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January 7, 2022

2021/ED-24(CK)

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

Dear Ms. Evans:

SUBJECT:	Chapter 25, Revised Ordinances of Honolulu Draft Environmental Assessment (DEA)
Project:	Wailehua I Single-Family Residences
Applicant:	Wailehua I, LLC and HK Construction
Agent:	GK Environmental LLC (Graham Knopp)
Location:	47-151 Wailehua Road - Kaalaea
Tax Map Keys:	4-7-014: 051, 052 and 055

With this letter, the Department of Planning and Permitting hereby transmits the DEA and Anticipated Finding of No Significant Impact for the Wailehua I Single-Family Residences Project, located on Wailehua Road in Kahaluu, Oahu, for publication in the January 23, 2022, edition of *The Environmental Notice*.

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

Should you have any questions, please contact Christi Keller, of our Zoning Regulations and Permits Branch, at (808) 768-8087 or via email at c.keller@honolulu.gov.

Very truly yours,

FOR: Dean Uchida
Director

Enclosures

October 2015

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

Project Name: Wailehua I Single-Family Residences

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

Type of Document: Draft Environmental Assessment (EA) and Anticipated Finding of No Significant Impact

Island: Oahu

District: Council District 2; Koolau Poko Sustainable Communities Plan Area

TMK: (1) 4-7-014: 051; 4-7-014: 052 and 4-7-014: 055

Permits Required: SMA Use Permit; Building Permits; Development Permits; Street Usage Permit, Occupancy Permit; Community Noise Permit; Individual Wastewater System Permit

Applicant or Proposing Agency:
Wailehua I, LLC
Contact: Graham Knopp
gpknopp@gkenvllc.com
(808) 841-1800
2046 S. King Street
Honolulu, Hawaii 96826

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

Consultant:
GK Environmental, LLC
Contact: Graham Knopp, Principal
gpknopp@gkenvllc.com
(808) 938-8583
P.O. Box 1310
Honoka'a, Hawaii 96727

Status: Draft EA - Public Review and Comment

Project Summary: The overall Project involves the development of 10 zoning lots with 10 single-family, detached dwelling units in the Special Management Area in Kahaluu, Oahu (Project). Building permits were previously obtained for four of the ten dwelling units. Approval of a Special Management Area Use Permit is required prior to the issuance of building permits for the remaining six dwelling units. The Subdivision application to allow the consolidation and subdivision of three lots into 10 lots received tentative approval in February, 2021. Other than the two dwelling units already constructed, the majority of the site is currently vacant with overgrown vegetation. The site is in Flood Zone X, and site runoff flows into a drainage along the northern side of the property. The Army Corps determined there are no jurisdictional wetlands on the site.

Reasons Supporting Determination: Please refer to the analysis in the Draft EA, as well as any comment letters and responses received for the proposed Project.

DRAFT ENVIRONMENTAL ASSESSMENT
November 2021

Wailehua 1 Single-Family Housing Project
Wailehua Road
Kaneohe, HI 96744
Tax Map Keys (TMKs): (1) 4-7-014: 051, 052 & 055

APPLICANT and LANDOWNER:
HK Construction and Wailehua 1

DETERMINING AGENCY:
City and County of Honolulu Department of Planning and Permitting
650 South King Street
Honolulu HI 96813

PREPARED BY:
GK Environmental LLC
P.O. Box 1310
Honokaa, HI 96727
(808) 938-8583

CLASS OF ACTION:
New Construction within the Special Management Area

This document is prepared pursuant to:

Chapter 25, Revised Ordinances of Honolulu, the Hawai'i Environmental Protection Act, Chapter 343, Hawai'i Revised Statutes (HRS) and Title 11, Chapter 200, Hawai'i Department of Health Administrative Rules (HAR).

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1. INTRODUCTION

1.1 Project Overview

HK Construction (applicant) and landowner, Wailehua 1, seek to build a total of 10 detached single-family homes, requiring consolidation and subdivision of the three existing lots with Tax Map Keys (TMKs) of 4-7-014: 051, 052 and 055. The site is located on Wailehua Road in Kahaluʻu.

Figure 1 presents a location map of the proposed project site, Figure 2 a vicinity map and aerial image, Figure 3 a TMK map, and Figure 4 a subdivision map. Figure 5 shows site photographs in existing conditions, and Figure 6 through Figure 11 approved drawings of the planned dwellings.

Subdivision and reconsolidation of the three "parent" properties would create 10 roughly equal parcels of approximately 10,700 square feet. Wastewater from each dwelling would be treated on site by permitted individual wastewater systems. Each property would use Wailehua Road for access via private driveways. Structure design and layout is described in detail in Section 2.2 Design Considerations.

Potential impacts on air quality, noise, and erosion during construction can be mitigated by adhering to existing public health regulations and Best Management Practices associated with construction. The project is not proposed near the shoreline; thus, there should be no impact on shoreline access, recreational resources, beach protection, and marine resources. There are no historical resources, coastal ecosystems, and scenic and open space resources to be affected. The site is located outside the 500-year flood plain and is not prone to flooding.

1.2 Purpose of the Environmental Assessment Process

This Environmental Assessment (EA) process is being conducted in accordance with Chapter 343 of the Hawaiʻi Revised Statutes (HRS) and Chapter 25, Revised Ordinances of the City and County of Honolulu (ROH). HRS343, along with its implementing regulations, Title 11, Chapter 200, of the Hawaiʻi Administrative Rules (HAR), is the basis for the environmental impact assessment process in the State of Hawaiʻi. As the proposed project would involve new construction in the Special Management Area (SMA), ROH Chapter 25 requires preparation of the HRS 343 environmental impact assessment, as well as having its own criteria for evaluation of environmental impact.

According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria. If, after considering comments to the Draft EA, the approving agency concludes that no significant impacts would be expected to occur, then the agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to proceed to other necessary permits. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) would be prepared.

Part 4 of this document states the findings that no significant impacts are expected to occur. Part

5 lists each criterion and presents the preliminary findings for each made by the County of Hawai'i Planning Department, the approving agency. If, after considering comments to the Draft EA, the approving agency concludes that, as anticipated, no significant impacts would be expected to occur, the agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to proceed to necessary permits and approvals. If the agency concludes that significant impacts are expected to occur as a result of the proposed action, an Environmental Impact Statement (EIS) will be prepared.

1.3 Previous Land Use Approvals

The following summarizes the major events with respect to previous efforts to develop the proposed project site:

- March 30, 2015: SMA Minor Permit application 2015/SMA-14 approved for TMKs (1) 4-7-14: 52 & 55 for stockpiling of soil with dust barrier and silt fence.
- May 19, 2015: 2015/CUP-32 Conditional Use Permit for joint development of TMKs (1) 4-7-14: 52 and 55.
- August 17, 2015: Building Permit Nos. 777670 and 777672, to allow two single-family detached dwelling units on Parcel 51.
- October 19, 2015: Building Permit Nos. 776496 and 776497 issued to allow two single-family detached dwelling units on joint developed parcels 51 and 55.
- November 15, 2015: SMA Minor Permit 2015/SMA-56 approved for consolidation of the three parcels and subdivision into 10 residential lots.
- January 12, 2016: SMA Minor Permit 2015/SMA-56 approved to allow the consolidation of the three subject parcels and resubdivision into 10 residential lots.
- February 23, 2016: "2016 COE Notice" determined portions of the proposed project site to be jurisdictional wetlands by the U.S. Army Corps of Engineers, Army File No. POH-2015-00119.
- July 29, 2016: Tentative approval of consolidation and subdivision of application 2016/SUB-10, for consolidation and subdivision into 10 lots.
- October 7, 2016: SMA Minor Permit application 2016/SMA-59 approved for TMKs (1) 4-7-14: 51, 52 & 55 for consolidation and subdivision into 10 residential lots, and construction of French drain at the rear of the properties. This approval superseded SMA Permit No. 2015/SMA-56.
- February 14, 2017: Notice of potential violation from unauthorized discharge of fill material into waters of the U.S. on TMKs (1) 4-7-014: 051, 052 and :055, Army File No POH 2015-00119, referenced at a January 20, 2016 meeting.
- May 3, 2017: Revocation of SMA Minor Permit Nos. 2015/SMA-14 and 2016/SMA-59. This letter acknowledges a material change in circumstances, meaning that previously unrecognized wetlands are identified and delineated on the site.
- March 23, 2019: Draft Conceptual Proposal for Compensatory Mitigation filed relevant to 33 CFR 332.2., proposing compensatory mitigation of wetlands impacts, including conservation of wetlands on the proposed project site and preservation of off-site wetlands at Waihee Marsh.
- December 21, 2020: U.S. Army Corps of Engineers determines that there are no waters of the U.S. present on the proposed project site.
- January 21, 2021: Mutual Settlement Agreement performed the following actions:

- 2015 SMA Minor and 2016 SMA Minor Permits, City and County of Honolulu rescinds former revocation.
- Acknowledgement that the construction of a 5th dwelling on the site would trigger an SMA major permit for the 10-dwelling project.
- February 23, 2021: Tentative subdivision approval received, for consolidation and subdivision of the proposed project site into 10 lots.
- Required SMA Major Permit, triggering this EA.

Additional County and State Permits, beyond completion of the Final Environmental Assessment/FONSI and the Special Management Area Major Use Permit, are needed to implement the proposed action are as follows:

- Grubbing, Grading, and Stockpiling Permit
- C&C of Honolulu Building Permit
- State Department of Health General Construction Individual Wastewater System (IWS) permits
- State Department of Health General Construction NPDES permit

1.4 Purpose and Need

The purpose of the proposed project is to provide family housing in windward Oʻahu by construction of 10 detached single-family dwellings of similar design after consolidation and subdivision of the three parcels with Tax May Key (TMK) numbers of (1) 4-7-14: 051, 052 and 055. Two such homes have been previously constructed under Building permits nos. 777670 and 777672. Two additional homes have been issued building permits, but the remaining six houses require SMA Major permit approval.

1.5 Agencies, Organizations and Individuals Contacted in Early Consultation

The following agencies and organizations have been consulted during the pre-consultation portion of the Draft Environmental Assessment Process. An "r" in parentheses indicates a response was received. Appendix A contains these comments, and specific responses made to each, if warranted.

- City and County of Honolulu Board of Water Supply (r)
- City & County of Honolulu Department of Planning and Permitting (r)
- City and County of Honolulu Department of Design and Construction (r)
- City and County of Honolulu Department of Environmental Services (r)
- Councilmember Heidi Tsuneyoshi
- Department of Health, State of Hawaiʻi
- Department of Land and Natural Resources, State of Hawaiʻi (r)
- Hawaiian Telcom
- Hawaiian Electric Company (r)
- Honolulu Fire Department
- Kahaluu Neighborhood Board #29 (r)
- Office of Planning City and County of Honolulu & State of Hawaii
- Honolulu Police Department (r)

- Public Works Division, Construction Management Branch
- Public Works Division, Planning Branch
- State of Hawai‘i Office of Planning and Sustainable Development, Environmental Review Program (Office of Environmental Quality Control)
- State Historic Preservation Division (SHPD)
- U.S. Army Corps of Engineers, Regulatory Division, Honolulu District (r), phone consultations only
- Fish and Wildlife Service, United States Department of the Interior (r)

A meeting to discuss the project with the Kahalu‘u Neighborhood Board #29 has been requested. The DEA has been distributed to the above list, in addition to one private individual.

2. DESCRIPTION OF THE PROPOSED ACTION

2.1 General Description of the Proposed Action

The proposed project site is located in the community of Kahaluʻu on windward Oʻahu, in the district of Koʻolau Poko and ahupuaʻa of Kaʻalaea. The proposed project site consists of three adjacent parcels with TMKs (1) 4-7-014: 051, 052 & 055 located along Wailehua Road, with Lamaula Road at the narrower eastern boundary of the site. The three parcels together occupy 2.4616 acres.

The surrounding area contains a mix of residential properties, vacant areas, agricultural lands, and commercial and light industrial uses. Properties to the west, south and east of the proposed project site are residential and areas immediately to the north are vacant. An unnamed drainage swale is to the north of the proposed project site, although a portion of this swale is located within the proposed project and is a drainage easement dedicated to the City and County of Honolulu. To the east along Wailehua Road are a number of commercial and light industrial uses, including an auto and bus repair and maintenance yard.

The cost of construction of this project has been determined to be $1,000,000. The timeline for completion of construction is about one year from receipt of all necessary permits.

Figure 1 shows a site location map, Figure 2 a vicinity map, Figure 3 a TMK map, Figure 4 a subdivision map, and Figure 5 photographs of existing site conditions taken November 11, 2021. Figure 6 through Figure 10 show project drawings of the proposed single-family dwellings.

2.2 Design Considerations

Consolidation and resubdivision would produce ten roughly equal-sized parcels of approximate area 10,700 square feet each. A subdivision map is shown in Figure 4, and tentative subdivision approval was received on February 23, 2021. The size of these parcels is representative of residential lots in the vicinity and allows for the minimum lot size in this zoning designation in addition to the area of the drainage easement in each lot. The existing two dwellings would occupy two of these lots. The new dwellings would be of similar design to these two previously constructed dwellings. Placement of structural fill would ensure adequate subgrade for drainage and IWS design considerations. Dwelling design would reflect one of two basic layouts, Model A and Model B.

Model “A” is a one-story four bedroom, three bathroom single family design with attached garage and a total footprint of 2,922 square feet, including a 420 square foot optional lanai. Model “A” structures would have finished floor elevations of 15.7 feet above mean sea level (MSL).

Model “B” is a 2-story four bedroom, three bathroom single family design with attached garage and a total footprint of 1,690 square feet, including an optional 352 square foot lanai. Finished floor elevation of the Model “B” structures would be 15.5 feet above MSL.

Improvements that would be completed within the Wailehua Road right-of-way include curb and gutter. Lots would be enclosed by vinyl fencing.

Electricity would be provided to the dwellings by HECO, and water by the Honolulu Board of Water Supply. Wastewater would be treated by on-site individual wastewater treatment systems, permitted by the State Department of Health.

The proposed project would involve a total grading of 3,943 square feet, with 379 cubic yards of excavation used as embankment on the property. Grading would not impact the 10-foot wide drainage easement along the north side of the proposed project site. Drainage improvements would include construction of French drains that would discharge to a swale at the rear of the properties and beyond. A portion of this swale is located on the proposed project site as part of a drainage easement.

Two single-family dwellings have been previously constructed on parcel TMK (1) 4-7-14:051 and are included in the project's 10 parcels and 10 single-family dwellings.

2.3 Project Cost and Schedule

Construction of the proposed project would commence upon issuance of the SMA Major Permit. Completion of the project should be completed one year from commencement. The estimated cost of construction of the new detached dwellings and appurtenant improvements is approximately $6,900,000.00 including the following costs: construction of 10 homes, site improvements, design fees, consultant fees, permitting fees, due diligence reports and entitlements. The proposed project will be funded solely by HK Construction and involves no public funds.

2.4 Alternatives Considered

Three alternatives were considered- the No Action Alternative, alternative sites, and alternative designs.

The No Action Alternative is considered as a baseline against which the impacts of all other build alternatives can be compared. Under the No Action Alternative, development of the property would not occur. This would avoid any adverse environmental impacts related to the development. It would also preclude economic benefits including jobs, income, and tax revenues associated with the development. The No Action Alternative is generally only discussed when No Action Alternative impacts are markedly different from those of the preferred alternative.

As the proposed project site is well-suited for this type of improvement, and the Applicant does not possess other properties in the vicinity that would appear to be preferable, no alternative sites were considered for the proposed project. The owner does not envision any other development scenarios that could reasonably satisfy its objectives and vision for the property, and therefore none are advanced or analyzed.

Alternative designs considered are constrained by zoning considerations, the topography of the site, and other considerations including building codes and residential development ordinances. Thus, design is site-specific. The zoning designation restricts total lot size to a minimum of 10,000 square feet.

Figure 1. Proposed Project Site Location Map

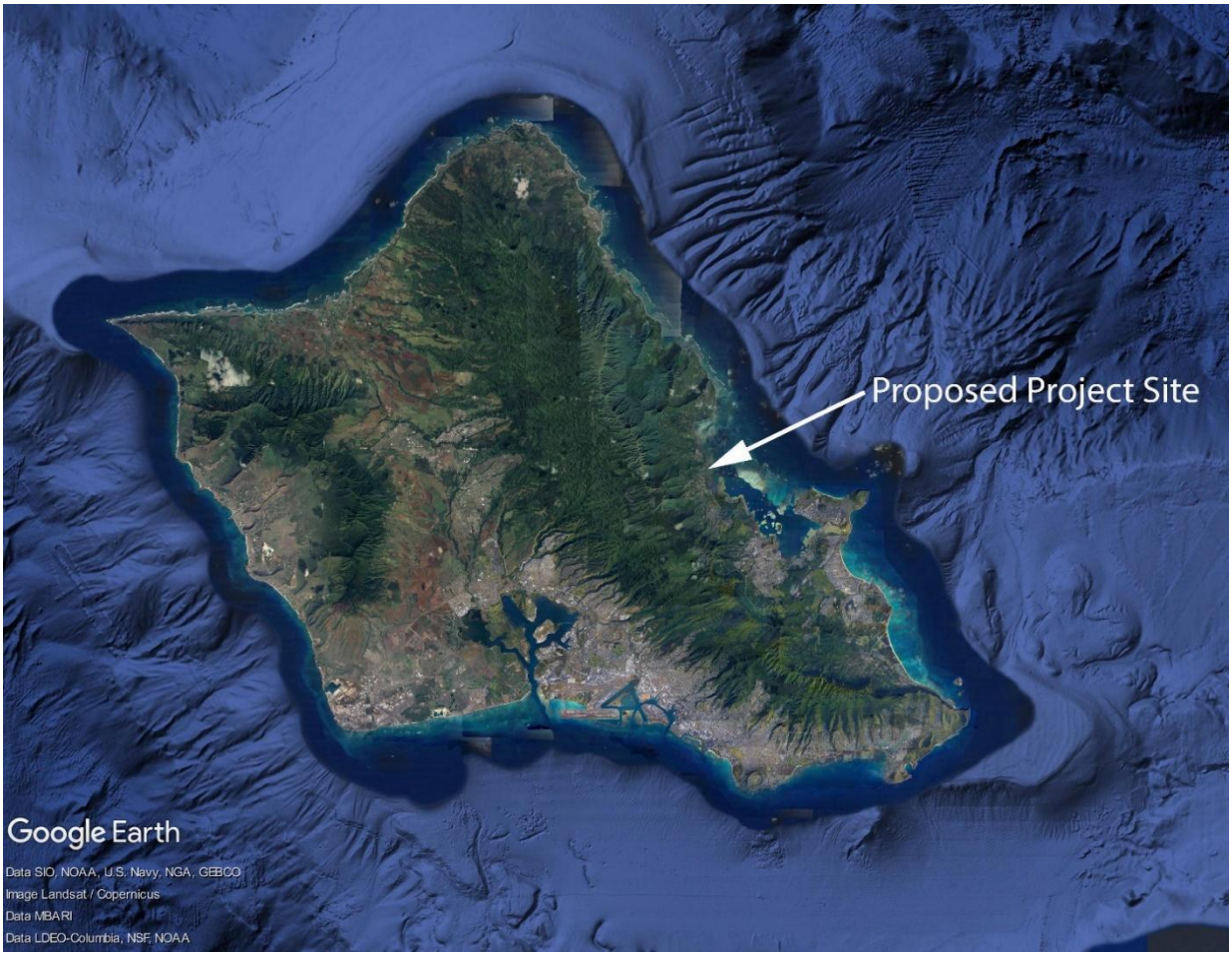


Figure 2. Vicinity Map

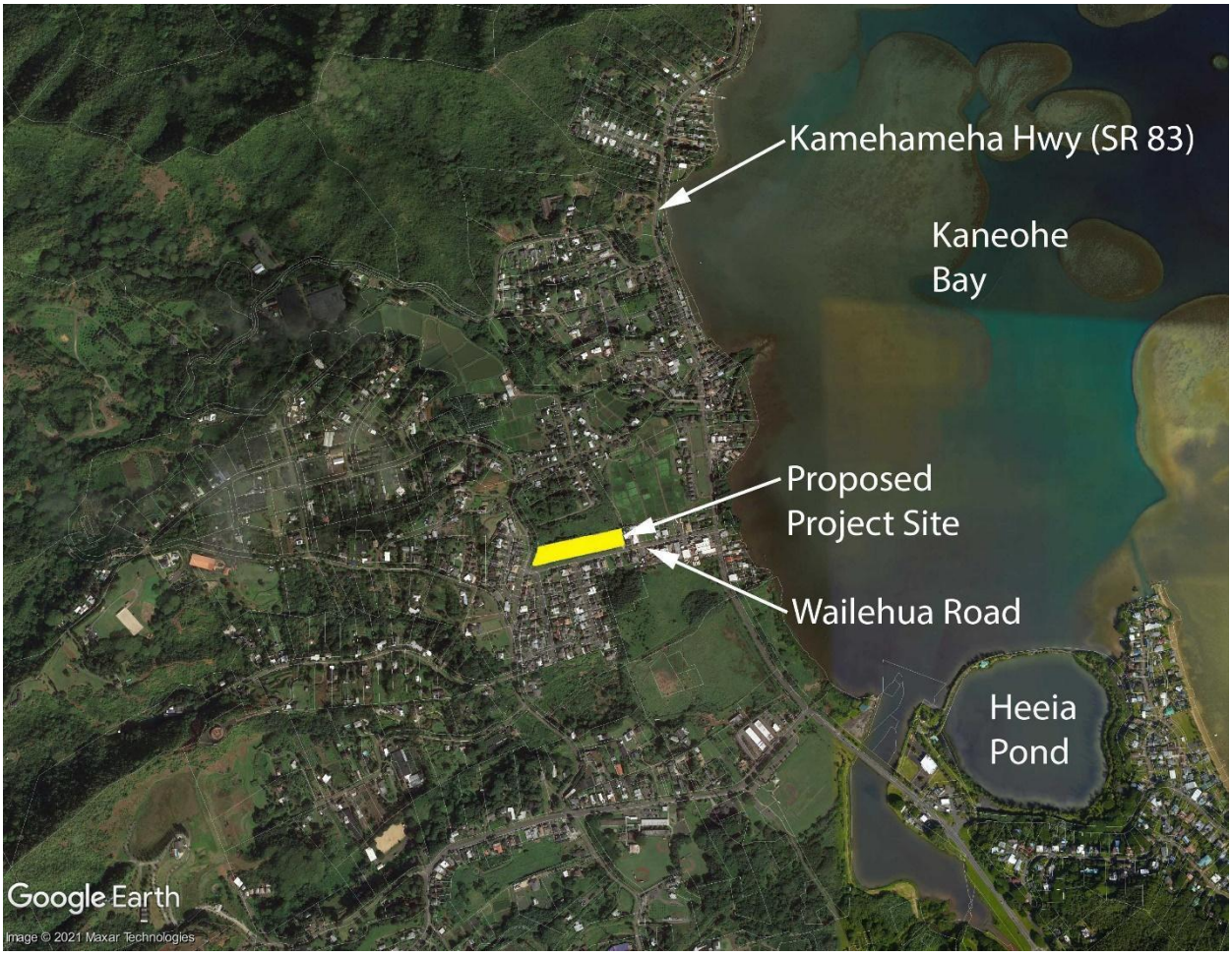


Figure 3. TMK Map

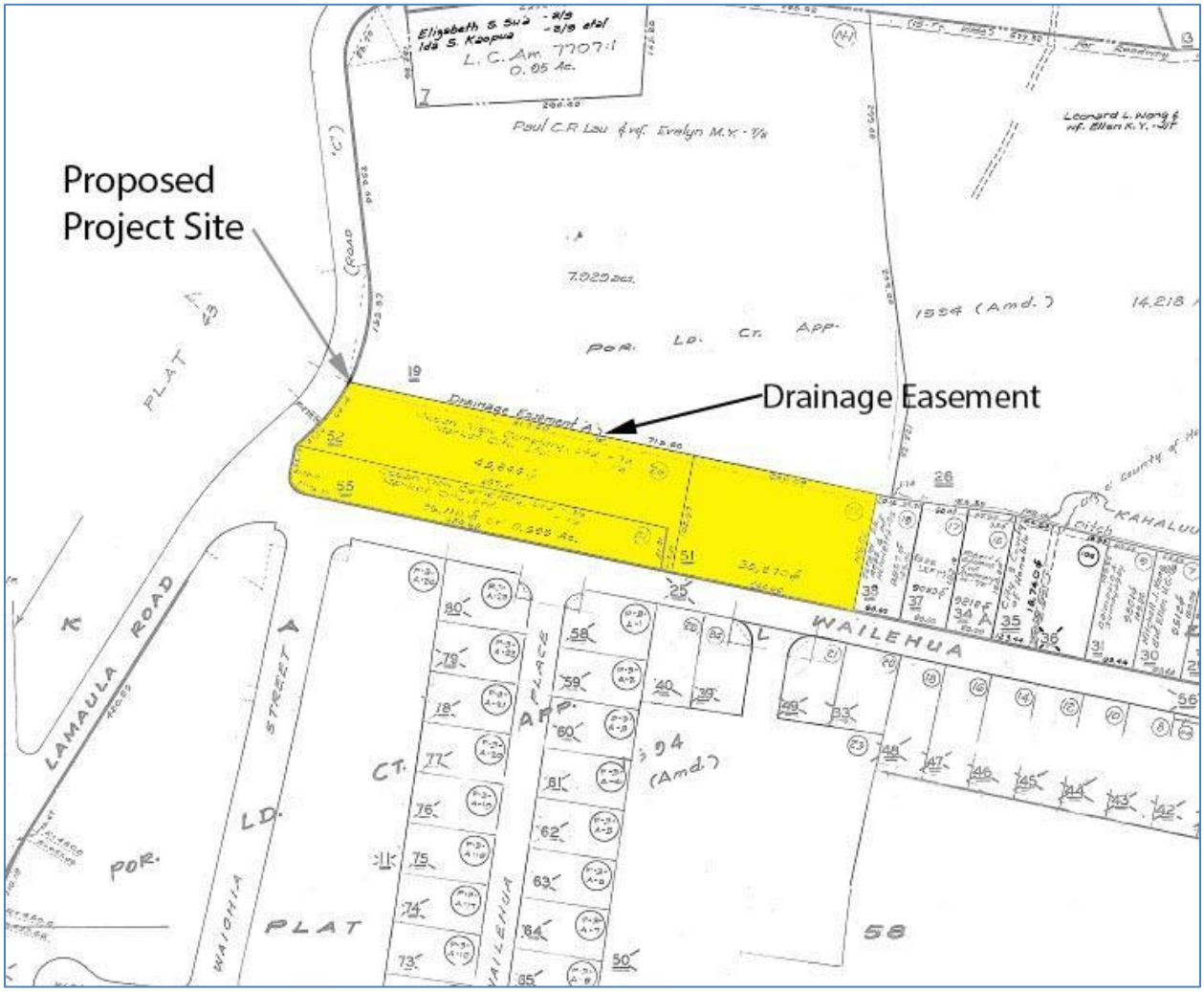


Figure 4. Subdivision Map

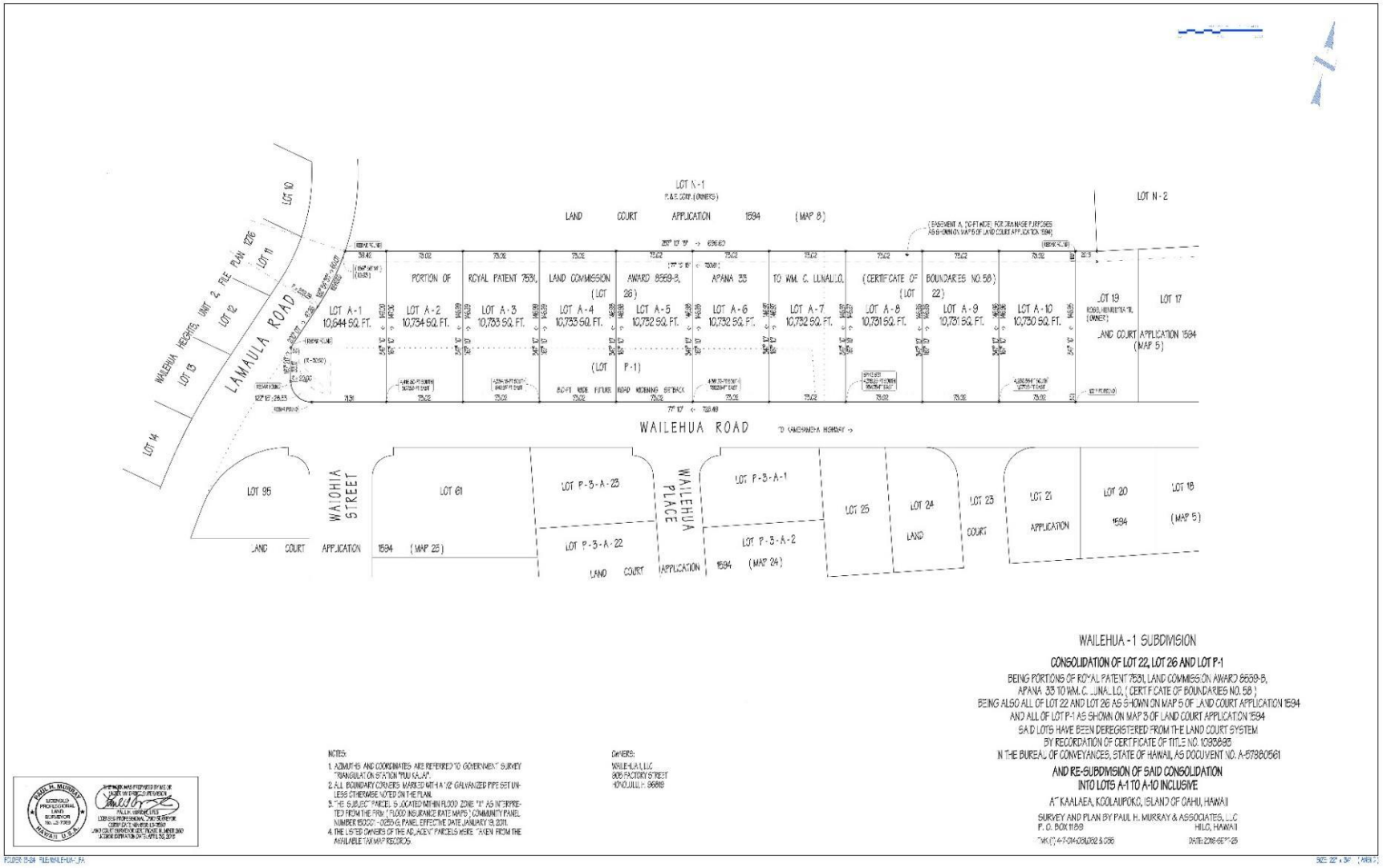


Figure 5. Site Photographs of Existing Site Conditions

Figure 6. Approved Drawing With Roof and Plot Plans

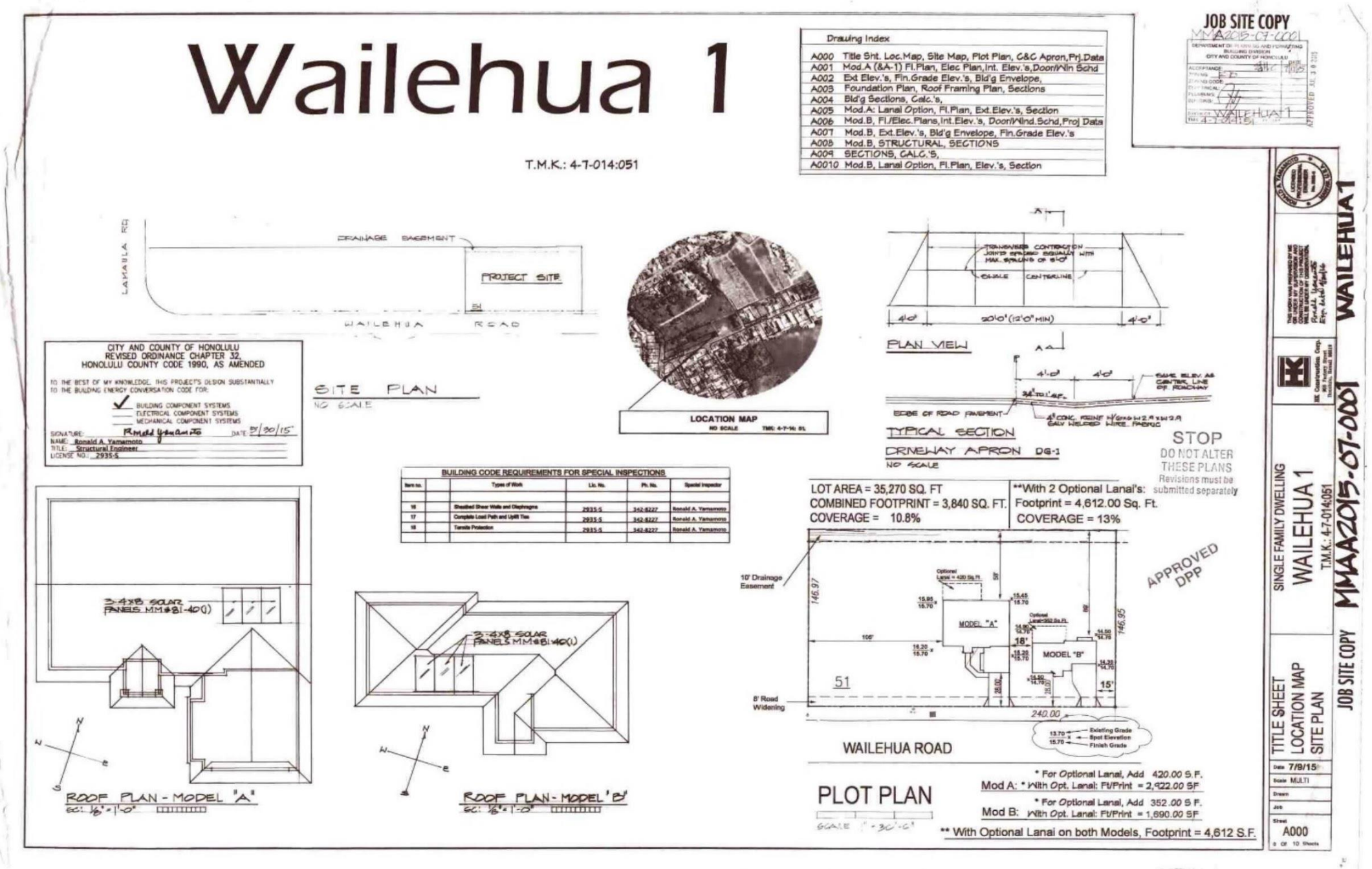


Figure 7. Floor Plan for Model "A"

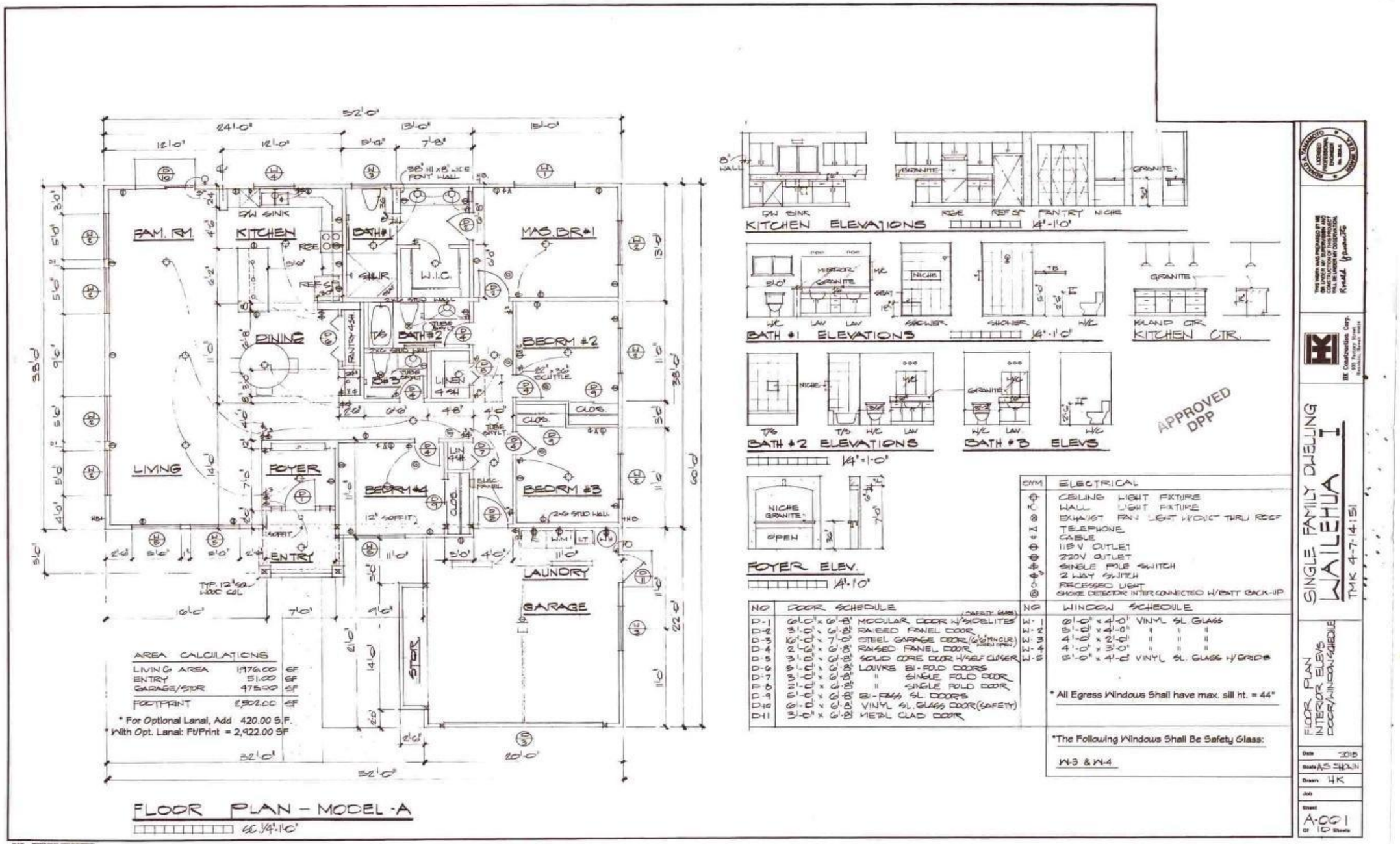


Figure 8. Elevation Views for Model “A” and “A-1”

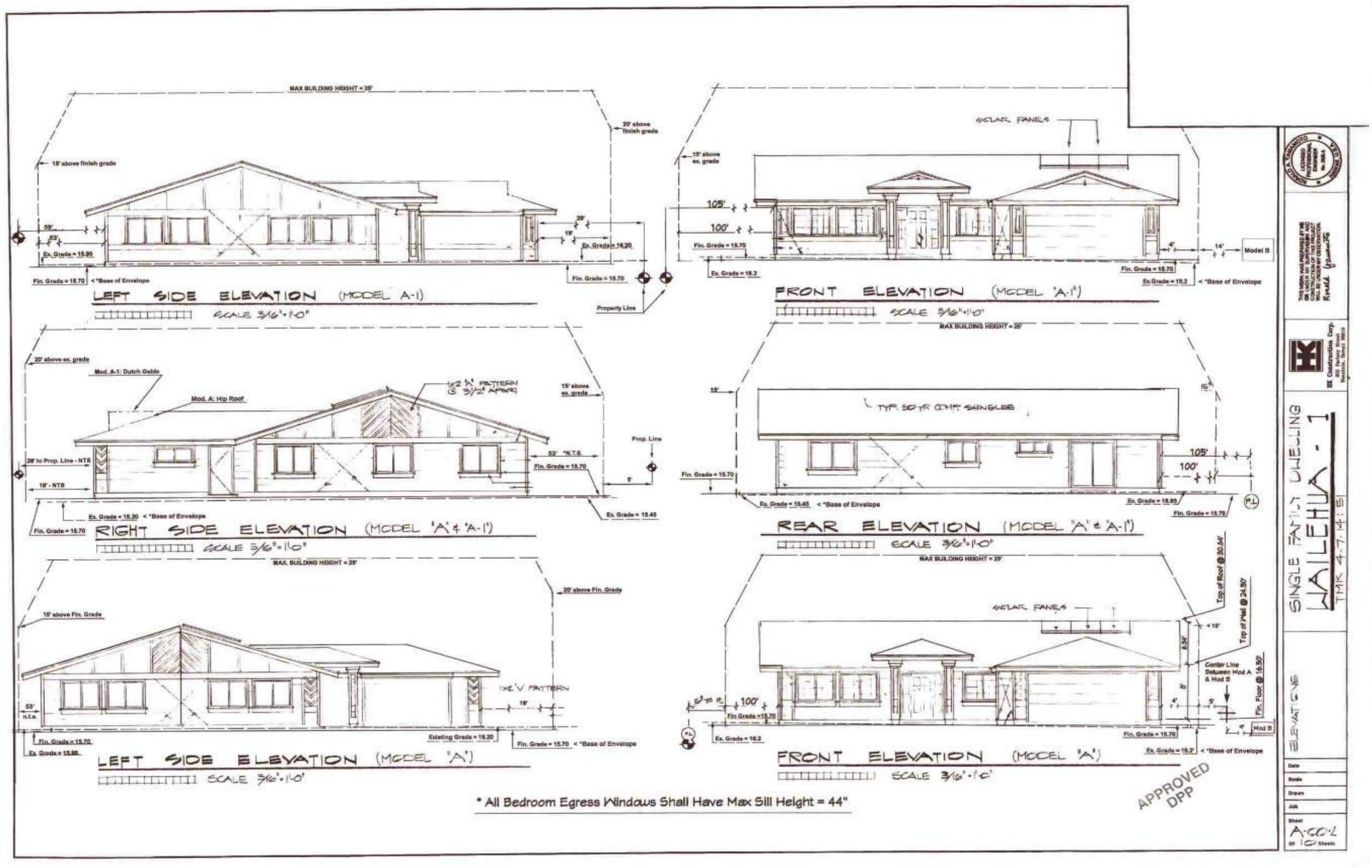


Figure 9. Model “B” Elevation Views

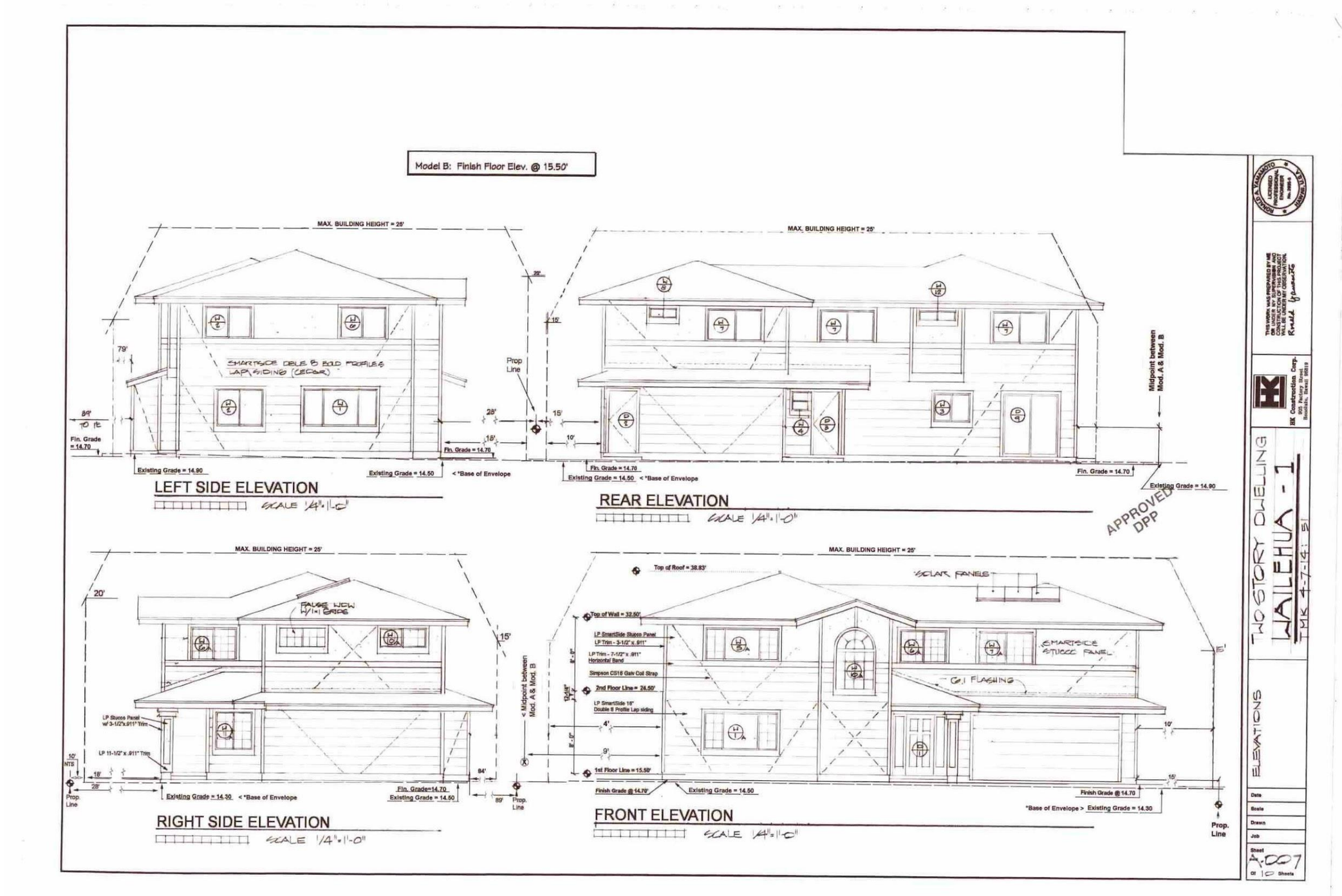
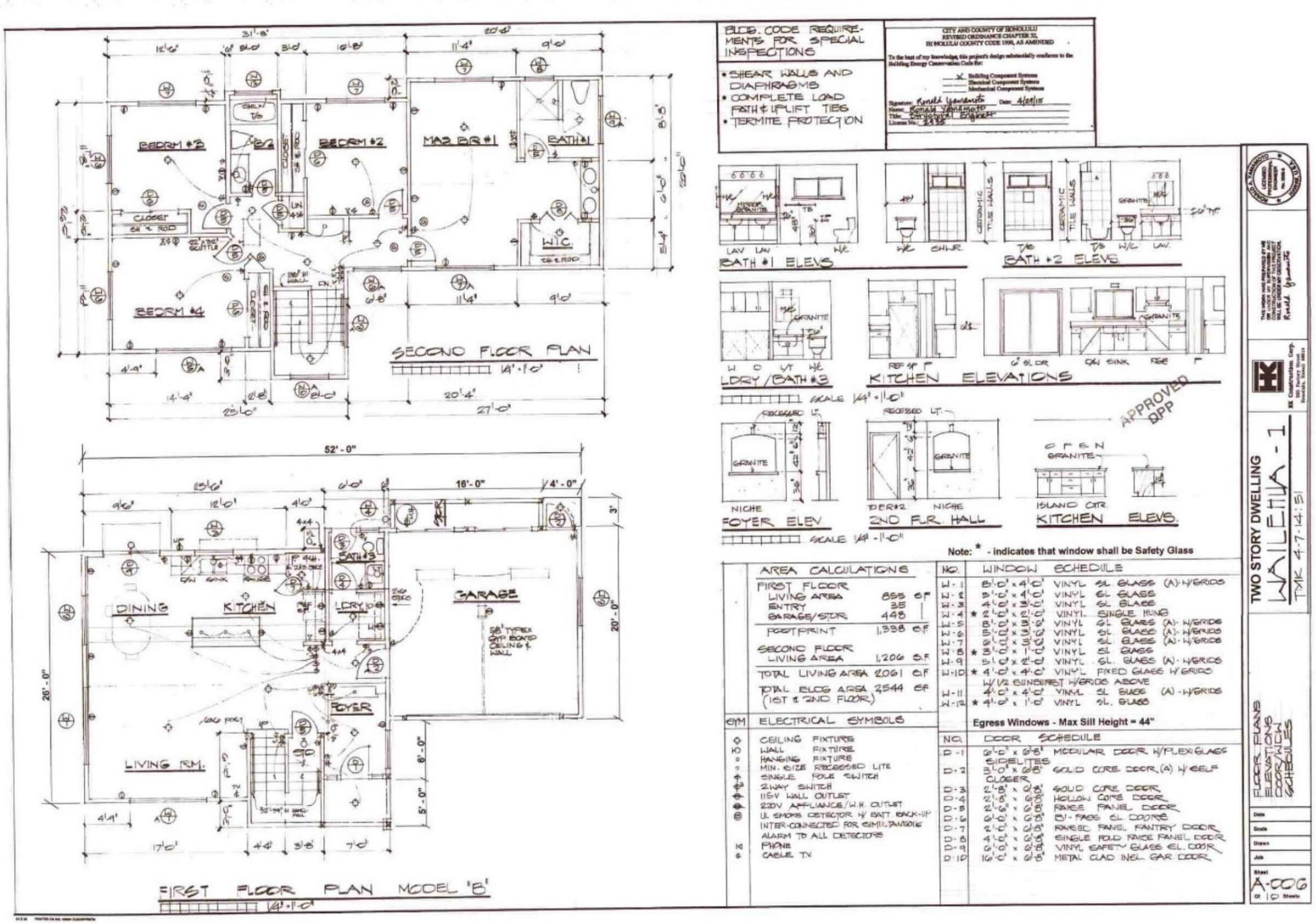


Figure 10. Model “B” Floor Plan



3. THE ENVIRONMENTAL SETTING – POTENTIAL IMPACTS AND MITIGATION MEASURES

This section describes existing conditions of the physical or natural environment, potential environmental impacts related to the proposed project and mitigation measures to minimize or negate impact.

