili CA <kanehilica@gmail.com>
Sent: Wednesday, August 7, 2024 10:10 PM
To: Jennifer Scheffel
Subject: Re: DHHL Ewa Beach Homestead Project_Comments

Aloha,

As a Native Hawaiian homesteader, I appreciate the opportunity to add my comment on the DHHL, Ewa Beach Homestead Project.
This proposed plan demonstrates an urgent need to build and develop more housing opportunities for native Hawaiians on the waitlist which is nearly 30,000. Approximately 380 housing units are proposed with additional acres available for community uses, farming/agricultural, and stewardship opportunities.
As a current lessee in the Kānehili homestead community, my concern is in the area of the quality of the housing Kānehili as well as Kaup‘ea homestead experienced problems with substandard housing conditions, such as inferior materials used in the construction of some of the homes, backed-up sewage pipes, and walls of the homes sustained hairline fractures, concrete driveways not meeting industry standards. The quality of newly built homes is still being questioned by residents. The DHHL should consider having DHHL personnel provide oversight during the housing construction phase to ensure homes are built to acceptable standards.
Another concern is the availability of sufficient roadways and emergency outlets in Ewa to evacuate homesteaders and residents in the event of a catastrophic tsunami. I believe looking at the map provided there are only two roadways available. I applaud the DHHL for constructing and building more affordable housing as land becomes available.

Mahalo,

Randy Akau
Kānehili Community Association/East Kapolei

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September 16, 2024

SSFM 2021_144.000

Mr. Randy Akau
Kānehili Community Association/East Kapolei

VIA EMAIL: kanehilica@gmail.com

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Akau,

Thank you for your email dated August 7, 2024, regarding the subject project. The Department of Hawaiian Home Lands (DHHL) deeply appreciates the input of Native Hawaiian homesteaders like yourself as we work toward addressing critical housing needs for the community. Regarding the quality of housing in existing homestead communities such as Kānehili and Kaup‘ea, please know that the DHHL aims to ensure that homes are built to industry standards.

Regarding your concerns about traffic, evacuation routes, and the overall safety of the ‘Ewa Beach area in the event of a natural disaster, a Traffic Impact Analysis Report has been conducted for the project. Additionally, the forthcoming Draft Environmental Assessment (EA) will discuss these issues in detail. The Draft EA will also provide the community additional opportunity to review and comment prior to the publication of a Final EA.

Mahalo again for your feedback, we will look forward to working with you further as the project progresses.

Your letter, along with this response letter, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

DEPARTMENT OF PLANNING AND PERMITTING
KA ʻOIHANA HOʻOLĀLĀ A ME NĀ PALAPALA ʻAE
CITY AND COUNTY OF HONOLULU

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

RICK BLANGIARDI
MAYOR
MEIA

D/

BRYAN GALLAGHER, P.E.
DEPUTY DIRECTOR
HOPE PO'O

REGINA MALEPEAI
2ND DEPUTY DIRECTOR
HOPE PO'O KUALUA

August 8, 2024 2024/ELOG-1344 (MAK)

Ms. Jennifer Scheffel
SSFM International
501 Sumner Street, Suite 620
Honolulu, Hawaiʻi 96817

Dear Ms. Scheffel:

SUBJECT: Pre-Consultation - Environmental Assessment (EA)
Department of Hawaiian Homelands (DHHL)
ʻEwa Beach Homestead Project
Honouliuli, Oʻahu, Hawaiʻi
Tax Map Key (TMK) 9-1-001: 001 (portion)

This is in response to your letter, received July 15, 2024, requesting comments, on behalf of the State of Hawaiʻi DHHL, regarding the upcoming preparation of an EA in compliance with Hawaiʻi Revised Statutes (HRS) Chapter 343. We understand that the proposal is to provide residential homesteading opportunities to native Hawaiian beneficiaries on the Oʻahu Residential waiting list, which includes approximately 220 single-family dwelling lots and 120 to 160 low-rise multi-family units (Project). The Department of Planning and Permitting has the following comments that should be addressed in the Draft EA.

- Jurisdictions: The Draft EA should discuss the various jurisdictions involved, their relationships, and ultimately what regulations will apply to the Project. According to our records, the subject property is within the F-1 Military and Federal Preservation District and under the jurisdiction of the U.S. Navy. Therefore, the uses and structures are generally not subject to the zoning requirements of the City and County of Honolulu. As indicated in the Land Use Ordinance (LUO) Section 21-3.40(c) and (d), the purpose of the F-1 Military and Federal Preservation District is to identify areas in military or federal government use and to permit the full range of military or federal government activities.

