DEPARTMENT OF PLANNING
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JODI A. HIGUCHI SAYEGUSA, DEPUTY DIRECTOR

DEREK S.K. KAWAKAMI, MAYOR
REIKO MATSUYAMA, MANAGING DIRECTOR

November 29, 2023

Mary Alice Evans, Interim Director
Environmental Review Program
Office of Planning and Sustainable Development
State of Hawaii, Department of Business, Economic
Development And Tourism,
235 South Beretania Street, Room 702
Honolulu, Hawai'i 96813

Subject: **DEA and AFONSI**
Commercial Boat Facility and Residences
Lot Nos. 64 and 65
Kauai Tax Map Key No. (4) 1-2-013:039 and 040
Kekaha, Kaua'i, Hawai'i

Dear Mr. Eisen:

The County of Kaua'i Department of Planning hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the subject property located at Kauai Tax Map Key Nos. (4) 1-2-013:039 and 040 on the Island of Kaua'i. As set forth in the DEA-AFONSI, the Applicant proposes to construct a Commercial Boat Facility and Residences within the shoreline setback area and hereby requests publication in the Environmental Notice.

Based on the significance criteria outlined in Hawaii Administrative Rules Chapter 200.1, our department anticipates a finding of no significant impacts, and the reasons supporting the DEA-AFONSI determination are as follows:

1. The Project would not result in substantial adverse impacts to natural, cultural or historic resources would be lost as the Project site is currently improved and the fence replacement within the shoreline setback area does not impact existing public access to the shoreline or known archeological resources.
2. The Project would not curtail the range of beneficial uses of the environment.
3. The Project aims to minimize disturbances to the existing landscape.
4. The Project does not result in substantial adverse impacts to the economic welfare, social welfare, or cultural practices of the community.
5. The Project does not substantially affect the public health and safety.
6. The small scale of the Project does not incur any secondary impacts.
7. The Project does not anticipate impacting existing vegetation and the environmental surroundings.
8. There are minimal impacts to the Project whereby construction of the replacement fence will generate temporary noise in the community, subject to the noise regulations of the State and County.

9. The Project will not be affected by sea level rise given the topography of the Commercial Boat Facility and Residence is elevated above future impacts of sea level rise.

We understand the Applicant has uploaded the DEA-AFONSI to the Environmental Review Program filing portal. Please publish the DEA-AFONSI on the next available publication of The Environmental Notice.

If there are any questions, please contact the Applicant's representative, Mr. Ian K. Jung of Belles Graham LLP at (808) 245-2163.

Me Ke Aloha Pumehana,

Kaaina S. Hull
Director of Planning

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Thursday, November 2, 2023 8:31:29 PM

Action Name

Commercial Boat Facility and Residences

Type of Document/Determination

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

HRS §343-5(a) Trigger(s)

- (3) Propose any use within a shoreline area

Judicial district

Waimea, Kauaʻi

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

(4) 1-2-013:039
(4) 1-2-013:040

Action type

Applicant

Other required permits and approvals

Shoreline Setback Variance, SMA Use Permit, Use Permit, Class IV Zoning Permit

Discretionary consent required

Planning Commission of the County of Kauai

Approving agency

Planning Department of the County of Kauai

Agency contact name

Romio Idica

Agency contact email (for info about the action)

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Map It

Applicant

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Was this submittal prepared by a consultant?

Yes

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Map It

Action summary

Nathaniel Fisher proposes to construct a Commercial Boat Facility and two (2) Residential Dwellings on properties identified as Lot Nos. 64 and 65 of Land Court Application No. 1076 (Map 35), and further identified as TMK Nos. (4) 1-2-013:039 and 040. The Applicant proposes to construct a Commercial Boat Facility and two (2) Residential Dwellings (collectively “Project”) on the northern (mauka) side of the Subject Properties to comply with the Section 27 of the CZO. The purpose of the Project is to provide alternative boating facilities for a commercial boating operation at Kikiaola Small Boat Harbor whereby patrons will park, check-in, gear up and load up to depart to board vessels at Kikiaola Small Boat Harbor for commercial boat tours. Additionally, the Application proposes two (2) residential dwelling units to accompany the commercial boating facility for residential, employee housing and/or long-term rental use.

Reasons supporting determination

The entirety of the Subject Properties are within the Shoreline Setback Area. The County of Kaua`i Shoreline Study Erosion Map for this area shows that the shoreline fronting the Project area as an eroding shoreline. However, given the depth of the Project area as approximately 312 feet from the certified shoreline, there are no anticipated impacts to the shoreline. Further, the design and setback of the proposed structures will be developed to be resilient to any anticipated coastal hazards.

Attached documents (signed agency letter & EA/EIS)

- Agency-Letter.pdf
- Fisher-Draft-EA-W0182031x9F183.PDF

Action location map

- Location-Map.zip

Authorized individual

Ian Jung

Authorization

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

DRAFT ENVIRONMENTAL ASSESSMENT
For
COMMERCIAL BOAT FACILITY AND RESIDENTIAL DWELLINGS

LOT NOS. 64 and 65
TMK NOS. (4) 1-2-013:039 and 040

Prepared for
County of Kaua`i Department of Planning

Prepared by
Belles Graham LLP
3135 Akahi Street, #A
Lihue, Hawaii 96766

October 2023

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LIST OF ACROYNMS

BMP Best Management Practice

CZM Coastal Zone Management dBA Decibel (A-weighted)