3.1 General Physical Setting

The three parcels owned by Wailehua 1 are referred to throughout this document as *the proposed project site*, or simply as the *site*. The term *vicinity* is used to describe the general environs of this area of windward O‘ahu. Most of the 2.4616-acre parcel is located within the Special Management Area (Figure 11) and is entirely located within the State Land Use Urban District (Figure 12). The proposed project site is located about 1000 feet inland from Kaneohe Bay. Adjacent land use is primarily residential, with a mix of agricultural, vacant, and commercial uses. The site is bounded by Wailehua Road, Lamaula Road, the unnamed drainage ditch to the north, and the privately-owned parcel TMK 4-7-014:038 to the east.

The climate of O’ahu has low annual variability with daily temperatures variation of less than 10 degrees at sea level. The Hawaiian Islands experience two seasons; summer and winter, with the summer months of May-September characterized by temperatures averaging 80 – 90 degrees and winter temperatures dropping to the mid 60’s with an increase in precipitation. The proposed project site has a mean total annual precipitation of about 68 inches. Trade-wind driven orographic precipitation increases with elevation, and areas directly inland of the site on the windward side of the Ko‘olau mountains receive more than 130 inches of precipitation annually.

The Island of O’ahu is made up of two highly eroded remnants of shield volcanoes; Waianae and Ko‘olau. While there are some more recent Ko‘olau volcanics, the Honolulu Volcanics, the exposed base rocks forming the mass of the Ko‘olau Mountains of the Ko‘olau Basalt series here are from 1.7 to 2.6 million years of age. The proposed project site is located approximately 1,000 feet inland from Kaneohe Bay on a broad plain formed from the erosion of the Ko‘olau Mountains. Topography in the area is determined by water erosion, which conveys surface flow, as well as groundwater, towards Kaneohe Bay. The coastal plain of windward O‘ahu contains an abundance of surface streams, stream-side and estuarine wetlands and freshwater springs, some with positive hydraulic head, that ultimately enter marine waters. On windward O‘ahu the combination of orographic precipitation and the highly eroded Ko‘olau Volcano produce characteristic cathedral valleys, with alluvial coastal plains below. The shoreline is laterally interrupted by dramatic ridgelines or headlands, including Pu‘u Kiolea to the north and Pu‘u Maeleili, to the south beyond Ahuimanu and Kahalu‘u.

Thus, the topographical characteristics of the proposed project site are determined by its hydrologic context- more specifically by its location relative to nearby drainages- and are discussed at length in Section 3.3 Hydrology and Drainage. The nearest mapped streams from the proposed project site are Haiamoa Stream, a transient stream located about 850 feet south of the proposed project site, with a watershed area of 410 acres. In the vicinity of the proposed project site are also found Ka‘alaea Stream, located about 1,300 feet to the north, Waihe‘e Stream, located

about 1,600 feet south, and Kahaluʻu Stream, located about the same distance to the south- as Waiheʻe Stream is a tributary of Kahaluʻu Stream- with its confluence near Kahaluʻu Pond.

Figure 11. Special Management Area Map

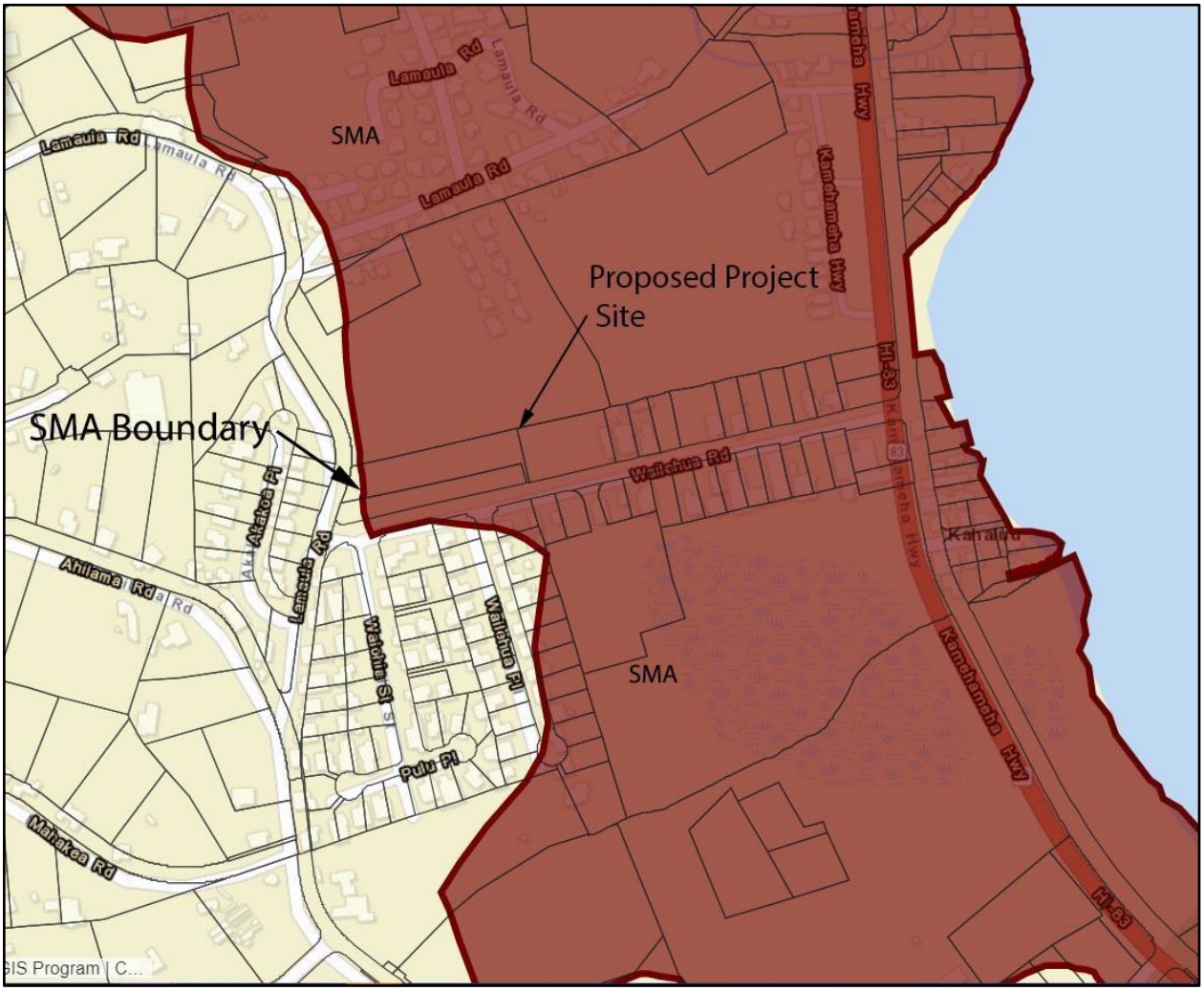
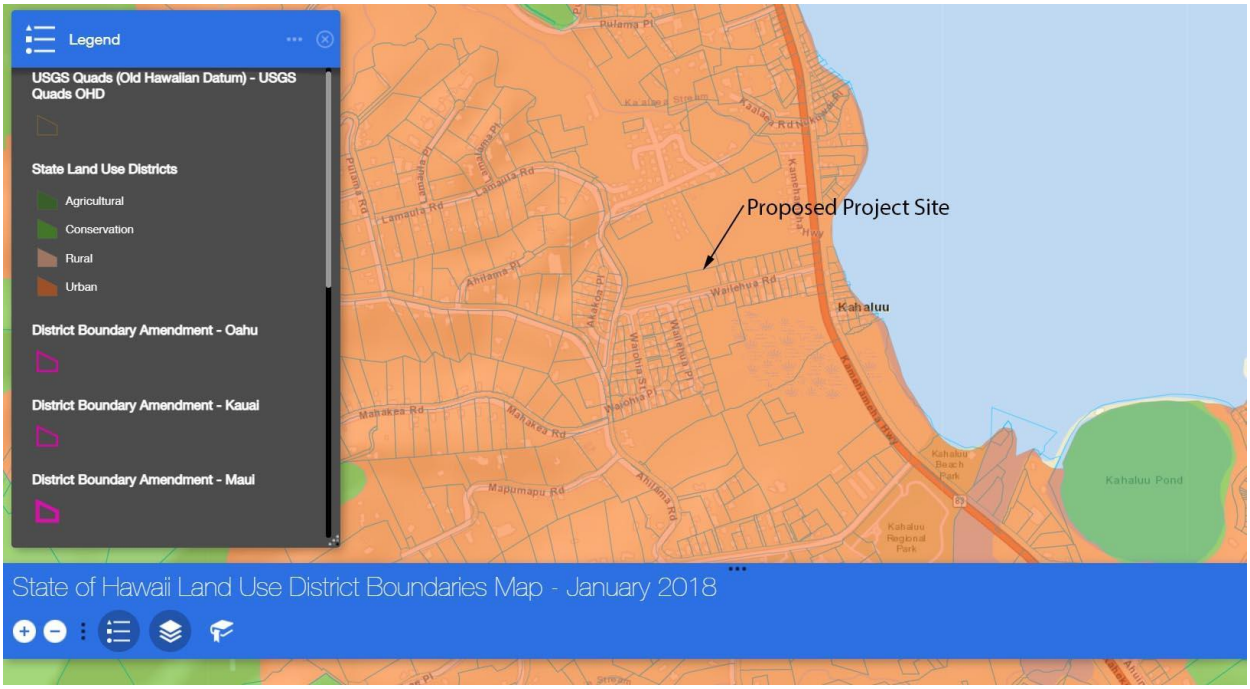


Figure 12. State Land Use District Map



3.2 Geology and Geohazards

Existing Setting, Impacts and Mitigation

The geologic map for the Island of O‘ahu (Sherrod et al. 2007) shows that the site is underlain by Holocene alluvium, and the inland portion may be underlain by older Pleistocene and Pliocene alluvium. The presence of low-permeability karst “caprock” is not noted in any references but is often commonly found in near-shore, low-lying areas of O‘ahu, sometimes representing older marine terraces. The proposed project site has relatively little slope overall but varies from about 11 feet to 18 feet above mean sea level, with the swale on the northern boundary of the site forming the lowest areas. The area has been modified by agriculture, road building, and other grading, therefore specific areas may contain non-native fill soils.

Soils underlying the proposed project site are consolidated alluvial soils. Soils of the proposed project site are defined by the NRCS Web Soil Survey (USGS 2021) as being of the three following types: (1) approximately the inland ¼ of the site contains Lolekaa silty clay, (2) approximately the middle half of the site contains typic endoaquepts mucky silt loam, and (3) approximately the seaward ¼ of the site contains Pearl Harbor clay. Lelekaa silty clay has a thickness of more than 80 inches and is a well-drained soil with a moderately low to moderately high capacity to transmit water (0.06 to 0.60 inches/hour). Typical endoaquepts denotes a soil largely found on atolls and does not indicate a hydric wetlands type of soil, and is further described as a poorly drained soil of thickness greater than 80 inches and a moderately high capacity to transmit groundwater. An endoaquept is a soil produced by weathering of base rocks with groundwater located close to their bottom layers, or are endo saturated. Pearl Harbor clay is a very poorly drained soil with a thickness

of more than 80 inches, a very low to moderately low capacity to transmit water (0.00 to 0.06 inches/hour), and is a hydric soil indicative of wetlands. It should be noted, however, that grading and placement of fill on the site has likely buried the native soils, particularly in the areas intended for structures.

The Island of Oʻahu may be impacted by earthquakes, generally originating from Hawaiʻi Island. The most recent large earthquake felt on Oʻahu was the 6.9 magnitude event centered in the Puna District of Hawaiʻi Island. The Universal Building Code determines structural resistance to seismic energy relative to a desigated "risk category" that is based upon the peak acceleration. The Island of Oʻahu is designated by the UBS as being in Seismic Zone 2A, with a peak ground acceleration of 0.15 g, or 0.15 times the acceleration of gravity. Through compliance with the UBC and ROH Chapter 16 Building Code, the proposed project would involve adequate engineering for geologic hazards. Further, geologic and soil conditions on the proposed project site would appear to present no hazards or conditions that would require mitigation. The proposed property would not appear to be impacted by landslides.

The proposed project site does not appear to be affected by geological hazards therefore no such mitigation is required. In general, soil and geologic conditions impose no constraints, and the proposed use is reasonable. Appropriate seismic standards would be adhered to during design and construction, per building codes.

3.3 Hydrology and Drainage

Existing Environment

As the topography of Oʻahu is determined by erosion, the topographical characteristics of the proposed project site and vicinity are determined by its hydrologic context, more specifically by its location relative to nearby drainages. The nearest mapped streams from the proposed project site are Haiamoa Stream, located about 900 feet south, Kaʻalaea Stream, located about 1,300 feet north, Waiheʻe Stream, located about 1,600 feet south, and Kahaluʻu Stream, located about the same distance to the south, as Waiheʻe Stream is a tributary of Kahaluʻu Stream, with its confluence near Kahaluʻu Pond.

The proposed project site lies within the Haiamoa watershed (DAR 2008), which has an area of 0.6 square miles and a total stream length of 1.0 mile. However, the drainage characteristics of the project site are likely to be more complex during high rainfall events, withat least a significant portion of the runoff from the proposed project site entering the adjoining drainage swale. The unnamed swale to the rear of the proposed project site was described at length in Paahana (2015), Wailehua 1 (2019).

The FEMA National Flood Hazard Layer (NFHL) viewer (FEMA 2021) shows that the proposed project site is entirely located in Flood Zone X, areas determined to be outside the 0.2% annual chance floodplain, as mapped on FEMA FIRM panel 15003CO255G (Figure 13). The proposed project site is not located within the tsunami evacuation zone but is located within the extreme tsunami evacuation zone (State of Hawaii, 2021).

There are no potential wetlands impacts from the proposed project as determined by the U.S. Army Corps of Engineers in a jurisdictional determination on December 21, 2020 (Appendix B). Figure 14 shows the U.S. Fish and Wildlife Service National Wetlands Inventory for the proposed project site and vicinity. This finding was issued after wetlands were delineated on the proposed project site under a previous study in 2015 (Paahana 2015) and was associated with a notice of violation dated February 14, 2017 for placement of fill in waters of the U.S. by the Applicant on a portion of the proposed project site. The change in jurisdictional determination is due to the halting of implementation of the Navigable Waters Protection Rule, which essentially rolled back interpretation of the definition of "waters of the United States"to the pre-2015 regulatory status. In the December 21, 2021 jurisdictional determination, the U.S. Army Corps of Engineers determined that the "Wailehua 1 drainage feature" was created by excavation for the purpose of drainage of stormwater and, furthermore, conveys flow only ephemerally, and is therefore not a water of the United States as per 33 CFR Section 328(b)(10). This determination is fixed for a period of five years, meaning that another rule change would not affect the determination for this term.

Under the implementation of the Navigable Waters Protection Rule, the swale adjoining the proposed project site, as well as portions of the proposed project site, were considered waters of the U.S., and hence protected from development, alteration, or fill, unless permitted. The Paahana 2015 wetlands delineation determined that wetlands existed on the proposed project site (Appendix C, Figures 8 and 9). Wetlands are defined, or delineated, by the presence of characteristic wetlands vegetation, characteristic wetlands soil, and, of course, water. The wetlands delineation of Paahana in 2016 (Appendix B) noted only the presence of wetlands plants on a portion of the site. The notice of violation of February 14, 2017 observed the unauthorized placement of fill on a significant portion of the proposed project site. This notice of violation set into motion an effort to achieve compensatory mitigation to offset the loss of wetlands, resulting in the preparation of the Draft Conceptual Proposal for Compensatory Mitigation (Appendix D). With the roll-back of the definition of "waters of the U.S." to the pre-2015 regulatory definition, the adjoining drainage swale and hydrologically connected portions of the proposed project site no longer were considered wetlands, meaning that the compensatory mitigation of wetland impacts was no longer needed.

A Drainage Study has been prepared for the proposed project by Hida, Okamoto & Associates, Inc. (Appendix E). This study determined that, under existing drainage conditions, all stormwater runoff flows towards and into the drainage easement on the north side of the site. The study further analyzed off site conditions including construction of a standard sidewalk, curb and gutter, which action was found to result in discharge of runoff from the proposed project site to neighboring properties downslope. To mitigate this, the drainage study proposed construction of French drains to transport this runoff to the drainage easement on the north side of the site. Design of these French drains is detailed in Appendix E.

Climate Change and Sea Level Rise

There is a scientific consensus that the Earth is warming due to increases in greenhouse gases in the atmosphere due to human activities, according to the UN's Intergovernmental Panel on Climate Change (IPCC 2021). Global mean air temperatures have increased by about 1.6° F to date, compared to the 19th century baseline, and are projected to increase by about 3.0°F by 2030 to

2052. This will be accompanied by the warming of ocean waters, expected to be highest in tropical and subtropical seas of the Northern Hemisphere. Wet and dry season contrasts will increase, and wet tropical areas in particular are likely to experience more frequent and extreme precipitation. For Hawai‘i, where warming air temperatures are already quite apparent, not only is the equable climate at risk but also agriculture, ecosystems, the visitor industry and public health.

For subdivisions near the shoreline in Hawai‘i, key related considerations are the potential for increased runoff from storms and rising sea levels. We are not able to predict with certainty how fast and high sea levels will rise within 10 years, 20 years or 50 years. An overall global rise in sea level of 3.3 feet by the end of the 21st century was proposed by Fletcher (2012) and others. A 2012 scientific assessment (e.g., Rahmstorf 2012) posited four feet as a reasonable upper bound by 2100. Some recent research, that concentrates on the potential for Antarctic melting to contribute more to sea level than generally modeled, envisions as much as an additional 3.3 feet of sea level rise (DeConto and Pollard 2016). Relative sea-level rise, of course, is a result of the combined water rise and land subsidence. Additionally, the timing of sea level rise, as well as the magnitude, is the subject of debate and scientific uncertainty. While the IPCC’s “business as usual” scenario, where GHG emissions continue at the current rate of increase, predicts up to 3.2 feet of global sea level rise by year 2100 (IPCC 2014), recent observations and projections suggest that this magnitude of sea level rise could occur as early as year 2060 under more recently published highest-end scenarios...

In 2014 the Hawai’i State Legislature passed the Hawai’i Climate Adaptation Initiative Act (Act 83, Session of Laws of Hawai’i), declaring that climate change poses both an urgent and longer threat to the state’s economy, sustainability, security and way of life. A statewide Sea Level Rise Vulnerability and Adaptation Report was developed to help Hawai’i prepare for the impact of sea level rise and also it intended to serve as a model for future efforts to address other climate related threats and climate change adaptation priorities, ultimately leading to a Climate Adaptation Plan for the State of Hawai’i. In 2017 the State legislature passed Act 32 further solidifying Hawai’i’s commitment to climate change mitigation and adaptation and created a Hawaii Climate Change and Mitigation and Adaptation Commission to further the work of the committee. Hawai’i Boat Harbors would be a focus of these committees in determining mitigation as well as properties along low lying coastal areas, which would be impacted. Adaptation to sea level rise and action are in the works now in Hawai’i. Hawai’i was the first state to require 100% renewable power supply by year 2045 (Act 97, SLH 2015), Act 99 SLH 2015 and Act 176 SLH 2016 direct all public schools and universities to be net-zero by 2035.

The State of Hawai‘i Sea Level Rise Viewer is an interactive mapping tool to facilitate understanding of potential impacts from climate change-induced sea level rise in a number of scenarios. Specific basemap layers show the potential impacts from sea level rise, passive flooding, annual high wave flooding, and coastal erosion, and also evaluate potential economic loss and highway flooding. According to this online tool, the proposed project site is not impacted by flooding under the maximum degree of sea level rise of 3.2 feet (Figure 15), or the maximum degree of passive flooding of 3.2 feet (Figure 16). Nor are there any impacts predicted in the vicinity of the proposed project site for the maximum amount of annual high wave flooding of 3.2 feet, and the maximum degree of coastal erosion of 3.2 feet.

The National Atmospheric Administration (NOAA) produces national storm surge hazard maps to

depict storm surge flooding vulnerability for areas vulnerable to tropical storms and hurricanes. The maps depict the SLOSH (Sea, Lake, and Overland Surges from Hurricanes) numerical model for hurricane strength categories 1-4. The predicted storm surge for a Category 4 hurricane is shown in Figure 17 and shows no storm surge inundation on the proposed project site.

Mitigation

The proposed detached single-family dwellings are to be constructed in accordance with the requirements set forth by Revised Ordinances of Honolulu (ROH) Chapter 21A Flood Hazard Areas. The existing dwellings have also been constructed in a manner compliant with ROH Chapter 21A. The proposed project will comply with the rules and regulations of the National Flood Insurance Program Title 44, Code of Federal Regulations and subchapter B along with City and County, and State rules and regulations. As a condition of subdivision, the Applicant would construct French drains to conduct runoff towards and into the adjoining drainage swale. The proposed project site is located in Flood Zone X, outside of the 500-year flood zone. As the proposed project site is not expected to be impacted by other sources of flooding, including storm surge, coastal flooding due to high waves, and sea level rise under the cases examined, no further mitigation is warranted.

Figure 13. Flood Zone Map

Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 4-7-014:051
WATERSHED:	HAIAMOA
PARCEL ADDRESS:	KANEOHE, HI 96744

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0255G
PANEL EFFECTIVE DATE:	JANUARY 19, 2011

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 400 800 ft

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL)*

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

Figure 14. FWS Wetlands Map

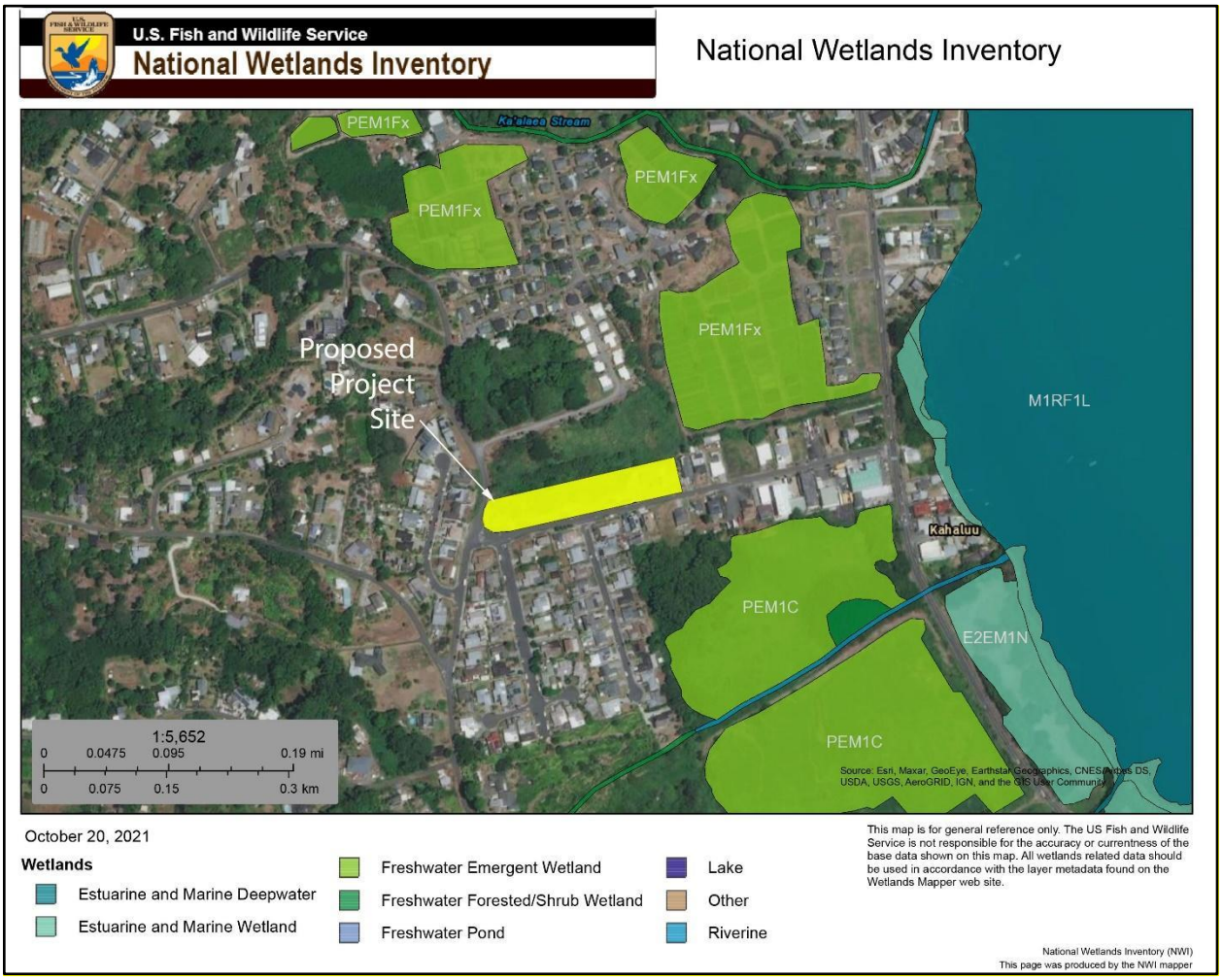


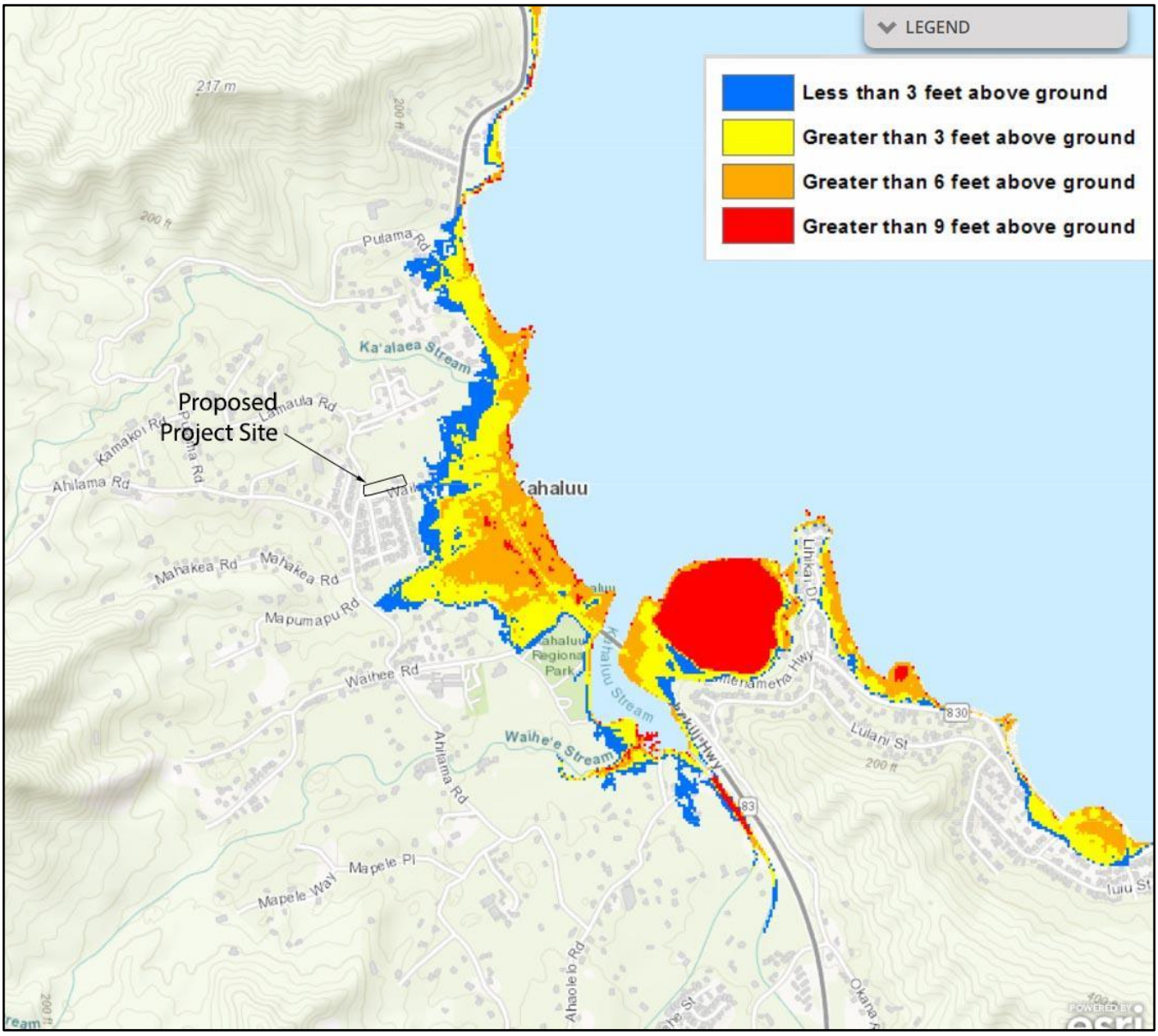
Figure 15. Predicted Impacts of 3.2 ft of Sea Level Rise

Source: https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/

Figure 16. Predicted Impacts from 3.2 ft of Passive Flooding

Source: https://www.pacioos.hawaii.edu/shoreline/slr-hawaii/

Figure 17. The SLOSH Model for Storm Surge from a Category 4 Hurricane.



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

3.4 Water Quality and Erosion

Existing Setting, Impacts and Mitigation

There would be no long-term adverse impacts to water quality as a result of the proposed project. Each dwelling would have its own individual wastewater system (IWS) permitted by the State Department of Health, and design would be conformant with HAR Title 11, Chapter 62 Wastewater Systems. This includes a requirement in HAR 11-62-34(c) that absorption beds be located in order to maximize the vertical separation distance from the bottom of the absorption bed to the seasonal high groundwater level, bedrock, or other limiting layer, with the minimum separation never less than three vertical feet. Furthermore, the United States Environmental Protection Agency recommends that septic tank wastewater systems be inspected every three years and pumped every three to five years (US EPA 2021).

A comment received from the Kahaluʻu Neighborhood Board as part of the pre consultation process expressed concern over water quality impacts from the proposed project, noting that cesspools in the subdivision "across the street"- apparently indicating the residences located on Waiohia Street, Waiohia Place, Pulu Place and Wailehua Place- have overflowed on occasion. Cesspools are inferior wastewater systems that can adversely impact water quality, as they provide very little reduction in wastewater nutrient concentrations and organic carbon, and are only allowed as grandfathered systems. Permitted IWS "Septic systems", including absorption beds, are vastly superior systems that reduce organic carbon and macronutrient (i.e., phosphorus species, nitrogen species) concentrations in wastewater. Although difficult to quantify, it can be confidently stated that a single cesspool is a much greater concern to groundwater quality than a larger number of permitted individual wastewater systems. However, the only means for a nearly 100% reduction in local potential impacts to groundwater quality is through sewer systems and waste water treatment at a wastewater treatment plant with a minimum of secondary treatment. A response was transmitted to the Kahaluʻu Neighborhood Board and is included in Appendix A.

The comment received from the Kahaluʻu Neighborhood Board also stated that any wetlands present should be preserved, as they favor water quality. The proposed project would not impact wetlands, as none are present, and would not affect the adjoining drainage swale/ditch.

A comment received from the City and County Department of Environmental Services as part of the pre consultation process stated that the proposed project site may be included in proposed sewerage improvements. The stated timeline for this project on Wailehua Road is 10 years. Therefore, it is recommended that it be ensured that the dwellings of the Wailehua 1 project connect to the City sewer service immediately when it becomes available. The United States Environment Protection Agency has recommendation for IWS septic system maintenance available at https://www.epa.gov/septic/how-care-your-septic-system, and recommend that septic systems be inspected every three years and pumped every three to five years; we recommend this as part of the proposed project.

The proposed project includes construction of French drains for each dwelling along the 10 foot wide drainage easement on the north side of the site. The design of these consists of a three foot wide section filled with drain rock to a depth of three feet along the entirety of the length of the proposed project site on the north side, abutting, but not extending into, the drainage easement.

The French drains would be surfaced with a three inch layer of planting medium. This design would allow infiltration of runoff into the subsurface at a lower rate, and would effectively mitigate the increase in runoff rate presented by construction of impermeable surfaces on the site. Further, there would be an improvement in water quality to the runoff by the filtering effect of the French drains.

The potential for short-term construction-phase water quality impact exists, primarily due to the potential for polluted stormwater runoff from disturbed soil surfaces. The contractor would comply with HAR Title 11, Chapter 54, Water Quality Standards, Title 11 Chapter 55 Water Pollution Control, and Revised Ordinances of Honolulu, Chapter 14, Articles 13, 14, 15 and 16. As construction would disturb more than one acre, a National Pollution Discharge Elimination System (NPDES) General Construction Permit would be required. This permit would likely require the following erosion control best management practices be implemented:

- Erosion control measures shall be installed before demolition and maintained until completion of grading phase.
- The silt fence shall be installed before any grading operations and shall be maintained until completion of construction activities.
- Contractor to periodically inspect silt fence, especially during periods of heavy rainfall.
- The final lift of each day's work shall be compacted to prevent erosion of fill materials.
- The contractor shall dispose of vegetation and equipment and hydraulic oils off-site.
- No oil or fuel shall be stored on site.
- All equipment shall be serviced in a confined area, and all fluids shall drain into pans for handling.
- All exposed areas would be grassed upon completion of grading work.
- Minimization of soil loss and erosion by revegetation and stabilization of slopes and disturbed areas of soil, possibly using hydromulch, geotextiles, or binding substances, as soon as possible after working.
- Minimization of sediment loss by emplacement of structural controls, possibly including silt fences, gravel bags, sediment ponds, check dams, and other barriers, in order to retard and prevent the loss of sediment from the site;
- Minimizing disturbance of soil during periods of heavy rain;
- Phasing of large projects in order to disturb a minimum necessary area of soil at a particular time;
- Application of protective covers to soil and material stockpiles;
- Construction and use of a stabilized construction vehicle entrance;
- Use of drip pans beneath vehicles not in use in order to trap vehicle fluids;
- Routine maintenance of BMPs by adequately trained personnel; and
- Cleanup of significant leaks or spills and disposal at an approved site, if they occur.

3.5 Air Quality

Existing Environment

The ambient air quality in the site vicinity is considered good, below criteria levels for most

pollutants in most locations at almost all times, due to the prevailing northeasterly trade winds and the absence of major industrial activities. Air quality in the vicinity can be affected by air pollutants from natural and/or human sources. Natural sources of pollution may include wind-blown dust, wildfires, and occasional distant volcanic emissions (vog) from the Island of Hawai‘i. Human sources include vehicular emissions from motorists traveling on residential streets, refuse and green waste burning, emissions from equipment using internal combustion engines, barbeque grills, and other intermittent sources. Air pollutant levels are monitored by the DOH at a network of sampling stations statewide, although there are no sampling stations in windward O‘ahu. State air quality monitoring consistently shows readings well in compliance with state and Federal air quality standards (DOH, 2021).

Impacts and Mitigation Measures

Adequate fugitive dust control can typically be accomplished by the establishment of a frequent watering program to keep bare dirt surfaces in construction areas from becoming significant sources of dust. In dust prone or dust sensitive areas, other control measures, such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Onsite mobile and stationary construction equipment also would emit air pollutants from engine exhausts, but no sensitive receptors are present. The contractor will be required to prepare a dust control plan during construction compliant with provisions of HAR, Chapter 11-60.1, “Air Pollution Control,” and Section 11-60.1-33, “Fugitive Dust.”

Construction-related exhaust emissions will be mitigated by ensuring that project contractors properly maintain their internal combustion engines and comply with DOH Hawaii Administrative Rules (HAR) Title 11, Chapter 59 and 60, regarding Air Pollution Control. Construction related impacts to air quality will be temporary and will cease when construction is completed.

3.6 Flora and Fauna

Flora – Existing Setting, Impacts and Mitigation

The ecological setting of the project site and vicinity have been surveyed and described by Paahana (2015) and the Draft Conceptual Compensatory Mitigation Plan prepared by Wailehua 1 (2019) and we rely on these investigations in this section. Section 3.7 Historical and Cultural Resources also discusses the history of land use of the proposed project site and vicinity.

Handy (1940) stated that, “The broad flats of Waihee from the seashore inland are continuous with those of Kaalaea to the north and Kahaluu to the south. These contiguous flats, all sectioned with terraces, make one of the largest single areas of wet taro land on the Koolau coast … The old terraces, now abandoned, ran back into these valleys for about 1.5 miles.” The project site on Wailehua Road lies just north of center for this expansive field system. Kennedy (1981) felt certain that none of the terrace walls or other irrigation features survived due to subsequent land clearing for sugarcane, rice, pineapple, and pasture lands in the 1800’s through early 1900’s.

In 1865, the lowlands within the Haiamoa, Waihee, and Kaalaea watersheds, including the project site, were cultivated in sugar by Kaalaea Sugar Plantation

(http://www.hawaiianstamps.com/isoahust.html). This was one of eight sugar plantations within the Kaneohe Bay area (Townscape 2012). A Hawaiian Government Survey map drawn by J.S. Gay dated 1874 illustrated the Kaalaea Sugar Plantation. Bowser (1880) noted that the 365-acre Kaalaea Sugar Plantation had 160 acres under cultivation in sugar cane at that time, with an estimated yield that year of 200 tons. The sugar plantation was given up around 1883. In 1888, the area was known for rice and taro cultivation[1]. The last sugar plantation in the Kaneohe region ceased production in 1903 (Townscape 2012). A resident from a neighboring property was recently interviewed by Environmental Risk Analysis (2014) and indicated that the area surrounding the project site was formerly cultivated in pineapple from 1920 through 1940 but insisted that the project site was not used for agriculture. Townscape (2012) notes that some 2,500 acres within the Kaneohe region were cultivated in pineapple. Mello (2019) said that pineapple cultivation extended to the upper reaches of Kaalaea Valley. Much of the cultivated fields reverted back to pasture lands between 1925-1940. An abandoned water valve, a gaging station, and old piping recently discovered on the southern edge of the Kaalaea watershed near the project site provide historical evidence of modern agricultural irrigation systems. Thus, the Wailehua 1 (2019) draft conceptual compensatory mitigation plan provided evidence that the proposed project site was used for agriculture.

US Geological Survey 7.5-minute quadrangle maps from the mid- to late-1950's reveal widely scattered buildings and dwellings throughout the region. The housing subdivision at the intersection of Lamaula Road and Wailehua Road appears to have been developed in the 1970's, and is illustrated in historical aerial photographs dating from 1975 (Environmental Risk Analysis LLC 2014). Paahana (2015) noted that the project site had not been previously developed for residential purposes or formally managed. Aerial photos of the project site prior to 1978 demonstrate that the parcel was undeveloped and completely covered with dense vegetation. Aerial photos available from Google Maps support anecdotal accounts that the center of the project site had previously been used as an undesignated parking lot for a commercial bus company, additional parking for area residents, and as an undesignated dumping ground by the former landowner (Paahana 2015). Between 1978 and 2008, marginal fills can be seen in aerial photos at differing locations within the project site immediately adjacent to Wailehua Road. A fill of roughly 2,398 square feet is visible in an August 2000 image of the site (Appendix C, Figure 2) and was expanded in subsequent years. The largest of these fills appears in an August 2004 Google Earth image to be approximately 0.40 acres in size (Appendix C, Figure 3); and vehicles can be seen parked there. Aerial images collected in Jan 2013 show that the filled area had been totally overgrown with dense vegetation (Appendix C, Figure 4). The full extent of clearing, grubbing and filling associated with the Wailehua I project can be seen in the 16 August 2016 aerial image (Appendix C, Figure 5). The area shown in white outline in Figure 5 represents the greatest extent of fill associated with the bus parking lot. The uneven elevated lands at the center of the project site, which appear as dark spots in Figure 5, appear to be mounds of rubble created by grubbing and grading of the site for Wailehua 1 as well as grading/filling for the bus parking area in the early 2000s. Irregular blocks of broken asphalt, concrete and gravel, previously used as fill for the bus parking lot, are evident under the heavy mats of grass at the project site (Appendix C, Photo 1).

The GAP Land Cover Ecological System Land Use map of the project area and surrounding lands identify the area around Wailehua Road as having a mix of low and high density development, alien grasslands and shrublands, and cultivated cropland (USGS 2011). Further details and photographs of the physical and biological setting of the project site appear in Paahana (2015).

Price et al (2007) described the proposed project site as located within a seasonal mesic moisture regime with a mix of low (i.e., converted) and medium (non-native) terrestrial habitat values. Wailehua 1 (Appendix D) noted that there are no significant open water habitats at the project site.