Should lands be removed from federal jurisdiction, all uses, structures and development standards will be as specified for the P-2 General Preservation District. Based on the current proposal, the Project is removing lands from federal jurisdiction to be utilized by the State of Hawai'i DHHL. As residential uses are limited and otherwise not permitted within the P-2 General Preservation District, we suggest that the Draft EA explain whose jurisdiction the Project will be under and what regulations it will be subject to.

- Permits and Approvals: The Draft EA should include a discussion of any other discretionary permits and approvals that the proposed project will require prior to the Project's implementation. Specifically, it is unclear from the proposal how the residential portions will be authorized. As mentioned above, residential uses are generally not permitted within the P-2 General Preservation District, so it is unclear if State of Hawai'i DHHL plans on exempting themselves from permits, or plans on waiving the zoning development standards through the HRS Chapter 201H Housing Program. Please provide clarification if any discretionary permits and approvals are required for the Project and a timeline of when they will be obtained.

- Existing and Proposed Structures: The Draft EA should describe any existing or proposed structures, including when the existing structures were built, and identify any associated building permits or other land use approvals.

- Land Use Consistency: The Draft EA should describe the Project's consistency with the O'ahu General Plan (OGP), and 'Ewa Development Plan (EDP).

  OGP Physical Development and Urban Design Objective B says to plan and prepare for the long-term impacts of climate change; and EDP Section 3.1.3.3 says to analyze the possible impact of sea level rise for new public and private projects in shoreline areas and incorporate, where appropriate and feasible, measures to reduce risks and increase resiliency to impacts of sea level rise. The Project parcel is located close to the 'Ewa Beach shoreline area and is susceptible to sea level rise impact. We suggest considering reconfiguring the site plan and developing more densely towards North Road or to consider implementing SLR adaptation strategies along Fort Weaver Road.

  Also, OGP Physical Development and Urban Design Objective E says to maintain those development characteristics in the urban-fringe and rural areas which make them desirable places to live; and Policy 5 says to encourage the development of a variety of housing choices including affordable housing in rural communities, to give people the choice to continue to live in the community that

they were raised in. Since substantial population and residential growth is expected in 'Ewa, we suggest considering an increase in the percentage of townhome and apartment to provide more residential units for the community while maintaining the overall low-density characteristics of 'Ewa Beach.

- Flood Hazards: The subject property is also located within the Flood Zones XS and D, as mapped by the Federal Emergency Management Agency. Flood Zone XS are areas of moderate flood hazard that are determined to be between the limits of the base flood and the 0.2 percent annual chance floodplain. Flood Zone D are unstudied areas where flood hazards are undetermined, but flooding is possible. Therefore, the Draft EA should evaluate the proposed Project's compliance with the City's Flood Hazard Areas Ordinance (ROH Chapter 21A), which is available online at:

  www.honolulu.gov/dpp/resources/ordinances

- Cultural Impact Assessment: The Draft EA must include a discussion analyzing the impact of the proposed Project on cultural practices and features associated within the project area. Guideline for assessing cultural impacts can be found on the Environmental Review Program's website at:

  https://planning.hawaii.gov/erp/

- Historic Properties: The Draft EA should include a discussion identifying historic properties within the Project area, the potential impacts as a result of the Project, and the appropriate mitigation to be implemented. Additionally, pursuant to HRS Chapter 6E-8, the Project should be submitted to the State Historic Preservation Division (SHPD) for review and comment via Hawai'i Cultural Resource Information System.

  https://shpd.hawaii.gov/hicris/landing

Copies of available records for the Subject property can be obtained from our Data Access and Imaging Branch. Please note that any request for permit research and/or copies (e.g., a Certificate of Occupancy, or a specific land use or building permit) must be accompanied with a research request fee. A money order or certified check in the amount of $5.00, made payable to the City and County of Honolulu, will initiate the process of researching and copying the specific records you are interested in obtaining. There will also be a copy charge of $0.50 for the first page of every record, and $0.25 for each page of the same record, thereafter. In addition to the copy charge, there is a research fee of $5.00 per 10 minutes, or fraction thereof, of research

time. Shipping and handling charges will also be added to your total cost for this type of request. These charges will be imposed separately from the zoning clearance and confirmation request fee. Please contact our Customer Service Division at (808) 768-8272 for cost estimates to initiate the request.

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

Very truly yours,

FOR Dawn Takeuchi Apuna
Director

SSFM International
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September 16, 2024

SSFM 2021_144.000

Ms. Dawn Takeuchi Apuna, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

SUBJECT: DHHL 'Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O'ahu, Hawai'i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Ms. Apuna,

Thank you for your letter dated August 8, 2024, regarding the subject project. The Department of Hawaiian Homelands appreciates your thoughtful comments. The Draft Environmental Assessment will include discussion regarding land use and zoning, permits and approvals, existing structures and infrastructure, proposed structures and infrastructure, consistency with land use plans and policies, flood hazards, cultural impacts, and historic properties.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

DEPARTMENT OF DESIGN AND CONSTRUCTION
KA 'OIHANA HAKULAU A ME KE KĀPILI
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAI'I 96813
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RICK BLANGIARDI
MAYOR
MEIA

HAKU MILLES, P.E.
DIRECTOR
PO'O

MARK YONAMINE, P.E.
DEPUTY DIRECTOR
HOPE PO'O

August 2, 2024

SENT VIA EMAIL

Jennifer Scheffel
jscheffel@ssfm.com

Dear Ms. Scheffel:

Subject: DHHL: 'Ewa Beach Homestead Project
Pre-Assessment Consultation for Environmental Assessment
Honouliuli, O'ahu, Hawai'i TMK: (1) 9-1-001:001 (portion)

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 questions, please contact me at (808) 768-8480.

Sincerely,

Haku Milles, P.E., LEED AP
Director

HM:krn (924959)

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September 16, 2024

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Mr. Haku Milles, P.E., LEED AP, Director
City and County of Honolulu
Department of Design and Construction
650 South King Street, 11th Floor
Honolulu, Hawai‘i 96813

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Milles,

Thank you for your letter dated August 2, 2024, regarding the subject project. The Department of Hawaiian Home Lands notes that the City and County of Honolulu Department of Design and Construction has no comments to offer at this time.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

The Senate

STATE CAPITOL
HONOLULU, HAWAIʻI 96813

August 9, 2024

SSFM International, Inc.
Attn: Jennifer Scheffel
501 Sumner Street, Suite 620
Honolulu, Hawaiʻi 96817

Subject:DHHL ʻEwa Beach Homestead Project
Pre-Assessment Consultation for Environmental Assessment Honouliuli, o· ahu, Hawai• i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

To whom it may concern,

Thank you for the opportunity to comment on the Ewa Beach Homestead Project. I provided the following comments:

1. Transportation and circulation.
    a. New city standards roadways are needed from the project onto the North Road/Kimopelekane and connect to Hanakahi.
    b. New city standard roadways are needed from the project onto Fort Weaver Road.
    c. City bus stops and circulation through the project connecting to Fort Weaver Road and North Road.
    d. Access from the project to public schools Iroquois Point Elementary.
    e. Overall traffic impact to Fort Weaver and North Roads
2. Infrastructure.
    a. Drainage
    b. Sea Level Rise
    c. Additional impact on area schools especially with Campbell having the highest student population ratio.
    d. Heights and impact to Honolulu Airport flight path.
    e. Housing units must be designed to mitigate airport flight plan and plane activities,
    f. Sewer capacity and the impact to Pohakupuna.
3. Culture and preservation.
    a. Housing units and community design should include the historical and cultural significance of the Ewa Beach place.
    b. Flora and fauna should include native plants, shrubs, etc. significant to the place.
    c. Historical Ewa Beach practices i.e. fishing, limu restoration/harvesting, etc. should be center for this project and collaborate with area schools.

Thank you for the opportunity to provide comments about a potential development in our community. I look forward to future discussions about this project, and please do not hesitate to contact my office if you have any questions.

Sincerely,

Senator Kurt Fevella
State of Hawaii, District 20

State Capitol, Room 231
415 S. Beretania Street,
Honolulu, HI 96813
Phone: (808) 586-6360
Fax: (808) 586-6361
senfevella@capitol.hawaii.gov

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September 16, 2024

SSFM 2021_144.000

Senator Kurt Fevella
State of Hawai‘i, District 20
State Capitol, Room 231
415 South Beretania Street
Honolulu, Hawai‘i 96813

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Senator Fevella,

Thank you for your letter dated August 9, 2024, regarding the subject project. The Department of Hawaiian Home Lands (DHHL) appreciates your thoughtful comments and provides the following response.

1. **Traffic and circulation.** The specific roadways and connection points noted in your letter will be explored as the Master Plan for the project is developed and considered to the extent practical. A Traffic Impact Analysis Report has been conducted for the project and will be discussed in the forthcoming Draft Environmental Assessment (EA).
2. **Infrastructure.** Drainage and sea level rise related impacts will be discussed in the forthcoming Draft EA along with appropriate avoidance and minimization measures. The DHHL has been in communication with both the State Department of Transportation and the State Department of Education for their consultation on permitting requirements from development near the Honolulu International Airport and the capacity of surrounding public schools to accommodate increased enrollment. The Honolulu Board of Water Supply and State Department of Health were contacted to participate in the pre-assessment consultation for the Draft Environmental Assessment but neither replied. Further consultation with them may be required to assess the potential for sewer expansion into the project area and the capacity of the nearby Honouliuli Wastewater Treatment Plant.
3. **Culture and Preservation.** A Cultural Impact Assessment, an Archeological Literature Review and Field Inspection, and a Biological Survey have been conducted to support the findings in the Draft EA.