Aerial photos available from Google Maps support anecdotal accounts that the center of the project site had previously been used as an undesignated parking lot for a commercial bus company, additional parking for area residents, and as an undesignated dumping ground by the former landowner (Paahana 2015, Appendix C). Between 1978 and 2008, marginal fills can be seen in aerial photos at differing locations within the project site immediately adjacent to Wailehua Road. A fill of roughly 2,398 square feet is visible in an August 2000 image of the site (Appendix C, Figure 2), and was expanded in subsequent years. The largest of these fills appears in an August 2004 Google Earth image to be approximately 0.40 acres in size (Appendix C, Figure 3), and vehicles can be seen parked there. Aerial images collected in Jan 2013 show that the filled area had been totally overgrown with dense vegetation (Appendix C, Figure 4). The full extent of clearing, grubbing and filling associated with the Wailehua I project can be seen in 16 August 2016 aerial image (Appendix C Figure 5). The area shown in white outline in Figure 5 represents the greatest extent of fill associated with the bus parking lot. The uneven elevated lands at the center of the project site, which appear as dark spots in Appendix C, Figure 5, appear to be mounds of rubble created by grubbing and grading the site for Wailehua 1 as well as grading/filling for the bus parking area in the early 2000s. Irregular blocks of broken asphalt, concrete and gravel, previously used as fill for the bus parking lot, are evident under the heavy mats of grass at the project site (Appendix D, Photo 1).

The unnamed drainage ditch that plays a key role in the hydrology of the project site today was apparently constructed by the Kaalaea Sugar Plantation sometime during the mid- to late-1870's to drain adjoining wetlands for sugar cultivation. This ditch, running in a straight line from Lamaula Road to Kaneohe Bay along the northern boundary of the project site, first appears in a map of the Kaalaea Sugar Company published in 1880 by M.D. Monsarrat (Appendix D, Figure 8). The Monsarrat map also shows another drainage that flows from the Kaalaea watershed through the area occupied today by Wong Village and drains into the unnamed ditch just makai of the project area. Mello (2019) identified this drainage as an auwai that carries water for taro irrigation from Kaalaea Stream.

Paahana (2015, Appendix C) performed a survey of plant species on the proposed project site. Paahana did not survey the fill area, as it would have contained only colonizing weedy plant species. Paahana described the site as containing a dominant herb stratum, lacking both sapling/shrub and woody vine strata. All observed vegetation, with the exception of the remnant plant community west of the center of the property, represents regrowth of successional plants since the proposed project site was mechanically grubbed in 2015. A list of the plant species observed is shown in Table 1.

Table 1. Plant Species Identified on the Proposed Project Site

Common Name	***Scientific Name***	***Biogeographic Status***
California grass, para grass	Urochloa *mutica*	Non-native
Guinea grass	*Megathyrsus maximus*	Non-native
Elephant Grass	*Cenchrus purpureus*	Non-native
Job's Tears	*Coix lacryma-jobi*	Non-native: Naturalized
Parasol Leaf Tree	*Macaranga tanarius*	Endemic
Primrose Willow	*Ludwigia octovalvis*	Non-native
Cyperus	*Cyperus difformis*	Non-native
Pycreus	*Cyperus polystachyos*	Native: indigenous
Bitter melon	*Momordica charantia*	Non-native: naturalized
Moon flower	*Ipomoea alba*	Non-native: naturalized
Juniper berry	*Citharexylum caudatum*	Non-native: naturalized
Scarlet Spiral Flag	*Costus woodsonii*	Non-native: naturalized
Koa haole/haole koa	*Leucaena leucocephala*	Non-native: naturalized

Although this survey was completed in 2015, we do not expect appreciable changes to the species present apart from successional colonization by weedy and non-native species. No habitat is located on or near the proposed project site that may provide habitat for threatened or endangered species, therefore no significant impacts to plant resources are anticipated as a result of the proposed project.

Fauna – Existing Setting, Impacts and Mitigation

Maps developed by Price et al (2007) identify the project site as being within a seasonal mesic moisture regime with a mix of low (converted) and medium (non-native) terrestrial habitat values. Today, there are no significant open water habitats either at the project site or in neighboring Waihee Marsh. Dense vegetation, lack of open water, and proximity to residential subdivisions and associated human disturbances have rendered the project site as poor habitat for endangered and migratory waterbirds.

No critical habitat (https://ecos.fws.gov/ecp/report/table/critical-habitat.html) for terrestrial fauna is present in the area, but some endangered species may overfly this and all other areas of the Island of Hawai‘i. The Hawaiian petrel (Pterodroma sandwichensis), the Hawaiian sub-species of Newell's shearwater (Puffinus newelli), and the band-rumped storm-petrel (Oceanodroma castro) have been recorded over-flying various areas on the Island of Hawai‘i between late April and the middle of December each year. The Hawaiian petrel and band-rumped storm-petrel are listed as

endangered, and Newell's shearwater as threatened, under both federal and State of Hawai'i endangered species statutes. These seabirds hunt over the ocean during the day and fly to higher elevations at night to roost and nest. The Hawaiian petrel and the band-rumped storm petrel are not known to nest on the Island of O'ahu, but may overfly portions of the Island. During the breeding season from April through November, the Newell's shearwater burrows under ferns on forested mountain slopes. These burrows are used year after year and usually by the same pair of birds. Although capable of climbing shrubs and trees before taking flight, it needs an open downhill flight path through which it can become airborne. Once abundant on all the main Hawaiian Islands, most Newell's shearwaters are today found in the stee terrain between 500 to 2,300 feet on only Kaua'i. (https://www.fws.gov/pacificislands/fauna/newellsshearwater.html)

The primary cause of mortality for all three species in Hawai'i is thought to be predation by alien mammalian species 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. Disoriented seabirds may collide with manmade structures and, if not killed outright, become easy targets of predatory mammals. These listed seabirds would not directly utilize the property but could occasionally overfly it.

The only native Hawaiian land mammal, the Hawaiian hoary bat (Lasiurus cinereus semotus), may also occur in the area, as it has been observed in almost all parts of the island of Hawai'i. Although the sparse kiawe-buffel grass vegetation of the site does not represent essential habitat for this endangered species, bats have been observed in kiawe scrub vegetation in other parts of West Hawai'i, and are undoubtedly present at least occasionally

However, recent research by van Rees et al. (2018) on the Hawaiian gallinule (*alae ula*) suggests that forested and vegetated streams, ditches, canals, and roadside swales play a significant role in the distribution of the species on O'ahu. Their study implies that marginal habitats formerly assumed to have little value to Hawaiian gallinules may contribute to their persistence by increasing population connectivity (van Rees et al 2017). They believe that some of these unmanaged water features may actually alleviate problems of genetic isolation in gallinule. van Rees and Reed (2015) speculated that changing water management goals with a greater emphasis on green stormwater infrastructure might simultaneously provide conservation benefits for waterbirds and help alleviate polluted water resources.

The roughly 8.3-acre taro pond complex, located approximately 130-feet northeast of the project site, appears to be the nearest open waters suitable as loafing and feeding habitat for endangered Hawaiian waterbirds, migratory waterfowl and shorebirds. At the present time, not all of these ponds appear to be simultaneously flooded, farmed, or managed to maximize value to wildlife. Recently, the U.S. Fish and Wildlife Service (2016a, 2016b) indicated that endangered species discussed in the following paragraphs may occur within the Kahalu'u region:

1. The Hawaiian hoary bat or opeapea (*Lasiurus cinereus semotus*) roosts in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away.

2. Four species of endangered Hawaiian waterbirds are known from windward O'ahu wetlands. The Hawaiian stilt or *aeo* (*Himantopus mexicanus knudseni)*, Hawaiian coot or *alae keokeo (Fulica alai)* , Hawaiian gallinule or *alae ula (Gallinula galeata sandvicensis)*, and Hawaiian duck or *koloa maoli (Anas wyvilliana),* collectively referred to as Hawaiian waterbirds, occur at various sites within the vicinity of the project area (e.g. Heeia Pond and various locations along Kaneohe Bay).
3. The wedge-tailed shearwater or *ua u kani (Puffinus pacificus)*, a species protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712] (MBTA), may occur in the area. Wedge-tailed shearwater nesting colonies are located on offshore islets and several locations on O'ahu and every year many young shearwaters are downed and struck along O'ahu roadways. Any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. Outdoor lighting, such as street lights and night-time work, can adversely impact listed and migratory seabird species found in the vicinity of the proposed project. Seabirds fly at night and are attracted to artificially lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators or often struck by vehicles along roadways.

Table 2. Macrofauna Observed or Likely to Be Observed

Common Name/ Hawaiian Name	***Scientific Name***	***Diadromous***	***Biogeographic Status***
Amphibians			
Marine toad/None	*Rhinella marina*	N	Naturalized
American bullfrog/None	*Lithobates catesbeianus*	N	Naturalized
Fishes			
Flagtail/aholehole	*Kuhlia xenura*	N	Endemic
Sleeper/oopu akupa	*Eleotris sandwicensis*	Y	Endemic
Goby/oopu naniha	*Stenogobius hawaiiensis*	Y	Endemic
Goby/o'opu nakea	*Awaous stamineus*	Y	Endemic
Blackchin tilapia/None	*Sarotherodon melanotheron*	N	Introduced
Western mosquitofish/None	*Gambusia affinis*	N	Introduced
Mexican Molly/None	*Poecilia* sp. (hybrid complex)	N	Introduced
Swordtail molly/None	*Xiphophorus helleri*	N	Introduced
Chinese walking catfish/None	*Clarias fuscus*	N	Introduced
Crustaceans			
Feeble shrimp/opae huna	*Palaemon debilis*	N	Indigenous
Hawaiianprawn/opae 'oeha'a	*Macrobrachium grandimanus*	Y	Endemic
Tahitian prawn/None	*Macrobrachium lar*	Y	Introduced
Crayfish/None	*Procambarus clarkii*	N	Introduced
Mollusks			
Estuarine neritid/hapawai	*Neritina vespertina*	Y	Indigenous
Red-rimmed melania/None	*Melanoides tuberculata*	N	Naturalized
Insects			
Wandering glider dragonfly	*Pantala flavescens*	N	Indigenous
Roseate skimmer damselfly	*Orthemis ferruginia*	N	Naturalized
Rambur's forktail damselfly	*Ischnura ramburi*	N	Naturalized
Familiar bluet damselfly	*Enallagma civile*	N	Naturalized

Mitigation

As the proposed project site is not used as habitat by native animals, the proposed project would present no adverse impacts to such resources.

The possibility exists, however, that the native Hawaiian hoary bat may use trees on the site, if any exist, for roosting. To minimize impacts to endangered Hawaiian hoary bats, woody plants taller than 15 feet will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

In order to minimize potential impacts to birds, all lighting associated with the residential subdivision and appurtenances will be designed with accepted federal, state, and county mitigation measures to help prevent the fallout of fledgling seabirds, which can be confused by stray lighting. New information is available from the International Dark Sky Association that can assist in finding acceptable lighting fixtures for virtually all applications: http://darksky.org/fsa/fsa-products/.

3.7 Historical and Cultural Resources

Existing Setting

Hawaiians first settled on the windward coast of Oʻahu as early as about 1,200 years ago. The favorable climate, rich soils, and the marine environment of Kāneʻohe Bay, along with the plentiful sources of fresh water in the many streams and springs of windward Oʻahu lent naturally to its development into a major food production area (Klieger, et al. 2005). Loʻi dominated the valleys and coastal plains of the region while loko iʻa (fishponds) were common features along the district's coastlines. During pre-contact times Koʻolau Poko supported the largest concentration of Oʻahu's population, estimated between 20,000 to 25,000 people. As one of eleven ahupuaʻa in Koʻolau Poko, the Waiheʻe ahupuaʻa was part of this primary population center (City and County of Honolulu 2017).

The proposed project site is located within the ahupuaʻa of Kaʻalaea, which refers to the red color of the soil in this area while Kahaluʻu literally translates as "diving place". To the south is the ahupuaʻa of Waiheʻe, and to the north that of Waiahole. The concept of the ahupuaʻa was established in Hawaiʻi during the 15th century, adding a new component to what was already a well-stratified society. Ahupuaʻa were usually wedge or pie- shaped, encompassing all of the eco-zones from the mountains to the sea and extending several hundred yards beyond the shoreline, assuring a diverse subsistence resource base. This land unit became the equivalent of a local community, with its own social, economic and political identity. Ahupuaʻa were ruled by aliʻi ʻai ahupuaʻa or lesser chiefs and managed by a konohiki. Aliʻi and makaʻainana, or commoners, were not confined to the boundaries of ahupuaʻa, as resources were shared when a need was identified. Ahupuaʻa were further divided into smaller sections such as ʻili, moʻoʻaina, paukuʻaina, kihapai, koele, hakuone and kuakua. The chiefs of these land units have their allegiance to a territorial chief or moʻi (often translated as king).

According to the model developed by Kirch (1974) and later revised in terms of initial settlement date (Kirch 2011), the Settlement or Colonization period of Hawaiʻi was around A.D. 1000, with colonists possibly from the Marquesas Islands. Early Hawaiian farmers developed new subsistence

strategies during this period, adapting familiar patterns and traditional tools for use in their new environment. Order was kept through adherence to their ancient and ingrained philosophy of life and through the principle of genealogical seniority. According to Fornander (1969), Hawaiians brought from their homeland a variety of Polynesian customs including the major gods of Kane, Ku and Lono; the kapu system of law and order; pu‘uhonua or places of refuge or asylum; the ‘aumakua concept of a family or ancestral spirit and the concept of mana, or spiritual power.

The Development Period, which lasted from about A.D. 1100 to 1350, brought changes that included an evolution of traditional tools as well as some distinctly Hawaiian inventions. The evolution of the adze was an example of the former, while the latter included the two-piece fishhook and the octopus-lure breadloaf sinker. Another new article was the lei niho palaoa, an item worn by those of high rank which represented a trend toward greater status differentiation.

The Expansion Period from about A.D. 1350 to 1650 saw an increase in social stratification and major socioeconomic changes. It also was a time of expansive settling, with the development of the most favorable windward areas as well as more marginal areas on the island’s leeward side. This was the time of the greatest population growth as large irrigated field systems were developed and expanded into more arid areas. Loko or fishpond aquaculture also flourished during this period. The second major migration to Hawai‘i also occurred during the Expansion Period, with the settlers for this expansion coming from Tahiti in the Society Islands. An increase in war marked the Proto-Historic Period (A.D. 1650-1795), both locally and between islands.

After Kamehameha III’s Māhele in 1848, land claims in windward O‘ahu were awarded to some commoners. In the Ko‘olaupoko District, 199 awards were awarded in the Kailua and Waimānalo ahupua‘a. Most of the lands in windward O‘ahu went to Queen Kalama. Two kuleana land claims are located in the vicinity of the proposed project site. Land Commission Award 7701 was awarded to Kohale, a 0.95-acre TMK (1) 4-7-014:007 property located about 400 feet north of the site, and Land Commission Award 5804 was awarded to Kokoi and is located about 900 feet northeast of the site. Kuleana awards were made to subsistence farmers for the purpose of food production and indicate this use in the vicinity of the proposed project site.

The proposed project site vicinity would have reflected these changes and developments keenly, as the close combination of marine aquaculture resources and freshwater streams supplying lo‘i year round would have made the vicinity very lucrative for food production.

Handy (1940) stated that, “The broad flats of Waihe‘e from the seashore inland are continuous with those of Kaalaea to the north and Kahalu‘u to the south. These contiguous flats, all sectioned with terraces, make one of the largest single areas of wet taro land on the Ko‘olau coast…the old terraces now abandoned ran back into these valleys for about 1.5 miles.” The proposed project site on Wailehua Road is just north of center of this expansive field system. Kennedy (1981) felt certain that none of the terrace walls or other irrigation features survived due to subsequent land clearing for sugarcane, rice, pineapple, and pasture lands in the 1800’s through early 1900’s.

Historic use of the proposed project site and vicinity appear to have been largely agricultural. Handy (1940) noted that this area was a portion of one of the largest areas of pondfield agriculture on the windward coast. In the 19th century as kalo production declined, it was replaced by sugarcane, later by pineapples, followed by rice cultivation (Devaney et al. 1982). A Libby,

McNeil & Libby pineapple cannery operated near the mouth of Kahaluʻu Stream until the 1920s.

In 1965, the lowlands within the Haiamoa, Waihee, and Kaalaea watersheds, including the project site, were cultivated in sugar by Kaalaea Sugar Plantation, one of eight sugar plantations within the Kaneohe Bay Area (Townscape 2012). Bowser (1880) noted that the 365-acre Kaalaea Sugar Plantation had 160 acres under cultivation in sugarcane at that time, with an estimated yield of 200 tons per year. The sugar plantation was given up around 1883, although the last sugar plantation in the Kaneohe Bay region ceased production in 1903 (Townscape 2012), after which the area was noted for rice and kalo production. Townscape (2012) noted that some 2,500 acres within the Kaneohe region were cultivated in pineapple. A nearby resident, interviewed for the Phase I Environmental Site Assessment (ERA 2014) for the proposed project site, stated that the proposed project site was cultivated in pineapple from 1920 to 1940. Wailehua 1 (2020) noted that an abandoned water valve, a gaging station, and old piping have recently been discovered on the southern edge of the Kaalaea watershed near the proposed project site, providing historical evidence of modern agricultural irrigation systems on the proposed project site. The 1954 USGS topographic map for the area, the Kaneohe quadrangle (USGS 1954), clearly shows an unimproved roadway entering the proposed project site near its southwest corner and looping back towards Lamaula Street. The U.S. Army Corps of Engineers (2020) jurisdictional determination stated that the adjoining drainage swale or ditch had been excavated to convey stormwater runoff from adjoining roadways and the neighboring development located to the west, but could not determine when, or by whom, the ditch had been constructed. It is possible that the prior landowner, Oceanview Cemetery Lmtd., may have constructed the feature, or it may have been excavated/constructed during the sugar cane/pineapple agricultural period.

A literature review was performed to identify sites in the vicinity that may have relevance to the proposed project site. In addition to other resources, the Bishop Museum database and the SHPD HICRIS database were searched. Archaeological studies performed in the vicinity of the proposed project site include those performed for the Waiheʻe Loʻi Restoration and Riparian Learning Center (G70 2021) by Keala Pono Archaeological Consulting. The Waiheʻe Loʻi site is located in the mauka portion of the Waiheʻe Valley approximately 0.9 mile southwest of the proposed project site in the Waiheʻe Valley. As this site is located farther back within a valley in a different watershed and ahupuaʻa, this information is not directly relevant to the proposed project site.

Tulchin and Hammatt (2007) performed an archaeological assessment for the Kahaluʻu Regional Park park project, located about 2,500 feet southeast of the proposed project site.

McAllister (1930) noted Kalaealakihi heiau, "probably a small fisherman's temple…on a point of land on the sea side of the government road, Kahaluu." This was located more than a mile from the proposed project site and was destroyed by road building.

Clark (1974) performed an archaeological reconnaissance survey of a 50-acre study area of the Kahaluʻu Stream estuary and adjoining waterways, and identified no resources.

One site in the vicinity is listed on the Hawaiʻi Register of Historic Places, the Kahaluʻu or Kahouna Fishpond (TMK 1-4-7-011:001), located about 0.55 mile east of the proposed project site. No other historic sites listed on the Hawaiʻi Register of Historic Places are located within about two miles of the proposed project site (DLNR 2021).

A survey of aerial photos available from Google Maps and the USGS EarthExplorer (USGS 2021) reveal more recent land uses of the proposed project site, including use as a parking lot for commercial buses, and an undesignated dumping ground (Paahana 2015, Appendix C). Wailehua 1 (2020, Appendix D) noted that between 1978 and 2008, marginal fills could be seen at different locations on the proposed project site immediately adjacent to Wailehua Road. Alexander (2018) noted that a neighbor stated that this formerly heavily wooded parcel was used as a ballpark and playing field by area residents. Additionally, the presence of old cattle fencing and an abandoned bathtub demonstrate its use for grazing, as noted by Shallenberger (1977, 2019) and Mello (2019).

Impacts and Mitigation

The Constitution of the State of Hawai‘i states the duty of the State and its agencies to preserve, protect, and prevent interference with the traditional and customary rights of native Hawaiians. Article XII, Section 7 requires the State to “protect all rights, customarily and traditionally exercised for subsistence, cultural and religious purposes and possessed by ahupua‘a tenants who are descendants of native Hawaiians who inhabited the Hawaiian Islands prior to 1778.” This right has been reaffirmed by the State of Hawai‘i Supreme Court, who, in 1992, ruled that, “native Hawaiian rights…may extend beyond the ahupua‘a in which a native Hawaiian resides where such rights have been customarily and traditionally exercised in this manner”.

To assist in consideration of cultural resources and their impacts during the EA/EIS process, the Hawai‘i State Office of Planning, Environmental Review Program (formerly the Office of Environmental Quality Control) developed the Guidelines for Assessing Cultural Impacts (http://health.hawaii.gov/oeqc/). The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access- related, recreational, and religious and spiritual customs. A cultural impact assessment must evaluate the probability of impacts on identified cultural resources, including values, rights, beliefs, objects, records, properties, and stories occurring within the project area and its vicinity.

As part of the effort to identify valued natural, cultural and historical resources, the physical resources of the proposed project site, such as plants and water features, were assessed. In general, it was observed that no culturally important native vegetation, springs, groves of native trees, caves or pu‘u, all of which may have cultural significance, are present on the proposed project site. The vegetation of almost the entire property, and all areas potentially affected by construction, is heavily disturbed and dominated by alien plants, as discussed in Section 3.6, above, and there would appear to be no notable or even common floral resources that would be valuable for gathering. Due to the characteristics of the proposed project site it is highly unlikely that the site contains either archaeological or cultural resources.

No adverse impacts to cultural resources are anticipated because no resources are present. There are no special plants or other resources that would be useful for cultural purposes present on the proposed project site. Gathering of plant materials has not been observed on the proposed project site and there is no reason to suspect that such materials may exist. The proposed project site does not possess special lore, or wahi pana, that may relate it to the Hawaiian mythological cosmos.

No adverse impacts to archaeological or historical resources are anticipated because the proposed

project site has been highly modified in the historic period. This includes construction of the adjoining drainage ditch by Ka‘alaea Sugarcane Plantation or other entity. Although the timeline of agricultural use of the proposed project site is not certain, it seems likely that it was used for sugarcane cultivation by Ka‘alaea Sugar and later for pineapple cultivation.

Project information was submitted to the State Historic Preservation Division’s (SHPD) HICRIS electronic document review system on August 23, 2021 requesting concurrence of no impact to historic properties, and received project number 2021PRO1010. Under HRS 6E-10 SHPD has 90 days to concur or not concur with the proposed project. The 90-day period expired on November 21, 2021, therefore, SHPD has indicated their concurrence with our request to recognize no impact from the proposed project on historical and archaeological resources.

Pursuant to HRS Chapter 6E, in the event any artifacts or human remains are uncovered during construction operation, the contractor will immediately suspend work and notify the State Department of Land and Natural Resources, Historic Preservation Division, in addition to the Department of Planning and Permitting Civil Engineering Branch.

3.8 Socio-economic Characteristics

Existing Environment

Kahalu‘u itself is a census-designated place and therefore census data is available specifically for this community. Table 3 shows the U.S. census data for Kahalu‘u compared to those for the Island of O‘ahu and the United States. These numbers show that Kahaluu, with a population of 5,241 in 2020, showed nearly 11% population growth in the preceding decade, compared to only 2.2% growth for O‘ahu. Kahalu‘u shows a median household income above that of O‘ahu, partly due to the greater household size of 3.52, compared to that of 3.03 for O‘ahu. Socioeconomic data do not suggest any conditions that would warrant mitigation.

Table 3. Selected Socioeconomic Characteristics

Region Value	Kahaluʻu CDP	City and County of Honolulu	United States
Population (2020)	5,241	974,563	331,449,281
Population (2010)	4,738	953,206	308,745,538
Percent pop. 65 years and over	23.7%	18.2%	16.5%
Race/ethnicity - White	24.0%	21.6%	76.3%
Race/ethnicity - Asian	24.0%	42.9%	5.9%
Race/ethnicity - Native Hawaiian	12.5%	9.6%	0.2%
Percent two or more races	38.4%	22.8%	2.8%
Median household income (2019)	$112,045	$85,857	$62.843
Per capita income (2019)	$37,417	$36,816	$34,103
Percent persons in poverty	9.3%	7.9%	11.4%
Persons per household	3.52	3.03	2.52

Note: CDP = census designated place

Source: U.S. Census Bureau American Fact Finder: http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml

Impacts and Mitigation

The development of the additional 8 single-family dwellings, in addition to the two dwellings previously built, would lead to only a minor increase in population. Given the persons per household indicated by the U.S. Census for the Kahaluʻu CDP, the resulting increase in population would be approximately 35 individuals. This would lead to minor shifts in demographic characteristics, employment rates, and demands on public services. Importantly, the population increase is consistent with the expectations of single-family zoning and the low-density Sustainable Community Plan designation.

3.9 Visual Resources, Impacts and Mitigation Measures

Views from both land and air are iconic and highlight the beauty of the island of Oʻahu. The Koʻolaupoko Sustainable Community Plan (KSCP) identifies views of the Koʻolau Mountains and coastal headlands of Oʻahu's windward side as important components of the Koʻolaupoko regional identity, offering both residents and visitors a unique perspective of the Hawaiian Islands scenery (DPP, 2000). Within the project area along the Ha'ikū Road corridor, there are mauka views of the Koʻolau Mountains ridgeline. There are no coastal views from any part of the project site.

The project will not result in any adverse impacts to the scenic views identified in the KSCP. Views of the construction activities and equipment will be apparent in various locations for the duration of the project, but will not completely block scenic views at any given point in time.

3.10 Noise

Environmental Setting

Noise on the proposed project site is low to moderate; the main source of noise at the site is traffic traveling on Wailehua Road, Lamaula Road and the Kamehameha Highway (SR 83), as well as occasional noise from airplanes and helicopters.

The noise descriptor used to assess environmental noise by the Department of Housing and Urban Development (HUD) is the day-night average A-weighted (dBA) sound level (DNL). DNL is a representation of the average noise during a typical day of the year. DNL levels of 55 or less are typical of quiet, rural or suburban areas. DNL exposure levels of 55 to 65 are typical of urbanized areas with medium to high levels of activity and street traffic. DNL exposure levels above 65 are representative of dense urban sites and areas near large highways or airports.

Administrative Rules for the Department of Health, Chapter 11-46, Community Noise Control (HAR 11-46) set permissible noise levels to provide for the prevention, control, and abatement of noise pollution in the state. The Project Site is zoned Residential with a minimum lot size of 10,000 square feet (R-10) and is therefore in the Class A zoning district with respect to HAR 11-46. The maximum permissible sound level in a Class A zoning district is 55 dBA from 7:00 a.m. until 10:00 p.m. and 545 dBA from 10:00 p.m. to 7:00 a.m. (HAR §11-46-4). Noise levels are not to exceed the maximum permissible sound levels for more than ten percent of the time within any 20 minute period, except by permit. The maximum for impulsive noise is 10 dBA above the maximum permissible sound levels.

Various agencies have different standards of noise compatibility. Per 24 CFR 51.103, HUD exterior standards are as follows:

- Acceptable (DNL not exceeding 65 dBA): The noise exposure may be of some concern but common building constructions will make the indoor environment acceptable and the outdoor environment will be reasonably pleasant for recreation and play.
- Normally Unacceptable (DNL above 65 but not exceeding 75 dBA): The noise exposure is significantly more severe; barriers may be necessary between the Project Site and prominent noise sources to make the outdoor environment acceptable; special building constructions may be necessary to ensure that people indoors are sufficiently protected from outdoor noise.
- Unacceptable (DNL above 75 dBA): The noise exposure at the site is so severe that the construction cost to make the indoor noise environment acceptable may be prohibitive and the outdoor environment would still be unacceptable.

Impacts and Mitigation Measures

During construction of the Proposed Project, there would be moderate levels of noise from the operation of heavy equipment during grading, and by vehicles and tools during construction. In cases where construction noise is expected to exceed the State DOH “maximum permissible” property-line noise levels, builders must obtain a permit per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction. The DOH reviews the proposed activity,

location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures, such as restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers. The Applicant will consult with DOH to determine if a permit will be required and what, if any, noise reduction measures are necessary. During operation, moderate levels of noise which would be consistent with the level of noise from neighboring residential subdivisions and roadways is anticipated. Therefore, the Proposed Action is not expected to significantly impact any existing residential areas within the vicinity of the proposed project site. Further, as the vicinity includes residential uses, construction work will be performed only during the hours of 7:00am to 5:00pm Monday through Friday.

Under the No Action Alternative, the Proposed Project would not be constructed and the site would remain unchanged from current conditions. There would be no additional impacts to noise from this alternative.

3.11 Utilities and Public Services including Wastewater and Waste Management

Existing Setting, Impacts and Mitigation

The nearest police station is the Kaneohe District Station, located approximately 4.7 miles (5.3 miles by road) from the proposed project site. The nearest Hospital is Adventist Health Castle, located approximately 8.2 miles (10.3 by road) away. The nearest fire station is the Fire Station 37 Kahaluʻu, located approximately 0.4 miles (0.5 by road) away. The nearest potential hurricane shelter is located at Kahaluʻu Elementary School approximately 0.4 (0.5 by road) miles away.

The Project would increase demand for services from residents during construction and occupancy including utilities, services, infrastructure, school, and government. Electrical power to the Project Site would be supplied by Hawaiʻi Electric Light Company. Telephone and data service are provided by local utilities.

During Project operation, solid waste would be hauled off site by a private contractor on a regular basis to a solid waste management facility in compliance with the applicable provisions (HAR, Chapter 11-58.1, "Solid Waste Management Control"). No burning of wastes would occur on site during construction or during operation of the Proposed Project.

Fire, police, and emergency management services are available in this part of North Kona. A police station is located in Kona, about five miles north of the Project Site. The Kailua Fire Station is located approximately 3.5 miles northeast of the Project Site. Emergency medical services are provided by the Hawaiʻi County Fire Department. Emergency medical services are available at Kona Community Hospital, approximately 7.5 miles to the south.

Impacts and Mitigation Measures

The Project is expected to serve the existing demand for mid-market housing for on-island residents. Under the No Action Alternative, the proposed project would not be constructed and the site would remain unchanged from current conditions, - no utilities would be needed and no solid waste from the Proposed Project would be generated.

The proposed project plans and drawings shall be submitted as required per the permitting process for review, comments and approval by the Honolulu Fire Department and the residential dwelling shall comply with all National Fire Code (UFC) and the ROH Chapter 20 Article 3 Section 20.3.1.

No impacts to public facilities are anticipated.

3.12 Traffic and Roadways

Existing Setting, Impacts and Mitigation

Wailehua Road is a bicycle route and a two-lane County Road with a posted speed limit of 25 mpg, while Kamehameha Highway (SR 83) is an arterial, two-lane highway under the jurisdiction of the State Department of Transportation, with a posted speed limit of 35 mph. All of the proposed and existing dwellings would utilize Wailehua Road for access. The State Department of Transportation Highways Program Status viewer (HDOT 2021) states that the Annual Average Daily Traffic (AADT) for SR 83 between MP 34.31 and 36.26, in the proposed project vicinity, is 15,000 for all vehicles, 859 for single unit trucks, and 151 for combination trucks. Assuming two vehicles per household and two vehicle trips per day, all utilizing the Wailehua Road and SR 83, an increase of 40 vehicle trips on SR 83 is implied, an increase of less than 0.3%. This is a negligible impact and does not warrant further investigation.

3.13 Hazardous Materials

Existing Setting, Impacts and Mitigation Measures

A Phase I Environmental Site Assessment was performed for the proposed project site in 2014 and identified no Recognized Environmental Conditions. A Recognized Environmental Condition (REC) is a situation that indicates the likely past release of hazardous materials, or the ongoing potential for a release, thereby warranting further investigation. The standard "shelf life" for a Phase I is six months, however, uses of the subject property do not suggest the presence of environmental hazards after 2014.

No conditions or activities that would lead to such site contamination are known to be present or are expected to be present on the property. The property does not contain quarries, former explosives sites, or other hazardous conditions. The property is vacant and does not appear to have undergone any active land use in modern times. No farming has been conducted in recent years, and there is no known use that would have involved pesticides or industrial uses. The history of the site and its surroundings as understood by the owner does not suggest the presence of hazardous materials or toxic substances. State databases did not indicate any Underground Storage Tanks (USTs), Leaking Underground Storage Tanks (LUSTs), or records of incidents or releasesonthesiteorinsurroundingproperties. (https://eha-cloud.doh.hawaii.gov/iheer/#!/viewer) Although it is unlikely that any potentially hazardous, toxic or radioactive waste would be found on the project site, reasonable precautions would be undertaken by contractors in the context of the project construction Best Management Practices for the appropriate response and remediation should any such hazardous, toxic, or radioactive material be encountered during construction.

3.14 Unresolved Issues

There appear to be no unresolved issues.

3.15 Potential Cumulative and Secondary Impacts

A development of this type is of small scale and represents a very small increase in population and consequent impacts. As significant development and growth in Koʻolau Poko is not anticipated by the Koʻolau Poko Sustainable Communities Plan, many of the secondary, indirect, and cumulative impacts associated with growth are not anticipated for this area. The proposed project would not appear to have the potential to produce secondary impacts. The proposed project would not modify any wetlands, and drainage from the site would be managed through construction of French drains that would have a positive effect on water quality. There do not appear to be other projects planned for the vicinity that would combine to produce adverse cumulative impacts.

4. PLANS AND POLICIES

4.1 Hawai‘i State Plan

Adopted in 1978 and last revised in 1991 (Hawai‘i Revised Statutes, Chapter 226, as amended), the Plan establishes a set of themes, goals, objectives and policies that are meant to guide the State’s long-run growth and development activities. The three themes that express the basic purpose of the Hawai‘i State Plan are individual and family self-sufficiency, social and economic mobility and community or social well-being. The proposed project would promote these goals by adding housing, thereby enhancing quality-of-life and community and social well-being.

4.2 Hawai‘i State Land Use Law

All land in the State of Hawai‘i is classified into one of four land use categories – Urban, Rural, Agricultural, or Conservation – by the State Land Use Commission, pursuant to Chapter 205, HRS. The property is in the State Land Use Urban District. The proposed use is consistent with intended uses for this land use district.

This project is located within the State Land Use Urban District. The counties primarily have jurisdiction over urban lands through their land use ordinances and regulations. Private residences are a permitted use in the State Land Use Urban District and are therefore consistent with the existing State Land Use classification.

4.3 City and County of Honolulu General Plan (2002 Amendment)

Adopted by resolution in 1977, the 1992 revised edition of the General Plan for the City and County of Honolulu sets forth the long-range objectives for the general welfare and prosperity of the people of O‘ahu and broad policies to attain those objectives. A Proposed Revised General Plan was transmitted to the Planning Commission to the City Council on April 20, 2018. The General Plan Update provides objectives and policies intended to guide and coordinate City land use planning and regulation, and budgeting for operations and capital improvements. As the Proposed Revised General Plan is under consideration, we excerpt and discuss the relevant portion of the 1992 revised General Plan below.

Natural Environment

Objective A: To protect and preserve the natural environment.

- *Policy 1: Protect Oahu’s natural environment, especially the shoreline, valleys, and ridges from incompatible development.*
- *Policy 2: Seek the restoration of environmentally damaged areas and natural resources.*
- *Policy 3: Retain the Island's streams as scenic, aquatic, and recreation resources.*
- *Policy 4: Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water-recharge areas, distinctive landforms, and existing vegetation, as well as plan for coastal hazards that threaten*

life and property.

- *Policy 5: Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.*
- *Policy 6: Design surface drainage and flood-control systems in a manner which will help preserve their natural settings.*
- *Policy 7: Protect the natural environment from damaging levels of air, water, and noise pollution.*
- *Policy 8: Protect plants, birds, and other animals that are unique to the State of Hawai'i and the Island of O'ahu, and protect their habitats.*

Objective B: To preserve and enhance natural landmarks and scenic views of O'ahu for the benefit of both residents and visitors as well as future generations.

- *Policy 2: Protect O'ahu's scenic views, especially those seen from highly developed and heavily traveled areas.*

Housing

Objective A: To provide decent housing for all the people of O'ahu at prices they can afford.

- *Policy 1: Develop programs and controls which will provide decent homes at the least possible cost.*
- *Policy 3: Encourage innovative residential development which will result in lower costs, added convenience and privacy, and the more efficient use of streets and utilities.*
- *Policy 4: Establish public, and encourage private, programs to maintain and improve the condition of existing housing.*
- *Policy 10: Promote the construction of affordable dwellings which take advantage of Oahu's year-round moderate climate.*
- *Policy 11:Encourage the construction of affordable homes within established low-density communities by such means as 'ohana' units, duplex dwellings, and cluster development.*

Objective B: To reduce speculation in land and housing.

- *Policy 1: Encourage the State government to coordinate its urban-area designations with the developmental policies of the City and County.*
- *Policy 2: Discourage private developers from acquiring and assembling land outside of areas planned for urban use.*

Objective C: To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.

- *Policy 1 Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.*
- *Policy 2 Encourage the fair distribution of low and moderate-income housing throughout the island.*
- *Policy 3 Encourage residential development near employment centers.*
- *Policy 4 Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.*
- *Policy 5 Discourage residential development where roads, utilities, and community*

facilities cannot be provided at a reasonable cost.

- *Policy6 Preserve older communities through self-help, housing-rehabilitation, improvement districts, and other governmental programs.*

Public Safety

Objective B: To protect the people of O'ahu and their property against natural disasters and other emergencies, traffic and fire hazards, and unsafe conditions.

- *Policy 2 Require all developments in areas subject to floods and tsunamis to be located and constructed in a manner that will not create any health or safety hazard.*

Discussion: The project supports the objectives of the Revised General Plan Update. Development of the project will not pose significant adverse impacts to the natural environment and would not have any impacts to the shoreline, or cultural, historic, architectural and archaeological resources.

4.4 City and County of Honolulu Koʻolau Poko Sustainable Communities Plan

Complementing the General Plan are the eight regional plans prepared by the City DPP. Two areas are identified as "development plans," which provide guidance for future growth and development, while the other six areas are identified as "sustainable communities plans" which aim to maintain the region's character and ensure modest development. Each regional plan implements the objectives and policies of the General Plan and provides direction on public policy, investment, and decision- making within each respective region. Together with the General Plan, they guide population and land use growth over a 20- to 25-year time span.

The project is within the Koʻolau Poko Sustainable Communities Plan (Koʻolau Poko SCP) area. The Koʻolau Poko Sustainable Communities Plan was first adopted by Ordinance 97-49 in 1997, and last revised in 2017 (Ordinance No. 17-42). The Koʻolau Poko Sustainable Communities Plan establishes policy to preserve the character and promote sustainable development in the Koʻolau Poko District. This vision for Koʻolau Poko's future is shaped around the following two principal concepts: first, the protection of the communities' natural, scenic, cultural, historic and agricultural resources, and, second, the need to improve and replace, as necessary, the region's aging infrastructure systems. The SCP is intended to guide orderly and coordinated public and private sector development in a manner that is consistent with applicable general plan provisions, although the SCP is not regulatory, and intends to provide a coherent vision for such development.

The Koʻolau Poko Sustainable Communities Plan establishes the region's role in Oʻahu's development pattern by establishing policies for the following land use types: Open Space Preservation; Parks and Recreation; Historic and Cultural Resources; Agricultural Use; Residential Use; Commercial and Industrial Uses; Institutional Uses; and Military Uses. The policies and/or guidelines applicable to the project area provided below:

Residential Uses:

- Modify residential street design to provide emphasis on safe, accessible, convenient and comfortable pedestrian routes, bus stops and bike routes.
- Maintain the predominantly low-rise, low-density, single-family character of the region.
- Protect the integrity of existing residential neighborhoods.

- Establish average density guidelines of 2-6 units maximum per acre in urban fringe areas and 0.2 – 4 units per acre in rural areas.

The proposed project site appears to be located within a designated Community Growth Boundary, as well as a designated urban area, by the Koʻolau Poko SCP. The Koʻolau Poko SCP notes that housing capacity in Koʻolau Poko will be increased only by "Infill development of remaining vacant lands in areas that are already urbanized" and "Subdivision of larger residential lots into smaller parcels at various locations throughout the region."

Further, the Koʻolau Poko SCP states the following policies pertinent to residential development in the region:

- Protect the character of existing residential areas and enhance desirable residential amenities.
- In accordance with the General Plan, increase housing capacity and address the trend toward decreasing household size through the development of new homes on lots presently designated for low-density residential use, and the expansion of existing homes in existing residential neighborhoods.

Discussion:

3. Land Use Policies and Guidelines
3.1.1 Open Space Preservation
3.1.1Policies

- *Protect endangered species and their habitats.*
- *Protect scenic beauty and scenic views and provide recreation.*

3.1.3.2 Shoreline Areas

- *Prohibit the use of shore armoring structures, considering alternative measures such as beach replenishment.*
- *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.*

Discussion: The Koʻolau Poko Sustainable Communities Plan Urban Land Use Map identifies the proposed project site within the community growth boundary in an area designated as low-density residential. The proposed project would not significantly alter the appearance of the area, nor would it affect notable view planes. Construction activities will employ BMPs as discussed throughout this EA to protect water quality and marine species.

4.5 City and County of Honolulu Land Use Ordinance Guidelines

The proposed project site is designated the R-10 zoning district and zoning restrictions are found in ROH Section 21-3.70 and 21-3.70-1 and summarized in Figure 18. The minimum lot size is 10,000 square feet. Multi-unit dwellings are not allowed within this zoning district. The minimum lot width and depth are 65 feet for dwellings and 100 feet for other uses. Required front, side and rear, yards are 10 feet and 5 feet, respectively, for dwellings, and 30 feet and 15 feet, respectively, for other uses. Maximum building area is 50% of the lot area, and maximum height is 25-30 feet.

Subdivision is the subject of ROH Chapter 22 Subdivision of Land. Subdivision of the three lots into the 10 proposed lots has been tentatively approved by the City and County of Honolulu Department of Planning and Permitting, under the following conditions:

- Compliance with applicable comments and recommendations from the State Department of Health
- Compliance with the City and County of Honolulu Engineering Branch to designate easements for the proposed drainage improvements, and to construct the drainage improvements in accordance with the approved construction plan
- Compliance the the City and County of Honolulu Building Division's certification requirement including compliance with the provisions of the Land Use Ordinance
- Submission of the final subdivision map information to the Department of Planning and Permitting

Figure 18. ROH Chapter 12 Residential Districts Development Standards

Table 21-3.2
Residential Districts
Development Standards

Development Standard		District				
		R-3.5	R-5	R-7.5	R-10	R-20
Minimum lot area (square feet)	One-family dwelling, detached, and other uses	3,500	5,000	7,500	10,000	20,000
	Two-family dwelling, detached	7,000	7,500	14,000	Use not permitted	Use not permitted
	Duplex	3,500	3,750	7,000	Use not permitted	Use not permitted
Minimum lot width and depth (feet)		30 per duplex unit, 50 for other uses		35 per duplex unit, 65 for other uses	65 for dwellings, 100 for other uses	100
Yards (feet):	Front	10 for dwellings, 30 for other uses				
	Side and rear	5 for dwellings[1], 15 for other uses			5 for dwellings, 15 for other uses	
Maximum building area		50 percent of the zoning lot				
Maximum height (feet)[2]		25-30				
Height setbacks		per Sec. 21-3.70-1(c)				

[1] For duplex lots, 5 feet for any portion of any structure not located on the common property line; the required side yard is zero feet for that portion of the lot containing the common wall.
[2]Heights above the minima of the given range may require height setbacks or may be subject to other requirements.

Source: ROH Chapter 21, Article 3 Establishment of Zoning Districts and Zoning District Regulations

4.6 Hawai‘i Coastal Zone Management

The Coastal Zone Management Act of 1972 (16 USC Section 1451), as amended through Public Law 104-150, created the coastal management program and the National Estuarine Research Reserve system. The coastal states are authorized to develop and implement a state coastal zone management program. The Hawai‘i Coastal Zone Management (CZM) Program received federal approval in the late 1970's. The objectives of the State's CZM Program articulated in Chapter 205A-2 HRS are to protect valuable and vulnerable coastal resources such as coastal ecosystems, special scenic and cultural values, and recreational opportunities. The objectives of the program are also to reduce coastal hazards and to improve the review process for activities proposed within the coastal zone.

Most recently, amendments to Chapter 205A-2 HRS were adopted on September 15, 2020 through Act 16 (SB2060, SD2, HD2). The following subsections examine the project's conformance with the objectives of the Hawai‘i CZM Law articulated in Parts I, II (Special Management Area), and III (Shoreline Setbacks) of Chapter 205A HRS, with adopted amendments presented below.

4.6.1 Coastal Zone Management

Section 205A-2 Coastal Zone Management Program; Objectives and Policies

(b) Objectives

(1) Recreational Resources

(A) Provide Coastal Recreational Opportunities Accessible to the Public.

(c) Policies

(1) Recreational Resources

(A) Improve coordination and funding of coastal recreation planning and management.

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point 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, artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county authorities; and crediting such dedication against the requirements of Section 46-6.

Discussion: The proposed project would not affect existing public access to coastal recreational resources as the proposed project site is located about 1000 feet from the shoreline and would not prevent any obstruction of coastal access. The proposed project would not affect coastal resources, not would it impact water quality. Construction will be in accordance with State and Federal water quality regulations. Drainage improvements would reduce the potential for polluted stormwater runoff to reach surface water bodies or marine waters, as runoff on the proposed project site would discharge to a drainage easement that is not hydraulically connected to surface waters.

(b) Objectives

(2) Historic Resources

(A) Protect, preserve and, where desirable, restore those natural and man-made historic and pre- historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

(c) Policies

(2) Historic Resources

(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation and display of historic resources.

Discussion: No historic archaeological resources have been identified on the proposed project site, nor are any expected to be present. Compliance with HRS 6E during construction would mitigate potential impacts to resources, should any be discovered during site work.

(b) Objectives

(3) Scenic and Open Space Resources

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

(c) Policies

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline.