Mahalo again for your participation in the Draft EA pre-assessment consultation process. The DHHL will likewise look forward to future discussions with you as the project moves ahead.

Your letter, along with this response letter, will be included in the forthcoming Draft EA. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

JOSH GREEN, M.D.
GOVERNOR

KEITH T. HAYASHI
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
KA 'OIHANA HO'ONA'AUAO
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF FACILITIES AND OPERATIONS

August 21, 2024

Ms. Jennifer Scheffel
SSFM International, Inc.
501 Summer Street, Suite 620
Honolulu, Hawaii 96817

Re: DHHL Ewa Beach Homestead Project, Pre-Assessment Consultation for Environmental Assessment, Honouliuli, Oahu, Hawaii, Tax Map Key (1)9-1-001:001 (por)

Dear Ms. Scheffel:

Thank you for your letter dated July 10, 2024. The Hawaii State Department of Education (Department) has reviewed the information provided and has the following comment on the Department of Hawaiian Home Lands (DHHL) Ewa Beach Homestead Project (Project).

The Department has determined that based on the proposal to develop 220 single-family units and approximately 120 to 160 multi-family units, it is expected that close to 160 students may be generated. We anticipate the attendance of approximately 89 elementary, 25 middle school, and 47 high school students.

Should you have any questions, please contact Cori China, Professional Worker of the Facilities Development Branch, Planning Section, at (808) 784-5080 or via email at cori.china@k12.hi.us.

We appreciate the opportunity to comment.

Sincerely,

Roy Ikeda
Interim Public Works Manager
Planning Section

RI:ctc
c: Facilities Development Branch

SSFM International
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September 16, 2024

SSFM 2021_144.000

Mr. Roy Ikeda, Interim Public Works Manager
Planning Section
State of Hawai‘i Department of Education
P.O. Box 2360
Honolulu, Hawai‘i 96804

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Ikeda,

Thank you for your letter dated August 24, 2024, regarding the subject project. The Department of Hawaiian Home Lands appreciates your estimate for additional student enrollment that could result from the full buildout of the project. This will be incorporated into the assessment of potential related impacts in the Draft Environmental Assessment.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Jennifer Scheffel

From: Tracy Arakaki <t.arakaki@capitol.hawaii.gov>
Sent: Wednesday, July 17, 2024 11:16 AM
To: Jennifer Scheffel
Subject: 07-17-24 DHHL Ewa Homestead Project

Aloha Jennifer,

Thank you for the update in regards to the DHHL Ewa Parcel. When will there be public meetings for this project? Will the future tenants be made aware of the impacts from the nearby Pu'uloa Range Training Facility? Our office looks forward to having these discussions. Mahalo

Mahalo,
Tracy Arakaki
Office Manager
Representative Rose Martinez D40
Ewa Beach, Iroquois Point, Ewa by Gentry
Rm 320 (808)586-9730
Email: t.arakaki@capitol.hawaii.gov

SSFM International
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September 16, 2024

SSFM 2021_144.000

Representative Rose Martinez District 40
Ewa Beach, Iroquois Point, Ewa by Gentry

Via Email to: Tracy Arakaki, Office Manager
t.arakaki@capitol.hawaii.gov

SUBJECT: DHHL ʻEwa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, Oʻahu, Hawaiʻi
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Ms. Arakaki,

Thank you for your email dated July 17, 2024, regarding the subject project. To answer your questions, a public meeting for this project will be held from 7:00pm to 8:30pm on October 9, 2024, at the ʻEwa Beach Public Library. Invitations to the meeting will be sent along with notification of the publication of the Draft Environmental Assessment to Kapolei Homestead Leaders, attendees of previous community meetings, and other interested parties approximately two weeks prior to the meeting.

Your email, along with this response email, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Jennifer Scheffel

From: DOH.CABPDTSS <DOH.CABPDTSS@doh.hawaii.gov>
Sent: Friday, July 19, 2024 10:25 AM
To: Jennifer Scheffel
Subject: DOH-CAB Response to Pre-Assessment Consultation for Ewa Beach Homestead Project

Thank you for your notice regarding Pre-Assessment Consultation for EA on Ewa Beach Homestead Project. We have updated our system and our policy.

Please find CAB website including our standard comments for Land Use Reviews below:
https://health.hawaii.gov/cab/clean-air-branch/standard-comments-for-land-use-reviews/

Thank you so much for your understanding.