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

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

Discussion: As described in *Section 3.9,* the action will not adversely affect vistas or scenic resources in the surrounding area. The project is consistent with the City and County of Honolulu General Plan, Koʻolau Poko Sustainable Communities Plan, and Zoning regulations.

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

Discussion: The project would not affect coastal ecosystems. Potential adverse construction phase impacts would be mitigated principally through compliance with the National Pollution Discharge Elimination System (NPDES) permit required for construction projects that disturb more than one acre of area.

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

Discussion: The project is consistent with State and County plans and land use regulations,

and furthermore is not a shoreline development. The residential housing project is consistent with the characteristics of the vicinity, which is primarily residential. The project is not anticipated to result in adverse social, visual, and environmental impacts in the coastal zone management area.

(b) Objectives
(6) Coastal Hazards
(A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
(c) Policies
(A) Develop and communicate adequate information about storm wave, tsunami, erosion, subsidence, and point and nonpoint pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;
(C) Ensure that developments comply with requirements of the National Flood Insurance Program; and
(D) Prevent coastal flooding from inland projects.

Discussion: The proposed project supports the objectives and policies with regards to coastal hazards, is not located in a flood area, and would not be impacted by coastal flooding and other coastal hazards.

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

Discussion: The project supports the objectives and policies with regards to managing development in coastal areas. This EA is prepared in accordance with HRS, Chapter 343 and complies with the requirements for assessing and communicating the potential short and long-term impacts of the proposed project.

(b) Objectives
(8) Public Participation
(A) Stimulate public awareness, education, and participation in coastal management.
(c) Policies
(A) Promote public involvement in coastal zone management processes;
(B) Disseminate information on coastal management issues by means of educational

materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

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

Discussion: Public participation is a requirement of the Chapter 343 HRS environmental review process. The State Office of Planning, Environmental Review office, formerly the Office of Environmental Quality Control, is the governing agency of EA publications, and makes available all EAs for public review and comment. The public is provided 30 days to submit comments on the Draft EA. Information regarding the coastal issues and processes is publicly provided in the EA. Consulted parties in the process are also encouraged to provide input regarding the project during the Draft EA. Following the EA process, the public will have another opportunity to comment on the project during the SMA permit application process, which requires a public hearing.

(b) Objectives

(9) Beach Protection

(A) Protect beaches for public use and recreation.

(c) 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 erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities;

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

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

(E) 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 project would not involve construction on or near the shoreline, nor would it involve any impacts to coastal access, as it is not located near the shoreline.

(b) Objectives

(10) Marine resources

(A) Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

(c) Policies

(A) Ensure 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 management 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) 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;

(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

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

Discussion: The project will not adversely affect marine resources. Appropriate BMPs as discussed throughout this EA will be used during construction to prevent the release of materials that have the potential to be released to the environment and affect coastal resources.

4.6.2 Special Management Area

Each county is responsible for designating a Special Management Area that extends inland from the shoreline. Development within the SMA is subject to County approval to ensure the proposal is consistent with the policies and objectives of the Hawai‘i CZM Program. Guidelines from Chapter 205A-26 are used to evaluate projects within the SMA.

Section 205A-22 Definitions

"Development" means any of the uses, activities, or operations on land or in or under water within a special management area that are included below:

(1) Placement or erection of any solid material or any gaseous, liquid, solid, or thermal waste;

(2) Grading, removing, dredging, mining, or extraction of any materials;

(3) Change in the density or intensity of use of land, including but not limited to the division or subdivision of land;

(4) Change in the intensity of use of water, ecology related thereto, or of access thereto; and

(5) Construction, reconstruction, demolition, or alteration of the size of any structure

"Development" does not include the following:

(1) Construction or reconstruction of a single-family residence that is less than seven thousand five hundred square feet of floor area and is not part of a larger development;

(2) Repair or maintenance of roads and highways within existing rights-of-way;

(3) Routine maintenance dredging of existing streams, channels, and drainage ways;

(4) Repair and maintenance of underground utility lines, including but not limited to water, sewer, power, and telephone and minor appurtenant structures such as pad

mounted transformers and sewer pump stations;
(5) Zoning variances, except for height, density, parking, and shoreline setback;
(6) Repair, maintenance, or interior alterations to existing structures;
(7) Demolition or removal of structures, except those structures located on any historic site as designated in national or state registers;
(8) Use of any land for the purpose of cultivating, planting, growing, and harvesting plants, crops, trees, and other agricultural, horticultural, or forestry products or animal husbandry, or aquaculture or mariculture of plants or animals, or other agricultural purposes;
(9) Transfer of title to land;
(10) Creation or termination of easements, covenants, or other rights in structures or land;
(11) Final subdivision approval; provided that in counties that may automatically approve tentative subdivision applications as a ministerial act within a fixed time of the submission of a preliminary plat map, unless the director takes specific action, a special management area use permit if required, shall be processed concurrently with an application for tentative subdivision approval or after tentative subdivision approval and before final subdivision approval;
(12) Subdivision of land into lots greater than twenty acres in size;
(13) Subdivision of a parcel of land into four or fewer parcels when no associated construction activities are proposed; provided that any land that is so subdivided shall not thereafter qualify for this exception with respect to any subsequent subdivision of any of the resulting parcels;
(14) Installation of underground utility lines and appurtenant aboveground fixtures less than four feet in height along existing corridors;;
(15) Structural and nonstructural improvements to existing single-family residences, where otherwise permissible;
(16) Nonstructural improvements to existing commercial structures; and
(17) Construction, installation, maintenance, repair, and replacement of emergency management warning or signal devices and sirens; provided that whenever the authority finds that any excluded use, activity, or operation may have a cumulative impact, or a significant environmental or ecological effect on a special management area, that use, activity, or operation shall be defined as "development" for the purpose of this part."

Discussion: The proposed project is regulated under the Special Management Area ordinance ROH Chapter 25.

As discussed in Section 3.3, the proposed project site will not be vulnerable to passive flooding or annual high wave flooding under both the 0.5-foot and 3.2-foot scenarios. The site could be exposed to erosion with 0.5 to 3.2 feet of sea level rise. The results of the erosion model represent the combined results of measured, historical erosion rates and the compounding impacts of projected higher water levels associated with projected sea level rise.

Section 205A-26 Special Management Area Guidelines
(1) All development in the special management area shall be subject to reasonable terms and conditions set by the authority in order to ensure:
(A) Adequate access, by dedication or other means, to publicly owned or used beaches,

recreation areas, and natural reserves is provided to the extent consistent with sound conservation principles;

(B) Adequate and properly located public recreation areas and wildlife preserves are reserved;

(C) Provisions are made for solid and liquid waste treatment, disposition, and management that will minimize adverse effects upon special management area resources; and

(D) Alterations to existing landforms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.

Discussion: The project will not adversely affect access to publicly owned or used beach, recreation, and natural areas. Shoreline access will not be affected by the project. During construction, potential effects to water quality will be mitigated through employment of BMPs to control potential sediment and stormwater runoff.

(2) No development shall be approved unless the authority has first found:

(A) That the development will not have any substantial adverse environmental or ecological effect, except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health, safety, or compelling public interests. Such adverse effects shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect, and the elimination of planning options;

(B) That the development is consistent with the objectives, policies, and special management area guidelines of this chapter and any guidelines enacted by the legislature; and

(C) That the development is consistent with the county general plan and zoning. Such a funding of consistency does not preclude concurrent processing where a general plan or zoning amendment may also be required.

Discussion: The proposed project would not have any substantial adverse environmental or ecological effects, as discussed in Section 5.0 Significance Criteria. The majority of the proposed project site is within the SMA as delineated by the City and County of Honolulu. The proposed project is consistent with the objectives, policies, and special management area guidelines of this chapter and any guidelines enacted by the legislature and is also consistent with the county general plan and zoning.

(3) The authority shall seek to minimize, where reasonable:

(A) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;

(B) Any development which would reduce the size of any beach or other area usable for public recreation;

(C) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management areas and the mean high tide line where there is no beach;

(D) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and

(E) Any development that would adversely affect water quality, existing areas of open water free of visible structures and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land."

Discussion: The project does not involve dredging, filling, or alterations to surface waters, nor would it reduce the size of any beach or area usable for public recreation. During construction BMPs would be employed to minimize potential impacts to water quality. In order to minimize the possibility of spill hazards during construction, emergency spill treatment, storage, and disposal of all hazardous materials will be explicitly required to meet all State and County requirements and the "Best Management Practices" for hazardous materials shall be adhered to:

- Onsite storage of the minimum practical quantity of hazardous materials necessary to complete the job
- Fuel storage and use will be conducted to prevent leaks, spills, or fires.
- Products will be kept in their original containers if possible, and original labels and safety data will be retained.
- Manufacturer's instruction for proper use and disposal will be strictly followed and will adhere to all applicable regulations.
- Onsite vehicles and machinery will be monitored for leaks and receive regular maintenance to minimize leakage.
- Construction materials, petroleum products, waste, debris, herbicides, pesticides, and fertilizers will be prevented from blowing, falling, flowing, washing or leaching into the ground surface.
- Fueling of construction equipment will be restricted to areas designated for that purpose and protected against spills. Drip pans or absorbent pads will be placed under vehicles/equipment if being fueled in areas other than impervious surfaces.
- All vehicles that regularly enter and leave the site will be fueled off-site.
- All spills will be cleaned up immediately after discovery, using absorbent materials that will be properly disposed of.
- Regardless of size, spills of toxic or hazardous materials will be reported to the appropriate governmental agency.
- Should spills occur, the spill prevention plan and cleanup procedures will be adjusted to include measures to prevent spills from reoccurring.

5. FINDINGS SUPPORTING ANTICIPATED DETERMINATION

The applicant anticipates that the Department of Planning and Permitting will determine that the proposed project will not adversely impact the environment; that an impact will be minimal, and that the agency will issue a Finding of No Significant Impact (FONSI). This determination will be reviewed based on the analysis of environmental impacts of the Draft EA, taking into consideration comments to the Draft EA.

Chapter 200 Environmental Impact Statement Rules of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (Section 11-200-12). The relationship of the proposed project to these criteria is discussed below.

1. **Irrevocably commit a natural, cultural, or historic resource.** No valuable natural or cultural resources would be committed or lost. The proposed project site does not contain any listed threatened or endangered plant or animal species. No native ecosystems would be adversely affected. No adverse impact upon endangered species would occur. Due to past uses no historic sites are present on the property or would otherwise be affected. No valuable cultural resources and practices such as shoreline access, hunting, gathering, or access to ceremonial sites would be affected in any way.

2. **Curtail the range of beneficial uses of the environment.** No restriction of beneficial uses would occur by residential use of the proposed project site. The proposed project would maintain the drainage easement located on a portion of the site.

3. **Conflict with the State's environmental policies or long-term environmental goals established by law.** The State's long-term environmental policies are set forth in Chapter 344, HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. This proposed project is environmentally benign and is consistent with the State's long-term environmental plans.

4. **Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and the State.** The project would not have any substantial effect on the economic welfare, social welfare, or any adverse effect on cultural practices on the community or the State of Hawaii.

5. **Have a substantial adverse effect on public health.** The project would not affect public health and safety in any way. Wastewater would be treated by individual wastewater systems permitted by the State Department of Health.

6. **Involve adverse secondary impacts, such as population changes or effects on public facilities.** The proposed project is small in scale, it would not produce any adverse secondary impacts, such as significant population changes, or adverse effects on public facilities.

7. **Involve a substantial degradation of environmental quality.** The proposed project is of small scale, is environmentally benign, and would not contribute to environmental degradation.

8. **Be individually limited, but cumulatively have substantial adverse effects upon the environment or involve a commitment for larger actions.** The adverse effects of construction of eight single-family dwellings, in addition to the existing two dwellings, are minor and limited to temporary disturbance to traffic, air quality, noise, and visual quality during construction. Long-term use of the residences would not result in significant adverse short- or long-term environmental impact or involve a commitment for a larger action. The proposed project is consistent with surrounding uses, which are largely residential. The proposed project is not related to any other project or larger action.

9. **Substantially affects a rare, threatened or endangered species, or its habitat.** Rare, threatened or endangered flora or fauna are not found on the project site. Several such species may transit the proposed project site and mitigation is recommended to minimize potential impacts to them, including use of shielded lighting.

10. **Detrimentally affects air or water quality or ambient noise levels**. The potential for adverse impacts to air quality during the construction phase would be minimized by adherence to Best Management Practices. Noise impacts would be minimized by compliance with County and State noise ordinances.

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 proposed project site is not located on the shoreline, tsunami zone, flood zone, sea level rise exposure area, beach, erosion-prone area, or estuary. The dwellings will be designed and constructed in compliance with the Revised Ordinances of Honolulu (ROH) Chapter 21A Flood Hazard Areas.

12. **Have a substantial adverse effect on scenic vistas and view planes, during day or night, identified in county or state plans and studies.** No scenic view planes or vistas are located nearby that would be affected in any way. The proposed dwellings are very much in character with the neighborhood.

13. **Require substantial energy consumption or emit substantial greenhouse gases.** Minor amounts of energy input and greenhouse gas emission would be required for construction and occupation of the residences.

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Appendix A. Comments Received in Pre-consultation and Responses

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

RICK BLANGIARDI
MAYOR

ALEX KOZLOV, P.E.
DIRECTOR

HAKU MILLES, P.E.
DEPUTY DIRECTOR

August 20, 2021

Mr. Graham Knopp, Principal
GK Environmental LLC
P.O. Box 1310
Honokaa, Hawaii 96727

Dear Mr. Knopp:

Subject: HRS 343-Compliant Environmental Assessment for Project Located at Wailehua Road in Kaneohe for HK Construction

Thank you for the opportunity to review and comment. Our Civil Division has the following comment:

Department of Planning and Permitting (DPP) is the approving City agency for the subdivision. DPP needs to review and approve the drainage report.

We have forwarded your inquiry to the Department of Planning and Permitting @ 650 South King Street, 7th Floor, Honolulu, Hawaii 96813 for their review and comments.

Sincerely,

for Alex Kozlov, P.E.
Director

AK:krn (859287)

cc: Department of Planning and Permitting w/enclosures

BOARD OF WATER SUPPLY

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

August 25, 2021

Mr. Graham Knopp
GK Environmental LLC
P.O. Box 1310
Honokaa, Hawaii 96727

Dear Mr. Knopp:

Subject: Your Letter Dated July 28, 2021 Requesting Comments on the Environmental Assessment Pre-Consultation for a Three-Lot Reconsolidation and Ten Single-Family Dwelling Project off Wailehua Road, Tax Map Key: 4-7-014: 051, 052, & 055

Thank you for your letter regarding the proposed three-lot reconsolidation and ten single-family dwelling project.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply (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.

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

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

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

Pending approval of City and County of Honolulu Department of Planning and Permitting application 2021/Sub-33, the BWS has no additional requirements to the proposed subdivision action.

When the Draft Environmental Assessment for the proposed project is published, an electronic copy, hardcopy, or notification of publishment shall be submitted to BWS.

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

Very truly yours,

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

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

RICK BLANGIARDI
MAYOR

WESLEY T. YOKOYAMA, P.E.
DIRECTOR

MICHAEL O'KEEFE
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
PRO 21-068

August 20, 2021

Mr. Graham Knopp, Principal
GK Environmental LLC
P.O. Box 1310
Honokaa, Hawaii 96727

Dear Mr. Knopp:

SUBJECT: Pre-Assessment Consultation, Preparation of Environmental Assessment for Proposed Development on Wailehua Road, Kaneohe, Oahu, Hawaii (TMKs 4-7-014:052 and 055)

We have reviewed your Pre-Assessment Consultation letter dated July 28, 2021. We have the following comment:

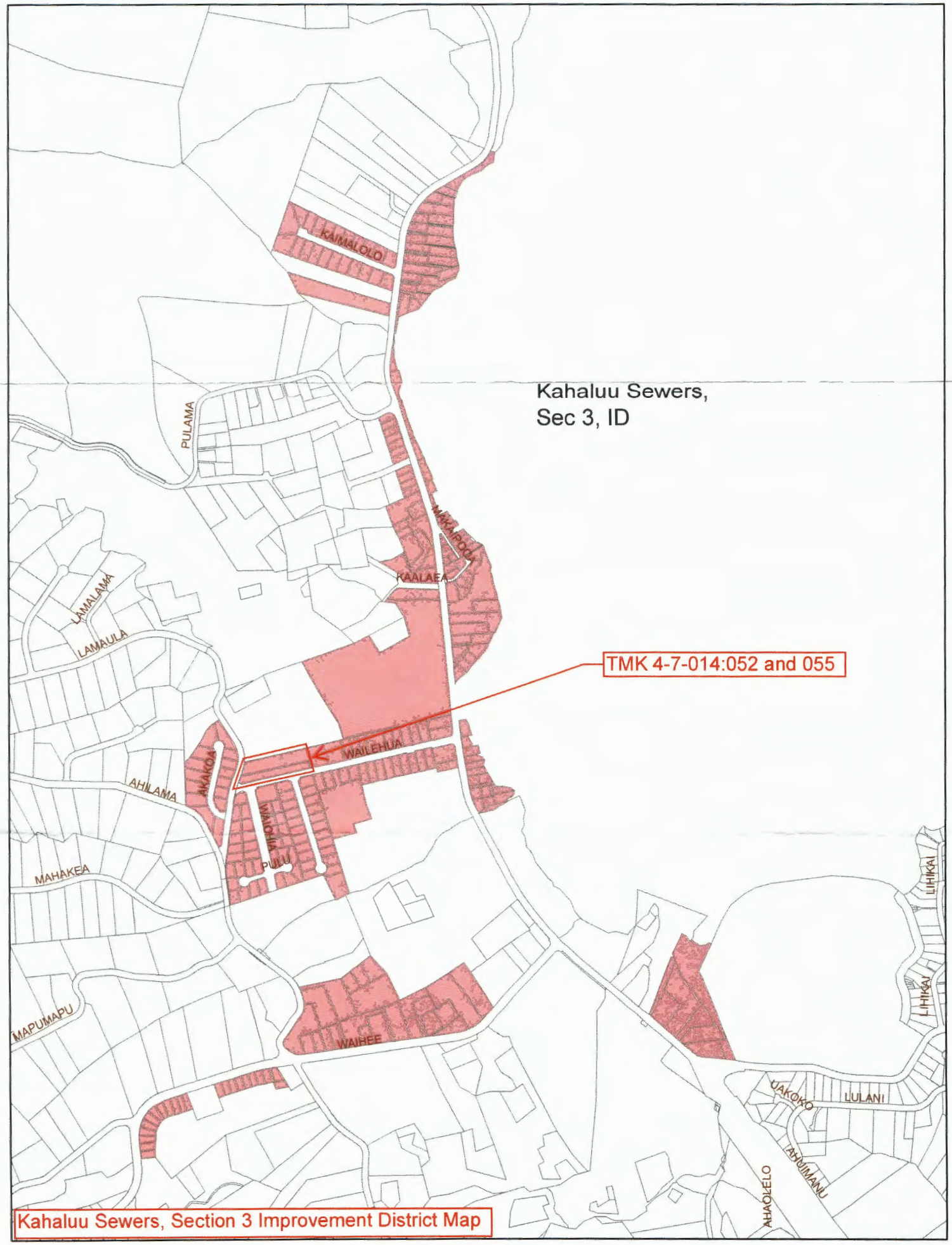
TMKs 4-7-014:052 and 055 may be included in the proposed future Kahaluu Sewers, Section 3 Improvement District (ID) project. See enclosed map for the project location. The Kahaluu Sewers, Section 3 ID Project, if it proceeds, would allow the parcels included in the proposed development to connect to City sewer service. The Kahaluu Sewers, Section 3 ID Project is tentatively scheduled to be done within the next 10 years, subject to City Council approval through the Sewer Improvement District process.

Should you have any questions, please call Jack Pobuk, Branch Chief, CIP Program and Planning, at (808) 768-3464 or by e-mail at jpobuk@honolulu.gov.

Sincerely,

Wesley T. Yokoyama, P.E.
Director

Enclosure


Kahaluu Sewers,
Sec 3, ID
TMK 4-7-014:052 and 055
KAIMALOLO
PULAMA
MAKAPOO
KAALAEA
LAMALAMA
LAMAULA
WAILEHUA
AHILAMA
AKAKOA
MAHAKEA
PUULU
MAPUMAPU
WAIHEE
LIHIKAI
LULANI
UAKOKO
AHAOLELO
Kahaluu Sewers, Section 3 Improvement District Map

phone: (808) 938-8583 P.O. Box 1310 Honoka‘a, Hawai‘i 96727 email: gpknopp@gkenvllc.com

Wesley T, Yokoyama, P.E.
City and County of Honolulu
Department of Environmental Services
1000 Uluohiua Street, Suite 308
Kapolei, HI 96707
November 8, 2021

Dear Director,

Thank you very much for your response to my request for comments as part of the preconsultation process for the Wailehua 1 Housing

We understand from your letter that the proposed project site may within 10 years be able to connect to sewer mains as part of the Kahaluu Sewers, Section 3 ID Project.

We would like to inform you that comments from the community on our project show that there is significant concern about the impacts to water quality from cess pools in the area. As sewerage and wastewater treatment is the best way to minimize such impacts, we would ask that the Kahaluu Sewers, Section 3 ID project be given high priority. We have attached the Kahalu‘u Neighborhood Board #29’s resolution that makes note of overflowing cess pools in the area in order to bring this to your attention.

Thank you for your time and consideration.

Sincerely,

Graham Knopp, Principal
GK Environmental LLC

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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RICK BLANGIARDI
MAYOR

DEAN UCHIDA
DIRECTOR

DAWN TAKEUCHI APUNA
DEPUTY DIRECTOR

EUGENE H. TAKAHASHI
DEPUTY DIRECTOR

August 27, 2021

2021/ELOG-1542(CK)
2021/ELOG-1565

Mr. Graham Knopp, Principle
GK Environmental LLC
P.O. Box 1310
Honokaa, Hawaii 96727

Dear Mr. Knopp:

SUBJECT: Request for Pre-Consultation Comments
Environmental Assessment (EA) for Residence on Shoreline Lot
Wailehua Road - Kaalaea
Tax Map Keys (TMKs) 4-7-014: 051, 052 and 055

This is in response to your letters, received on August 6 and 10, 2021, requesting comments on the scope and content to be addressed in a Draft Environmental Assessment (DEA) that is required under the Special Management Area (SMA) Ordinance, Chapter 25, Revised Ordinances of Honolulu (ROH). The request is to allow for the development of 10 zoning lots with 10 single-family dwelling units in the SMA (Project). The following comments are provided in response to each of these letters:

1. Project History: In order to distinguish the current Project proposal from previously-proposed development at the subject properties, the DEA should include a brief discussion of the status of previous land use and subdivision approvals, development permits, resource agency opinions (such as the previous U.S. Army Corps of Engineers wetlands mapping), and settlement agreements for the subject properties. Of particular note, your letter described the Project site as consisting of TMKs 4-7-014: 052 and 055 (Parcels 52 and 55). However, previous subdivision actions and settlements also include TMK 4-7-014: 051 (Parcel 51). Therefore, the potential impacts of existing and proposed development at Parcels 51, 52 and 55 must be collectively analyzed in the EA and SMA Use permit prepared for the Project. Any Project-related activities proposed to occur outside of Parcels 51, 52 and 55 should also be addressed in the EA and SMA Use Permit application. *We recommend you review the available documentation and permits*

application. We recommend you review the available documentation and permits regarding the history of all three parcels. Copies of documents can be obtained through our Data Access and Imaging Branch, who can be contacted at (808) 768-8272.

2. Early Public Outreach: In order to facilitate understanding of the current Project proposal within the surrounding community, please contact the Kahaluu Neighborhood Board No. 29 as well as any relevant neighborhood associations or commissions to request an opportunity to present the Project proposal at the next available board and association meeting(s). A summary of these outreach efforts and actions taken to address any community concerns should be included in the DEA and ultimately the SMA Use Permit Application.

3. Chapter 21, Land Use Ordinance (LUO), ROH: Proposed development activities must comply with the development standards applicable to the R-10 Residential District. Project compliance with these standards should be presented and evaluated in the DEA. We recommend that the discussion of the Project's compliance with the applicable standards be presented in both written and table format. If exact dwelling unit dimensions are unknown at this time, the maximum planned dimensions should be evaluated. The LUO is available on our website at: www.honoluludpp.org/ApplicationsForms/ZoningandLandUsePermits

4. Onsite Structures: The DEA should describe all existing structures and development on the site, including paving, fencing, drainage, etc. If any existing structures are proposed to remain in place, the DEA should describe where they are located, whether they were lawfully established (permitted), and whether they are located within any required setback areas. Such structures should be included in the DEA's analysis of compliance with the applicable development standards in the LUO.

5. SMA Regulations: The DEA should include in its analysis all of the required components and issue area discussions for an SMA Use Permit under both the SMA Ordinance, Chapter 25, ROH, and the Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes (HRS), as amended under Act 16 (2020).

   Chapter 25, ROH, is available online at:
   www.honolulu.gov/rep/site/ocs/roh/ROH_Chapter_25_article_1_12.pdf

   The revised text of Chapter 205A, HRS, as amended by Act 16 (2020) is available online at:
   https://www.capitol.hawaii.gov/session2020/bills/SB2060_HD2_.htm

6. Long-Term Planning Policies and Objectives: The DEA should address the proposed Project's consistency with the relevant policies of the General Plan and the Koolaupoko Sustainable Communities Plan.

7. Flood Zones and Wetlands: The DEA should identify the subject property's Flood Zone, as mapped by the Federal Emergency Management Agency, and evaluate the proposed Project's compliance with the City's Flood Hazard Areas Ordinance (Chapter 21A, ROH), which is available online at: https://www.honolulu.gov/rep/site/ocs/roh/ROH_Chapter_21A_.pdf

   The DEA should also discuss the history of wetlands on and around the site and describe the current condition of the site.

8. Coastal Hazards: Although the Project site is not a shoreline lot, it is located relatively close to the shoreline and along a drainage system leading to the Pacific Ocean. Therefore, it may be susceptible to coastal hazards related to global climate change. Mayor's Directive 18-2, issued on July 16, 2018, requires all City departments and agencies to use the Hawaii *Sea Level Rise (SLR) Vulnerability and Adaptation Report*, the *SLR Guidance* and the *Climate Change Brief* in planning decisions. The recent amendments to Chapter 205A, HRS, under Act 16 (2020), further reiterate the need to evaluate potential impacts related to coastal hazards and SLR. As such, both the DEA and subsequent SMA Use Permit application should evaluate the site's existing topographic, geologic, and shoreline environment, and show whether and how a proposed development can safely be located outside of the areas subject to coastal hazards. The analysis should describe potential impacts and mitigation measures associated with implementation of the Project including, but not limited to, the following.

   - SLR - Potential impacts relating to SLR at the subject property, based on review of the State's SLR Exposure Area Mapping Tool, of 3.2 feet of SLR by mid-century.

   - Active and Passive Flooding - Potential impacts related to active and passive surface water and/or groundwater flooding, based on existing site conditions and flood mapping projections available on the State's SLR Mapping Tool.

   - Storm Surge - Potential impacts of hurricane storm surge inundation levels at the subject property during Category 1 through 4 hurricane events, based on review of the National Oceanic and Atmospheric Administration's (NOAA) National Hurricane Storm Surge Hazard Maps.

- Potential cumulative impacts of coastal hazards and property inundation should SLR or global climate change exacerbate existing flooding or other coastal hazards that may occur at the subject property.

Relevant sources of information are available online at the following links:

- SLR Vulnerability and Adaptation Report: http://climate.hawaii.gov/wp-content/uploads/2019/02/SLR-Report_Dec2017-with-updated-disclaimer.pdf

- State SLR-XA Mapping Tool: www.pacioos.hawaii.edu/shoreline/slr-hawaii/

- Guidance for Using the SLR-XA: https://climate.hawaii.gov/wp-content/uploads/2020/12/Guidance-for-Using-the-Sea-Level-Rise-Exposure-Area.pdf

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

- NOAA Storm Surge Mapping tool: https://www.nhc.noaa.gov/nationalsurge/

9. Historic and Archeological Resources: Please be advised that in December 2020, the State Historic Preservation Division (SHPD) began using a new online system to better track consultation requests: https://shpd.hawaii.gov/hicris/landing.

   Because the new tracking system requires agency-to-agency requests, the Department of Planning and Permitting (DPP) has created a generic request letter that consultant's/property owners may use for Projects that will eventually require DPP approval. This letter may be completed by a consultant or property owner and submitted to SHPD directly via their online system to initiate requests before permit applications are submitted to the DPP. The letter includes a general DPP contact number and email, as well as blank fields where the property owner or their consultant can enter their contact information. The generic request letter is available online at: https://tinyurl.com/h7yvc7vp.

10. EA Processing: In the letter received on August 10, 2021, you sought concurrence that because the proposed Project is in the SMA, it requires an EA that is compliant with Chapter 343, HRS. Further, you sought concurrence that

the DPP will be the accepting agency for the EA (Draft and Final). While the Project does not involve one of the triggers contained in Section 343-5, HRS, it does trigger the requirement for preparation of an EA in support of an application for an SMA Use Permit, under Chapter 25, ROH. Therefore, the EA will be a Chapter 25, ROH-triggered review document. Chapter 25-triggered EAs are subject to the same content and procedural requirements as an EA triggered by Chapter 343, HRS, including publication in the Environmental Notice published by the State Office of Planning and Sustainable Development, Environmental Review Branch (ERB; previously the Office of Environmental Quality Control). The DPP will be the accepting agency for the Draft and Final EA, and if accepted, will transmit the EA documentation to the ERB, and issue the finding of no significant impact for the proposed Project.

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

Very truly yours,

FOR: Dean Uchida
Director

KAHALU'U NEIGHBORHOOD BOARD NO. 29
(He'eia Kea, 'Āhuimanu, Kahalu'u, Waihe'e, Ka'alaea, Waiāhole, Waikāne, Hakipu'u, Kualoa)
C/o Neighborhood Commission Office • 925 Dillingham Boulevard, Suite 160 • Honolulu, Hawaii 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www.honolulu.gov/nco

"LET US NOT EVER HAVE AN UNHAPPY MINORITY; RATHER, LET US BUILD A COMMUNITY CONSENSUS."

October 19, 2021

GK Environmental, LLC
P.O. Box 1310
Honoka'a, Hawai'i 96727

RE: Kahalu'u Neighborhood Board #29 Resolution regarding HK Construction Development on Wailehua Road in Ka'alaea (TMK 4-7-014: 051, 052, 055)

Aloha e Graham Knopp,

Last week, in our October 13, 2021 Kahalu'u Neighborhood Board #29 (KNB #29) meeting, our board unanimously passed and approved the attached resolution titled, ***HK Construction Development on Wailehua Road in Ka'alaea (TMK 4-7-014: 051, 052, 055)."*** (attached)

We, the KNB #29, affirm receiving numerous complaints from the community raising concerns about the development and the suitability of the current plan for Individual Wastewater Systems (IWS) on those properties, which historically functioned as a wetland and buffer zone for flooding. In our resolution we call upon federal, state and county agencies to take immediate action in enjoining HK Construction, their DBAs, and their assignees from further work to allow for investigation of these concerns.

Please find the referenced KNB #29 resolution attached and do feel free to contact me if you have any questions or seek additional information.

Me ka ha'aha'a,

Ka'ano'i Walk, Chair
Kahalu'u Neighborhood Board #29

KAHALU'U NEIGHBORHOOD BOARD NO. 29
(He'eia Kea, 'Āhuimanu, Kahalu'u, Waihe'e, Ka'alaea, Waiāhole, Waikāne, Hakipu'u, Kualoa)
Neighborhood Commission Office • 925 Dillingham Boulevard, Suite 160 • Honolulu, Hawaii 96817
PHONE (808) 768-3710 • FAX (808) 768-3711 • INTERNET: http://www.honolulu.gov/nco

"LET US NOT EVER HAVE AN UNHAPPY MINORITY; RATHER, LET US BUILD A COMMUNITY CONSENSUS."

Kahalu'u Neighborhood Board #29 Resolution
HK Construction Development on Wailehua Road in Ka'alaea
(TMK 4-7-014: 051, 052, 055)
October 13, 2021

Whereas, the representatives from the subdistrict of the Kahalu'u Neighborhood Board #29, where the HK Construction development is occurring, have received numerous complaints raising concerns by residents in the area dating back to 2015; and

Whereas, the Kahalu'u Neighborhood Board has provided notice to government agencies of these concerns; and

Whereas, many cesspools and Individual Wastewater Systems (IWS) located in the subdivision across the street from the project at a higher elevation, continue to breach during the winter months and during severe rain events, as evidenced by the acid etching of the respective concrete driveways by the breaching wastewater; and

Whereas, the Hawai'i State Department of Health; Wastewater branch requires that new IWS systems comply with three basic criteria; two of which may not be satisfiable by the HK development:

1) Minimum of three feet vertical separation between the floor of the absorption bed and the underlying water table;
2) A workable percolation rate for an absorption bed to function properly; and

Whereas, the HK property has historically functioned as a wetland; that in its original state, has acted to buffer runoff from severe storm events, and now that it has been filled, may well pose an additional flooding potential on an already floodable area; and

Therefore, Be It Resolved, that the Kahalu'u Neighborhood Board #29 strongly urges the U.S. Army Corps of Engineers, the Hawai'i State Department of Health Wastewater Branch, and the City and County of Honolulu's Department of Planning and Permitting to take immediate steps to enjoin HK Construction and their DBAs and their assignees from further work and to allow for investigation of these concerns.

The Kahalu'u Neighborhood Board #29 PASSED this resolution
by UNANIMOUS vote
at its Wednesday October 13, 2021 Regular Meeting

Submitted by: 

Kaʻanoʻi Walk, Chair

ENVIRONMENTAL LLC

phone: (808) 938-8583 P.O. Box 1310 Honokaʻa, Hawaiʻi 96727 email: gpknopp@gkenvllc.com

Kahaluʻu Neighborhood Board #29
November 8, 2021
Via email: kaanoiwalk@gmail.com

Dear Chair Walk, Members of the Kahaluʻu Neighborhood Board #29 and Community:

Thank you for your interest in the proposed project, and for your specific comments.

I would like to request a meeting with the Kahaluʻu Neighborhood Board #29 to discuss the proposed project in December 2021.

Cess pools are a much greater water quality concern than properly designed and permitted individual wastewater systems. While the efficiency of an IWS may vary, properly designed and permitted IWS are vastly superior to cess pools in terms of nutrient removal. It should be noted that septic systems require maintenance including routine inspection and pumping to operate at design efficiency.

Ultimately, however, the most efficient means of improving potential wastewater impacts to water quality is sewerage and wastewater treatment. In this case, connection to the Ahuimanu Wastewater Treatment plant would be ideal. The City and County of Honolulu Department of Environmental Services has stated that the proposed project will have sewer connections available within the next 10 years as part of the Kahaluu Sewers, Section 3 ID Project, subject to City Council approval through the sewer improvement district. It is important that this sewerage project is completed in order to bring sewerage to the proposed project site and vicinity.
The proposed project would involve no cess pools, as they are not permitted. The proposed project would include individual wastewater systems permitted by the State Department of Health.

The other issue that the Resolution takes on is wetlands. There are no wetlands on the proposed project site, as per the U.S. Army Corps of Engineers jurisdictional determination of December 21, 2020. This applies to the proposed project site, as well as the drainage swale on the north side of the site.

Wetlands perform important “ecosystems services” including positive impacts on water quality, flood control, and often are important in terms of biodiversity. Portions of the proposed project site that were previously delineated as wetlands were not important in terms of biodiversity or water quality and were identified as wetlands only for their soils. The proposed project would preserve the transient drainage ditch located on the north adjoining side of the site.

Please note that the proposed project would include single family dwellings that are very much in character with the surroundings.

Thank you for your time and consideration.

Sincerely,

Graham Knopp, Principal
GK Environmental LLC

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

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

RICK BLANGIARDI
MAYOR

RADE K. VANIC
INTERIM CHIEF

OUR REFERENCE EO-DK

August 16, 2021

SENT VIA EMAIL

Mr. Graham Knopp
gpknopp@gkenvllc.com

Dear Mr. Knopp:

This is in response to your letter of July 28, 2021, requesting comments on the Environmental Assessment for the proposed development and construction of ten single-family homes and drainage improvements from two parcels of land on Wailehua Road in Kahaluu.

The Honolulu Police Department (HPD) recommends that all necessary signs, lights, barricades, and other safety equipment be installed and maintained by the contractor during the construction phase of the project, as Wailehua Road is off of the main Kamehameha Highway which is heavily traversed on a daily basis. The HPD also recommends that adequate notification be made to residents in the area prior to deliveries or possible road closures, as any impacts to pedestrian and/or vehicular traffic may cause issues and disruptions to residents which could lead to complaints.

If there are any questions, please call Major Crizalmer Caraang of District 4 (Kaneohe, Kailua, Kahuku) at 723-8639.

Thank you for the opportunity to review this project.

Sincerely,

DARREN CHUN
Assistant Chief of Police
Support Services Bureau

Gmail

Graham Paul Knopp, Ph.D. <gpknopp@gkenvllc.com>

EA for Wailehua Road single family dwellings project

Liu, Rouen <rouen.liu@hawaiianelectric.com> Fri, Aug 27, 2021 at 9:25 AM
To: "gpknopp@gkenvllc.com" <gpknopp@gkenvllc.com>
Cc: "Kuwaye, Kristen" <kristen.kuwaye@hawaiianelectric.com>

Dear Mr. Knopp,

Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objection to the project. Should Hawaiian Electric have existing easements and facilities on the subject property, we will need continued access for maintenance of our facilities. We appreciate your efforts to keep us apprised of the subject project in the planning process. As the proposed Wailehua Road single family dwellings project comes to fruition, please continue to keep us informed.

Should there be any questions, please contact me at 543-7245.

Thank you,
Rouen Liu
Permit Engineer

Scanned from a Xerox Multifunction Printer.pdf
118K

Gmail

Graham Paul Knopp, Ph.D. <gpknopp@gkenvllc.com>

Honolulu DPP outreach letter for SHPD Consultation

Keller, Christina K <c.keller@honolulu.gov> Wed, Aug 11, 2021 at 9:53 AM
To: "gpknopp@gkenvllc.com" <gpknopp@gkenvllc.com>

Aloha Graham,

Per our discussion yesterday, here is the information regarding use of the SHPD database and the City's pre-signed cover letter. I anticipate your pre-DEA consultation letter will be mailed out within a week.

1. Historic and Archeological Resources: Please be advised that in December 2020, the State Historic Preservation Division (SHPD) began using a new online system to better track consultation requests:

https://shpd.hawaii.gov/hicris/landing.

Because the new tracking system requires agency-to-agency requests, the Department of Planning and Permitting (DPP) has created a generic request letter that consultants/property owners may use for projects that will eventually require DPP approval. This letter may be completed by a consultant or property owner and submitted to SHPD directly via their online system to initiate requests before permit applications are submitted to the DPP. The letter includes a general DPP contact number and email, as well as blank fields where the property owner or their consultant can enter their contact information. The generic request letter is available online at:

https://tinyurl.com/h7yvc7vp.

Christi Keller

City and County of Honolulu

Zoning Regulations and Permits Branch

Department of Planning & Permitting

808.768.8087

Gmail

Graham Paul Knopp, Ph.D. <gpknopp@gkenvllc.com>

HK Construction Project for Wailehua Road, Environmental Assessment

Office of the Chief of Police <hpdchiefsoffice@honolulu.gov> Thu, Aug 19, 2021 at 2:48 PM
To: "Graham Paul Knopp, Ph.D." <gpknopp@gkenvllc.com>

Dear Mr. Knopp:

Thank you for your prompt response and for ensuring our review of the third, adjacent project, TMK (1) 4-7-014: 051, that is included in the parcels that will be consolidated and subdivided.

The HPD has no further comments to offer at this time.

Darren Chun

Assistant Chief of Police

Support Services Bureau

From: Graham Paul Knopp, Ph.D. <gpknopp@gkenvllc.com>
Sent: Thursday, August 19, 2021 8:37 AM
To: Office of the Chief of Police <hpdchiefsoffice@honolulu.gov>
Subject: Re: HK Construction Project for Wailehua Road, Environmental Assessment

[Quoted text hidden]

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

September 03, 2021

LD 0904

Graham Knopp, Principal
GK Environmental LLC
P.O. Box 1310
Honoka'a, HI 96727

Via email: gpknopp@gkenvllc.com

Dear Sirs:

SUBJECT: **Early Consultation for Environmental Assessment for Project at Wailehua Road to Consolidate Two Existing Parcels, Resubdivide into Ten Parcels, and Construct Ten Single-Family Dwellings and Drainage Improvements; Kaneohe, Island of Oahu, Hawaii; TMK: (1) 4-7-014:052 & 055**

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

Attached are comments received from our (a) Engineering Division and (b) Division of Forestry and Wildlife. Should you have any questions, please feel free to contact Barbara Lee via email at barbara.j.lee@hawaii.gov. Thank you.

Sincerely,

Russell Tsuji

Russell Y. Tsuji
Land Administrator

Attachments

Cc: Central Files

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 09, 2021

LD 0904

MEMORANDUM

FROM:

~~TO:~~ **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division *(via email: DLNR.Engr@hawaii.gov)*
_X_ Div. of Forestry & Wildlife *(via email: Rubyrosa.T.Terrago@hawaii.gov)*
___Div. of State Parks
_X_ Commission on Water Resource Management *(via email: DLNR.CWRM@hawaii.gov)*
___Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District *(via email: DLNR.Land@hawaii.gov)*

TO:

~~FROM:~~ Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Early Consultation for Environmental Assessment for Project at Wailehua Road to Consolidate Two Existing Parcels, Resubdivide into Ten Parcels, and Construct Ten Single-Family Dwellings and Drainage Improvements**

LOCATION: Wailehua Road, Kaneohe, Island of Oahu, Hawaii; TMK: (1) 4-7-014:052 & 055

APPLICANT: **GK Environmental LLC on behalf of HK Construction**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **August 31, 2021** to the Land Division at DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov.

If no response is received by the above due date, we will assume your agency has no comments at this time. If you have any questions, please contact Barbara Lee at barbara.j.lee@hawaii.gov. Thank you.

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

Signed: _____
Print Name: Carty S. Chang, Chief Engineer
Division: Engineering Division
Date: Aug 11, 2021

Attachments
Cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/Russell Y. Tsuji

Ref: Early Consultation for Environmental Assessment for Project at Wailehua Road to Consolidate Two Existing Parcels, Resubdivide into Ten Parcels, and Construct Ten Single-Family Dwellings and Drainage Improvements
Location: Walehua Road, Kaneohe, Island of Oahu, Hawaii
TMK(s): (1) 4-7-014:052 & 055
Applicant: GK Environmental LLC on behalf of HK Construction

COMMENTS

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

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

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

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

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: Aug 11, 2021

DAVID Y. IGE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

August 09, 2021

LD 0904

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division *(via email: DLNR.Engr@hawaii.gov)*
_X_ Div. of Forestry & Wildlife *(via email: Rubyrosa.T.Terrago@hawaii.gov)*
___Div. of State Parks
_X_ Commission on Water Resource Management *(via email: DLNR.CWRM@hawaii.gov)*
___Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District *(via email: DLNR.Land@hawaii.gov)*

FROM: Russell Y. Tsuji, Land Administrator *Russell Tsuji*

SUBJECT: **Early Consultation for Environmental Assessment for Project at Wailehua Road to Consolidate Two Existing Parcels, Resubdivide into Ten Parcels, and Construct Ten Single-Family Dwellings and Drainage Improvements**

LOCATION: Wailehua Road, Kaneohe, Island of Oahu, Hawaii; TMK: (1) 4-7-014:052 & 055

APPLICANT: **GK Environmental LLC on behalf of HK Construction**

Transmitted for your review and comment is information on the above-referenced project. Please review the attached information and submit any comments by the internal deadline of **August 31, 2021** to the Land Division at DLNR.Land@hawaii.gov, and copied to barbara.j.lee@hawaii.gov.

If no response is received by the above due date, we will assume your agency has no comments at this time. If you have any questions, please contact Barbara Lee at barbara.j.lee@hawaii.gov. Thank you.

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

Signed: DGS
Print Name: DAVID G. SMITH, Administrator
Division: Division of Forestry and Wildlife
Date: Sep 1, 2021

Attachments
Cc: Central Files

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

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

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

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

August 30, 2021

MEMORANDUM *Log no. 3285*

TO: RUSSELL Y. TSUJI, Administrator
Land Division

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

SUBJECT: **Division of Forestry and Wildlife Comments on the Early Consultation for an Environmental Assessment for a Project at Wailehua Road to Consolidate Two Existing Parcels, Re-subdivide into Ten Parcels, and Construct Ten Single-Family Dwellings**

The Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) has received your inquiry regarding the early consultation for the proposed project at Wailehua Road in Kaneohe on the Island of Oʻahu, Hawaiʻi; TMKs: 4-7-014:052 and 055. The proposed project consists of the consolidation of two parcels, re-subdivision of the new parcel into ten roughly equal parcels, and construction of ten single-familiy dwellings with drainage improvements.

The State listed Hawaiian Hoary Bat or ʻŌpeʻapeʻa (*Lasiurus cinereus semotus*) could potentially occur in the vicinity of the project area and may roost in nearby trees. Any required site clearing should be timed to avoid disturbance during the bat birthing and pup rearing season (June 1 through September 15). During this period, woody plants greater than 15 feet (4.6 meters) tall should not be disturbed, removed, or trimmed. DOFAW prefers that new construction avoid the use of barbed wire; if this is not possible, metal tags or plates should be used on the barbed wire for increased detection by bats.