Anna

Anna Gardner
Program Specialist | Clean Air Branch
Hawai'i State Department of Health | Ka 'Oihana Olakino
2827 Waimano Home Road #130 | Pearl CIty, HI 96782
Office: (808) 586-4200

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September 16, 2024

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Ms. Anna Gardner, Program Specialist
State of Hawai‘i Department of Health
Clean Air Branch

Via Email: DOH.CABPDTSS@doh.hawaii.gov

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Ms. Gardner,

Thank you for your letter dated July 19, 2024, regarding the subject project. The Department of Hawaiian Home Lands has reviewed the standard comments for Land Use Reviews per the Clean Air Branch and will incorporate these comments into the Draft Environmental Assessment.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

DEPARTMENT OF FACILITY MAINTENANCE
KA 'OIHANA MĀLAMA HALE
CITY AND COUNTY OF HONOLULU

1000 ULU`OHIA STREET, SUITE 215, KAPOLEI, HAWAI'I 96707
PHONE: (808) 768-3343 • Fax: (808) 768-3381 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

GENE C. ALBANO, P.E.
DIRECTOR AND CHIEF ENGINEER
PO'O A ME LUNA NUI 'ENEKINIA

WARREN K. MAMIZUKA
DEPUTY DIRECTOR
HOPE PO'O

IN REPLY REFER TO:
DRM 24-269

July 22, 2024

SSFM INTERNATIONAL, INC.
RECEIVED - 7/24/24

JMS
dc

FILE COPY
FILE 2021-144.000

SSFM International, Inc.
Ms. Jennifer M. Scheffel
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

Dear Ms. Scheffel:

Subject: DHHL – Ewa Beach Homestead Project
Pre-Assessment Consultation for Environmental Assessment
Honouliuli, TMK: (1) 9-1-001:001(portion)

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

We have no comments at this time, as we do not have any facilities or easements on the subject property.

If you have any questions, please call Mr. Kyle Oyasato of the Division of Road Maintenance at (808) 768-3697.

Sincerely,

for Gene C. Albano, P.E.
Director and Chief Engineer

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September 16, 2024

SSFM 2021_144.000

Mr. Gene C. Albano, P.E., Director and Chief Engineer
City and County of Honolulu
Department of Facility Maintenance
1000 Ulu‘ohia Street, Suite 215
Kapolei, Hawai‘i 96707

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Albano,

Thank you for your letter dated July 22, 2024, regarding the subject project. The Department of Hawaiian Home Lands has noted that the City and County of Honolulu Department of Facility Maintenance does not have any facilities or easements on the subject property and therefore has no comments at this time.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

KEITH A. REGAN
COMPTROLLER
KA LUNA HO'OMALU HANA LAULĀ

MEOH-LENG SILLIMAN
DEPUTY COMPTROLLER
KA HOPE LUNA HO'OMALU HANA LAULĀ

STATE OF HAWAI'I | KA MOKU'ĀINA O HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES | KA 'OIHANA LOIHELU A LAWELAWE LAULĀ
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

(P)24.158

JUL 22 2024

SSFM INTERNATIONAL INC.
RECEIVED - 7/24/24

JMS

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FILE 2024-144.000

Jennifer M. Scheffel
SSFM International
501 Sumner Street, Suite 620
Honolulu, HI 96817

Dear Jennifer Scheffel:

Subject: Pre-Assessment Consultation for Environmental Assessment
DHHL Ewa Beach Homestead Project
Honoulioli, Oahu, Hawaii
TMK: (1) 9-1-001:001 (portion)

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

If you have any questions, your staff may call Dora Choy-Johnson of the Planning Branch at (808) 586-0488.

Sincerely,

GORDON S. WOOD
Public Works Administrator

DC:mo

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September 16, 2024

SSFM 2021_144.000

Mr. Gordon S. Wood, Public Works Administrator
State of Hawai‘i Department of Accounting and General Services
P.O. Box 119
Honolulu, Hawai‘i 96810-0119

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Wood,

Thank you for your letter dated July 22, 2024, regarding the subject project. The Department of Hawaiian Home Lands has noted that the Department of Accounting and General Services does not anticipate impacts to their projects or facilities or easements and therefore has no comments at this time.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

DISABILITY AND COMMUNICATION ACCESS BOARD

1010 Richards Street, Rm. 118 • Honolulu, Hawai'i 96813
Ph. (808) 586-8121 (V) • Fax (808) 586-8129 • (808) 586-8162 TTY

July 22, 2024

Ms. Jennifer M. Scheffel
Sr. Environmental Planner
SSFM International
501 Sumner Street
Suite 620
Honolulu, HI 96817

Regarding: DHHL 'Ewa Beach Homestead Project
Pre-Assessment Consultation for Environmental Assessment
Honouliuli, O'ahu, Hawai'i
Tax Map Key: (1) 9-1-001:001 (por)

Dear Ms. Scheffel:

The Disability and Communication Access Board (DCAB) received the request for the above-referenced project requesting an environmental review of the proposed homestead community. Thank you for your consideration, however, DCAB does not review environmental issues and therefore has no comments regarding this project proposal. DCAB does provide accessibility-related technical assistance and would welcome the opportunity to provide informal assistance prior to the official submittal for the above-referenced project.