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

State listed waterbirds including the Hawaiian Duck (*Anas wyvilliana*), Hawaiian Stilt (*Himantopus mexicanus knudseni*), Hawaiian Coot (*Fulica alai*), and Hawaiian Common Gallinule (*Gallinula chloropus sandvicensis*) could potentially occur in the vicinity of the

proposed project site. It is against State law to harm or harass these species. If any of these species are present during construction activities, then all activities within 100 feet (30 meters) should cease, and the bird should not be approached. Work may continue after the bird leaves the area of its own accord. If a nest is discovered at any point, please contact the O‘ahu DOFAW office at (808) 973-9778.

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

DOFAW recommends minimizing the movement of plant or soil material between worksites, such as in fill. Soil and plant material may contain invasive fungal pathogens, vertebrate and invertebrate pests (e.g. Little Fire Ants, Coconut Rhinoceros Beetles), or invasive plant parts that could harm our native species and ecosystems. We recommend consulting the O‘ahu Invasive Species Committee at (808) 266-7994 in planning, design, and construction of the project to learn of any high-risk invasive species in the area and ways to mitigate spread. All equipment, materials, and personnel should be cleaned of excess soil and debris to minimize the risk of spreading invasive species. Gear that may contain soil, such as work boots and vehicles, should be thoroughly cleaned with water and sprayed with 70% alcohol solution to prevent the spread of Rapid ‘Ōhi‘a Death and other harmful fungal pathogens.

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

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

Sincerely,

DAVID G. SMITH
Administrator

Appendix B. U.S. Army Corps of Engineers Jurisdictional Determination

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

December 21, 2020

SUBJECT: Approved Jurisdictional Determination for Wailehua Road Residential Subdivision at TMKs (1) 4-7-014:051, :052 and :055, Kahaluu, Island of Oahu, Hawaii, Department of the Army File No. POH-2015-00119

Angie Kim
Wailehua 1, LLC
905 Factory Street
Honolulu, Hawaii 96819

Dear Ms. Kim:

Based on the April 21, 2020 final rule defining the scope of waters federally regulated under the Clean Water Act, known as the "Navigable Waters Protection Rule" (NWPR), the U.S. Army Corps of Engineers (Corps), Honolulu District, Regulatory Office has reevaluated the approved jurisdictional determination (AJD) issued to you on February 5, 2016 for the unauthorized activities on your Wailehua Road property located in Kahaluu, Island of Oahu, Hawaii (Latitude: 21.46333° N, Longitude: -157.84682° W). This action has been assigned Department of the Army (DA) file number POH-2015-00119. Please reference this number in all future correspondence with our office relating to this determination.

The review area for this AJD comprises the three parcels known as TMKs (1) 4-7-014:051, :052 and :055 and is shown on the enclosed map (Enclosure 1). Based on the NWPR, information submitted to our office by your agent, other available information, and the October 1, 2020 field visit, the Corps has determined there are no waters of the U.S. on the subject site. The basis for this determination can be found in the enclosed AJD form (Enclosure 2).

This determination has been conducted to identify the presence or absence of jurisdictional aquatic resources on your property in the review area, and is valid for five (5) years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

If you object to this determination, you may request an administrative appeal under 33 CFR Part 331. We have enclosed a Notification of Administrative Appeal Options and Process (NAAOP) and Request for Appeal (RFA) form (Enclosure 3). If you wish to appeal this determination, you must submit a completed RFA form within 60 days of the date on the NAAOP to the Corps' Pacific Ocean Division office at the following address:

Kate Bliss
Civil Works and Regulatory Program Manager
U.S. Army Corps of Engineers
Pacific Ocean Division, ATTN: CEPOD-PDC
Building 525
Fort Shafter, Hawaii 96858-5440

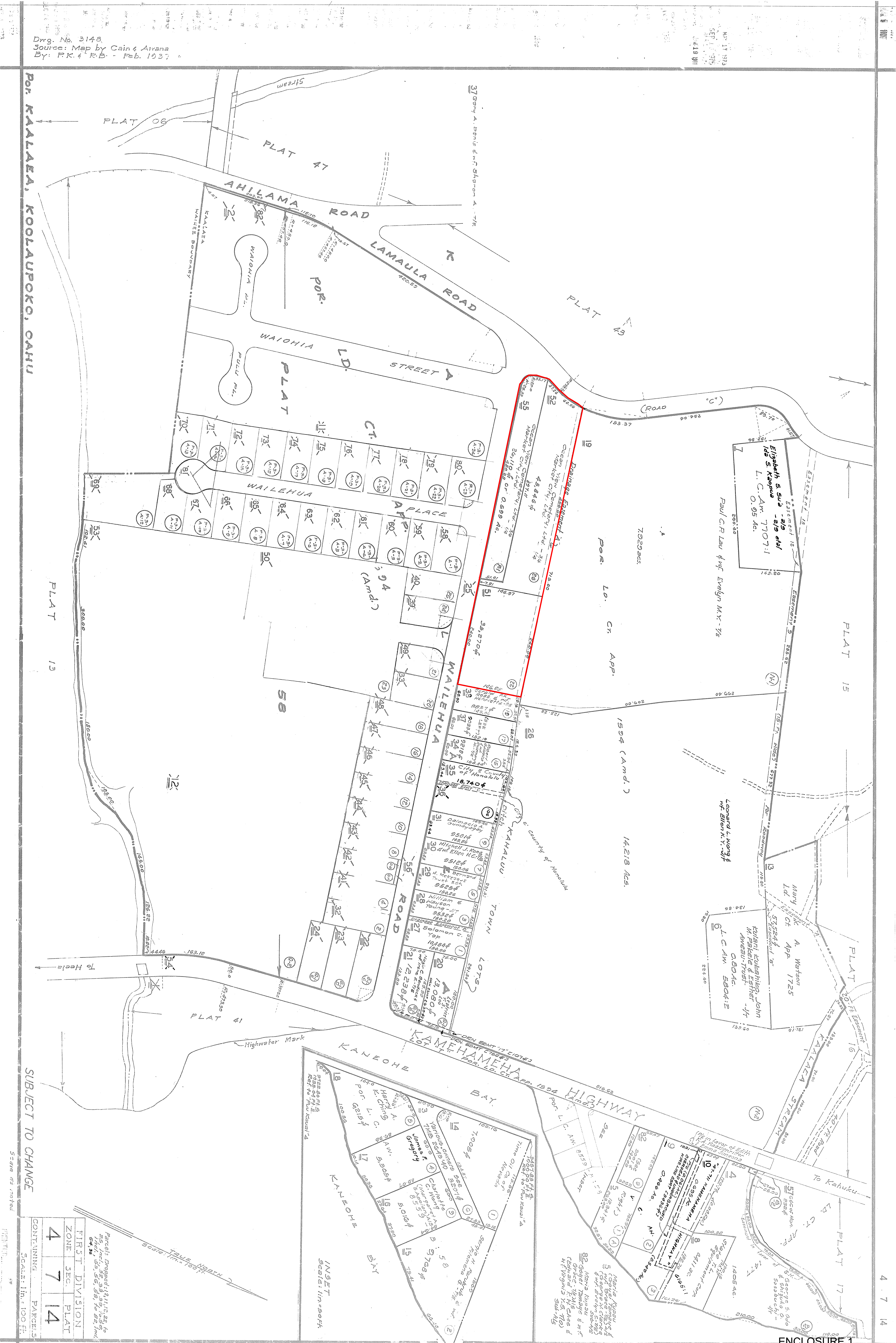
If you do not object to the Corps' AJD, then no further action is required of you. Thank you for your cooperation with the Honolulu District Regulatory Program. If you have questions related to this determination, please contact Susan A. Meyer Gayagas at (808) 835-4599 or via e-mail at susan.a.meyer@usace.army.mil. You are encouraged to provide comments on your experience with the Honolulu District Regulatory Office by accessing our web-based customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. For additional information about our Regulatory Program, please visit our web site at http://www.poh.usace.army.mil/Missions/Regulatory.aspx.

Sincerely,

Linda Speerstra
Chief, Regulatory Office

Enclosures

cc (via email):
John Ford, Tetra Tech



Drg. No. 3148
Source: Map by Cain & Aiana
By: P.K. & R.B. - Feb. 1937
Por. KAALAEA, KOOLAUPOKO, OAHU
AHILAMA ROAD
LAMAULA ROAD
WAIOHIA STREET
WAILEHUA PLACE
WAILEHUA ROAD
KAMEHAMEHA HIGHWAY
KANEOHE BAY
KAALAEA STREAM
PLAT 06
PLAT 47
PLAT 43
PLAT 13
PLAT 15
PLAT 17
PLAT 41
To Heeia
To Kahuku
Highwater Mark
INSET Scale 1in.=50ft.
True North Scale 1in.=100ft.
SUBJECT TO CHANGE
FIRST DIVISION
ZONE SEC. PLAT
4 7 14
CONTAINING PARCELS
SCALE 1in.=100ft.

ENCLOSURE 1

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 12/21/2020
ORM Number: POH-2015-00119
Associated JDs: POH-2015-00119-JAP (herein "2016 AJD")
Review Area Location[1]: State/Territory: Hawaii City: Kahaluu County/Parish/Borough: Honolulu
Center Coordinates of Review Area: Latitude 21.46333 Longitude -157.84682

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- ☐ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters):[3]				
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

[1] Map(s)/figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Wailehua Road Wetlands	1.2	acre(s)	(b)(1) Non-adjacent wetland.	Wailehua Road Wetlands were determined to meet the (b)(1) exclusion based on the rationale provided in Section III.C below and in Exhibit 2.
Wailehua 1 Drainage Feature	685	linear feet	(b)(10) Stormwater control feature constructed or excavated in upland or in a non-jurisdictional water to convey, treat, infiltrate, or store stormwater runoff.	Wailehua 1 Drainage Feature was determined to meet the (b)(10) exclusion based on the rationale provided in Section III.C below and Exhibits 1 and 2.
N/A.	N/A.	N/A.	N/A.	N/A.

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

☒ Information submitted by, or on behalf of, the applicant/consultant: "Draft Conceptual Proposal for Compensatory Mitigation, Offsetting Impacts of an Unauthorized 1.3-acre Fill into Jurisdictional Wetlands by Wailehua 1 LLC", dated April 8, 2019.

This information is and is not sufficient for purposes of this AJD.

Rationale: The information and evidence presented in the draft report is relevant and sufficient for purposes of providing the necessary standards of evidence to support the AJD reconsideration, but the conclusions drawn by the author in the draft report are incorrect because they were based on the Rapanos guidance and not the NWPR.

☐ Data sheets prepared by the Corps: Title(s) and/or date(s).

☒ Photographs: Aerial and Other: Google Earth Pro, UH Manoa Historic Aerial Imagery (USGS 1951, 1960s, 1978), and on-the-ground photographs (2019, 2020).

☒ Corps site visit(s) conducted on: October 1, 2020

☒ Previous Jurisdictional Determinations (AJDs or PJDs): POH-2015-00119, February 5, 2016

☒ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B*.

☒ USDA NRCS Soil Survey: USDA NRCS Online Soil Survey

☒ USFWS NWI maps: Wetands Mapper, retrieved 10/22/2020

☒ USGS topographic maps: 1:24000 Kaneohe, HI

Other data sources used to aid in this determination:

[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	N/A.
USACE Sources	N/A.
Other state/local data (specify)	1) City and County of Honolulu, Stormwater Quality Division – stormwater system database and maps; 2) personal communication with Randall Wakumoto, Branch Head, CCH-SQD; 3) State of Hawaii, City and County Tax Map Keys ((1) 4-7-14:051, 052, 055)
Other Sources	N/A.

B. Typical year assessment(s): The Corps, Honolulu District used the Antecedent Precipitation Tool (APT) to understand whether normal Typical Year conditions (i.e., precipitation levels within the normal periodic range) were present within the Review Area at the time that field assessments were completed for the Wailehua Road project area. The APT output for the JD Review Area is provided as Exhibit 1.

C. Additional comments to support AJD: The Corps has determined that the Wailehua Road Wetland is not an adjacent wetland per 33 CFR 328.(c)(1) and that the subject reach of Wailehua 1 Drainage Feature within the Review Area is a stormwater feature excluded from Corps jurisdiction per 33 CFR 328(b)(10). Rationales for these determinations are summarizsed below and expanded upon in the USACE, Honolulu District "Jurisdictional Reconsideration, Report of Findings: Field Visit & Evaluation, Wailehua 1 LLC Residential Development, Unauthorized Activity, DA File No. POH-2015-00119", dated November 1, 2020 (Exhibit 2):

WAILEHUA ROAD WETLANDS:

Field observations made during site investigations conducted on 10/27/2015, 11/5/2015 and 10/1/2020 confirm the presence an upland barrier/berm between the Wailehua 1 Drainage Feature (also known as Drainage Feature A in the 2016 AJD) and the Wailehua Road Wetlands. This upland barrier/berm appears to be an artificial (manmade) feature that rises an average of 4 to 6 feet above the ground surface elevation and runs longitudinally along the right bank of the Wailehua 1 Drainage Feature before sloping landward into the Wailehua Road Wetlands area. This artificial barrier physically separates the two aquatic features and consequently, the Wailehua Road Wetlands do not abut (touch) the Wailehua 1 Drainage Feature. Furthermore, no structure or features were found within the artificial barrier/berm that provide a direct hydrologic surface connection between the drainage feature and the Wailehua Road Wetlands in a typical year. For these reasons, the Wailehua Road Wetlands are not adjacent wetlands because they do not meet the conditions of 33 CFR 328.3(c)(1). Therefore, the wetlands are non-jurisdictional and not a waters of the U.S.

WAILEHUA 1 DRAINAGE FEATURE:

Wailehua 1 Drainage Features extends approximately 688 linear feet through the Review Area, flowing west to east. The drainage feature exits the Kim property at the Review Area's eastern boundary as it continues to flow an additional 900 linear feet before terminally discharging into Kaneohe Bay, a traditional navigable water. At the time of the October 1, 2020 field visit, the reach of the drainage feature located within the Reivew Area did not exhibit an OHWM and was overgrown with dense vegetation.

Based upon examination of historic and current aerial photographs and the City and County of Honolulu Stormwater System GIS database, the Wailehua 1 Drainage Feature appears to be a feature excavated in uplands to convey stormwater run-off from adjoining roadways and the neighboring development located to the west. As evidenced by the drainage inlet feature that is constructed at the edge of the upslope residential development, stormwater runoff is carried from the development through a concrete culvert underneath Lamaula Road that outlets into what is referred to as Wailehua 1 Drainage Feature at the westernmost boundary of the Review Area (refer to Observation Point #1 in Exhibit 2). The Wailehua 1 Drainage Feature carries stormwater run-off that comingles with other surface water inputs located downstream before eventually disharging into Kaneohe Bay, a navigable in-fact water. While record searches with the City and County of Honolulu Land Division did not reveal precisely when and who constructed the drainage feature, the State of Hawaii tax map keys show the City and County of Honolulu as the easement holder. Some hypothesize the prior landowner, Oceanview Cemetary Lmtd., may have constructed the feature while other evidence suggests the Wailehua 1 Drainage Feature may have first been excavated/constructed during the sugar cane agricultural era at or around the turn of the 19th century. Presently, the feature is identified on the City and County of Honolulu database as a “constructed ditch” that has been incorporated as an integral part of the City and County of Honolulu’s stormwater system in the region.

Within the Review Area, the uppermost reach of the Wailehua 1 Drainage Feature appears to exhibit ephemeral flow, as it conveys stormwater run-off and surface water flows only in direct response to precipitation (rainfall). A qualitative assessment of Wailehua 1 Drainage Feature was performed by extrapolating streamflow duration assessment method (SDAM) protocol from other regional SDAMs, including the Pacific Northwest (Nadeau 2015) and New Mexico (SWQB 2010). The qualitative assessment evaluated 10 physical indicators of flow at four sample points along the drainage feature. The results of the evaluation suggest that Wailehua 1 Drainage Feature supports an ephemeral flow regime and not perennial flow as was originally documented in the 2016 AJD. Overall results of this qualitative evaluation of relevant indicators are summarized below:

(1) Water in channel: Stagnant water was observed in some segments of the 3-foot-wide feature and appeared to be ponded due to the thickness of vegetation within the drainage.
(2) Fish and Other Aquatic Biota: While it may be possible that some fish (e.g., mosquitofish, goby, talapia) migrate upstream from the perennial reach of the Wailehua 1 Drainage Feature during rain events, the drainage feature otherwise does not appear capable of supporting fish due to a lack of flowing water in the channel. In addition, the drainage feature does not support other features characteristic of fish habitat, such as sinuosity or riffle pool sequences. While not observed in the drainage feature during the October 1, 2020 field visit, the presence of marine toad (Rhinella marina) and/or American bullfrog (Lithobates catesbeianus) are expected to inhabit the area and may reproduce and forage within the drainage feature as evidenced by two dead toads observed on the shoulder of Wailehua Road, adjacent to the Kim property in the Review Area.
(3) Benthic macroinvertebrates: Due to the ponding of water in some segments of the drainage feature, the Wailehua 1 Drainage Feature appears capable of supporting benthic macroinvertebrates. As described in the Wailehau 1 LLC report, dated April 8, 2019, the landowner’s consultant examined the Wailehua 1 Drainage Feature and indicated that it is likely to support aquatic invertebrates, including species common to the island of Oahu, such as dragonfly (Pantala flavescens) and damselfly (Enallagma civile). However, during the October 1, 2020 field visit, it was noted the Wailehua 1 Drainage Feature lacked habitat features known to occur in riparian areas where benthic macroinvertebrates are most often observed, such as

sandy channel margins, localized ponding features, dried-out pools, or stream cobbles.
(4) Differences in vegetation: No compositional or density differences in vegetation were observed between the drainage banks and adjacent uplands throughout Wailehua 1 Drainage Feature.
(5) Absence of rooted upland plants in streambed: Rooted plants were observed occurring at consistent degrees of density throughout the streambed of Wailehua 1 Drainage Feature. Refer to photographs contained in Exhibit 2.
(6) Sinuosity: Wailehua 1 Drainage Feature mostly consists of a straight channel that has been subject to infill with accumulated sediments and heavy vegetative growth.
(7) Floodplain and channel dimensions: The channel dimensions are small, measuring approximately three feet in width and on average ½ foot to one foot in depth.
(8) In-channel structure - riffle pool sequences: No riffle pool complexes were observed.
(9) Particle size or stream substrate sorting: Particle sizes within Wailehua 1 Drainage Feature were observed to be similar or comparable to particle sizes in areas close to, but not within, the drainageway. Where stagnant water was observed within the drainage feature, the underlying sediments appeared mucky.
(10) Sediment on plants and debris: No sediment was observed on plants or debris within Wailehua 1 Drainage Feature.

Outside and beyond the Review Area, the downstream reach of the Wailehua 1 Drainage Feature appears to sustain perennial flow, owing to the diverted flows from the Kaalaea watershed that discharge into the Wailehua 1 Drainage Feature below the Kim property (i.e., outside the Review Area). As this downstream segment of the Wailehua 1 Drainage Feature is located outside the Review Area, a complete evaluation of flow regime was not performed.

Based on the foregoing, the reach of the Wailehua 1 Drainage Feature located in the Review Area (i.e., Kim property) has been determined to be a stormwater control feature excavated in uplands to convey stormwater run-off. Therefore, per 33 CFR Section 328(b)(10), this drainage feature is non-jurisdictional and not a waters of the U.S.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Angie Kim, Wailehua 1, LLC	File Number: POH-2015-00119	Date: 12/21/2020

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A. INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.**
- **OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district commander. Your objections must be received by the district commander within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district commander will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district commander will send you a proffered permit for your reconsideration, as indicated in Section B below.**

B. PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

C. PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

D. APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

E. PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Honolulu District, U.S. Army Corps of Engineers Regulatory Office, CEPOH-RO Building 230 Fort Shafter, Hawaii 96858-5440 808-835-4303	Kate Bliss Regulatory Program Manager U.S. Army Corps of Engineers, Pacific Ocean Division Building 525 Fort Shafter, HI 96858-5440 808-835-4626 Kate.m.bliss@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Commanders personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

Appendix C. Paahana (2016) U.S. Army Corps of Engineering, Wetlands Delineation

WETLAND DELINEATION REPORT

FOR A RESIDENTIAL SUBDIVISION AT TMKS (1) 4-7-014:051, :052 AND :055, WAILEHUA ROAD, KANEOHE, ISLAND OF OAHU, HAWAII

DEPARTMENT OF THE ARMY FILE NO. POH-2010-00280

Report Prepared by
Jessie Paahana, Biologist
Honolulu District, USACE
Regulatory Office, CEPOH-RO
Building 230
Fort Shafter, Hawaii 96858-5440

TABLE OF CONTENTS

A. Purpose

The purpose of this report is to document data used to evaluate the presence of waters of the U.S., including adjacent wetlands, subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (Corps) in accordance with the Clean Water Act at the subject property. The conclusions drawn from the data provide the basis for establishing the boundaries of the wetlands delineated on the subject property and the Corps' limit of regulatory jurisdiction as they apply to regulated activities on-site.

B. Site Description, Landscape Setting

The subject property is comprised of three separate, adjoining parcels identified as Tax Map Keys (1) 4-7-014:051, :052 and :055 located at 21.463312 ºN latitude, -157.846969º W longitude, Wailehua Road located in the Haiamoa watershed of the Kahaluu ahupuaa within the Koolaupoko district on the windward side of the Island of Oahu in the State of Hawaii (Figure 1, Appendix A). The previously undeveloped, overgrown property is located in the northeast quadrant of the intersection of Lamaula Road and Wailehua Road. The subject property is owned by Ms. Angie Kim, Wailehua 1, LLC and is being developed by HK Construction Corp.

The subject property is located in the gradually sloping coastal plains situated between the foot of the steep Koolau Mountains to the west and the Kaneohe Bay shoreline of the Pacific Ocean to the east. The landscape slopes in an easterly direction, from the mountain to the sea, conveying surface hydrology towards the ocean. The coastal plain features an abundance of surface streams, stream-side and estuarine wetlands and freshwater springs where subsurface groundwater returns to the surface. As a matter of geographic and landscape position, the windward side of all Hawaiian Islands is subject to near-constant, year-round precipitation as a result of orographic rain, with expected higher rainfall in the winter and spring season.

The site is bordered to the west and to the south by raised, asphalt roadways. The east end of the property is bounded by an existing residential development constructed atop fill, at a higher elevation than the subject property. The road, by nature and in the absence of roadside drainage features to capture storm water, acts as a conduit for sheet flow onto the depressed property. Higher surrounding elevations situate the majority of the property at the toe of the slope, in an area of convergent slopes. The property, akin to the surrounding grade, slopes from a higher elevation at the west end (30-feet) to a lower grade at the east end (11-feet) (Topographic Survey, Appendix D). The west end of the property abutting Lamaula Road features a steep slope into the property that transitions into a gradual slope of 2.75% eastward, representing a nearly level area across the subject property.

The subject property is bordered to the north by an unnamed drainage with terminal discharge approximately 1,000-feet downstream into the Kaneohe Bay. The channel measures, on average, approximately 3-feet wide by 1-foot deep, from bed to top of bank. The channel features thickly overgrown vegetation beginning midway up the bank and onto the top of bank. Located 70-feet higher in elevation, 0.42-miles west

of the subject property and within the same watershed, exists an unnamed freshwater spring as mapped on the USGS topographic map (Figure 3, Appendix A). Approximately 0.25-miles north of the property lies the perennial Kaalaea Stream that features both natural and farmed stream-side wetlands mapped on the USFWS National Wetlands Inventory (NWI) map (USFWS, 2005). Approximately 0.19-miles south of the property lies the perennial Haiamoa Stream featuring adjacent and abutting wetlands also mapped on the USFWS NWI (Appendix D).

C. Site Alterations, Past and Current Land Use

Prior to recent residential development, Koolaupoko was known for some of the most productive agricultural lands on the island, likely owing to the abundant rainfall characteristic of the region. The saturated landscape featured many streams, wetlands and freshwater springs providing irrigation for stream-side, traditional taro fields as well as modern rice paddies (Klieger, et al, 2005). The shift in land use and demand from agricultural to residential gave rise to the trend of filling in wetlands to create desirable fastland. Some of these wetlands have been preserved and continue to produce agricultural crops. The downstream property to the northeast features currently operating, farmed, stream-side wetlands along the left bank of the unnamed drainage.

The subject property has neither been previously developed for residential purposes nor formally managed. Per anecdotal accounts, the center of the site had been used as an undesignated parking lot for a nearby commercial bus company and was accessed by a filled, gravel/asphalt driveway located east of the center of the property constructed perpendicular to Wailehua Road. The areas on-site abutting the road have been used, due to lack of a deterrence, for additional parking for nearby residents. As an unguarded, undeveloped site, it is reasonable to presume the site had been used over time as an undesignated dumping ground

The current landowner has informed the Corps of recent earth-moving activities that have been conducted by the landowner in preparation for development of a residential subdivision consisting of ten single family residence lots. Site preparation activities included grubbing of all on-site vegetation (with the exception of a remnant plant community near the center of the property measuring approximately 0.3 acres) and the placement of 1,000 cubic yards of fill material on-site for construction access by heavy machinery and stockpiling of grading materials. Based on a quantification of recent aerial imagery, it appears the landowner filled an estimated 1.36-acres of the 2.46-acre property. These recent activities have altered the vegetation, soils and hydrology on-site.

D Investigation Methods

To confirm the presence of wetlands at the subject property, Corps staff implemented a three-factor approach, identifying the presence or absence of indicators of hydrophytic vegetation, hydric soil and wetland hydrology. Positive indication of all three parameters is required to confirm presence of a wetland. Procedures and guidance provided in the 1987 Corps of Engineers Wetland Delineation Manual

(citation) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaii and Pacific Islands Region (citation) were used to evaluate data collected in the field.

D.1 Pre-Field Visit Review

Prior to conducting the on-site investigation, the Corps reviewed available resources to provide insight to the existing conditions on-site and inform sample point selection. Characteristics of on-site vegetation, soils and hydrology expected to occur on-site are provided below.

D.1.a Vegetation

Based on aerial and drone imagery, vegetation across the site was densely overgrown with tall grasses. The site also featured a stand of tree species not apparent elsewhere on site spanning the central half of the property, oriented in a southwest to northeast direction. Based on an interpretation of recent drone imagery provided by the landowner dated May 2015 in combination with the June 2015 general observation by Corps staff, it appears the grasses consisted of a mix of California grass (Urochloa mutica), FACW, guinea grass (Megathyrsus maximus), FAC and elephant grass (*Cenchrus purpureus*), FAC with Job's tears (*Coix lachrymal-jobi*), FACW growing most prominently near the drainage channel (Appendix D). As identified from on-site photos taken by the Corps in June 2015 of the remnant plant community on-site the tree species were identified as Juniper-berry, (*Citharexylum caudatum*), UPL, *Macaranga tanarius*, UPL and Scarlet Spiral Ginger (*Costus woodsonii*), FACU. These species likely made up the tree stand that traversed the central corridor of the property. Recent drone imagery and Google Earth Street View reveals a sparsely vegetated, shrub-dominated community along the west, south and east boundaries featuring guinea grass and haole koa (*Leucaena leucocephala*), UPL and lining the old gravel driveway near the center of the property (Figure 4, Appendix A).

D.1.b Soils

The Natural Resources Conservation Service (NRCS) Soil survey (NRCS, 2015) characterizes the soils at the subject property as Pearl Harbor clay along the eastern third of the property, Tropaquepts at the central third of the property and Lolekaa silty clay, 3 to 8 percent slopes along the western third of the property (NRCS Soil Survey, Appendix D)). Pearl Harbor clay is described as consisting of a 12-inch thick surface layer underlain by a 19-inch thick clay layer. Tropaquepts feature a 10-inch thick mucky, silt-loam surface layer underlain by a 5 to 10-inch thick firm to compact silty-clay-loam layer over alluvium. As published in March 2014, the NRCS soil survey identifies both Pearl Harbor clay and Tropaquepts as hydric soils; Lolekaa silty clay is not listed as a hydric soil. A

geotechnical survey conducted for the landowner on 3 Jun 15 consisting of two soil pits taken at parcel 147014051 indicates a 2-foot thick, moist surface layer of medium-stiff elastic silt underlain by very moist, soft, sandy elastic silt. Old fill is presumed to occur on-site based on anecdotal accounts of past use of the property.

D.1.c Hydrology

Standing water was observed along the western, southern and central portions of the property by Corps staff during an informal site visit in June 2015 after the landowner conducted grubbing activities on-site.

In 2015, the Pacific Ocean was subject to an El Nino Southern Oscillation resulting in climatic variability. According to data published by the National Climactic Data Center at the Kaneohe Mauka Station #781 (Western Regional Climate Center, 2006), the region normally receives an average annual rainfall of 76.03-inches of rainfall with an average monthly rainfall of 4.51-inches during the summer "dry" season (May - September) and 7.64-inches during the winter "wet" season (October – April), as averaged from 1949-1998. Recent precipitation summaries recorded by the National OAA (NOAA, 2015) during the months of June to November 2015 indicates the following: many of the windward rainfall totals were in the near to above average range for the month of June. All of the rainfall totals on Oahu were in the near to below average range for the months preceding June through to the end of July. Rainfall increased in August through to November. Nearly all the rain gages on Oahu had near to above average rainfall totals for 2015 through the end of November (Precipitation Summary, Appendix D).

An unnamed drainage flows east along the north border of the property.

The current USFWS National Wetlands Inventory (NWI) map does not recognize any aquatic features on-site.

D.2 On-Site Wetland Investigation

An investigation of aquatic resources on-site was conducted by Corps staff on October 27 and November 5, 2015. Procedures outlined in the Corps of Engineers Wetlands Delineation Manual, 1987 and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaii and Pacific Islands Region, Version 2.0, 2012 were used to determine the presence and extent of wetlands within the subject property. The methodology outlined in the manuals is based upon three essential characteristics of wetlands: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Field indicators of these three characteristics must be present to make a positive wetland determination.

Seven sample plots were established to determine plant species composition, analyze soil pits, and evaluate hydrology (Figure 8, Appendix A) in areas not covered with fill material. In addition to the absence of fill material, sample point locations were selected based on changes in the composition of the plant community presumed to reflect a change in the underlying hydrology and soils. Current Wetland Determination Data Forms from the Hawaii and Pacific Islands Regional Supplement were used to record information gathered from the sample plots. Wetland Determination Data Forms are included in Appendix B. Photos taken on-site by Corps staff are provided at Appendix E.

D.2.a Vegetation

Plant species at each sample plot were identified, percent cover for each dominant species was visually estimated and the indicator status as established in the Hawaii 2014 Regional Wetland Plant List (Lichvar, et. al, 2014) recorded on the data sheet. Plot size was primarily dependent on the encroaching adjacent fill boundary and secondarily in relation to changes in composition of the plant community. Where significant changes to the composition of the plant community were observed, such as introduction of a different species of a different indicator status, a separate sample point was established and evaluated. Sample points ranged from a 100-square foot rectangular plot to a 30-foot diameter circular plot. The subject property primarily featured an herb stratum, lacked both sapling/shrub and woody vine strata and only within the remnant plant community featured a tree stratum. If a plant was not immediately identifiable in the field, a representative sample was collected and identified in the office using resources available to the Corps. Hydrophytic vegetation indicators used were the Dominance Test and the Prevalence Test. All observed vegetation, with the exception of the remnant plant community west of the center of the property, represents regrowth since the site was mechanically grubbed in May 2015 (Figure 5, Appendix A).

On-site survey of plant species confirmed dominance by grass species (*U. mutica, M. maximus, C. purpureus, C. lachrymal-jobi*) with a single, remnant tree stand of (*C. caudatum*, *M. tanarius*) as interpreted on recent drone imagery. In addition, the following hydrophytic species were observed on-site: *Ludwigia octovalvis* (OBL), *Cyperus difformis (OBL)*, *Cyperus polystachyos* (FACW), *Momordica charantia (FAC) and Ipomoea alba (FAC).*

Observed filled areas on-site created atypical vegetation situations. The results of that analysis are incorporated into Section E below.

The following sample points featured hydrophytic vegetation: SP1, SP3, SP4, SP1a, SP2a and SP3a. SP2, located in the southeast corner of the

property between the fill footprint and Wailehua Road, was absent of vegetation during the site investigation.

D.2.b Soils

In order to determine the presence or absence of hydric soils, soil samples were collected at each representative sample plot using an 18-inch long spade. Soil profiles were inspected to a depth of at least 15 inches and analyzed for soil matrix color, texture and the presence of redoximorphic features. Soil hue, value and chroma were determined using the Munsell soil color charts (Munsell, 2000). Data collected was analyzed using the Hydric Soil Indicators developed by the NRCS and published in the regional supplement. The only hydric soil indicator observed at the subject property included Redox Depressions.

Soil samples across the property revealed the soils consist of a clay/loam texture, absent of sandy soils, aligning with the designation on the NRCS soil survey. The composition of the soil profile west of the center of the property featured a very mixed, saturated appearance. Redoximorphic features occurring as soft masses with diffuse, undefined boundaries were common throughout the matrix. The soil composition along the eastern half of the property was very different, much more compacted, some redoximorphic features occurring as soft masses, no indication of saturation and featuring a nearly impenetrable, compacted clay layer at 15-inch depth. Old fill material consisting of angular rock and hardened redox nodules could be detected throughout the profile near the drainage.

Soil samples at SP2 and SP3 could not be collected as the surface layer featured old asphalt fill that could not be penetrated by the soil spade. SP4 soil sample could not be extracted as the surface was ponded by up to six inches of water; extraction of a clean, legible soil profile would not have been practical.

Observed filled areas on-site created atypical soil situations. The results of that analysis are incorporated into Section E below.

The following sample points featured positive indicators of hydric soil: SP1a, SP2a and SP3a, specifically, primary indicator (F8), Redox Depressions. The presence of soils meeting the NRCS' definition of hydric soils was presumed at SP4; SP4 featured standing water and a dominance by FACW and OBL hydrophytic vegetation. SP1 did not meet the technical requirements of any of the indicators of hydric soils. Hydric soil indicators were presumed absent at SP2 and SP3, both of which featured an impenetrable asphalt surface layer.

D.2.c Hydrology

The presence of wetland hydrology indicators described in the regional supplement were noted for each of the sample points. Wetland hydrology was observed at all points west of the center of the property and absent along the eastern half of the property. Primary indicators found at various sample plots along the western half of the property included surface water, high water table, saturation, iron deposits and presence of reduced iron. Secondary indicators found at all sample points included geomorphic position and at some, FAC-Neutral Test. A positive indication of at least two secondary indicators is required to determine presence of wetland hydrology

Due to the landscape position of the subject property in a localized depression surrounded by areas of higher elevation to the west, south and east and at the base of convergent slopes, the property lies in a geomorphic position subject to natural accumulation of hydrology. Accordingly, all sample points on-site meet the wetland hydrology secondary indicator (D2), Geomorphic Position. Sample points located near the drainage to the north do not feature near surface wetland hydrology as the free flowing drainage depresses the water table within a certain lateral distance or zone of influence parallel to the channel.

Observed filled areas on-site created atypical hydrology situations. The results of that analysis are incorporated into Section E below.

The following sample points featured positive indicators of wetland hydrology: SP4, SP1a, SP2a and SP3a. SP4 featured primary indicators (A1), Surface Water and (B4), Algal Mat. SP1a, SP2a and SP3a featured primary indicators (A2), High Water Table and (A3), Saturation. All above sample points featured primary indicator (B5), Iron Deposits and two secondary indicators: (D2), Geomorphic Position and (D5), FAC-Neutral Test. Aside from a single secondary indicator of wetland hydrology, geomorphic position, SP1, SP2 and SP3 did not feature any primary or any other qualifying secondary indicators of wetland hydrology.

D.3 Atypical Situations, In-Office Assessment

The recent unauthorized mechanical vegetation removal and discharge of fill material at the project site has resulted in an atypical situation such that positive indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology could not be found due to effects of recent human activities. To evaluate the soils, vegetation and hydrology occurring on-site prior to the disturbance Corps staff implemented the method described in Part IV, Section F of the Corps manual to address atypical situation. The assessment involves describing the type of alteration, the effect the alteration had on vegetation, soils and hydrology and a discussion of the vegetation, soils and hydrology on-site prior to the disturbance based on sources of evidence such as aerial

photography, onsite inspection, previous site inspections, adjacent, undisturbed reference areas, anecdotal accounts and local resource records, surveys and maps. The results of the in-office assessment are documented on the Corps' Data Form 3: Atypical Situations (Appendix C) and incorporated in Section E, below

E. Description of Wetlands and Other Waters of the U.S.

Based on the results of the pre-field visit review, the observations and data collected on-site by Corps staff on October 27 and November 5, 2015 and the results of the in-office assessment consequent to recent disturbances on-site, the Corps identified a 685-foot long unnamed perennial stream and two wetlands totaling 1.20-acres adjacent to the stream at the 2.46-acre subject property. These conclusions are made in accordance with the methods and guidance provided in the Corps' wetland delineation manual and applicable regional supplement. No aquatic resources were identified at the subject property on the current USFWS NWI map.

A graphical representation of these aquatic resources is provided as Figure 9, Appendix A. A summary description of waters of the U.S. inventoried at the subject property is provided in the table below.

E.1 Unnamed Drainage

The unnamed drainage that flows along the north border of the property measures, on average, approximately 3-feet wide by 1-foot deep, from top of bank to bed. The tributary features a defined, natural bed and banks and although densely overgrown with vegetation, the change in plant community marks the ordinary high water mark. Based on site visits by the Corps in June, October and November, during the wet and dry season, and the climate of the region, the channel flows year round to support immediate, downstream flow contribution to the farmed streamside wetlands along the left bank of the adjacent property to the northeast. The perennial drainage terminally discharges approximately 1,000-feet downstream into the Kaneohe Bay of the Pacific Ocean.

E.2 Wetlands

The results from the field investigation and the in-office assessment indicate the subject property features two areas on-site that meet the Corps' definition of a wetland. The wetland occurring along the western end of the property is identified herein as Wetland 1, the wetland occurring along the eastern end of the property, Wetland 2. Further information is provided below.

E.2.a Wetland 1

A wetland, entirely contained within the subject property, exists along the western two-thirds of the property. It spans a total of 0.97-acres and consists of both filled wetlands and unfilled wetlands bordered to the west,

south and east by fill. The center of Wetland 1 features a ponded depression. This determination was based primarily on the results of SP4, SP1a, SP2a and SP3a and to a lesser degree, as reference for interpretation of aerial and drone imagery for filled areas, consistent with the method provided in Part IV, Section F of the Corps manual. Wetland 1 is not identified as a wetland on the NWI map, but can be characterized, based on its features, under the Cowardin system as Palustrine Emergent.

Hydrophytic Vegetation. Vegetation observed in Wetland 1 was dominated by FACW species (U. mutica), with OBL species (Ludwigia octovalvis) present in the ponded area and FAC species (M. maximus and C. purpureus) along the western slope. No FACU or UPL species were identified in this area. The plant community in this area met the Dominance and Prevalence Test. A review of aerial and drone imagery, particularly in areas covered by fill, indicates a similar hydrophytic plant community as is present at SP4 and SP1a.

Hydric Soil. Soils in Wetland 1 are mapped as Lolekaa silty clay loam (non-hydric), Tropaquepts (hydric) and Pearl Harbor clay (hydric). Soil samples featured prominent redox concentrations (>5%) occurring as soft masses that is Wetland 1 soils met hydric soil indicator (F8), Redox Depressions because the soils occur within a closed depression and feature a layer at least two inches thick of prominent redox concentrations (>5%) starting in the top six inches of the profile that extends beyond the top six inches of the profile. A review of aerial and drone imagery, particularly in areas covered by fill, features similar vegetation as is present at SP4 and SP1a and that also features hydric soils.

Wetland Hydrology. Primary hydrology indicators recorded in Wetland 1 include (A1), Surface Water and (B4) Algal mat in the depression located at the east end, (A2) High Water Table and (A3) Saturation west of the depression and (B5) at all sample locations. With reference to SP 4 and SP1a, areas covered with fill that previously featured a hydrophytic plant community were presumed to feature wetland hydrology, typical of the landscape position of the subject property.

E.2.b Wetland 2

A smaller wetland, entirely contained within the subject property, exists along the eastern one-third of the property and east of the remnant, paved driveway. It spans a total of 0.22-acres and was recently completely covered by fill. As physical observation of the vegetation, soils and hydrology was inhibited by fill in this area, characterization of these parameters was based entirely on aerial and drone imagery with reference to like sample points on-site in accordance with the atypical situations procedure described in the Corps manual (Part IV, Section F). Wetland 2 is not identified as a wetland on the NWI map, but can be characterized,

based on indication of the naturally occurring vegetation, soils and hydrology on-site, under the Cowardin system as Palustrine Emergent.

Hydrophytic Vegetation. Vegetation in Wetland 2 was completely covered by fill at the time of the Corps' field investigations. The vegetation could not be identified based solely on observation in the field. Characterization of the vegetation under the fill was based on aerial and drone imagery prior to the fill activities that indicate the plant community was of a similar composition as observed in SP4 and SP1a. Similar to SP4 and SP1a, the grass-dominated area east of the center of the property were characterized as having hydrophytic vegetation.

Hydric Soil. Soils in Wetland 2 were completely covered with fill at the time of the Corps' field investigations and soil samples could not be retrieved from beneath the fill in this area. Past NRCS soil survey indicates soils in Wetland 2 are mapped as Pearl Harbor clay, a hydric soil. Aerial and drone imagery cannot provide a clear depiction of the previously existing soils in this area as the undeveloped property lays overgrown with vegetation. Instead, the aerial and drone imagery can give indication of the plants that the soils on-site support. As depicted in the aerial and drone imagery, the vegetation in this area appear of a similar plant community as was observed at SP4 and SP1a. SP4 and SP1a feature hydrophytic vegetation supported by hydric soils. Likewise, the hydrophytic vegetation within Wetland 2 is supported by hydric soils.

Wetland Hydrology. Indications of wetland hydrology in this area covered by fill could neither be discerned in the field nor using aerial or drone imagery. The property occurs in a landscape position with a propensity to concentrate and accumulate hydrology on-site. A review of aerial and drone imagery indicates this area supports the growth of hydrophytic vegetation as is similar to SP4 and SP1a. SP4 and SP1a features hydrophytic vegetation, hydric soils and wetland hydrology. The growth of hydrophytic vegetation supported by hydric soils in an area with a propensity for concentration of hydrology is indicative of wetland hydrology in this area, as is observed elsewhere on-site.

E.3 Waters of the U.S.

The Unnamed Drainage with terminal discharge into the Kaneohe Bay, a traditionally navigable water, is a water of the U.S. The wetlands occurring along the right bank of the channel at the subject property are considered adjacent to the unnamed drainage and, as such, are also waters of the U.S.

Table 4. Aquatic Resources Inventoried at the Subject Property

WOUS	WOUS Type	Width (feet)	Length (feet)	Area (acres)	Receiving WOUS	Category of WOUS

Unnamed Drainage along north border	Relatively Permanent Water	1 to 3	685	--	Kaneohe Bay, Pacific Ocean (TNW)	A5 – Tributary of A1 water
Wetland 1	Adjacent Wetlands	--	--	0.97	Unnamed Drainage along north border	A7 – wetlands adjacent to A5 water
Wetland 2	Adjacent Wetlands			0.22	Unnamed Drainage along north border	A7 – wetlands adjacent to A5 water

F. Mapping Method

Wetland and upland boundaries were based on the best professional judgment of the investigator in light of field data and the results of the in-office assessment of available resources within the context of the Corps manual and regional supplement. These estimated boundaries, based on field data extrapolated to disturbed areas, were superimposed on aerial imagery in Google Earth with reference to recent aerial and drone imagery to quantify the total amount of wetlands and uplands within the subject property before and after the disturbance. (See Figure 7 & 9, Appendix A).

G. Results and Conclusion

Based on the results of site investigations conducted on October 27 and November 5, 2015 by Corps staff and the results of the in-office assessment consequent to recent disturbances on-site, the Corps identified a 685-foot long unnamed perennial stream and a total of 1.20-acres of wetlands adjacent to that stream at the 2.46-acre subject property. These conclusions are made in accordance with the methods and guidance provided in the 1987 Corps of Engineers Wetland Delineation Manual and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Hawaii and Pacific Islands Region.

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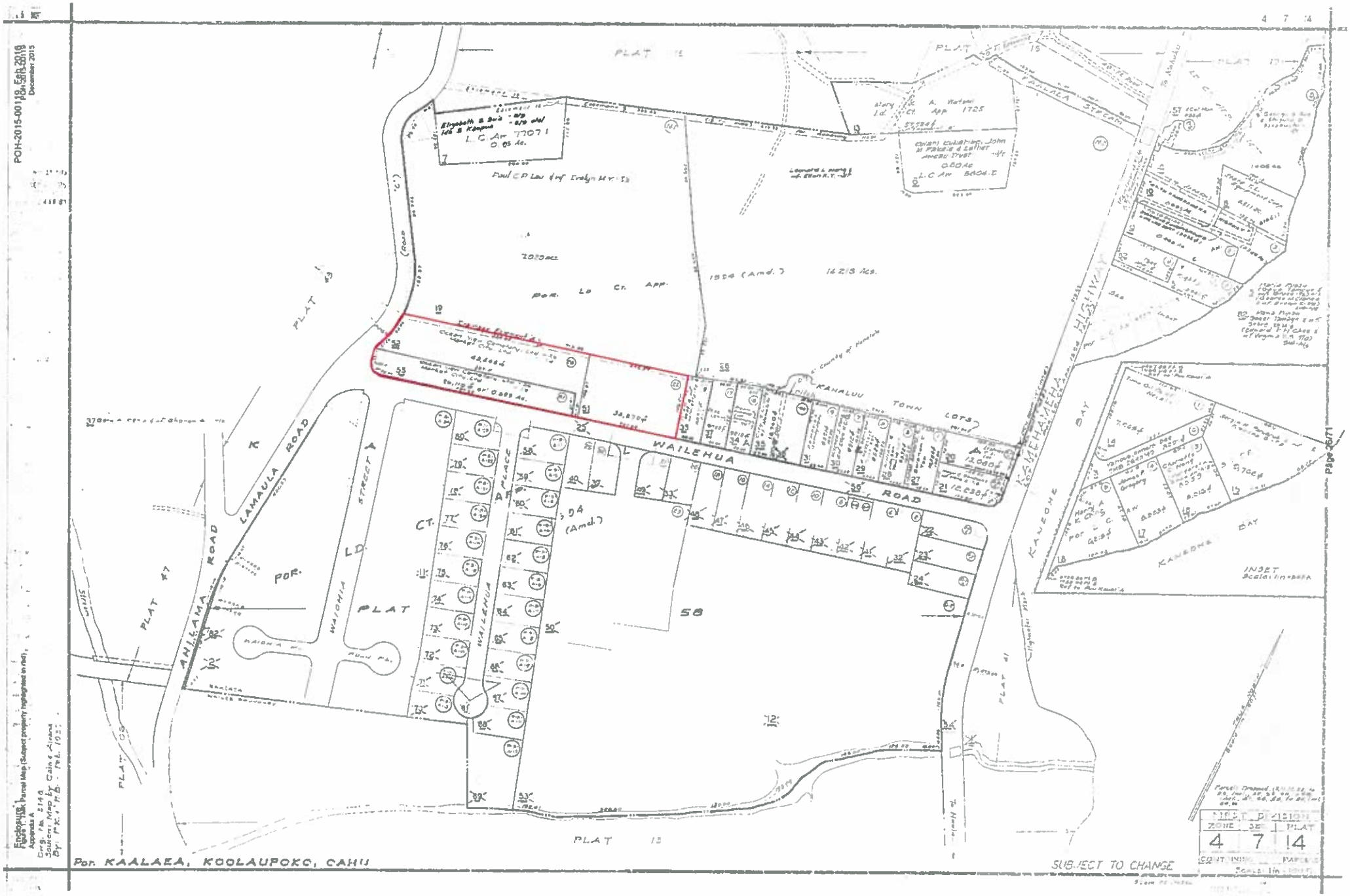

PLAT 12
PLAT 15
PLAT 43
PLAT 47
PLAT 58
PLAT 41
PLAT 15
KAALAEA ROAD
LAMAULA ROAD
WAILEHUA ROAD
KAMEHAMEHA HIGHWAY
WAIOHIA STREET
WAILEHUA PLACE
KAHALUU TOWN LOTS
KANEOHE BAY
INSET
L.C. Aw. 7707:1
0.05 Ac.
L.C. Aw. 8404:2
1524 (Amd.)
1423 Acs.
POR. L.C. APP.
POR. KAALAEA, KOOLAUPOKO, OAHU
SUBJECT TO CHANGE
ZONE 4
SEC 7
PLAT 14


Google earth
© 2015 Google
Waiohia Rd
Akakoa Pl
Waiohia St
Lamania Rd
Waiakaua Rd
Kamehameha Hwy
N
83

Figure 3. USGS Topo Map, Kaneohe, HI Quad, 1:24000, 1998
Subject property highlighted in red
Appendix A

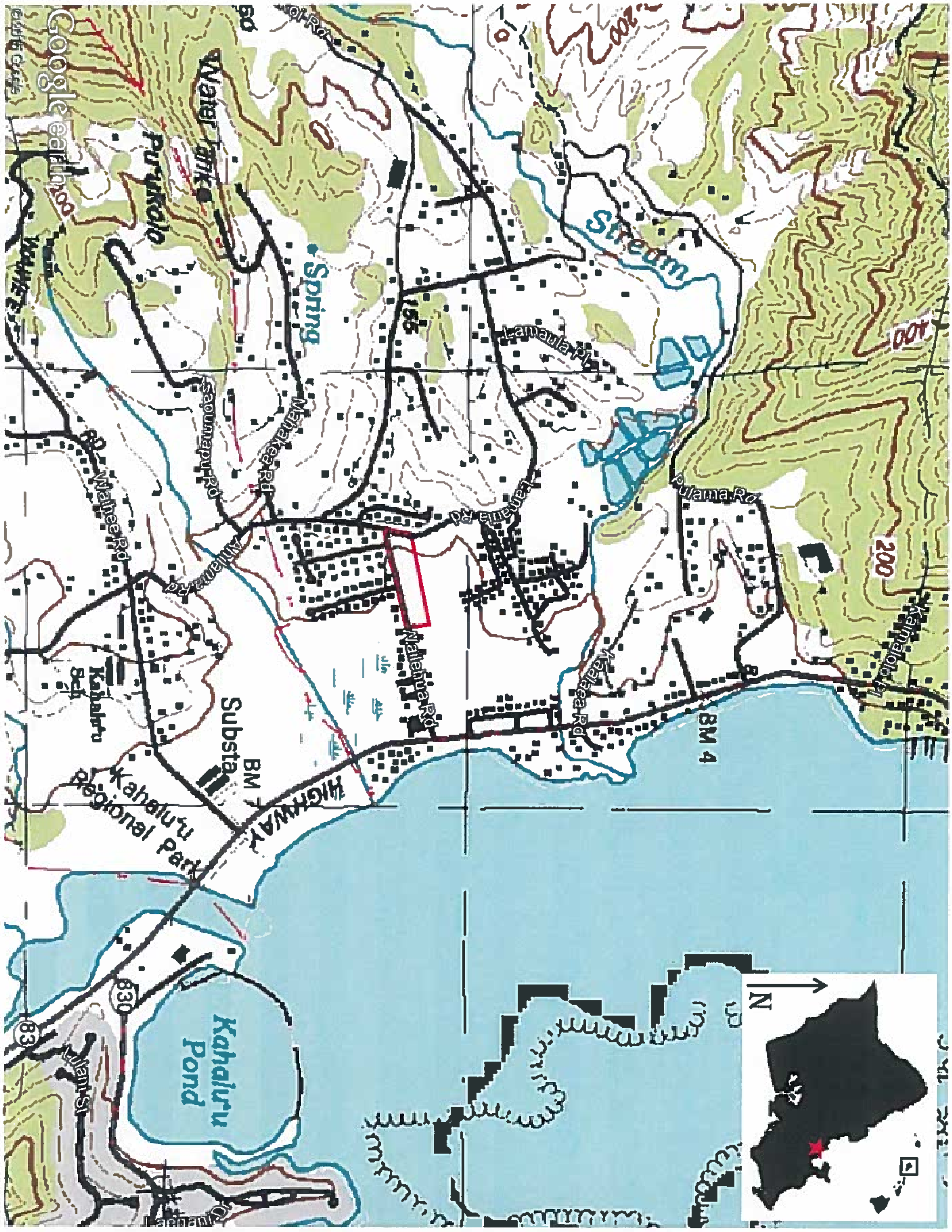


Figure 4. Pre-Disturbance Street View
Appendix A

Figure 4. Pre-Disturbance Street View
Appendix A

Figure 5. Pre-Disturbance Aerial, 3 May 15
(Source: Digital Globe)
Appendix A

Figure 6. Post-Disturbance Aerials, 3 Jun 15 & 15 Nov 15
(Source: Digital Globe)
Appendix A

Figure 7: Pre-Fill conditions and resources based on in-office assessment as overlain and quantified in Google Earth

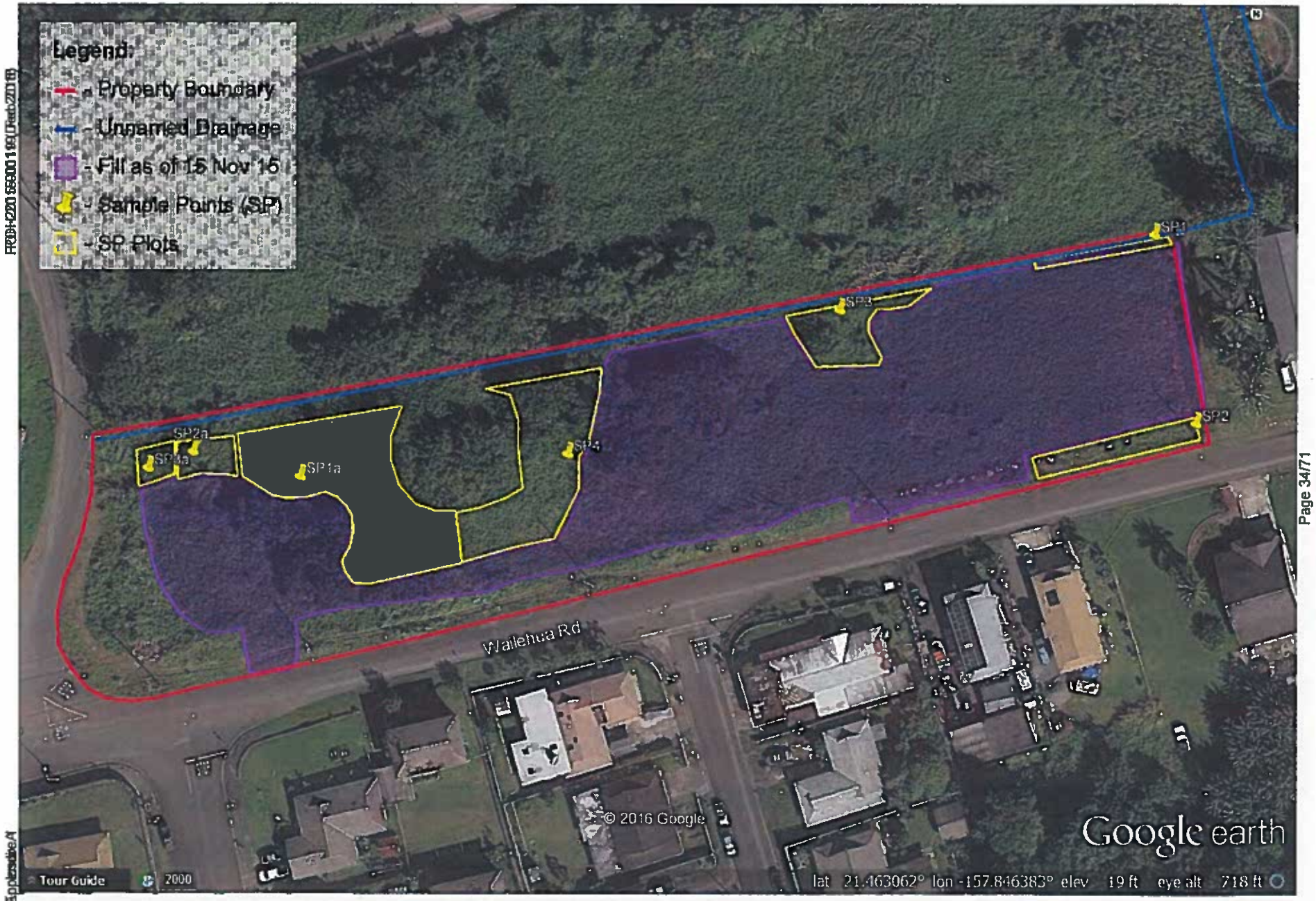


Figure 8: Fill as of 15 Nov 15. Corps wetland delineation sample point selection and corresponding plots based on fill at time of site visit as overlain and quantified in Google Earth

Figure 9: Final results based on existing, post-fill conditions and in-office assessment as overlain and quantified in Google Earth

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 27 OCT 15 Time: 1345

Applicant/Owner: HK CONSTRUCTION CORP. State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 1

Investigator(s): J. PAAHANA, R. FRAGER, L. MOLINA TMK/Parcel: 147014051

Landform (hillside, coastal plain, etc.): TOP OF RIGHT BANK Local relief (concave, convex, none): CONCAVE

Lat: 21.463688 Long: -157.845884 Datum: NAD 83 Slope (%):

Soil Map Unit Name: Pearl Harbor Clay, Ph, Hydric NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation x, Soil x, or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes No x

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes	No x	
Wetland Hydrology Present?	Yes	No x	

Remarks:
Sample Point 1 is taken in the NE corner of the subject parcel approximately 5 feet from the adjacent unnamed drainageway. SP1 was recently grubbed and may have been recently graded or filled. Evidence of prior fill apparent. These activities may have impacted on-site hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5-foot radius)			
1. *Megathyrsus maximus*	15	Yes	FAC
2. *Urochloa mutica*	5	Yes	FACW
3. Unknown microgreens	5	Yes	UPL
4. *Momordica charantia*	4	No	FAC
5. *Ipomoea alba*	1	No	FAC
6.			
7.			
8.			
	30 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	30 (A)		95 (B)
Prevalence Index = B/A =			3.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
The sample area had been recently grubbed as was stated by the landowner and also as evident by the new growth not consistent with the surrounding vegetation that appeared to constitute normal circumstances. Immediately adjacent to the sample point and opposite the stream was recent fill with no vegetation growth. The sample plot characterizes only those recently disturved areas within an approximate 5-foot radius.

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	98	10YR 5/6	2	C	M	Loamy/Clayey	Prominent redox concentrations
5-15	7.5YR 4/4	75	5YR 5/1	15	D	M	Loamy/Clayey	
			7.5YR 5/8	10	C	M		Prominent redox concentrations
15-18	10YR 4/3	97	7.5YR 5/8	3	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No x

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). The upper layer within the sample area was recently mechanically grubbed and may have been recently graded in preparation for adjacent fill activities. The sample area was likely compacted by use of heavy machinery for site preparation activities on site. Of interest was the presence of hardened redox concretions characterized as 7.5YR 5/6 occuring within the matrix of the second soil layer (15%). Per the regional supplement, these concretions were omitted from the soil profile description and only recorded the soft concretions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No x Depth (inches): ____

Water Table Present? Yes ____ No x Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No x Depth (inches): ____

Wetland Hydrology Present? Yes ____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Due to the close proximity to the immediately adjacent waterway, wetland hydrology indicators were expected to be observed. Due to the recent grading, grubbing and filling activity immediately adjacent to SP1 the hydrology may be disturbed at this location and not represent normal circumstances. Of note, a perennially flowing stream is situated within 5-feet of this sample point. The inclusion of the micro greens (5% cover and classification as Uplands in the absence of an indicator status caused the SP to fail the FAC-neutral test resulting in the absence of wetland hydrology.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 27 OCT 15 Time: 1430

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 2

Investigator(s): J. PAAHANA, R. FRAGER, L. MOLINA TMK/Parcel: 147014051

Landform (hillside, coastal plain, etc.): _____ Local relief (concave, convex, none): CONCAVE

Lat: 21.463365 Long: -157.8745807 Datum: NAD 83 Slope (%): _____

Soil Map Unit Name: PEARL HARBOR CLAY (Ph), HYDRIC NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No x	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No x	
Wetland Hydrology Present?	Yes _____	No x	

Remarks:
SP2 is taken in the SE corner of the subject parcel approx 10ft from Wailehua Rd. SP2 was recently grubbed and potentially graded/filled. Evidence of prior fill apparent. These activities may have impacted on-site hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No x

Remarks:
The area has been recently grubbed, as stated by the landowner and as evidenced in the field by domination of new growth and lack of old growth. This hole was not completed due to lack of hydrology indicators, disturbed vegetation and compacted soils that could not be penetrated. Likely would not have met indicator for hydrophytic vegetation.

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: compacted soils

Depth (inches): 0

Hydric Soil Present? Yes ____ No x

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). The soil at this location was impenetrable as it was recently and likely historically compacted based on knowledge of current and past on-site activities and location immediately adjacent to Wailehua Road. Due to lack of hydrophytic vegetation and indicators of wetland hydrology, this site likely would not feature hydric soil indicator(s).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No x

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No indicators of hydrology present. Surrounding area has been graded and filled therefore no immediate reference sites available that may feature hydrology indicators.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 27 OCT 15 Time: 1445

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 3

Investigator(s): J. PAAHANA/R. FRAGER/L. MOLINA TMK/Parcel: 147014052

Landform (hillside, coastal plain, etc.): Local relief (concave, convex, none): CONCAVE

Lat: 21.463586 Long: -157.846483 Datum: NAD 83 Slope (%):

Soil Map Unit Name: TROPAQUEPTS (TR), HYDRIC NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation x, Soil X, or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes Y No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes	No x	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Sample point appears to feature normal circumstances at this location near the unnamed drainageway. This sample point is situated at the toe of a large remnant fill pile and a large recent fill pile in preparation of site development.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5-10 foot radius)			
1. *Ipomoea alba*	50	Yes	FAC
2. *cenchrus purpureus*	30	Yes	FAC
3. *megathyrsus maximus*	20	No	FAC
4. *crotalaria incana*	15	No	UPL
5. *Chamaecrista nictitans*	10	No	FACU
6. *coix lacryma-jobi*	8	No	FACW
7.			
8.			
	133 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	8	x 2 =	16
FAC species	100	x 3 =	300
FACU species	10	x 4 =	40
UPL species	15	x 5 =	75
Column Totals:	133 (A)		431 (B)
Prevalence Index = B/A =			3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
The vegetation at this sample point represents all vegetation landward of the adjacent drainageway. While the plant community constitutes a positive indicator of hydrophytic vegetation, there is a prominent presence of UPL and FACU species that are not found elsewhere on the property.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: asphalt, old fill

Depth (inches): 0

Hydric Soil Present? Yes ____ No x

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). A soil pit was not dug at this sample point as a layer of remnant asphalt fill restricted penetration. The top layer consists of fill. Given the history of the previously undeveloped site as an unofficial parking lot, the historic fill a this sample point is reasonable.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No ____ Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Due to the close proximity to the drainageway hyrdology indicators were expected to be observed, however, none were present. While the vegetation meets the hydrophytic vegetation indicator, it does not meet the FAC-neutral test likely due to a lack of hydric soils or wetland hydrology.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 27 OCT 15 Time: 1545

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 4

Investigator(s): J. PAAHANA/R. FRAGER/L. MOLINA TMK/Parcel: 147014052

Landform (hillside, coastal plain, etc.): PONDED DEPRESSION Local relief (concave, convex, none): CONCAVE

Lat: 21.463312 Long: -157.846969 Datum: NAD 83 Slope (%):

Soil Map Unit Name: TROPAQUEPTS (TR), hydric (2014) NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Ponded depression, bordered by recent fill at E, W & S and to the N by the adj. waterway. While SP4 does not appear to have been directly manipulated, the recent fill/grubbing activities in surrounding areas has likely disturbed the hydrology at this site and created abnormal

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft diameter)	Absolute % Cover	Dominant Species?	Indicator Status
1. Macaranga tanarius	2	Yes	UPL
2. Citharexylum caudatum	1	No	UPL
3.			
4.			
5.			
	3	=Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	3	=Total Cover	
Herb Stratum (Plot size: 30ft diameter)			
1. *Urochloa mutica*	75	Yes	FACW
2. *Ludwigia octovalvis*	40	Yes	OBL
3. *Cyperus polystachyos*	30	No	FACW
4. *Coix lacryma-jobi*	10	No	FACW
5. *Megathyrsus maximus*	10	No	FAC
6. *Cyperus difformis*	5	No	OBL
7. *Cenchrus purpureus*	5	No	FAC
8. *Ipomoea alba*	3	No	FAC
	178	=Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	115	x 2 =	230
FAC species	19	x 3 =	57
FACU species	0	x 4 =	0
UPL species	2	x 5 =	10
Column Totals:	181 (A)		342 (B)
Prevalence Index = B/A =			1.89

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
The sample point characterizes a ponded depression dominated by California grass and an underlayer dominated by sedge. The very center of the vegetative plot featured a small tree stand.

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes x No ___

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). A soil pit was not dug at this location becuase the sample point represented a ponded depression that would not have produced an intact soil profile. As the site was dominated by FACW and OBL hydrophytic vegetation species and primary indicators of wetland hydrology, hydric soils are presumed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- x Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- x Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- x Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No ___	Depth (inches): 0
Water Table Present?	Yes ___	No ___	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No ___	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water ponded at the surface at this location. A red iron sheen (not oil as the deposit broke up into pieces and did not conglomerate like a petroleum source would have) was visible atop the water surface. The immediate vicinity was bounded by recent fill and meets the geomorphic position indicator. The central upland island featured a single FAC and UPL species that was stunted in comparison to an adjacent upland area apparent abundant tree growth of the same species. These tree species are stunted/stressed and not representative of new growth based on a review of recent aerial imagery indicating the vegetation at this location was not altered.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 5 Nov 15 Time: 1300

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 1a

Investigator(s): J. PAAHANA/V. KOSKELO TMK/Parcel: 147014052

Landform (hillside, coastal plain, etc.): Local relief (concave, convex, none): CONCAVE

Lat: 21.463280 Long: -157.847479 Datum: NAD 83 Slope (%):

Soil Map Unit Name: TROPAQUEPTS (TR), hydric NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
SP1a is taken on the mauka side of the remaining apparent upland island about midway through the property and just makai of the 3rd telephone pole. According to aerial imagery, the veg at SP1a was grubbed and the soils mechanically disturbed between 3 and 25 May 15.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size:)			
1. *Urochloa mutica*	85	Yes	FACW
2. *Ludwigia octovalvis*	45	Yes	OBL
3. *Cyperus polystachyos*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
	140 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	45	x 1 =	45
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	140 (A)		235 (B)

Prevalence Index = B/A = 1.68

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
According to aerial imagery, the veg at SP1a was cleared sometime between 3 and 25 May 15. Prior to the disturbance, it appears the area may have featured some tree species that are no longer present at this location. Per aerial imagery, the veg at SP1a does not appear to have been disturbed since. Plant community represents lower lying vegetation occuring a couple feet inward from the toe of the slope of the adjacent recent fill approx 3-6 feet above grade. Taller FAC species and FAC vines line the fill slope to the toe and are not considered of the same plant community.

SOIL

Sampling Point: 1a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	55	10YR 4/1	30	D	M	Loamy/Clayey	
			7.5YR 4/6	15	C	M		Prominent redox concentrations
5-9	10YR 3/2	85	10YR 4/4	15	C	M	Loamy/Clayey	Distinct redox concentrations
9-15	10YR 3/2	85	10YR 5/6	15	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- x Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). The soil was disturbed at the time vegetation was cleared. Soil featured a mixed up appearance throughout the profile. Buried chunks of decaying organic matter throught profile. Redox concentrations were diffuse and not concentrated indicating recent development. The soil profile meets the Redox Depressions hydric soil indicator because it features a layer at least two inches thick of prominent redox concentrations (>5%) starting in the top six inches of the profile and that may and does extend beyond the top six inches of the profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- x Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- x Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes x	No ___	Depth (inches): 10
Saturation Present? (includes capillary fringe)	Yes x	No ___	Depth (inches): 8

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water was encountered at the bottom of the 15-inch pit. Seepage beginning at 8-in continued for approximately 15-20min during data recording. At the completion of data collection the water table was at 10-in. Iron film at waters surface in pit (determined not petroleum or oil-based when water surface disturbed). Alpha-alpha dipyridl strips placed at each soil layer with positive results at layers 5-9 and 9-15inch depth.

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 5 NOV 15 Time: 1400

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 2a

Investigator(s): J. PAAHANA/V. KOSKELO TMK/Parcel: 147014052

Landform (hillside, coastal plain, etc.): SLOPE TOE Local relief (concave, convex, none): CONCAVE

Lat: 21.463304 Long: -157.847668 Datum: NAD83 Slope (%): <5

Soil Map Unit Name: LOLEKAA SILTY CLAY, 3 TO 8 PERCENT SLOPES (LoB), non-hydric NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation x , Soil x , or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes ____ No x

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Spa represents a change in the plant community observed on the unfilled slope at the NW corner of the subject parcel. This area appears higher in elevation than SP1a. This area was cleared of vegetation at some time between 3 and 25 May 15

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 100sf)			
1. *Cenchrus purpureus*	45	Yes	FAC
2. *Megathyrsus maximus*	45	Yes	FAC
3. *Ipomoea obscura*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	100	x 3 =	300
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)
Prevalence Index = B/A =			3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
plant community representative of species growing on apparent slope up to Lamaula St. along the NW corner of the property. Per aerial imagery, it is evident that the vegetation was cleared in this area between 3 and 25 May 15. The vegetation has since grown undisturbed. The slope is bounded to the S by a fill pile. California grass is not apparent growing within this plant community as opposed to dominance observed at adjacent SP1a. Vine observed in this plant community and absent in adjacent SP1a. Grass species have grown to a height overhead in 6 months.

SOIL

Sampling Point: 2a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- x Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). The colors of the profile were not evaluated. The soils appeared identical to the profile observed at SP1a. Soil composition was mixed due to recent mechanized disturbance. Redox concentrations with diffuse boundaries observed throughout profile. Dark spots of decaying organic matter observed throughout profile. Due to the similarities in the composition of the soil profile at SP2a in comparison to SP1a, the Corps presumes a positive indicator of Redox Depressions (F8) as a layer at least 2in thick of redox concentrations (≥5%) starting in the top 6in of the profile and extending beyond 6in was observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- x Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- x Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- x Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ? Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____
Water Table Present?	Yes x	No ____	Depth (inches): 13
Saturation Present? (includes capillary fringe)	Yes x	No ____	Depth (inches): 8

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water table present at bottom of hole (16-in) when hole initially dug. Approximately 10 min later water level rose to 13-inches and continued to seep starting at a depth of 8-in. It is likely the seepage would have resulted in an positive indication of a high water table within 12-inches of the surface had we observed the pit for a longer period of time. Iron deposit observed atop water surface within hole (not oil-based).

WETLAND DETERMINATION DATA FORM – Hawai'i and Pacific Islands Region

Project/Site: WAILEHUA ROAD UA City: KANEOHE Sampling Date: 5 Nov 15 Time: 1420

Applicant/Owner: HK CONSTRUCTION CORP State/Terr/Comlth.: Hawai'i Island: OAHU Sampling Point: 3a

Investigator(s): J PAAHANA/V KOSKELO TMK/Parcel: 147014052

Landform (hillside, coastal plain, etc.): SLOPESIDE Local relief (concave, convex, none):

Lat: 21.463289 Long: -157.847728 Datum: N NAD 83 Slope (%): 15

Soil Map Unit Name: Lolekaa silty clay, 3 to 8 percent slopes (LoB), non-hydric NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation x , Soil x , or Hydrology x significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____ , Soil ____ , or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
SP3a represents midway up the hillslope along the west end of the property towards Lamaula Road. The purpose of this pit was to determine if the slope featured a boundary wherein any one of the indicators was absent due to the change in elevation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: approx. 200sf)			
1. *Cenchrus purpureus*	70	Yes	FAC
2. *Megathyrsus maximus*	40	Yes	FAC
3. *Ipomoea obscura*	35	Yes	FAC
4.			
5.			
6.			
7.			
8.			
	145 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	145	x 3 =	435
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		435 (B)
Prevalence Index = B/A =			3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
The plant community for this sample point represents an increased proportion of elephant grass and vine to guinea grass that was observed halfway up the hill slope.

SOIL

Sampling Point: 3a

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Muck Presence (A8)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Dark Surface (S7)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- x Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Stratified Layers (A5)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

This data form is revised from Hawai'i and Pacific Islands Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx). The colors of the profile were not evaluated. The soils appeared identical to the profile observed at SP1a. Soil composition was mixed due to recent mechanized disturbance. Redox concentrations with diffuse boundaries observed throughout profile. Dark spots of decaying organic matter observed throughout profile. Due to the similarities in the composition of the soil profile at SP2a in comparison to SP1a, the Corps presumes a positive indicator of Redox Depressions (F8) as a layer at least 2in thick of redox concentrations (>5%) starting in the top 6in of the profile and extending beyond 6in was observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- X Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Tilapia Nests (B17)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Fiddler Crab Burrows (C10) (Guam, CNMI, and American Samoa)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Salt Deposits (C5)
- ___ Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 15
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 8

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Seepage was present at 8in depth with water table present at bottom of pit. We did not wait to see if the water table rose over time due to the seepage observed at around 8in. A layer of reduced iron developed at the water surface in the pit.

DATA FORM 3
ATYPICAL SITUATIONS

Applicant Name: Angie Kim, HK Construction Corp.
Application No.: POH-2015-00119
Project Name: Wailehua Rd. Residential Subdivision
Location: TMKs 147014051, 052 and 055, Kaneohe, Oahu, Hawaii
Date: 30 Nov 15

A. Vegetation

1. Type of Alteration: All vegetation on-site, with the exception of a small area just west of the center of the property was mechanically grubbed on or around 21 May 15 by the landowner. At the time of the on-site wetland delineation, vegetation had not been further disturbed for approximately 6-months with the exception of the estimated 1.36 acres of the 2.46-acres site that had been covered with approximately 1,000 cubic yards of foreign fill.

2. Effect on Vegetation: The mechanical grubbing physically removed all previously existing vegetation on-site down to the roots. All vegetation observed during the on-site wetland delineation represents species that have since recolonized over a period of 6-months. Regrowth is inhibited in areas subjected to fill. The mechanized removal of both grass and tree species across the site would have significantly reduced the rate of transpiration and resulted in the increase in surface inundation in the absence of vegetation. In addition to the increased hydrology, the removal of the tree stratum, in the absence of a shading canopy, allowed for FACW and OBL herb stratum species to proliferate as was observed at SP4 on 27 Oct 15.

3. Previous Vegetation: Based on aerial imagery over the past five years, most of the property was dominated by medium to tall grasses, likely a mix of FAC and FACW grasses such as Megathyrsus maximus, FAC and Urochloa mutica, FACW. The drainageway appears to feature tall grasses such as Job's tears, FACW and Elephant grass, FAC. A corridor spanning from south west to north east near the center of the property appears to feature a developed tree stratum not apparent elsewhere on-site. Based on recent pre-disturbance drone imagery taken by the landowner in May 2015 what appears to be shrub-stratum upland species dominate the east and south east boundary alongside the neighboring residence and Wailehua Road. Based on the aerial imagery, a small stand of trees surrounded by an herb stratum was left un-grubbed near the center of the property. SP4 taken in the field on 27 Oct 15 occurs within this un-grubbed area and represents vegetation growing on-site prior to recent disturbances. Recent drone imagery and aerial imagery was cross-referenced to establish photographic signatures of the vegetation growing at SP4 to transpose the same

plant community in areas with similar photographed signatures that had since been covered by fill material. SP4 featured hydrophytic vegetation and all areas that had since been filled and that presented similar photographed characteristics were determined to feature hydrophytic vegetation. The non-hydrophytic plant community within the remnant tree stand on-site featured Citharexylum caudatum, UPL, Macaranga tanarius, UPL (presumed, in the absence of an indicator status) and Scarlet Spiral Ginger (Costus woodsonii). Areas with similar photographed characteristics as the remnant tree stand were applied to areas that were grubbed and filled that previously featured a similar plant community. In areas that based on aerial imagery appeared to support non-hydrophytic tree species, but since the disturbance now supports hydrophytic vegetation, hydric soils and wetland hydrology have been characterized as wetlands.

4. Hydrophytic Vegetation? _X_ Yes __ No Based on aerial imagery and on-site reference vegetation, it appears there are areas that have since been filled that supported hydrophytic vegetation (as well as areas that do not support hydrophytic vegetation).

B. Soils

1. Type of Alteration: The grubbing of the entire site through mechanical means and down to the root system disturbed the surface soil layer. Lastly, a large portion of the property was covered with foreign fill material replaced the top layer of soil with 1 to up to 6-feet of fill in some areas.

2. Effect on Soils: The use of heavy machinery to remove vegetation disturbed the top layer of soils to an unknown depth and may have removed any presence of surface layer decaying organic matter e.g. muck or peat that could have developed on-site over time. The physical disturbance of the soil may have also aerated soils that under normal circumstances may have developed under anaerobic conditions. If these soils were hydric, the introduction of oxygen may have disturbed the chemical composition of the soils. In addition, the weight of the heavy machinery both for grubbing and filling activities compacted the top layer of soil. The discharge of fill material over grubbed, bare substrate replaced the soil profile with foreign fill material that would completely change the composition of the top 1 to 6-feet of the soil profile and buried any hydric soil indicators. In areas that had not been filled, but that had been grubbed, the soil profiles featured prominent redox features with diffuse boundaries indicating recent development. These featured hydric soil indicators. Due to the recent disturbances, it is likely that the change in hydrology affected the soil chemistry of previously existing soils.

3. Previous Soils: The property is located in a landscape position with a high propensity for concentration of hydrology in the area as it is locally depressed and surrounded by sources of runoff. The NRCS Soil survey (Version 10, 21 Sep 15) characterizes the soils expected to be on site as Pearl Harbor clay and Tropaquepts. Pearl Harbor clay is described as consisting of a 12-inch thick surface layer underlain by a 19-inch thick clay layer. Tropaquepts feature a 10-inch thick mucky, silt-loam surface layer underlain by a 5 to 10-inch thick firm to compact silty-clay-loam layer over alluvium. A geotechnical survey conducted for the landowner on 3 Jun 15 consisting of two soil pits taken at parcel 147014051 indicates a 2-foot thick, moist surface layer of medium-stiff elastic silt underlain by very moist, soft, sandy elastic silt. Both in reference and as observed, the site

features a restrictive stiff, clayey soil layer within 2-feet of the surface contributing to the tendency of the property to accumulate water. As discerned from aerial imagery, prior to being mechanically grubbed, the site supported the growth and in some areas, domination by hydrophytic vegetation. The data collected in the field in areas that featured both wetland hydrology and hydrophytic vegetation and that also featured hydric soils were outlined on drone imagery for reference. Areas that have since been filled were reviewed to determine if the vegetation appeared similar to those areas featuring all three wetland parameters. If so, these areas were characterized similarly as featuring hydric soils. Areas that featured a differing plant community, especially upland and forested areas were considered not having hydric soils. As referenced anecdotally and as corroborated in the field, some areas east of the center of the undeveloped parcels had been previously used by motor vehicles as an undesignated parking lot, prior to the current landowner. These areas that featured old fill also lack wetland parameters, including hydric soils.

4. Hydric Soils? _X_ Yes __ No Based on aerial imagery and reference areas on-site there are both areas that feature hydric soils and non-hydric soils on-site.

C. Hydrology

1. Type of Alteration: Majority of the vegetation on the property was mechanically removed. Material obstructions from within the east end of the drainage channel were removed by the landowner to relieve restricted flow.

2. Effect on Hydrology: Removal of the vegetation directly resulted in decreased transpiration rates which normally retain water throughout the plant structure. This increases the hydrology on site that is normally stored by vegetation. The restoration of flow within the east/downstream end of the drainage channel would increase the hydraulic capacity of the channel. The restoration of flow would drain the hydrology from the adjacent wetlands that normally would concentrate on the property. This results in a drawdown or lowering of the water table in the vicinity of the channel to the level of flow within the channel.

3. Previous Hydrology: The project site is situated in a landscape position that is likely to collect and/or concentrate water. The site is bordered to the west by Lamaula Road and to the south by Wailehua Road; asphalt roadways constructed at a higher elevation than the subject property. The east end of the property is bounded by an existing residential development also at a raised elevation atop fill. The road, by nature and in the absence of roadside drainage features, acts as a conduit for sheet flow onto the depressed property. In addition, the property and surrounding grade slopes from a higher elevation at the west end (30-feet) to a lower grade at the east end (11-feet). The west end of the property abutting Lamaula Road features a steep slope into the property with a gradual slope thereafter, eastward. The site features an average slope of 2.75% (19ft/690ft), characterized, per the regional supplement, as a nearly level area. The higher elevations surrounding the property situate the majority of the parcel at the toe of the slope, in an area of convergent slopes. Finally, the subject property is bordered to the north by an unnamed perennial drainageway with terminal discharge in the Kaneohe Bay. The channel measures, on average, approximately 3-feet wide by 1-foot deep, from top of bank to bed. The channel features thick overgrowth, creating a poorly defined bank. Both in reference and as observed, the site features a restrictive soil layer. Each of the

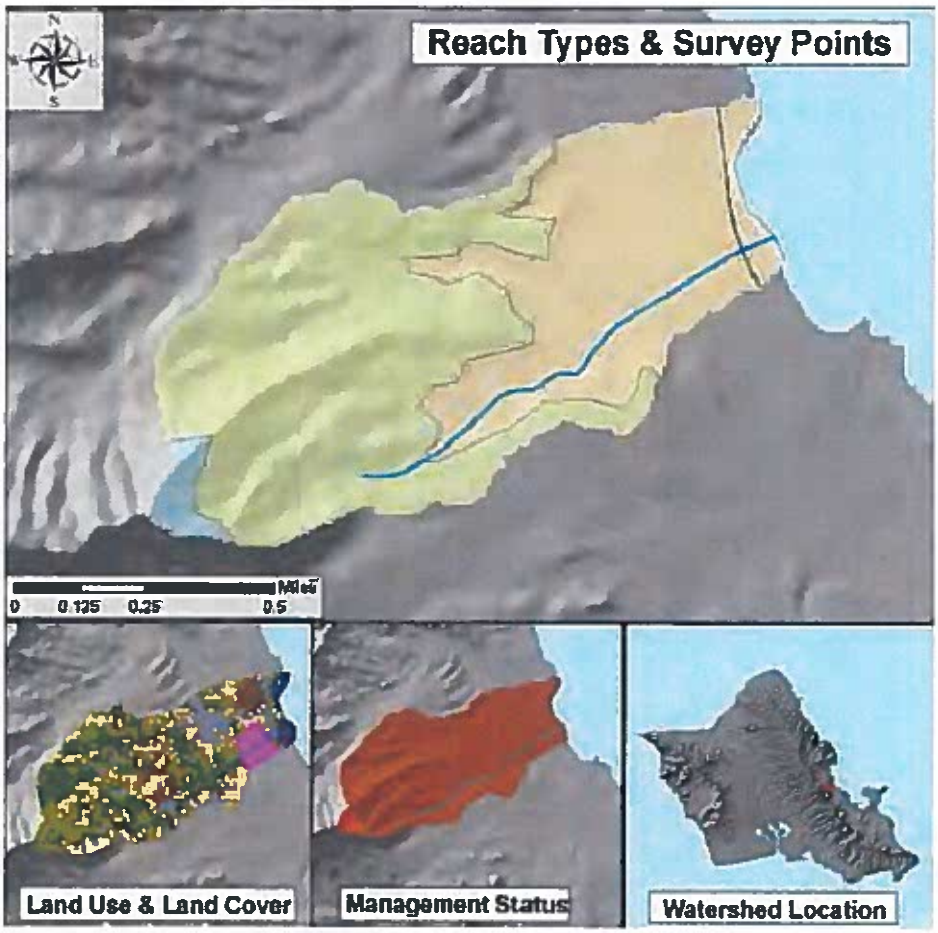
four sample points take by the Corps from the center to the west end of the property either featured standing water, a high water table or saturation within 12-inches of the surface, all indicators of wetland hydrology. Seepage was observed higher in the pits that featured a high water table, evidence of groundwater discharge at the project site. The aerial imagery reveals the site featured areas dominated by hydrophytic vegetation. Because the property was undeveloped prior to the current landowner, all recent aerial images for the past years were overgrown by vegetation and if the site featured surface waters, they were masked by the vegetation. The vegetation is the only parameter that can be seen on aerial images, of which, identification of the species is indicative of the soils and hydrology below. Similar to identifying hydric soils in filled areas, areas that in the field featured all three wetland parameters were used as reference sites. All areas with similar vegetation to areas where all three wetland parameters were met were presumed wetlands in areas where sample points were inhibited by recent fill.

4. Wetland Hydrology? _X_ Yes __ No Due to the landscape position lending to a propensity to accumulate water and the evaluation of on-site areas featuring wetland hydrology, the Corps has determined there were areas on-site that featured all three wetland parameters, especially wetland hydrology, prior to the discharge of fill at the subject property. There are also areas that were absent of wetland hydrology prior to the disturbance.

Characterized by: Jessie Paahana, Biologist, Regulatory Office

DAR Watershed Code: 32006

Haiamoa, O'ahu



WATERSHED FEATURES

Haiamoa watershed occurs on the island of O'ahu. The Hawaiian meaning of the name is "chicken chased". The area of the watershed is 0.6 square mi (1.6 square km), with maximum elevation of 991 ft (302 m). The watershed's DAR cluster code is not yet determined. The percent of the watershed in the different land use districts is as follows: 0% agricultural, 17.6% conservation, 0% rural, and 82.4% urban.

Land Stewardship: Percentage of the land in the watershed managed or controlled by the corresponding agency or entity. Note that this is not necessarily ownership.

Military	Federal	State	OHA	County	Nature Conservancy	Other Private
0.0	0.0	0.0	0.0	2.8	0.0	97.2

Haiamoa, O'ahu

Land Management Status: Percentage of the watershed in the categories of biodiversity protection and management created by the Hawaii GAP program.

Permanent Biodiversity Protection	Managed for Multiple Uses	Protected but Unmanaged	Unprotected
0.0	0.0	2.8	97.2

Land Use: Areas of the various categories of land use. These data are based on NOAA C-CAP remote sensing project.

	Percent	Square mi	Square km
High Intensity Developed	0.7	0.00	0.01
Low Intensity Developed	15.8	0.10	0.25
Cultivated	7.8	0.05	0.12
Grassland	17.1	0.10	0.27
Scrub/Shrub	31.4	0.19	0.49
Evergreen Forest	20.1	0.12	0.31
Palustrine Forested	0.0	0.00	0.00
Palustrine Scrub/Shrub	0.0	0.00	0.00
Palustrine Emergent	4.0	0.02	0.06
Estuarine Forested	1.0	0.01	0.02
Bare Land	0.3	0.00	0.01
Unconsolidated Shoreline	0.1	0.00	0.00
Water	1.6	0.01	0.03
Unclassified	0.0	0.00	0.00

STREAM FEATURES

Haiamoa is a perennial stream. Total stream length is 1 mi (1.5 km). The terminal stream order is 1.

Reach Type Percentages: The percentage of the stream's channel length in each of the reach type categories.

Estuary	Lower	Middle	Upper	Headwaters
0.0	87.3	12.7	0.0	0.0

The following stream(s) occur in the watershed:
Haiamoa

BIOTIC SAMPLING EFFORT

Biotic samples were gathered in the following year(s): none

BIOTA INFORMATION

None

Type of KT	control no.	value	PIID	PIID sub	Ktr	description	status
AE	17-16	$ 20,000.00	15-D-0006		Sam Hirota	topo survey/mapping, Maui Army Reserve Center, Wailuku, Maui	recd IGE; proposal recd; rev sow issued, rev prop recd; 2/22/16-MFR to kent 2/23/16 - PR&C req to Darren Walls
AE	20-16	$160,196.00	12-D-0001	0017	Mechanical Engineer	VMU DD1391	TO issued 1/29/2016
		0.00		0017-01			admin mod issued 2/9/2016 to correct POP frm 6/30/2016 to 3/4/2017
AE Svc	23-16	$191,000.00	11-D-0003	00XX	Bowers + Kubota Consulting	construction scheduler service	RFP issued 2/16/16; prop due 2/23/16 2/23/16 prop dist to GN
AE		$35,000	11-D-0004	0004-XX	Okahara & Associates	addl post design, construction support svcs	Assgmt recd 2/17/16; RFP issued 2/19/16, due 2/23/16 2/23/16 prop dist to GN

Appendix D. Draft Conceptual Proposal for Compensatory Mitigation

DRAFT CONCEPTUAL PROPOSAL FOR COMPENSATORY MITIGATION

OFFSETTING IMPACTS OF AN UNAUTHORIZED 1.3-ACRE FILL INTO JURISDICTIONAL WETLANDS BY WAILEHUA 1 LLC

Wailehua Road, Kahaluu, Hawaii 96744
Department of the Army File No. POH-2015-00119

March 23, 2019

Prepared for U.S. Army Corps of Engineers
Honolulu District, Regulatory Office CEPOH-RO
Building 252, Fort Shafter, Hawaii 96858

Prepared by Wailehua 1 LLC
905 Factory Street
Honolulu, Hawaii 96819

Table of Contents

A. Background

At the request of the U.S. Army Corps of Engineers Honolulu District Regulatory Office (Gayagas 2019), this document provides historical data on land and water use related to the existing environment at the site of the Wailehua 1 residential development hereinafter referred to as the "project site". The information presented here will better inform alternatives for compensatory mitigation associated with the unauthorized fill of a freshwater emergent wetland by Wailehua I LLC (U.S. Army Corps of Engineers 2017). Both the project site and the northern portion of the adjacent Waihee Marsh are discussed inasmuch as both are owned by HK Construction, Inc. (HKC), and mitigation may include actions within Waihee Marsh as well as at the project site.

This information is meant to supplement the Approved Jurisdiction Determination prepared by staff of the Honolulu District, Army Corps of Engineers (Paahana 2015) by expanding our understanding of conditions at the site prior to the violation, as well as establishing a clearer understanding of the biological, chemical and hydrological integrity of wetlands at the project site. The paper offers additional information on the site's hydrology, including water sources and paths (e.g., springs, tributaries, surface flow/run-off, other drainage features, inputs from taro farms, etc.). Alternative sites for compensatory mitigation along with anticipated gains in wetland functions and services are also discussed.