Should you have any questions, please feel free to contact Rodney Kanno, Facility Access Coordinator at (808) 586-8121.

Sincerely,

KIRBY L. SHAW
Executive Director

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September 16, 2024

SSFM 2021_144.000

Mr. Kirby Shaw, Executive Director
State of Hawai‘i Disability and Communication Access Board
1010 Richards Street, Room 118
Honolulu, Hawai‘i 96813

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Shaw,

Thank you for your letter dated July 22, 2024, regarding the subject project. The Department of Hawaiian Home Lands has noted that the Disability and Communication Access Board does not review environmental issues and therefore has no comments to offer at this time. The Department of Hawaiian Home Lands will contact your office to seek informal assistance for the project if necessary.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

HONOLULU FIRE DEPARTMENT
KA 'OIHANA KINAI AHI O HONOLULU
CITY AND COUNTY OF HONOLULU

636 SOUTH STREET • HONOLULU, HAWAI'I 96813
PHONE: (808) 723-7139 • FAX: (808) 723-7111 • WEBSITE: honolulu.gov

RICK BLANGIARDI
MAYOR
MEIA

SHELDON K. HAO
FIRE CHIEF
LUNA NUI KINAI AHI

JASON SAMALA
DEPUTY FIRE CHIEF
HOPE LUNA NUI KINAI AHI

July 24, 2024

SSFM International Inc.
Attn: Jennifer Scheffel
Senior Environmental Planner
501 Sumner Street, Suite 620
Honolulu, Hawai'i 96817

Dear Ms. Scheffel:

Subject: Department of Hawaiian Home Lands Ewa Beach Homestead Project
Preassessment Consultation for Environmental Assessment
Honolulu, O'ahu, Hawai'i
Tax Map Key: 9-1-001: 001 (portion)

In response to your letter received on July 15, 2024, 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 (46 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; 2018 Edition, Sections 18.2.3.2.2 and 18.2.3.2.2.1, as amended.)

   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; 2018 Edition, Section 18.2.3.2.1.)

2. Fire department access roads shall be in accordance with NFPA 1; 2018 Edition, Section 18.2.3.

3. An approved water supply capable of supplying the required fire flow for fire protection shall be provided to all premises upon which facilities, buildings, or portions of buildings are hereafter constructed or moved into the jurisdiction. The approved water supply shall be in accordance with NFPA 1; 2018 Edition, Sections 18.3 and 18.4.

4. Submit civil drawings to the City and County of Honolulu's Department of Planning and Permitting (DPP), which will be routed to the HFD, as needed, by the DPP.

The abovementioned provisions are required by the HFD. This project may necessitate that additional requirements be met as determined by other agencies.

Should you have questions, please contact Battalion Chief Pao-Chi Hwang of our Fire Prevention Bureau at 808-723-7151 or phwang@honolulu.gov.

Sincerely,

CRAIG UCHIMURA
Assistant Chief

CU/MD:bh

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September 16, 2024

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Mr. Craig Uchimura, Assistant Chief
Honolulu Fire Department
636 South Street
Honolulu, Hawai‘i 96813

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Uchimura,

Thank you for your letter dated July 24, 2024, regarding the subject project. The Department of Hawaiian Home Lands has reviewed your comments. A Master Plan for the ‘Ewa Beach Homestead community has been completed and will be included as an appendix to the Draft Environmental Assessment. Drawings for the project will incorporate all applicable fire regulation standards and the Department of Hawaiian Home Lands will look forward to your further input during the permitting process.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

Jennifer Scheffel

From: Dang, Charmian I <charmian_dang@fws.gov>
Sent: Thursday, July 25, 2024 10:34 AM
To: Jennifer Scheffel
Subject: Pre-assessment Consultation for the EA of Ewa Beach Homestead Project on Oahu
Attachments: IPaC Info Letter_Species List Instructions_PIFWO_20Apr2022_Final.pdf

Dear Ms. Scheffel,

Our office received your letter requesting the US Fish and Wildlife Service's input on the Pre-assessment Consultation for the EA of Ewa Beach Homestead Project on Oahu. Below are instructions for the IPAC online portal to obtain a list of species that may be affected in the project location and conservation measures which should be included in the EA.

The Pacific Island Fish and Wildlife Office (PIFWO) is transitioning to the use of the Information for Planning and Consultation (IPaC) online portal, https://ipac.ecosphere.fws.gov/, for federal action agencies and non-federal agencies or individuals to obtain official species lists, including threatened and endangered species and designated critical habitat in your project area. Using IPaC expedites the process for species list distribution and takes minimal time. Therefore, the IPaC list would fulfill your request for a species list. Please find step by step instructions attached to use IPaC for future projects, and feel free to share with additional project partners.