As defined in 33 CFR 332.2, compensatory mitigation refers to the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance. Compensatory mitigation is actually the third step in a sequence of actions that must be followed to offset impacts to aquatic resources. The 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and the Department of Army established a three-part mitigation process to help guide mitigation decisions and determine the type and level of mitigation required under Clean Water Act Section 404 regulations. These steps include (in order): 1. Avoidance (adverse impacts to aquatic resources are to be avoided and no discharge shall be permitted if there is a practicable alternative with less adverse impact); 2. Minimization (if impacts cannot be avoided, appropriate and practicable steps to minimize adverse impacts must be taken); and 3. Compensation (appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain).

Each of these steps will be addressed in Chapter G of this conceptual proposal. Ultimately, Wailehua I LLC will propose to preserve wetlands on a portion of the project site and off-site in wetlands owned by the same entity within the same watershed.

The wetlands proposed for preservation provide important physical, chemical, and biological functions for the watershed primarily through retention and filtration of sediments and update of nutrients and other contaminants that might adversely impact Kaneohe Bay. These wetlands contribute significantly to the ecological sustainability of the watershed, and are now (and have been for decades) under threat of piecemeal destruction or adverse modification. The proposed preservation areas will be permanently protected through an appropriate real estate or other legal instruments. The proposed compensatory mitigation will also help achieve wetland conservation within the Waihee Marsh that local community groups have been trying to implement for over 50 years.

B. Methods

Methods of investigation included interviews with several community residents, representatives of the Key Project (www.keyproject.org), biologists of the U.S. Fish and Wildlife Service, representatives of the U.S. Army Corps of Engineers Honolulu District, and other resource persons all of whom are cited within the body of the report. Information on prior land use was obtained from the Hawaii State Archives, through personal interviews, review of historic literature and online resources, all of which are cited herein. Information on prior activities associated with the unauthorized fill and correspondence with federal, state, and local government agencies was obtained through detailed search of Wailehua I project records, and requests for project correspondence with the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service. Registration of project boundaries on historic maps was accomplished with the rubber sheeting overlay function in Google Earth Pro. Numerous field trips to the project site and surrounding watershed(s) were conducted in January, February, and March 2019 to better define area hydrology and ecology.

C. Historical Evidence for Prior Land Use / Land Cover

Handy (1940) stated that: "The broad flats of Waihee from the seashore inland are continuous with those of Kaalaea to the north and Kahaluu to the south. These contiguous flats, all sectioned with terraces, make one of the largest single areas of wet taro land on the Koolau coast … The old terraces, now abandoned ran back into these valley for about 1.5 miles." The project site on Wailehua Road clearly lies just north of center for this expansive field system. Kennedy (1981) felt certain that none of the terrace walls or other irrigation features survived due to subsequent land clearing for sugarcane, rice, pineapple, and pasture lands in the 1800's through early 1900's.

In 1865, the lowlands within the Haiamoa, Waihee, and Kaalaea watersheds, including the project site, were cultivated in sugar by Kaalaea Sugar Plantation (http://www.hawaiianstamps.com/isoahust.html). This was one of eight sugar plantations within the Kaneohe Bay area (Townscape 2012). A Hawaiian Government Survey map drawn by J.S. Gay dated 1874 illustrated the Kaalaea Sugar Plantation (Figure 1). Bowser (1880) noted that the 365-acre Kaalaea Sugar Plantation had 160 acres under cultivation in sugar cane at that time, with an estimated yield that year of 200 tons. The sugar plantation was given up around 1883. In 1888, the area was known for rice and taro cultivation[1]. The last sugar plantation in the Kaneohe region ceased production in 1903 (Townscape 2012). A resident from a neighboring property was recently interviewed by Environmental Risk Analysis (2014) and indicated that the area surrounding the project site was formerly cultivated in pineapple from 1920 through 1940, but insisted that the project site was not used for agriculture. Townscape (2012) notes that some 2,500 acres within the Kaneohe region were cultivated in pineapple. Mello (2019) said that pineapple cultivation extended to the upper reaches of Kaalaea Valley. Much of the cultivated fields reverted back to pasture lands between 1925-1940. An abandoned water valve, a gaging station, and old piping recently discovered on the southern edge of the Kaalaea watershed near the project site provide historical evidence of modern agricultural irrigation systems.

[1] The State of Hawaii Department of Health EGIS (http://health.hawaii.gov/epo/egis/sugarcane/) does not show that the region was cultivated in sugar cane at any time during or after 1900.

US Geological Survey 7.5 minute quadrangle maps from the mid- to late-1950's reveal widely scattered buildings and dwellings throughout the region. The housing subdivision at the intersection of Lamaula Road and Wailehua Road appears to have been developed in the 1970's, and is illustrated in historical aerial photographs dating from 1975 (Environmental Risk Analysis LLC 2014). Paahana (2015) noted that the project site had not been previously developed for residential purposes or formally managed. Aerial photos of the project site prior to 1978 demonstrate that the parcel was undeveloped and completely covered with dense vegetation.

Aerial photos available from Google Maps support anecdotal accounts that the center of the project site had previously been used as an undesignated parking lot for a commercial bus company, additional parking for area residents, and as an undesignated dumping ground by the former landowner (Paahana 2015). Between 1978 and 2008, marginal fills can be seen in aerial photos at differing locations within the project site immediately adjacent to Wailehua Road. A fill of roughly 2,398 square feet is visible in an August 2000 image of the site (Figure 2), and was expanded in subsequent years. The largest of these fills appears in an August 2004 Google Earth image to be approximately 0.40 acres in size (Figure 3); and vehicles can be seen parked there. Aerial images collected in Jan 2013 show that the filled area had been totally overgrown with dense vegetation (Figure 4). The full extent of clearing, grubbing and filling associated with the Wailehua I project can be seen in 16 August 2016 aerial image (Figure 5). The area shown in white outline in Figure 5 represents the greatest extent of fill associated with the bus parking lot. The uneven elevated lands at the center of the project site, which appear as dark spots in Figure 5, appear to be mounds of rubble created by grubbing and grading the site for Wailehua 1 as well as grading/filling for the bus parking area in the early 2000s. Irregular blocks of broken asphalt, concrete and gravel, previously used as fill for the bus parking lot, are evident under the heavy mats of grass at the project site (Photo 1).

The GAP Land Cover Ecological System Land Use map of the project area and surrounding lands identify the area around Wailehua Road as having a mix of low and high density development, alien grasslands and shrublands, and cultivated cropland (USGS 2011). Further details and photographs of the physical and biological setting of the project site appear in Paahana (2015).

D. Historical Evidence for Hydrology

The project site is located within the Haiamoa watershed (DAR watershed code 32006). It is neighbored on the north by the Kaalaea watershed (32005) and on the south by the Waihee/Kahaluu watershed (32007). The project site is not identified as a wetland by the U.S. Fish and Wildlife Service's National Wetlands Inventory (https://www.fws.gov/wetlands/data/mapper.html).

The Koolau volcanic rocks underlying the Kahaluu region consist of Plio-Pleistocene age basalts, along with Pleistocene-Holocene sedimentary deposits that have filled in the valley floors (Hunt 1996; Sherrod et al. 2007). Precipitation infiltrates downward through this alluvium and collects in dike-impounded reservoirs, which themselves leak down dip along inclination of the regional lava flows towards lower elevations (Takasaki et al 1969, Hirashima 1971, Takasaki and Mink 1981, Hunt 1996, and Dores 2018). Groundwaters provide baseflow of streams in the region. Hunt (1996) noted that a permeable soil layer centimeters to a meter thick is underlain by several meters of weathered basalt (saprolite).

Both Shinsato Engineering, Inc. (2015) and Paahana (2015) confirm that the predominant soils within the eastern two thirds of the project site are tropaquepts (TR) and Pearl Harbor clay (Ph), consistent with the Natural Resource Conservation Service's Web Soil Survey for Hawaii (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx). Both soil types appear on the Natural Resource Conservation Service's hydric soils list for Hawaii which is used by U.S. Army Corps of Engineers (2012) to aid in the determination of jurisdictional wetland boundaries (https://www.nrcs.usda.gov/Internet/FSE-DOCUMENTS/nrcseprd1316620.html). The western-most edge of the project site is underlain with Lolekaa silty clay (LoB) which is not considered a hydric soil.

Many wetlands within the narrow coastal lands in the Kahaluu region are fed by intercepted groundwater and springs. A Hawaiian Government Survey map of the Island of Oahu, published in 1881 by C.J. Lyons and Richard Covington, identifies lowlands in the Kaalaea, Haiamoa, and Waihee watersheds as wetlands (Figure 6). In 1902, the Hawaii Territorial Survey published a map of Oahu by Walter E. Wall that shows all lowlands in Kaalaea, Haiamoa, Waihee, and Kahaluu watersheds were dominated by wetlands (Figure 7). Handy and Handy (1972) name four distinct springs within the Kaalaea region, one or more of which may influence current hydrology at the project site. Interestingly, Kaalaea means "ocherous earth" (www.ulukau.org) which might refer to the iron-rich hydric soils in the valley wetlands.

USGS 7.5 minute quadrangle maps illustrate major streams (Kaalaea, Haiamoa, and Waihee) in the region, but do not show all interrupted streams or ditches. A single spring is illustrated within the 409-acre Haiamoa watershed mauka of the project site and Waihee Marsh (Paahana 2015, in Figure 3 of her Appendix A). This spring may contribute to base flow of Haiamoa Stream which bisects Waihee Marsh as well as to the lower reaches of the unnamed drainage ditch adjacent to the project site. Interestingly, the bridge railing abutment on Ahilama Road over Haiamoa Stream where it enters the upper reaches of Waihee Marsh is inscribed as "North Waihee Stream". USGS discharge records could not be located for either stream name. A listing of permitted water diversions within the Kaalaea, Haiamoa, and Waihee watersheds is found in the Board of Water Supply's Koolau Poko Stream Diversion Survey (Appendix F of Townscape 2012).

The unnamed drainage ditch that plays a key role in the hydrology of the project site today was apparently constructed by the Kaalaea Sugar Plantation sometime during the mid- to late-1870's to drain adjoining wetlands for sugar cultivation. This ditch, running in a straight line from Lamaula Road to Kaneohe Bay along the northern boundary of the project site, first appears in a map of the Kaalaea Sugar Company published in 1880 by M.D. Monsarrat (Figure 8). The Monsarrat map also shows another drainage that flows from the Kaalaea watershed through the area occupied today by Wong Village an drains into the unnamed ditch just makai of the project area. Mello (2019) identified this drainage as an auwai that carries water for taro irrigation from Kaalaea Stream.

Today, this drainage feature is an integral part of the stormwater system in the region and is identified as a "ditch" in the City & County of Honolulu GIS (Figure 9). The ditch flows within "Drainage Easement A" clearly marked on the TMK (1) 4-7-14 for 715 ft. from Lamaula Road to the eastern edge of TNK parcel 051 (Figure 10), and onward to the sea through a culvert under Kamehameha Highway. The City and County of Honolulu GIS also illustrates that this ditch receives ephemeral stormwater discharge from other ditches originating in both the housing area mentioned above, and the streets uphill to the west of Lamaula Road on Akaka Road. Paahana (2015) incorrectly identified the drainage ditch as a perennial stream.

Recent site surveys of the unnamed drainage revealed a culvert with standing water under Lamaula Road at the head of the ditch (Photo 2). This culvert had no flow during site surveys by agent John Ford in November 2018, January and February 2019. The channel of the unnamed ditch has meandered somewhat over the years due and is no longer straight due to bank erosion, encroachment by dense vegetation, and by filling of home lots seaward of the project site and taro ponds north of the unnamed ditch (Photo 3). This can be clearly seen in historic Google Earth images of the project site. However, in January 2019 running water could be heard flowing under thick grasses in the ditch 580 feet downstream from the Lamaula Road culvert, possibly from the interception of groundwater or spring flow. Prior to the unauthorized fill, 100% of the stormwater sheet flow within the subject parcels flowed into the unnamed ditch (Hida, Okamoto & Associates 2016).

The unnamed drainage ditch appears to have perennial flow where it enters Kaneohe Bay (Photos 4 and 5). This includes flow from an historic auwai that flows southwesterly from the Kaalaea watershed through Wong Village (Photo 6) and into the unnamed drainage ditch downstream and outside of the project site. The ditch also receives discharge from the Wong's taro ponds, which have small PVC pipes that direct overflow from the fields into the ditch downstream of the project site, and from two other storm drains on the south side of Wailehua Road (Figure 9). There is also at least one, and possibly two, ditches between fields that carry flood water into the unnamed drainage adjacent to the fields. These influent ditches are not likely to influence conditions at the project site. The most recent estimates of discharge from the principal watersheds within the Kahaluu region are reported by Dores (2018) (Table 1) in his thesis about onsite sewage disposal systems (OSDS).

Table 1. Summary of watershed size, agricultural land area, number of OSDS, volumetric discharge, and discharge environment. Adapted from Dores (2018).

Stream	Watershed Size (sq mi)	Ag Land (ac)	Number of OSDS	Discharge (mgd)	Discharge Environment
Kahaluu	1.30	10	207	2.55	Concrete
Waihee	2.26	20	155	4.34	Deltaic estuary
Haiamoa	0.64	5	222	0.57	Coastal
Kaalaea	1.76	35	233	0.98	Coastal
Waiahole	3.95	42	87	25.10	Mangrove forest

The project site is located in Flood Zone X (outside the 0.2% annual flood occurrence) on FEMA/FIRM Map No. 15003C0391G, Panel 391 of 395, revised January 19, 2011). According to these maps, the project site is not subject to riverine flooding (http://gis.hawaiinfip.org/FHAT/). However, Reppun (2019) indicated that Wailehua Road frequently floods during prolonged heavy rainfall, and Mello (2019) recalled seeing "perennial ditches running down both sides of Wailehua Road" in the 1970s. These observations are supported by numerous articles that appeared in Honolulu newspapers reporting floods and flood damage along Wailehua Road over the past 40 years. The project site is located within the newly-designated extreme tsunami evacuation zone: (http://www.honolulu.gov/rep/site/dem/dem_docs/tsunami_evac/etez_final/Kaneohe_Bay_to_Koolau_Bay_map21_inset2.pdf).

HK Construction, Inc. (HKC) owns 11-acres within the northern portion of Waihee Marsh from the left bank of Haiamoa Stream to the back end of house lots along Wailehua Road (TMKs 1-7-14-058:12,

:50, and :53, and TMK 1-7-14-058:2). HKC President Harry Kim has said that formerly upland areas within the marsh, notably TMK 1-7-058:2, have been gradually flooded in recent decades. A Wailehua Road neighbor corroborated Kim's statement, saying that this heavily wooded parcel was formerly used as a ballpark and playing field by area residents (Alexander 2018). Today, this upland area is heavily overgrown by dense tree cover and has depressions filled with standing water throughout. Old cattle fencing and an abandoned bathtub found within this area are testament to its former use for grazing, as noted by Shallenberger (1977, 2019) and Mello (2019). Lacking specific evidence of other causes, the conversion of this formerly upland area, which is excluded from the National Wetlands Inventory maps (https://www.fws.gov/wetlands/data/mapper.html), is likely due to a number of insidious factors:

1. Construction of the housing subdivision at the intersection of Lamaula Road and Wailehua Road in the 1970's contributed to the alteration of traditional drainage patterns within the marsh.
2. Dense grasses, sedges, and hau (*Hibiscus tiliaceous*) vines have clogged the Haiamoa Stream channel resulting in the dispersal of flood flows overland within the marsh.
3. Lack of regular maintenance and/or inadequate drainage capacity of the Haiamoa Stream highway culvert by the City and County of Honolulu may have exacerbated this problem.
4. A channel or eddy has reportedly formed where Haiamoa Stream enters the marsh, directing some flow northward toward TMK 1-7-058:2. Today, a low swale traces the boundary between the forested swamp and grassy marshlands in this area.
5. An elevated berm was constructed in jurisdictional wetlands of Waihee Marsh along Haiamoa Stream's south bank between Ahilama Road and Kamehameha Highway in 2015 by the Oahu Society for the Prevention of Cruelty to Animals (OSPCA) (Sokugawa 2017; Reppun 2019). The berm has likely altered the natural hydrology of the stream and marsh by diverting flood waters into the north portion of the marsh owned by HK Construction, Inc.

E. Ecological Structure and Function

The unnamed drainage within "Drainage Easement A" is a stormwater ditch with ephemeral flow that is not a relocated tributary or excavated in a tributary (40 CFR 203.3 (o)(2)(iii)(A)). However, it was most likely excavated in a wetland and is directly tributary to the traditional navigable waters of Kaneohe Bay (40 CFR 230.3 (o)(3)(iii)). As such, it has a "significant nexus" as it "contributes significantly to the chemical, physical, or biological integrity" of the bay (40 CFR 203.3 (o)(3)(v)). It is likely that the primary ecological role of the affected wetland includes the following functions relevant to the significant nexus evaluation:

- Sediment trapping,
- Nutrient recycling,
- Pollutant trapping, transformation, filtering, and transport,
- Retention of precipitation and attenuation of flood waters,

Excessive nutrient enrichment and other anthropogenic activities have degraded the Kaneohe Bay ecosystem in recent decades (summarized in Bahr, et al. 2015). Dores (2018) documented wastewater-borne nutrients from leachate, originating from onsite sewage disposal systems (OSDS), which includes effluent from cesspools and malfunctioning septic tanks. The leachates are being transported through groundwater to streams and nearshore coastal waters of Kahaluu region in Kaneohe, Oahu. Dores (2018) found that the degree of nutrient enrichment, measured as dissolved

nitrate from OSDS sources, is highest adjacent to the mouths of Kaalaea and Haiamoa Streams than at any other location sampled within the region (Figure 11), due to the high number and density of OSDS located within these watersheds (Table 1). Consistent with Dores (2018) findings, the State of Hawaii Department of Health (2018) identified both Kaalaea and Waihee Streams as being impaired for TN, NO3+NO2, Turbidity, TP, and Enterococci at various times during the year. There are no State of Hawaii water quality records for the unnamed ditch adjacent to the project area.

Fish and wildlife resources and habitats in the Kaalaea and Haiamoa, and Waihee watersheds are mentioned in Paahana (2015), survey data from neighboring Waihee Marsh (Hawaii Planning LLC 2016) and Waipilopilo Stream (AECOS 2001, 2017), recent correspondence from of U.S. Fish and Wildlife Service (2016a, 2016b), a general summary of stream surveys in Waihee and Kaalaea Streams (Parham et al 2008), unpublished aquatic survey records of the Hawaii Cooperative Fishery Research Unit (Ford 1975), USFWS (1976), and recent reconnaissance surveys conducted by the author over the past three months. No biological surveys have been conducted in Haiamoa Stream (Parham et al 2008). The description of wetland vegetation within Waihee Marsh by Elliott and Hall (1977) is remarkably similar to the distribution of plants there today. Shallenberger (1977) described the value of these wetlands for wildlife:

> "…choked with bulrush and to a lesser amount California grass. Water in the marsh was between four to six inches deep when surveyed (on May 8, 1977), but a one-to-two foot thick layer of mud and organic ooze lay under the water. The land is presently used for cattle grazing, and is subject to considerable noise disturbance from nearby residences and businesses.
>
> "Cattle, dogs, and mongoose were all observed within the marsh. Judging from the distribution of tracks on patches of exposed mud, there is no part of the existing wetland that is inaccessible to these species. The shallow water supports a surprisingly high density of mosquito fish, crayfish and gastropod mollusks. Two gallinule were flushed as we walked through the area, and some others may have been missed. To the extent that the site would hold additional water after heavy rains, there is some chance that greater numbers of waterbirds may inhabit the marsh intermittently. However, the neighboring human disturbance and accessibility of the site to a large number of people, predators and cattle prevents the wetland from being of more than marginal significance to waterbirds."

Despite this assessment, Waihee Marsh has been highly valued for decades by conservationists and the Kahaluu community as a nutrient and sediment filter for surface water discharge entering Kaneohe Bay, flood control, and ephemeral habitat for endangered Hawaiian water birds (Honolulu Star Bulletin 1996; Reppun 2019; and Shallenberger 2019). Over several years and through changing land ownership, various development proposals have been defeated by community pressure including a marina, deep draft harbor, industrial and other commercial developments (Gray, Hong & Associates 1982; Honolulu Advertiser 1995; Reppun 2019). The Office of State Planning (1993) unsuccessfully petitioned to have Waihee wetlands rezoned from urban to conservation classification under Hawaii Revised Statutes §205-18. In a later action, another private land owner tilled and applied pesticides to a significant portion of the Waihee Marsh in 2001 and proposed mixed uses for the property which created significant controversy (Honolulu Advertiser 2001).

Through efforts by Hawaii Congresswoman Patsy Mink and Oahu Councilman Steve Holmes in cooperation with local community groups, President Clinton signed legislation in October 1996

authorizing the Secretary of the Interior to acquire and manage the 36-acre Waihee Marsh for inclusion in the Oahu National Wildlife Refuge Complex, Hawaii (H.R. 1772). The Honolulu City Council supported the protection of the marsh by the Interior Department (Honolulu Advertiser 1995). However, the U.S. Fish and Wildlife Service's Region 1 Wildlife and Refuges Division subsequently determined that the marsh did not provide sufficient suitable habitat for listed endangered waterbirds, and could not be adequately managed and protected from predators, disease, and water quality issues. Instead, federal wildlife protection efforts were subsequently focused upon expansion and management of wetland habitats at James Campbell National Wildlife Refuge and the Pearl Harbor National Wildlife Refuge units on Oahu (Shallenberger 2019). Waihee Marsh was not identified as a priority wetland for protection of endangered Hawaiian waterbirds on windward Oahu by the Pacific Coast Joint Venture (2006).

Maps developed by Price et al (2007) identify the project site as being within a seasonal mesic moisture regime with a mix of low (converted) and medium (non-native) terrestrial habitat values. Today, there are no significant open water habitats either at the project site or in neighboring Waihee Marsh. Dense vegetation, lack of open water, and proximity to residential subdivisions and associated human disturbances have rendered the project site as poor habitat for endangered and migratory waterbirds. However, recent research by van Rees et al. (2018) on the Hawaiian gallinule (*alae ula*) suggests that forested and vegetated streams, ditches, canals, and roadside swales play a significant role in the distribution of the species on Oahu. Their study implies that marginal habitats formerly assumed to have little value to Hawaiian gallinules may contribute to their persistence by increasing population connectivity (van Rees et al 2017). They believe that some of these unmanaged water features may actually alleviate problems of genetic isolation in gallinule. van Rees and Reed (2015) speculated that changing water management goals with a greater emphasis on green stormwater infrastructure might simultaneously provide conservation benefits for waterbirds and help alleviate polluted water resources.

The roughly 8.3-acre taro pond complex, located approximately 130-feet northeast of the project site, appear to be the nearest open waters suitable as loafing and feeding habitat for endangered Hawaiian waterbirds, migratory waterfowl and shorebirds. At the present time, not all these ponds appear to be simultaneously flooded, farmed, or managed to maximize value to wildlife. Recently, the U.S. Fish and Wildlife Service (2016a, 2016b) indicated that endangered species discussed in the following paragraphs may occur within the Kahaluu region:

1. The Hawaiian hoary bat or opeapea (*Lasiurus cinereus semotus*) roosts in both exotic and native woody vegetation and, while foraging, will leave young unattended in "nursery" trees and shrubs when they forage. If trees or shrubs suitable for bat roosting are cleared during the breeding season, there is a risk that young bats could inadvertently be harmed or killed since they are too young to fly or may not move away.

2. Four species of endangered Hawaiian waterbirds are known from windward Oahu wetlands. The Hawaiian stilt or *aeo* (*Himantopus mexicanus knudseni)*, Hawaiian coot or *alae keokeo (Fulica alai)* , Hawaiian gallinule or *alae ula (Gallinula galeata sandvicensis)*, and Hawaiian duck or *koloa maoli (Anas wyvilliana),* collectively referred to as Hawaiian waterbirds, occur at various sites within the vicinity of the project area (e.g. Heeia Pond and various locations along Kaneohe Bay).

3. The wedge-tailed shearwater or *ua u kani (Puffinus pacificus),* a species protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712] (MBTA), may occur in the area. Wedge-tailed shearwater nesting colonies are located on offshore islets and several locations on Oahu and every year many young shearwaters are downed and struck along Oahu roadways. Any increase in the use of night-time lighting, particularly during each year's peak fallout period (September 15 through December 15), could result in additional seabird injury or mortality. Outdoor lighting, such as street lights and night-time work, can adversely impact listed and migratory seabird species found in the vicinity of the proposed project. Seabirds fly at night and are attracted to artificially lighted areas which can result in disorientation and subsequent fallout due to exhaustion or collision with objects such as utility lines, guy wires, and towers that protrude above the vegetation layer. Once grounded, they are vulnerable to predators or often struck by vehicles along roadways.

The streams draining the Kahaluu region are considered “above average” habitat for native aquatic species (HCPSU 1990, Parham et al 2008); however, Haiamoa Stream was not ranked due to lack of survey data. Based upon studies of neighboring streams and wetlands, the aquatic species that are likely to inhabit the unnamed drainage ditch along the northern border of the project site are listed in Table 2. The table also identifies species observed or likely to occur in the makai portion of the ditch between the project site and receiving waters of Kaneohe Bay.

Neither the unauthorized fill by Wailehua I LLC nor the completion of the proposed Wailehua I residential development of 10 homes would result in detrimental impacts upon aquatic resources within or downstream of the unnamed drainage ditch within “Drainage Easement A”. There are no endangered aquatic invertebrates known to inhabit the projects site; however, endangered Hawaiian damselflies have been reported from the upper reaches of Kaalaea Stream (Polhemus 2018).

Table 2. Conspicuous aquatic macrofauna observed, reported, or likely to occur within the unnamed ditch ("Drainage Easement A") adjacent to and downstream of Wailehua 1.

Common Name/ Hawaiian Name	***Scientific Name***	***Diadromous***	***Biogeographic Status***
Amphibians			
Marine toad/None	*Rhinella marina*	N	Naturalized
American bullfrog/None	*Lithobates catesbeianus*	N	Naturalized
Fishes			
Flagtail/aholehole	*Kuhlia xenura*	N	Endemic
Sleeper/oopu akupa	*Eleotris sandwicensis*	Y	Endemic
Goby/oopu naniha	*Stenogobius hawaiiensis*	Y	Endemic
Goby/oopu nakea	*Awaous stamineus*	Y	Endemic
Blackchin tilapia/None	*Sarotherodon melanotheron*	N	Introduced
Western mosquitofish/None	*Gambusia affinis*	N	Introduced
Mexican Molly/None	*Poecilia* sp. (hybrid complex)	N	Introduced
Swordtail molly/None	*Xiphophorus helleri*	N	Introduced
Chinese walking catfish/None	*Clarias fuscus*	N	Introduced
Crustaceans			
Feeble shrimp/opae huna	*Palaemon debilis*	N	Indigenous
Hawaiian prawn/opae oehaa	*Macrobrachium grandimanus*	Y	Endemic
Tahitian prawn/None	*Macrobrachium lar*	Y	Introduced
Crayfish/None	*Procambarus clarkii*	N	Introduced
Mollusks			
Estuarine neritid/hapawai	*Neritina vespertina*	Y	Indigenous
Red-rimmed melania/None	*Melanoides tuberculata*	N	Naturalized
Insects			
Wandering glider dragonfly	*Pantala flavescens*	N	Indigenous
Roseate skimmer damselfly	*Orthemis ferruginia*	N	Naturalized
Rambur's forktail damselfly	*Ischnura ramburi*	N	Naturalized
Familiar bluet damselfly	*Enallagma civile*	N	Naturalized

Key: N = no, is not diadromous; Y = yes, is diadromous. Tropical insular gobies, crustaceans, and mollusks have a *diadromous* life cycle which requires an obligatory period of larval development in the ocean before post-larvae migrate back into streams. These species require ecological connectivity between freshwater streams and the sea, at least several times during a year. *Sources*: Ford (1975); USFWS (1976); Parham et al (2008); and AECOS (2011, 2017).

F. Summary of New Information

1. The existing unnamed drainage running from Lamaula Road into Kaneohe Bay through "Drainage Easement A" along northern boundary of the project site is a stormwater ditch, not a perennial stream. It is intermittent in nature as it flows past the project site, and receives stormwater discharge from the site and other storm drains serving residential areas mauka of Lamaula Road and south of Wailehua Road. It may also intercept groundwater or spring flow toward the eastern end of the project site. Downstream of the project site it receives inflow from an historic auwai originating in the Kaalaea watershed and overflow from adjacent taro ponds.

2. The drainage ditch was not filled or directly altered by the unauthorized fill; but its course has meandered over time due to dense vegetative growth, lack of maintenance, and in-filling of home lots and taro pond berms downstream of the project site.

3. An approximate area of 0.4 acres of the unauthorized fill had been placed on the project site by a previous land owner for use as a bus parking lot. This filled area was subsequently overgrown with weeds and grasses before being grubbed and graded in 2015 by the current landowner.

4. Excess stormwater sheet flow from the proposed house lots will be intercepted by a French drain to help maintain existing drainage patterns and avoid flooding of the house lots and direct discharge of sediment-laden sheet flow into the unnamed ditch.

5. The project site does not currently provide habitat for protected species, and is of marginal value to wildlife and aquatic resources due to the proximity of the site to human activity.

6. The wetlands within the Haiamoa, Kaalaea, and Waihee watersheds act as important filters for sediments and nutrient enrichment entering Kaneohe Bay from upland stormwater sheet flow and onsite sewage disposal systems. As such, they contribute significantly to the sustainability of the watersheds and to the water quality and nearshore reef ecosystems in Kaneohe Bay. These wetlands have been under changing ownership and threat of destruction through inappropriate development for at least four decades. Much of their ecological value is being eroded through piecemeal development. Perpetual preservation of a portion of the Waihee Marsh and margins of the unnamed drainage ditch at the project site, are therefore deemed appropriate as a form of compensatory mitigation.

7. The unauthorized fill associated with Wailehua I LLC house construction at the project site has resulted in the loss of 1.3 acres of freshwater emergent wetlands under jurisdiction of the Army Corps of Engineers under 33 CFR 328.4.

G. Applicant-Proposed Mitigation Statement

The following action alternatives are recommended for compensatory mitigation of the unauthorized fill associated with the Wailehua 1 residential housing development:

1. Avoidance of impacts to waters of the U.S., including wetlands.

   Insofar as the unauthorized fill occurred in 2015 in violation of Section 404 of the Clean Water Act, the initial impacts caused by that fill cannot be avoided. Recommendations are made herein for compensatory mitigation for the unavoidable loss of 1.3 acres of adjacent wetlands (Paahana 2015). Should the applicant be awarded an after-the-fact Department of the Army permit (POH-2015-00119), all measures to avoid and minimize impacts to waters of the United States contained in relevant City and County of Honolulu, State of Hawaii, and federal agency permits and licenses will be adhered to (see paragraph 2, below).

2. Minimization of unavoidable impacts to water of the U.S., including wetlands.

   During the unauthorized placement of fill at the project site in 2015-2016, all earth moving activities associated with the unauthorized fill were conducted by Wailehua 1 LLC in compliance within the limitations and requirements of the following state and local permits that had been issued for the project:

   a. JD Conditional Use Permit issued 4 May 2015
   b. C&CH Stockpiling permit GP2015-06-0269 issued 12 Jun 2015
   c. C&CH Grubbing permit GP 2015-09-0433 issued 2 Sep 2015
   d. C&CH Grading permit GP2015-08-0387 issued 6 Aug 2015
   e. C&CH Grading permit GP2015-09-0437 issued 4 Sep 2015
   f. C&CH Building permit 771670 issued 17 Aug 2015
   g. C&CH Building permit 771671 issued 17 Aug 2015
   h. C&CH Building permit 775496 issued 19 Oct 2015
   i. C&CH Building permit 775497 issued 19 Sept 2015
   j. C&CH SMA-14 Minor approved 30 April 2015
   k. C&CH SMA-56 Minor approved 12 Jan 2016
   l. C&CH CUP-32 approved 19 May 2015
   m. C&CH SUB-10 approved 29 Jul 2016
   n. C&CH SMA-59 Minor / erosion control and grading plan, approved 18 Jan 2017
   o. C&CH SMP permit approved 8 Feb 2017
   p. C&CH SMA Minor Permits 2015/SMA-14 and 2016/SMA-59

During grubbing, grading and filling, no materials were placed into the unnamed ditch within “Drainage Easement A”, and no structural alterations or changes to discharge capacity of the unnamed ditch were made. Standard BMPs were employed during these operations to prevent sediment from entering the unnamed ditch or existing municipal sewers. Due to the length of time that has passed since these permits were obtained, it is likely that Wailehua I LLC will need to have these permits renewed or reissued.

Additional avoidance, minimization, and mitigation measures that will be employed should Wailehua I LLC be granted an after-the-fact Department of the Army permit for their project:

a. A French drain will be employed to intercept increased stormwater sheet flow from the proposed house lots before they enter the ditch. The design of the drain was formerly approved by the City and County of Honolulu Department of Planning and Permitting.

b. To minimize impacts to endangered Hawaiian hoary bats, woody plants taller than 15 feet will not be disturbed, removed, or trimmed during the bat birthing and pup rearing season (June 1 through September 15).

c. All lighting associated with the residential subdivision and appurtenances will be designed with accepted federal, state, and county mitigation measures to help prevent the fallout of fledgling seabirds, which can be confused by stray lighting. New information is available from the International Dark Sky Association that can assist in finding acceptable lighting fixtures for virtually all applications: http://darksky.org/fsa/fsa-products/. Appendix B provides additional information for use in selecting appropriate lighting fixtures.

d. Erosion and sedimentation from project-related work will be minimized and contained within the project area by silt containment devices and curtailing work during flooding or adverse tidal and weather conditions. BMPs, including appropriate measures identified in Chapter 6: Pollution Prevention / Good Housekeeping of Department of Facility Maintenance (2016), will be maintained for the life of the construction period until turbidity and siltation within the project area is stabilized. All project construction-related debris and sediment containment devices will be removed and disposed of at an approved site.

e. All project construction-related materials and equipment (dredges, vessels, backhoes, silt curtains, etc.) to be placed in an aquatic environment will be inspected for pollutants and cleaned prior to use. Project related activities will not result in any debris disposal, non-native species introductions, or attraction of non-native pests to the affected or adjacent aquatic or terrestrial habitats.

f. Project construction-related materials (fill, revetment rock, pipe, etc.) will not be stockpiled in, or in close proximity to aquatic habitats and will be protected from erosion *(e.g.,* with filter fabric, coir logs, etc.), to prevent materials from entering adjacent waters.

g. Fueling of project-related vehicles and equipment will take place away from the aquatic environment and a contingency plan to control petroleum products accidentally spilled during the project should be developed. The plan should be retained on site with the person responsible for compliance with the plan. Absorbent pads and containment booms should be stored on-site to facilitate the clean-up of accidental petroleum releases.

h. All deliberately exposed soil or under-layer materials used in the project near water will be protected from erosion and stabilized as soon as possible with geotextile, filter fabric or native or noninvasive vegetation matting, hydro-seeding, etc.

3. Conceptual proposal for compensation for unavoidable impacts to waters of the U.S., including wetlands.

    a. On-site and Off-site Wetland Preservation is proposed as compensatory mitigation under preservation is believed to be an appropriate and practicable mitigation alternative meeting the necessary prerequisites of 33 CFR 332.3(h). Wailehua 1 LLC will dedicate in perpetuity a ~0.20 acre easement along and abutting ~715 ft of "Drainage Easement A" (Figure 13) to protect and preserve wetland vegetation for the purpose of sediment and nutrient retention, and the uninterrupted conveyance of floodwaters. This would require creation of a Conservation Easement and Acceptance document and other legal documents. Responsibility for maintenance of "Drainage Easement A" is jointly shared by the City and County of Honolulu and the land owner. Additionally, a 3,128 square foot area of fill between the back of the existing homes and the easement boundary would be restored to pre-fill wetland conditions. The expanded easement will be fenced and posted, and will be inspected and maintained on annual basis by the land owner to ensure that the natural character of the area remains undisturbed. This action would preserve the densely wetlands along and within 'Drainage Easement A' in perpetuity to serve as a pollutant and sediment filter for Kaneohe Bay. The total area of the protected easement would encompass approximately 1.0 acre.

    b. In addition, Wailehua 1 LLC is prepared to convey a perpetual conservation easement, of a mutually agreed upon area, over freshwater emergent wetlands within the northern portion of Waihee Marsh located on lands it owns within the same watershed as the project site (Figure 14). Completion of the compensatory mitigation alternative would require the preparation of appropriate perpetual conservation easements or transfer of title to a 501(3)(c) conservation organization such as the Hawaiian Islands Land Trust (www.hilt.org), along with related legal documents to insure perpetual protection of the mitigation areas. This alternative would help the Kahaluu community achieve a long-term goal of wetland preservation while allowing Wailehua I LLC and the community to realize benefits for the original proposal to construct 10 single-family homes at the project site.

    c. Table 3 identifies permits and studies that may be required to complete the proposed Wailehua I residential housing development and compensatory mitigation.

Table 3. Potential permits and studies that may be required to complete the proposed Wailehua I residential housing development and compensatory mitigation for the unauthorized fill.

Permit or Study Requirement	Agency
Jurisdictional Wetland Boundary Determination at Waihee Marsh	USACE
Department of the Army Section after-the-fact Section 404 permit	USACE
Biological Surveys of Haiamoa Stream and Waihee Marsh	State OEQC
HRS §343 Environmental Assessment	State OEQC
Archaeological Survey and Historical Use Survey	State OEQC
Section 401 Water Quality Certification	State DOH
NPDES Permit and SWPPP	State DOH
Coastal Zone Management Consistency Certification	State OSP
Stream Channel Alteration Permit	State CWRM
Conditional use permit	C&CH DPP
SMA Major permit	C&CH DPP
Grubbing permit (renew or reapply)	C&CH DPP
Grading permit (renew or reapply)	C&CH DPP
Stockpiling permit (renew or reapply)	C&CH DPP
Building permit (renew or reapply)	C&CH DPP
Street use permit (renew or reapply)	C&CH DPP

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APPENDIX A

MAPS AND FIGURES

Figure 1. 1874 Map of the Kaalaea Plantation illustrating the extent of sugar cultivation within the Waihee, Haiamoa, and Kaalaea watersheds. Red polygon is approximate location of the project site. Map source: Hawaii State Archives.

Figure 2. Google Earth image dated December 2000 on Wailehua Road showing the location of a small fill near the center of the property (white polygon), allegedly used as an unauthorized parking area. Red polygon illustrates the boundaries of the proposed project. Map source: Google Earth Pro.

Figure 3. Google Earth image dated August 2004 illustrating an approximately .40-acre expanse of fill (white polygon) on Wailehua Road associated with the unauthorized parking area. Large vehicles can be seen parked at the site. Red polygon illustrates the location of the proposed project. Map source: Google Earth Pro.

Figure 4. Google Earth image dated January 2013 illustrates that the fill associated with the unauthorized parking area (white polygon) has been completely overgrown by grasses and shrubs. This condition persisted through 2014. Red polygon illustrates the location of the proposed project. Map Source: Google Earth Pro.

Figure 5. Google Earth image dated August 2016 illustrates the 1.16 acres of grubbing and grading (yellow outline), and 0.40 acres of fill over the previous unauthorized parking area (white outline), and 0.31 acres of grading, grubbing and fill associated with the two existing house lots at Wailehua I. Values are approximate based upon Google Earth area calculations. Map source: Google Earth Pro.

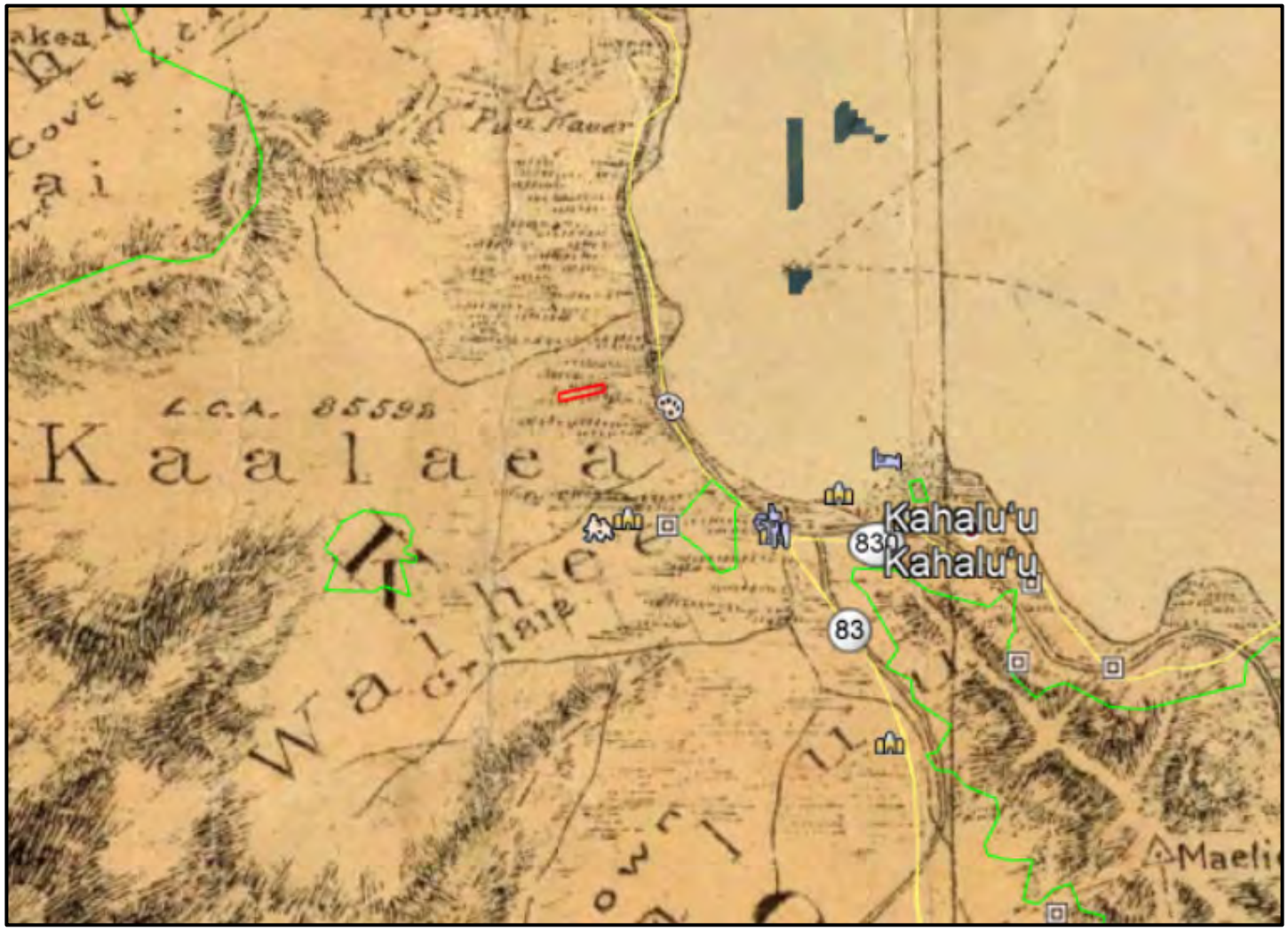

Figure 6. An 1881 Hawaiian Government Survey map of the project region (overlain with Google Earth Pro) identifies extensive wetland complex in the Kaalaea, Haiamoa, and Waihee watersheds. Red polygon is approximate location of the project site. Map source: David Rumsey Map Collection.

Figure 7. A 1902 Hawaii Territorial Survey map of Oahu (overlain with Google Earth Pro) that shows lowlands in Kaalaea, Haiamoa, Waihee watersheds dominated by wetlands. Red polygon is approximate location of project site. Map source: David Rumsey Map Collection.

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Figure 8. A map of the Kaalaea Sugar Company published in 1880 by M.D. Monsarrat illustrates the presence of the unnamed drainage ditch running from Lamaula Road into Kaneohe Bay, and an irrigation auwai that flows through the area occupied today by Wong Village that drains into the unnamed ditch just seaward of the project area. Red polygon illustrates the approximate location of the project site. Map source: Hawaii State Archives.

Figure 9. A map from the City and County of Honolulu's online GIS system showing that the drainage feature in "Drainage Easement A" that forms the northern boundary of the project site is clearly a component of the stormwater system within the Haiamoa watershed, and is not a perennial stream. Red polygon illustrates the footprint of the project site. Map source: http://cchnl.maps.arcgis.com/apps/OnePane/basicviewer/.

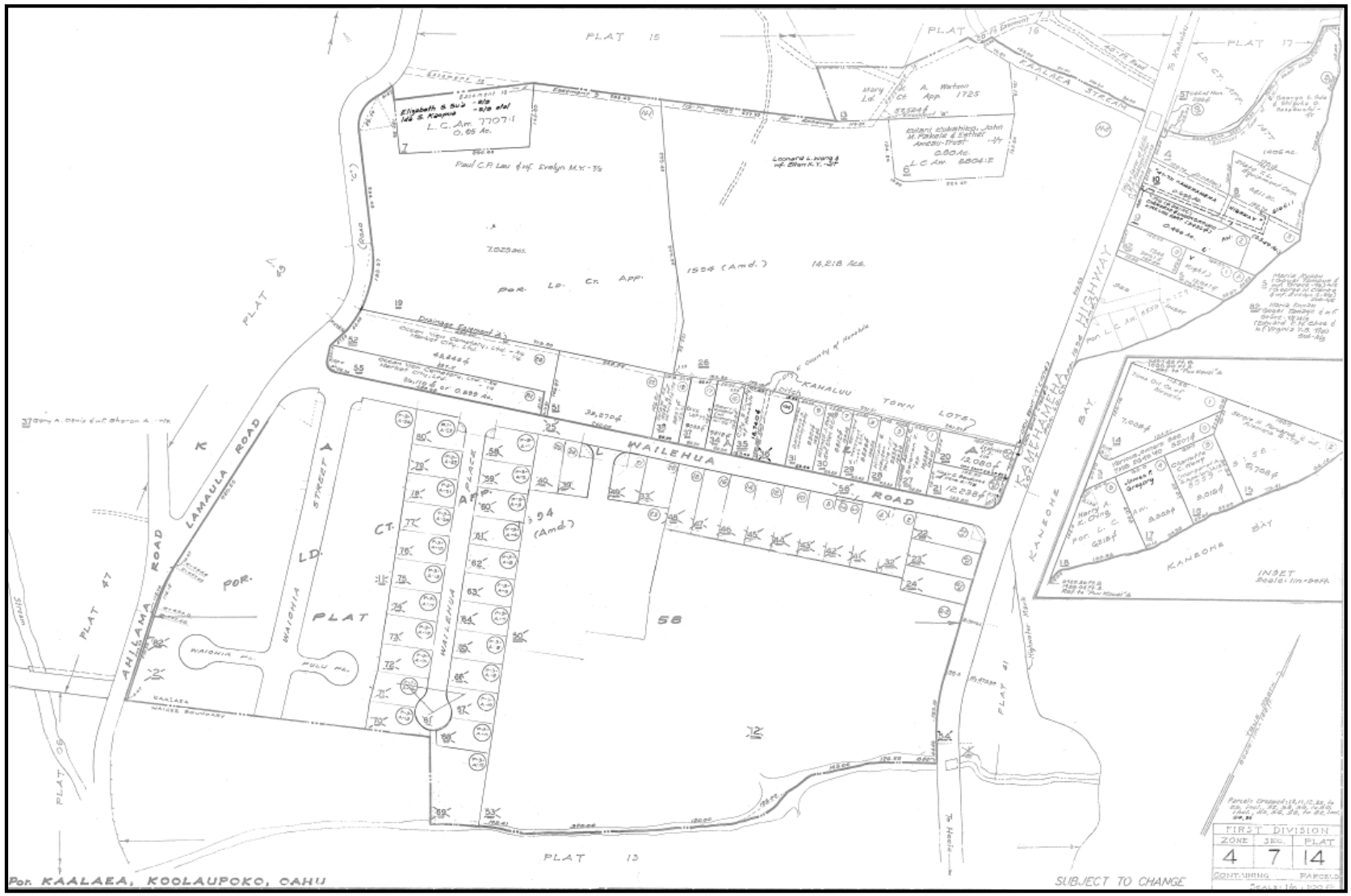


Figure 10. City and County of Honolulu Tax Map Key 1-4-7-14. The project site encompasses parcels 051, 052, and 055. "Drainage Easement A" is located along the northern boundary of the project site.

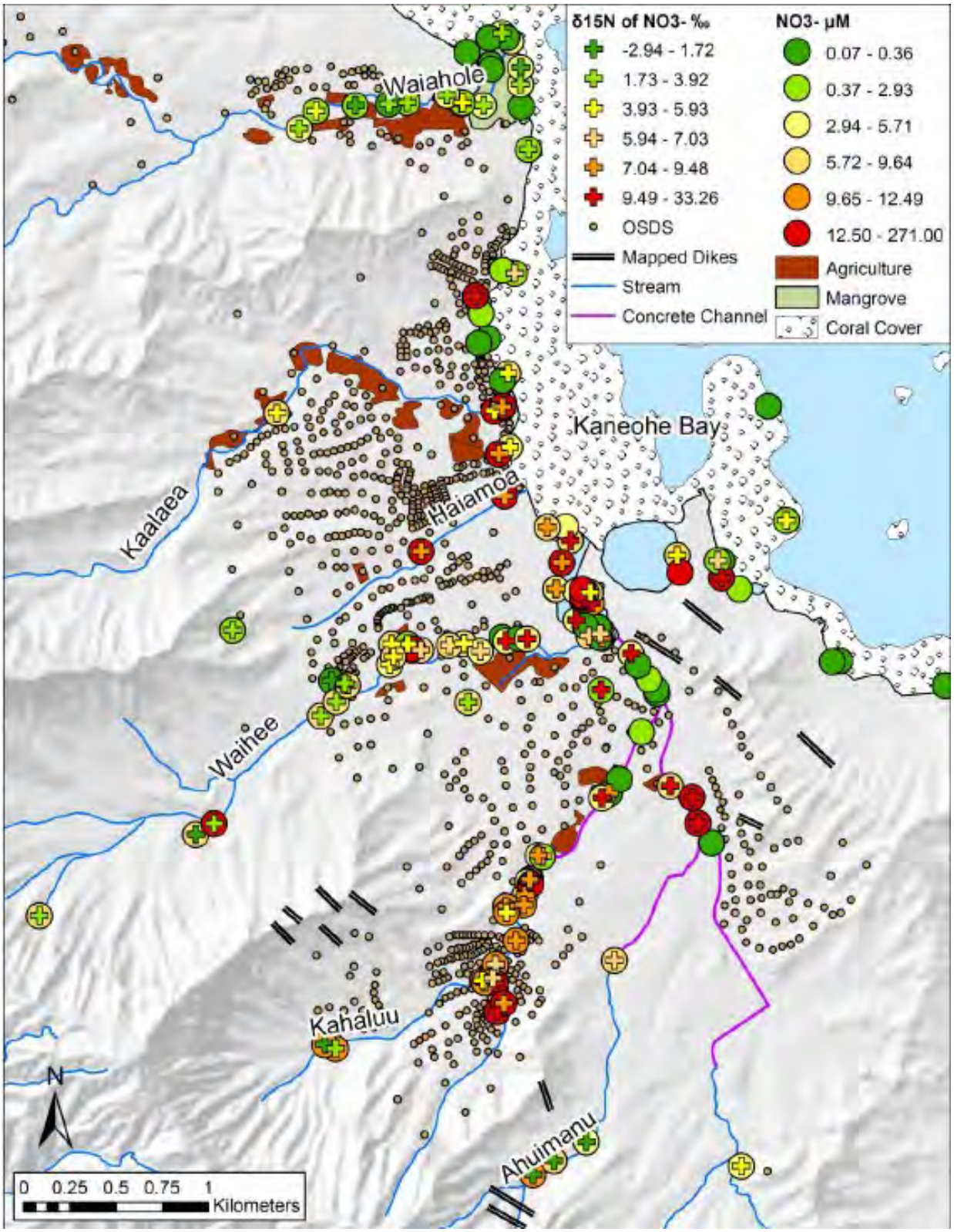


Figure 11. Dores (2018) found that the degree of nutrient enrichment, measured as dissolved nitrate from OSDS sources, is highest adjacent to the mouths of Kaalaea and Haiamoa Streams than at any other location sampled within the Kahaluu study region. Map source: Dores (2018).

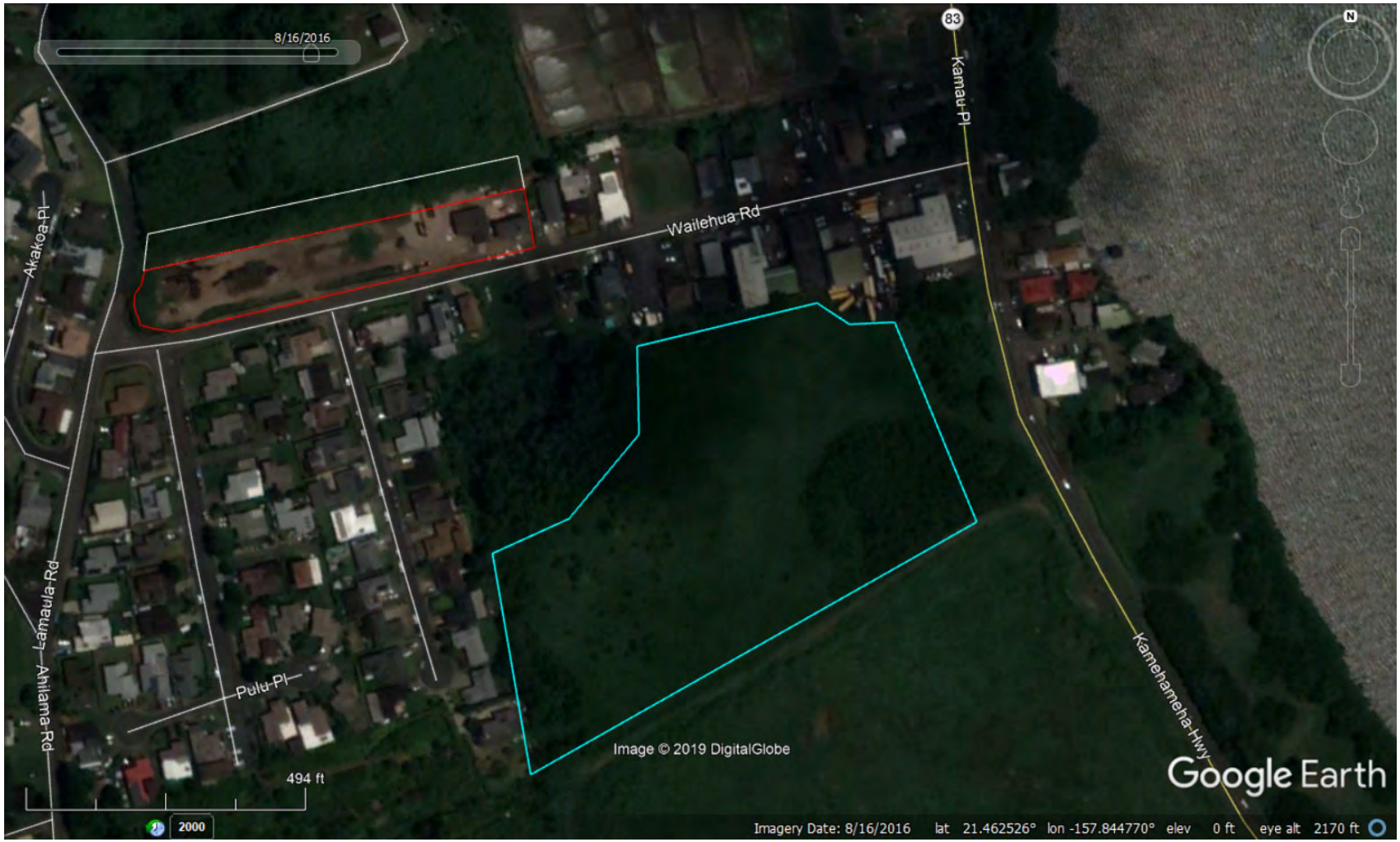


Figure 12. Draft conceptual compensatory mitigation proposal for Wailehua I (red polygon) involving both on- and off-site wetland preservation. A perpetual conservation easement (white polygon) abutting "Drainage Easement A" on Wailehua Road; and area within Waihee Marsh where additional preservation may be located (blue polygon).

APPENDIX B

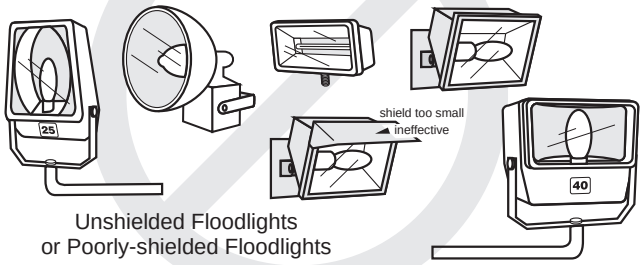
SEABIRD-FRIENDLY LIGHTING SOLUTIONS

SEABIRD FRIENDLY LIGHTING SOLUTIONS

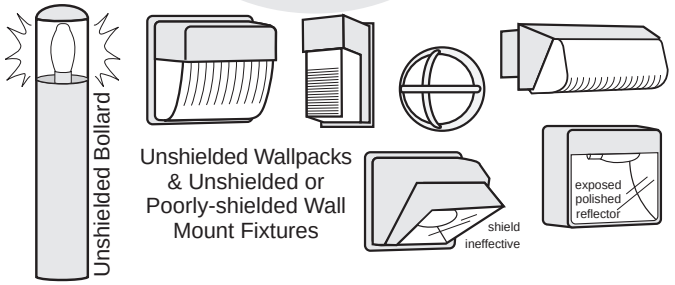
Help eliminate seabird light attraction. Select the best fixture for your application using this guide. Avoid uplighting, always shield floodlights, and aim downlights carefully to avoid light trespass. For more information go to www.kauai-seabirdhcp.info.

Unacceptable / Discouraged

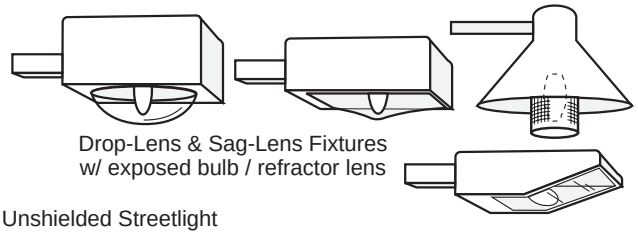
Fixtures that produce glare and light trespass



Unshielded Floodlights
or Poorly-shielded Floodlights

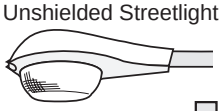


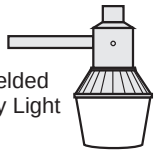
Unshielded Wallpacks
& Unshielded or
Poorly-shielded Wall
Mount Fixtures



Drop-Lens & Sag-Lens Fixtures
w/ exposed bulb / refractor lens

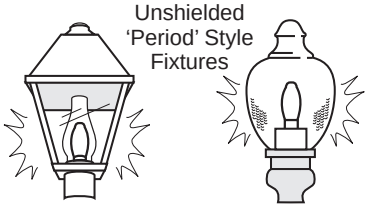
Unshielded Streetlight



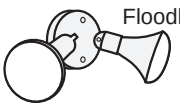


Unshielded
Security Light

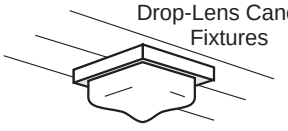
Unshielded
'Period' Style
Fixtures



Unshielded PAR
Floodlights

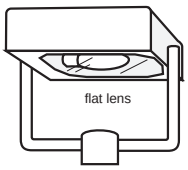


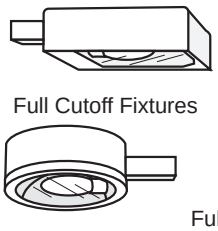
Drop-Lens Canopy
Fixtures



Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night

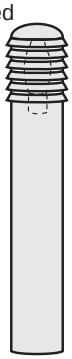


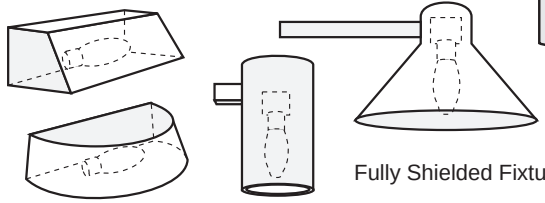


Full Cutoff Fixtures

Fully Shielded
Wallpack & Wall
Mount Fixtures

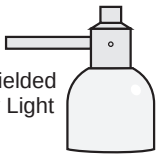
Fully Shielded
Walkway
Bollards





Fully Shielded Fixtures

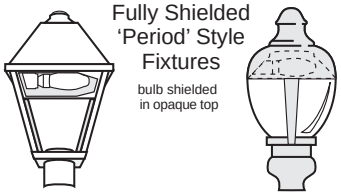
Full Cutoff Streetlight

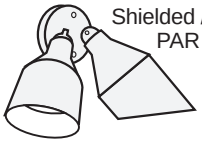


Fully Shielded
Security Light

Fully Shielded
'Period' Style
Fixtures

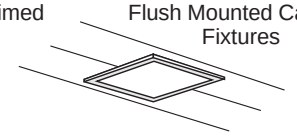
bulb shielded
in opaque top



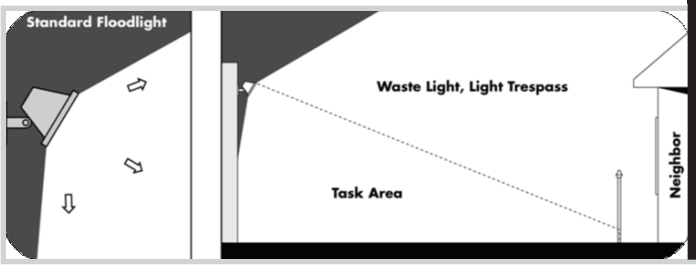


Shielded / Properly-aimed
PAR Floodlights

Flush Mounted Canopy
Fixtures



Unshielded floodlight that is angled incorrectly



Shielded floodlight that is angled correctly

Illustrations from
www.darksky.org and
www.darkskysociety.org

APPENDIX C

PHOTOGRAPHS

Photo 1. Several mounds consisting of boulders, asphalt, gravel, and broken concrete from the previous parking lot fill and illegal dumping are found scattered within the project site where they had been moved during initial grubbing and grading of the project site that occurred in 2015.

Photo 2. Concrete culvert just below Lamaula Road at the head of the unnamed ditch that runs along the northern boundary of the project site.

Photo 3. View towards Kaneohe Bay within the unnamed ditch immediately downstream of the Lamaula Road culvert. No water was seen flowing in this portion of the ditch during field visits in the first quarter of 2019. Note the dense vegetation.

Photo 4. View toward Lamaula Road of the unnamed ditch taken from the Kamehameha Highway culvert, below the project site. Note the fish trap and dense vegetation. The ditch appears to have perennial flow at this location, fed by the auwai that carries water from Kaalaea watershed through Wong Village to the north, and perhaps by spring flow.

Photo 5. View downstream from the Kamehameha Highway bridge culvert of the muliwai (estuarine portion) of the unnamed ditch. Here, the drainage reaches a depth of 4-5 feet and flows through hau and mangrove trees before reaching Kaneohe Bay.

Photo 6. View upstream of the irrigation auwai that carries flow from the neighboring Kaalaea watershed into the unnamed ditch just below the project site. Note the stream gauge on the bank at right. Also note other PVC pipes that apparently stormwater discharge from neighboring properties into the auwai. The auwai consistently carried surface flow during site visits in the first quarter of 2019. No records of the stream gauge have been located as yet.

Appendix E. Drainage Study

DRAINAGE STUDY

for

Wailehua I Subdivision
Wailehua Road
Kaneohe, HI 96744

TMK(S): 4-7-014: 051, 052 & 055

HO&A JOB NO.: 2813

Prepared by:

Hida, Okamoto & Associates, Inc.
Consulting Engineers
Pacific Guardian Tower
1440 Kapiolani Boulevard, Suite 1120
Honolulu, Hawaii 96814-3600

Lic. Exp. 4/30/2018

December 2016

HARVEY K. HIDA
LICENSED PROFESSIONAL ENGINEER
No. 4363-C
HAWAII, U.S.A.

This work was prepared by
me or under my supervision
and construction of this
project will be under my observation.

SIGNATURE

12/20/2016 12-21-2016

DATE

Existing Conditions:

The project site, TMK(s): 4-7-014: 051, 052 & 055 is located in Kaalaea. The area to be graded is approximately 0.33 acres at a 2.6% slope with elevations ranging from 16 to 11 feet. The property has a land use classification of Residential. The land use classification of the properties is R-10, Residential (City) and Urban (state). 100% of the storm water sheet flow towards the drainage easement on the north east side of the property. Currently, the project area is overgrown.

Tributary Area	Direction	Flow, Q (cfs)
AREA A	DITCH	2.13

Proposed Conditions:

The new development will be a subdivided residential development consisting of 10 units with paved driveways. The storm water will follow the existing patterns and flow offsite towards the earthen ditch at the north east of the property.

Tributary Area	Direction	Flow, Q (cfs)
AREA A	DITCH	4.40

Offsite Conditions:

Analysis of the offsite condition adjacent to the proposed development was done to determine the impact of installing a standard sidewalk and gutter. With the addition of a curb, gutter and sidewalk, the 2.34 cfs will be diverted from the development and will flow onto the neighboring property downslope of the development. This is not acceptable and may cause an adverse drainage impact to downslope properties.

Tributary Area	Direction	Flow, Q (cfs)
AREA A	OFFSITE	2.34

Therefore, under the proposed subdivision, offsite runoff will continue to flow onto the project site as under the existing drainage condition. Approximately 22,000 sf of offsite runoff (2.34 cfs) will continue to enter the project site via the roadway and flow toward the existing drainage easement located on the northeast side of the project.

Conclusion:

The proposed development for the above project will have no adverse drainage impacts to the roadways, surrounding areas or existing drainage system. The proposed development will maintain existing runoff patterns. Comparing the existing condition runoff to the proposed condition runoff (see attached inlets design worksheet), the development is expected to increase total runoff quantity by 2.27 cfs, however measures during the design phase of the individual lot development will need to be applied to reduce the runoff increase such as 9EA 71' long x 4' wide x 4' deep french drains as per exhibit EX-4 which will accomodate the increase of runoff. There is no existing ponding on the property and grading shall be done to provide positive flow away from the houses.

INLETS DESIGN WORKSHEET										
Tm =		YEARS			ONE-HOUR RAINFALL =				INCHES	Q=RCIA
AREA	INLET	OVERLAND FLOW TIME				R	C	I	A	Q
		GROUND CHAR.	LENGTH (FEET)	SLOPE (FT/FT)	Tc (MIN)	CORR. FACTOR			(ACRES)	(CFS)
EXSITING CONDTIONS										
A	DITCH	GRASS	700.0	0.026	26.0	1.57	0.20	2.80	2.42	2.13
PROPOSED CONDITIONS									2.42	2.13
A	DITCH	PAVE/GRASS	700.0	0.026	19.8	1.77	0.37	2.80	2.42	4.40
									2.42	4.40
								Difference		2.27
OFFSITE CONDITIONS										
A	OFFSITE	PAVEMENT/DIR	800.0	0.026	13.0	2.07	0.78	2.80	0.51	2.34
HIDA, OKAMOTO & ASSOCIATES, INC.					Consulting Engineers					
JOB NO.:		BY:	GBL		DATE:		6/6/16	CHECK:		
SUBJECT								SHEET:		

French Drain

Data:

Flow Required= 2.27 cfs
percolation rate= 3.25 min/inch
French Drain depth= 4 feet
void percentage= 25%

French Drain Area:

Qrequired=Qvoid+Qpercolation
Qrequired=A*d*(2/3600)*(0.25)+A/(3.25*12*60)
2.27=A*4*(2/3600)*0.25+A/(3.25*12*60)
2.27=A/1800+A/2340
A= **2309 sf** 9EA. 71'Lx4'Wx4'D = **2556 sf**

RUNOFF COEFFICIENT WORKSHEET

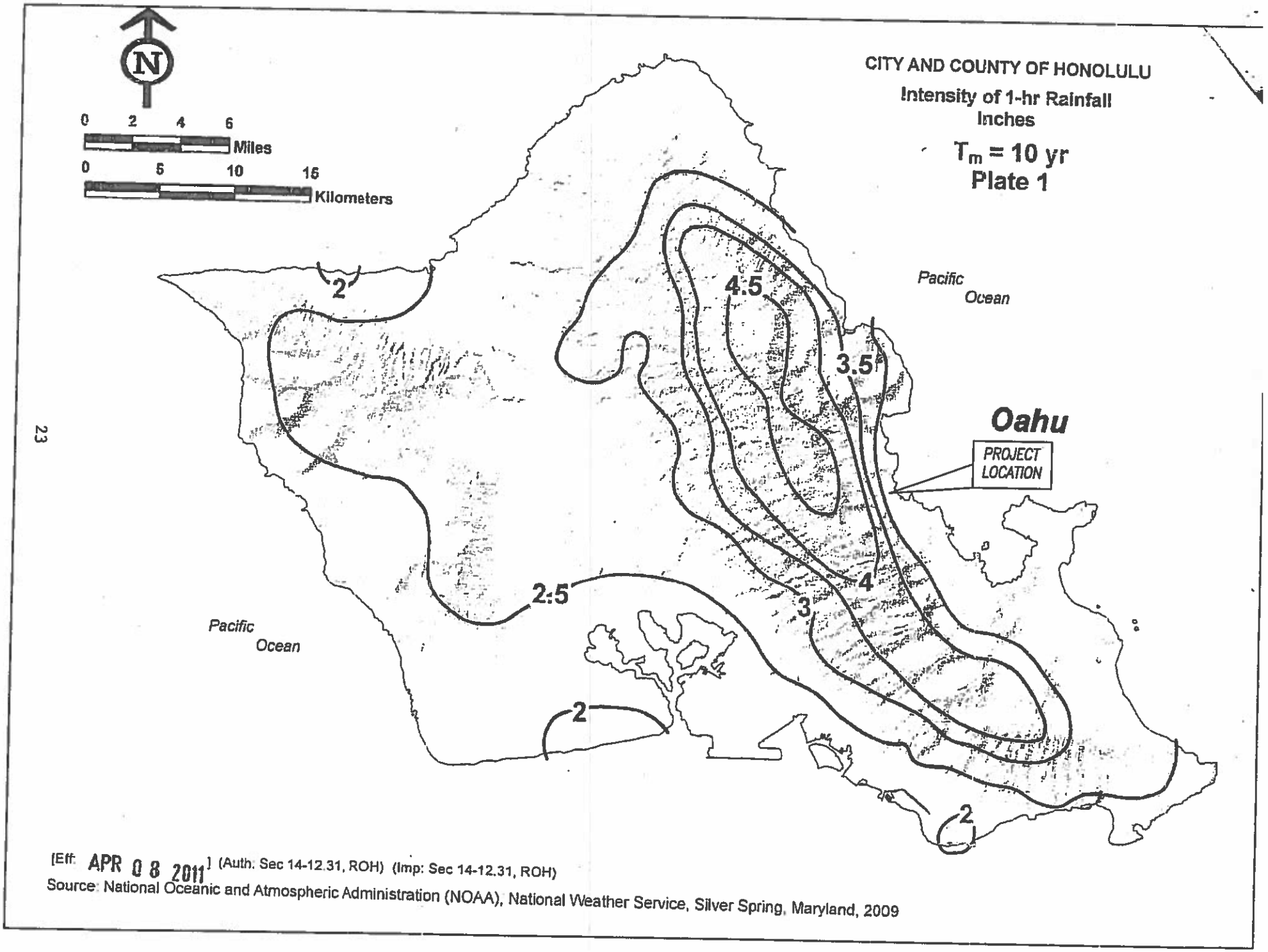
GROUND CHARACTER	RUNOFF COEFFICIENT (C)
PAVEMENT	0.95
ROOF	0.95
DIRT	0.60
STEEP BRUSH	0.45
STEEP GRASS	0.35
GRASS	0.20

TRIBUTARY AREA	GROUND CHARACTER	% PAVEMENT	% ROOF	% DIRT	% STEEP BRUSH	% STEEP GRASS	% GRASS	WEIGHTED (C)
EXSITING CONDTIONS								
A	GRASS						100.0	0.20
PROPOSED CONDITIONS								
A	PAVE/GRASS	22.2					77.8	0.37
OFFSITE CONDITIONS								
A	PAVEMENT/DIRT	52.3		47.7				0.78

HIDA, OKAMOTO & ASSOCIATES, INC. Consulting Engineers

JOB NO.: 2813 BY: GBL CHECK:

SUBJECT: Wailehua II Subdivision SHEET:



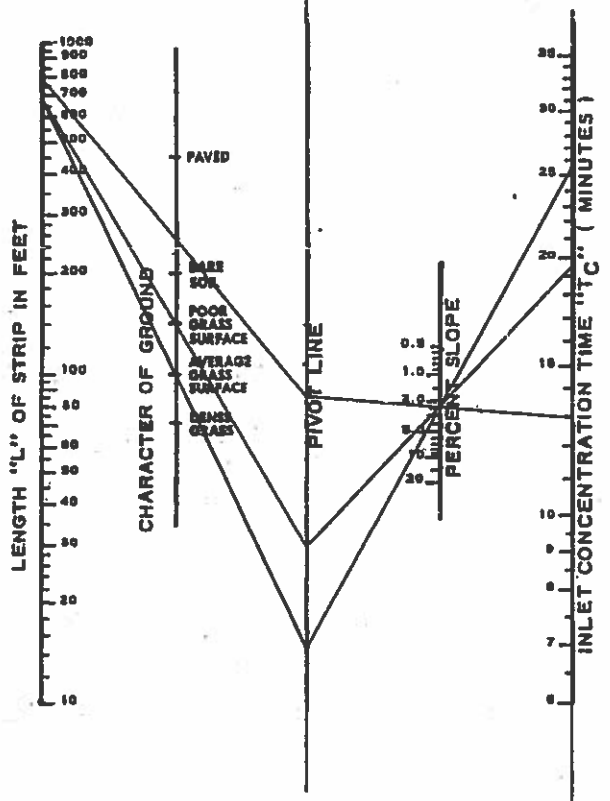
[Eff: APR 08 2011] (Auth: Sec 14-12.31, ROH) (Imp: Sec 14-12.31, ROH)

Source: National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Silver Spring, Maryland, 2009

EXISTING
NEW

Plate 3

Overland Flow Chart



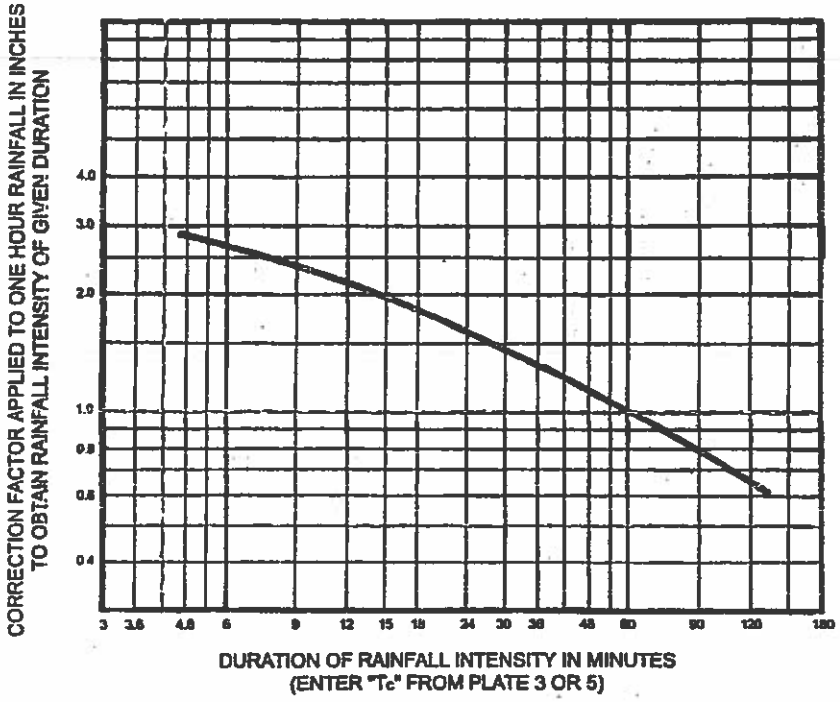
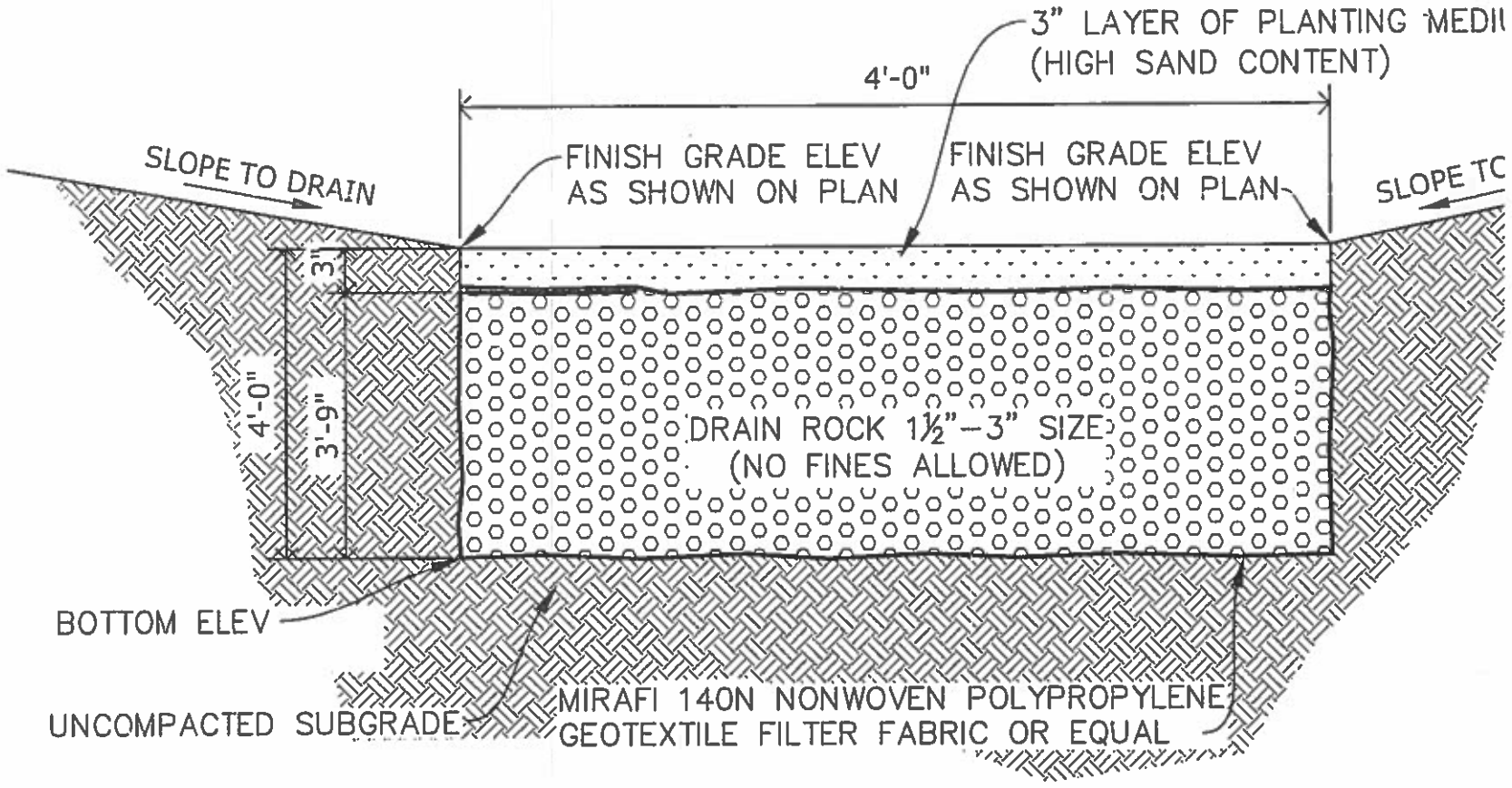


Plate 4

CORRECTION FACTOR
FOR CONVERTING 1 HR. RAINFALL
TO RAINFALL INTENSITY
OF VARIOUS DURATIONS

TO BE USED FOR AREA
LESS THAN 100 ACRES

(See Plate 6 for area
more than 100 acres)



EY K. HIDA
LICENSED
PROFESSIONAL
ENGINEER
No. 4363-C
WAII, U.S.A.

EXP. APR. 30, 2018

RK WAS PREPARED
UNDER MY SUPERVISION
ISTRUCTION OF THIS
WILL BE UNDER MY
ATION.

SIGNATURE

DATE

WAILEHUA II SUBDIVISION
WAILEHUA ROAD

HIDA, OKAM

DEPARTMENT OF HEALTH - WASTEWATER BRANCH
INDIVIDUAL WASTEWATER SYSTEM (IWS) - SITE EVALUATION / PERCOLATION TEST

Date / Time: 06/20/2015 10:00AM Test Performed by: Harvey Hida, P.E.

Owner: Angie Kim (Wailehua I, LLC) TMK: (01) 4-7-14 51' (Mold A)

Elevation: 14 feet

Depth to Groundwater Table. 6 feet below grade

Depth to Bedrock (if observed): _____ feet below grade

Diameter of Hole: 4" inches

Depth to Hole Bottom. 4' feet below grade

Depth, inches below grade	Soil Profile (color, texture, other)
2'	Gray-Brown Elastic Silt
2'-4'	Soft - Gray Elastic Silt

PERCOLATION READINGS:

Time 12 inches of water to seep away 40 minutes

Time 12 inches of water to seep away 38 minutes

Check one:

____ Percolation tests in sandy soils, recorded time intervals and water drops at least every 10 minutes for at least 1 hour

✓ Percolation tests in no-sandy soils, presoaked the test hole for at least 4 hours Recorded time intervals and water drops at least every 10 minutes for 1 hour of time for the first 6 inches to seep away in greater than 30 minutes record time intervals and water drops at lest every 30 minutes for 4 hours or until 2 successive drops do not vary by more than 1/16 inch.

Time Interval	Drop in Inches	Time Interval	Drop in Inches
10	3		4
20	6		7
30	9		10
40	12		13
50	15		15
60	18		17

Percolation Rate (time/final water level drop): _____ minutes/inches

As the engineer responsible for gathering and providing site information and percolation test results, I attest to the fact that above site information is accurate and that the site evaluation was conducted in accordance with the provisions of Chapter 11-62, "Wastewater Systems" and the results were acceptable. I also attest that three feet of suitable soil exist between the bottom of the soil absorption system and the groundwater table or any other limiting layer

Engineer's Signature/Stamp

HARVEY R. HIDA
LICENSED PROFESSIONAL ENGINEER
No. 4363-C
HAWAII U.S.A.

06-22-2015
Date

LAND COURT SYSTEM : REGULAR SYSTEM

AFTER RECORDATION, RETURN BY MAIL ( ) PICKUP ( ):

Total Pages: _____

Tax Map Key Nos. (1) 4-7-014-_____

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS

THIS DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS ("Declaration"), dated _____, 2016, by WAILEHUA I, LLC, a Hawaii limited liability company, whose post office address is 905 Factory Street, Honolulu, Hawaii 96819 ("Declarant").

RECITALS

WHEREAS, Declarant is the owner of those certain parcels of land situate at Kaalea, District of Koolaupoko, City and County of Honolulu, State of Hawaii, which are more particularly described in Exhibit "A" attached hereto and made a part hereof (collectively, "Lots" and singly, "Lot"); and

WHEREAS, in order to enhance and protect development of the Lots, Declarant wishes to impose certain covenants, conditions and restrictions on the Lots, which are intended to inure to the benefit of and to burden each of the Lots and their respective successive owners and occupants.

NOW, THEREFORE, the acceptance of a deed, agreement of sale, lease or other conveyance by any person of any Lot or any interest in any Lot shall constitute acceptance of this Declaration and the covenants, conditions and restrictions herein, regardless of whether or not said instrument is expressly made subject hereto. This Declaration shall be binding upon and enforceable against each owner, purchaser, tenant and occupant of all or any part of each Lot and their respective successors in interest; and shall be deemed incorporated in each deed, lease or other instrument by which any right, title or interest in any Lot is granted, devised or conveyed, whether or not expressly referred to herein.

Article 1
RESTRICTIONS

1.1 **Use.** The Lots shall be occupied and used only for residential purposes.

1.2 **Prohibited Structures and Activities.** (a) No temporary structures (including, by way example, sheds, tents or tarps) shall be permitted to be built or located on a Lot, and no such temporary structures shall be improved so as to be made permanent.

(b) No garments, rugs or other objects shall be hung from any improvement located on a Lot.

1.3 **Maintenance and Painting.** The Lots shall keep in a strictly clean and sanitary fashion. Such obligation includes repainting any improvement located on a Lot, as such becomes reasonably necessary.

1.4 **Improvements Damaged or Destroyed.** (a) Should any improvement located on a Lot be substantially or totally damaged or destroyed, the Owner thereof shall promptly replace and rebuild such improvement. Should the Owner fail to do so within six (6) months of the occurrence of the damage or destruction, the Owner shall remove from the Lot what remains of the damaged or destroyed improvement.

(b) As used herein, "Owner" shall mean any person who owns a fee simple interest in a Lot, and any person to whom all rights as Owner shall have been transferred by means of (a) a deed, (b) a lease of said Lot for a period in excess of five (5) years, or (c) an agreement of sale which transfers all rights of possession and occupancy.

1.5 **Pets.** Dogs, cats, and other usual and customary household pets may be kept in reasonable number on a Lot, provided that (a) no such animals may be kept in violation of any laws, ordinances, rules, or regulations now or hereafter made by any governmental authority; (b) such animals shall not be kept, bred, or used for any commercial purpose; and (c) chickens and roosters shall not be allowed as pets.

1.6 **Drainage Easement.** The northerly portion of each Lot ("Burdened Land") is burdened by a portion of an easement for drainage purposes ("Drainage Easement"), which Drainage Easement is more particularly described as Easement A, as shown on Map 5 of Land Court Application No. 1594. Each Owner shall maintain its Burdened Land so as to allow the free flowage of water within the Drainage Easement.

1.7 **Erosion Control Improvements.** As required by the City and County of Honolulu, Department of Planning and Permitting, certain improvements have been installed for erosion control purposes, including "French drains" and "silt fences" (collectively, "Erosion Control Improvements"), on Lots A-2 through A-10 inclusive in the locations shown on Exhibit "B" attached hereto and made a part hereof. It is the obligation of the Owner of each Lot on which Erosion Control Improvements are located to maintain such Improvements.

Article 2
GENERAL PROVISIONS

2.1 **Duration.** This Declaration shall be binding in perpetuity unless the Owners of not less than seventy-five percent (75%) of the Lots shall cancel and terminate this Declaration by executing and recording in the Bureau of Conveyances of the State of Hawaii an instrument setting forth such cancellation and termination, except as otherwise provided by applicable law.

2.2 **Amendment.** This Declaration may be amended at any time by not less than seventy-five percent (75%) of the Lots executing and recording in the Bureau of Conveyances of the State of Hawaii an instrument setting forth such amendment, except as otherwise provided by applicable law.

2.3 **Enforcement.** Declarant and each Owner shall have the right, but not the responsibility, to enforce any or all of the limitations, restrictions, covenants and conditions imposed by this Declaration by any proceeding at law or in equity against any person or persons violating or attempting to violate any such limitations, restriction, covenant or condition, and any judgment for any such violation may require all costs and expenses of such enforcement action, including a reasonable attorney's fee, to be paid by the person who the court finds in violation of any such limitations, restriction, covenant or condition.

2.4 **No Waiver.** No failure to enforce the provisions of any limitation, restriction, covenant or condition of this Declaration shall constitute a waiver of any right by the Declarant or an Owner to enforce any provisions of this Declaration in another case against or with respect to any other Owner.

2.5 **Severability.** The invalidity of one or more provisions of these covenants by judgment or court order shall not affect any of the other provisions hereof.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the undersigned has executed these presents as of the day and year first above written.

WAILEHUA I, LLC, a Hawaii limited liability company

By _____

Its

"Declarant"

STATE OF HAWAII)
) SS.
CITY AND COUNTY OF HONOLULU)

On this _____ day of _____, 2016, before me personally appeared _____ _____, to me personally known or adequately proven to be the person(s) described in and who executed the foregoing instrument, who, being by me duly sworn or affirmed, did say that such person(s) executed the same as the free act and deed of such person(s), and if applicable, in the capacity shown, having been duly authorized to execute such instrument in such capacity.

_____
Notary Public, State of Hawaii

_____
(Printed name)

My commission expires: _____

Doc. Date: _____	**# Pages:** _____
Name: _____	**First Circuit**
Doc. Description: _____	
_____	(Seal)
_____	
Notary Signature Date	
NOTARY CERTIFICATION	

EXHIBIT "A"

[TO BE INSERTED]

END OF EXHIBIT "A"

REQUEST FOR REVIEW (From Subdivision Branch)		SITE DEVELOPMENT DIVISION Department of Planning & Permitting
PROJECT: Construction of French Drain Wailehua Subdivision I Wailehua Road, Kaneohe	Log No.: 2016/CP-193 Ref. No.:	Date: 12/6/16
T.M.K.: 4-7-014:051, 052 & 055;	Submitted by: Hida, Okamoto & Associates, Inc. Contact: Glen Lukec Phone: 942-0066	Due Date:
ROUTE TO: ___ BLDG _X_ CEB ___ WWB ___ TRB ___ BWS _X_ LUAB		

Comments:

1st REVIEW

(Approval required for subdivision requirements)
COMMENTS - D, CWQ

2nd REVIEW
ACAMST

VERIFIED W/ KEN NISHI (THAT EASEMENT IS PRIVATE

3rd REVIEW
D1: 3/4 – 1) Provide confirmation from DDC/Land Division that the drainage easement is City's. 2) Submit a copy of the restrictive covenants Subdivision Branch to show that individual lot owners shall be responsible for the maintenance and upkeep of the french drain. 3) Add note to grading plan stating that individual lot owners shall be responsible for the maintenance and upkeep of the french drain. 4) Submit the updated drainage report. (Repeat Comments).

Comment Key: 1 – See attached memo 2 – See remarks 3 – More data required
4 – Make Corrections as noted 5 – Prints okay 6 – Okay for signature
7 – Okay for signature after corrections are made

Comments by: C – Steven Young (768-8108); D – Len Furukawa (768-8105); D1 – Todd Kuniyoshi (768-8109); S - Don Fujii (768-8107); SWQ - Dawn Kimura (768-8106)

Dept. DPP-CEB Print Name of Examiner: See above Phone No.: See above Date: 12/6/16

DPP Document Name: 1384002r3

DPP Form: REVform
07/30/03 (MS Word)