For recommended avoidance and minimization measures, you can visit the following webpage https://www.fws.gov/office/pacific-islands-fish-and-wildlife/library

Aloha,
Charmian Dang

~~~~~~

Charmian Dang
U. S. Fish and Wildlife Biologist
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850
808-792-9400
~~~~~~

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September 16, 2024

SSFM 2021_144.000

Ms. Charmian Dang
U.S. Fish and Wildlife Biologist
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, HI 96850

VIA EMAIL: charmian_dang@fws.gov

SUBJECT: DHHL ʻEwa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, Oʻahu, Hawaiʻi
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Ms. Dang,

Thank you for your email on July 25, 2024, regarding the subject project. The Department of Hawaiian Home Lands appreciates the instructions for using the US Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) online portal for informal consultation. The Department of Hawaiian Home Lands has obtained an official species list from the IPaC portal and has made a determination of "may affect, but is not likely to adversely affect" the following federally listed species: endangered ʻuaʻu (Hawaiian petrel, *Pterodroma sandwichensis*), endangered Hawaiʻi distinct population segment of the ʻakēʻakē (band-rumped storm-petrel, *Hydrobates castro*), threatened ʻaʻo (Newell's shearwater, *Puffinus newelli*) (hereafter collectively referred to as Hawaiian seabirds); and endangered ʻōpeʻapeʻa (Hawaiian hoary bat, *Lasiurus cinereus semotus*). The USFWS concurred with this determination via letter dated August 27, 2024 (Ref. No. 2024-0049526-S7-001).

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner

JOSH GREEN, M.D.
GOVERNOR
KE KIA'ĀINA

EDWIN H. SNIFFEN
DIRECTOR
KA LUNA HO'OKELE

Deputy Directors
Nā Hope Luna Ho'okele
DREANALEE K. KALILI
TAMMY L. LEE
CURT T. OTAGURO
ROBIN K. SHISHIDO

STATE OF HAWAI'I | KA MOKU'ĀINA 'O HAWAI'I
DEPARTMENT OF TRANSPORTATION | KA 'OIHANA ALAKAU
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

DIR 0000735
STP 8.3797

August 5, 2024

VIA EMAIL: jscheffel@ssfm.com

Ms. Jennifer M. Scheffel
Senior Environmental Planner
SSFM International, Inc.
501 Sumner Street, Suite 620
Honolulu, Hawaii 96817

Dear Ms. Scheffel:

Subject: Pre-Assessment Consultation for Environmental Assessment (EA)
Department of Hawaiian Home Lands (DHHL) Ewa Beach Homestead Project
Honouliuli, Oahu, Hawaii
Tax Map Key: (1) 9-1-001: 001 (portion)

Thank you for your letter, dated July 10, 2024, requesting the Hawaii Department of Transportation's (HDOT) review and comments on the DHHL's Ewa Beach Homestead Project. HDOT understands that the DHHL is proposing to demolish 7 existing buildings and develop approximately 220 single-family lots and approximately 120 to 160 multi-family units on approximately 80 acres of land in Ewa Beach, Oahu. The project will also include supporting infrastructure, internal roadways, and approximately 27 acres of land for community-use, community agriculture, stewardship, open space, and drainage.

HDOT has the following comments:

1. Based on the project information provided, HDOT anticipates a potential adverse impact to state highways. Please submit a Traffic Impact Analysis Report (TIAR) prepared and stamped by a licensed engineer. The TIAR and EA should include the following:

    a. The study area considers intersections along state highways.

    b. Description of existing trip generation at the site, existing traffic conditions and multimodal routes in the study area.

    c. Forecasted traffic and multimodal conditions in the horizon year (year at full project build-out) without the project and with the project. If the project

construction is phased over multiple years, interim horizon years should be analyzed for the completion of each phase.

d. Analysis of existing and future safety conditions for all roadway users.

e. Recommendations of mitigation to address transportation impacts.

2. Describe strategies to reduce carbon emissions from the project, if any. Suggestions include:

   a. Alternative Modes of Transportation: Incorporate elements that encourage and enhance the use of multiple types of transportation to reduce carbon emissions.

   b. Energy Efficiency: Implement energy-efficient technologies and practices, such as light-emitting diode lighting.

   c. Sustainable Materials: Use sustainable, recycled, or low-emission materials in construction and manufactured products.

3. Determine applicability for the following HDOT permits:

   a. Permit to Perform Work Upon State Highways is required for any work within the state highway right-of-way (ROW), (Hawaii Revised Statutes [HRS], Chapter 264). The application for the permit includes the review and approval of construction drawings and a Traffic Management Plan.

   b. Permit to Operate or Transport Oversize and/or Overweight Vehicles and Loads Over State Highways (HRS Chapter 291, Section 36)

   c. Permit for the Occupancy and Use of State Highways (HRS Chapter 264). Note that this is applicable to underground and overhead power lines and utility pipelines within the state highway ROW.

   The permit applications and instructions are available at the following link: https://hidot.hawaii.gov/highways/home/doing-business/guide-to-permits

4. The proposed project is approximately 2.4 miles from the property boundary of Daniel K. Inouye International Airport (HNL) and approximately 3.3 miles from the property boundary of Kalaeloa Airport (JRF). All projects within 5 miles from Hawaii State airports are advised to read the Technical Assistance Memorandum (TAM) for guidance with development and activities that may require further review and permits. The TAM can be viewed at this link: http://files.hawaii.gov/dbedt/op/docs/TAM-FAADOT-Airports_08-01-2016.pdf.

5. The project site is approximately 16,300 feet from the end of Runway 8R at HNL and approximately 19,400 feet from the end of Runway 22L at JRF. Federal Aviation Administration (FAA) regulation requires the submittal of FAA Form 7460-1 Notice of Proposed Construction or Alteration pursuant to the Code of Federal Regulations, Title 14, Part 77.9, if the construction or alteration is within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with its longest runway more than 3,200 feet. Construction equipment and staging area heights, including heights of temporary construction cranes, shall be included in the submittal. The form and criteria for submittal can be found at the following website: https://oeaaa.faa.gov/oeaaa/external/portal.jsp. Please provide a copy of the FAA response to the Part 77 analysis to the HDOT Airport Planning Section.

6. Due to the project's proximity to HNL and JRF, the applicant and future residents should be aware of potential single event noise from aircraft operations. There is also a potential for fumes, smoke, vibrations, odors, etc., resulting from occasional aircraft flight operations over or near the project. These incidences may increase or decrease over time and are dependent on airport operations.

7. If a solar energy photovoltaic (PV) system is going to be installed, be aware that PV systems located in or near the approach path of aircrafts can create a hazardous condition for pilots due to possible glint and glare reflected from the PV panel array. If glint or glare from the PV array creates a hazardous condition for pilots, the owner of the PV system shall be prepared to immediately mitigate the hazard upon notification by the HDOT and/or FAA.

   The FAA requires a glint and glare analysis for all solar energy PV systems near airports. The www.sandia.gov/glare website has information and guidance with the preparation of a glint and glare analysis. A separate FAA Form 7460-1 will be necessary for the solar energy PV system. After the FAA determination of the Form 7460-1 glint and glare analysis, a copy shall be provided to the HDOT Planning Section by the owner of the solar energy PV system.

   Solar energy PV systems have also been known to emit radio frequency interference (RFI) to aviation-dedicated radio signals, thereby disrupting the reliability of air-to-ground communications. Again, the owner of the solar energy PV system shall be prepared to immediately mitigate the RFI hazard upon notification by the HDOT and/or FAA.

8. The proposed project shall not provide landscape and vegetation that will create a wildlife attractant, which can potentially become a hazard to aircraft operations. Please review the FAA Advisory Circular 150/5200-33C, Hazardous Wildlife Attractants On or Near Airports for guidance. If the project's landscaping creates a wildlife attractant, the developer shall immediately mitigate the hazard upon notification by the HDOT and/or FAA.

Please submit any subsequent land use entitlement-related requests for review or correspondence to the HDOT Land Use Intake email address at DOT.LandUse@hawaii.gov.

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

Sincerely,

EDWIN H. SNIFFEN
Director of Transportation

SSFM International
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September 16, 2024

SSFM 2021_144.000

Mr. Edwin H. Sniffen, Director of Transportation
State of Hawai‘i Department of Transportation
869 Punchbowl Street
Honolulu, Hawai‘i 96813-5097

SUBJECT: DHHL ‘Ewa Beach Homestead Project
Response to Pre-Assessment Consultation Comments for
Draft Environmental Assesssment
Honouliuli, O‘ahu, Hawai‘i
Tax Map Key (TMK): (1) 9-1-001:001 (portion)

Dear Mr. Sniffen,

Thank you for your letter dated August 5, 2024, regarding the subject project. The Department of Hawaiian Home Lands acknowledges and will look into the comments listed in your letter. A Traffic Impact Analysis Report has been conducted for the project and will be discussed in the forthcoming Draft Environmental Assessment. The Department of Hawaiian Home Lands will be in contact with your office should any questions arise during the required permitting processes.

Your letter, along with this response letter, will be included in the forthcoming Draft Environmental Assessment. We appreciate your participation in the pre-assessment consultation process. Should you have additional comments or questions regarding this project, please contact me at (808) 356-1273 or via email at jscheffel@ssfm.com.

SSFM INTERNATIONAL, INC.

Jennifer M. Scheffel
Sr. Environmental Planner