DEA Draft Environmental Assessment

DOH Department of Health

FEA Final Environmental Assessment

FEMA Federal Emergency Management System

FONSI Finding of No Significant Impact

HAR Hawai'i Administrative Rules

HDOH State of Hawai'i Department of Health

HRS Hawai'i Revised Statues

SMA Special Management Area

SSD Shoreline Setback Determination

SSV Shoreline Setback Variance

SHPD State of Hawai'i Historic Preservation Division

TMK Tax Map Key

EXHIBIT LIST

Exhibit "A-1" – Applicant Authorization
Exhibit "A-2" – Owner Authorization
Exhibit "B-1" – Lot 64 Title Report
Exhibit "B-2" – Lot 65 Title Report
Exhibit "C-1" – Location Map
Exhibit "C-2" – Tax Map
Exhibit "C-3" – Land Court Map
Exhibit "C-4" – State Land Use Map
Exhibit "C-5" – General Plan Map
Exhibit "C-6" – CZO Map
Exhibit "C-7" – West Kauai Community Plan Map
Exhibit "C-8" – SMA Map
Exhibit "C-9" – Heritage Resources Map
Exhibit "C-10" – Kauai Coastal Erosion Study
Exhibit "C-11" – Sea Level Rise Constraint District Map
Exhibit "D-1" – Subdivision Map
Exhibit "D-2" – Shoreline Certification
Exhibit "E-1" – Lot 64 Plan Set
Exhibit "E-2" – Lot 65 Plan Set
Exhibit "F-1" – Kikiaola Coastal Assessment Report
Exhibit "F-2" – Ka Pa'akai Analysis
Exhibit "F-3" – Archeological Assessment

I. INTRODUCTION:	PROJECT SUMMARY
Project Name:	Commercial Boat Facility and Residential Dwellings
Owner/Applicant:	Hokuaina Development LLC, a Hawaii limited liability company
	Nathaniel Fisher
Approving Agency:	Kaua'i County Planning Department
Project Location:	Lots 64 and 65 of Land Court Application No. 1076 (Map 35) Kekaha, Kaua'i TMK Nos.: 1-2-013:039 and 040
State Land Use:	Urban
County of Kaua'i Zoning:	Open District
General Plan Designation:	Natural Designation
Determination of EA:	A Finding of No Significant Impact (FONSI)

Agencies and Parties Consulted during Draft EA included:

State of Hawaii Department of Health
State of Hawaii Accounting and General Services
State of Hawaii DLNR State Historic Preservation Review
Kaua'i County Planning Department

Process Employed in Preparation of Draft EA:

In anticipation of approval of updated Environmental Assessment regulations, this Environmental Assessment has been performed under the provisions o Hawai`i Administrative Rules, Title 11, Department of Health, Chapter 200.1, Environmental Impact Statement Rules, Subchapter 9

II. SUMMARY OF PROPOSED ACTION

Nathaniel Fisher ("Applicant") proposes to construct a Commercial Boat Facility and two (2) Residential Dwellings on properties identified as Lot Nos. 64 and 65 of Land Court Application No. 1076 (Map 35), and further identified as TMK Nos. (4) 1-2-013:039 and 040 (collectively "Subject Properties"). (See, Exhibit "A-1" for the Applicant's Authorization). Lot 64 is allocated 1.112 acres and Lot 65 is allocated 1.188 acres. The Subject Properties are currently owned by Hokuaina Development LLC, a Hawaii limited liability company and the Applicant is under contract to purchase the Subject Properties. (See, Exhibit "A-2" for the Owner's Authorization). The ownership of the Subject Properties are reflected in Exhibits "B-1" and "B-2", respectively.

The Applicant proposes to construct a Commercial Boat Facility and two (2) Residential Dwellings (collectively "Project") on the northern (mauka) side of the Subject Properties to comply with the

Section 27 of the Kauai County Code, Chapter 8, Comprehensive Zoning Ordinance ("CZO"). The purpose of the Project is to provide alternative boating facilities for a commercial boating operation at Kikiaola Small Boat Harbor whereby patrons will park, check-in, gear up and load up to depart to board vessels at Kikiaola Small Boat Harbor for commercial boat tours. Additionally, the Application proposes two (2) residential dwelling units to accompany the commercial boating facility for residential, employee housing and/or long-term rental use. The proposed improvements are collectively referred to as the "Project".

The proposed Project consists of the following on the Subject Properties: Lot 64, 1) Single-family Dwelling Unit (1,000 square feet); 2) Boat Shed (2,160 square feet), Gravel Parking, Driveway, Fencing, and related Site Utilities; and Lot 65, 1) Single-family Dwelling Unit (1,000 square feet); 2) Boat Shed (2,160 square feet), Gravel Parking, Driveway, Fencing, and related Site Utilities. Attached as Exhibits "E-1" and "E-2" are the Project Plan Sets for the respective Subject Properties.

SMA (Shoreline Management Area) Use Permit will be required for the Project. The proposed Project will also require a Shoreline Setback Variance (SSV) as required by the Planning Department of the County of Kaua'i (Planning Department). A Use Permit and Class IV Zoning Permit are also required for the Project.

This Environmental Assessment has been performed under the provisions of Hawai`i Administrative Rules, Title 11, Department of Health, Chapter 200.1, Environmental Impact Statement Rules, Subchapter 9 Preparation of Environmental Assessments: This DEA provides a framework to address the potential impacts of the proposed project on the designated SMA boundary.

The county Planning Department, in informal consultation with the Applicant, has indicated that an Environmental Assessment is required for this Project. This DEA evaluates the existing environmental conditions and potential environmental impacts resulting from the proposed project, as well as the mitigation measures which would be implemented to minimize any adverse impacts.

We anticipate that the County of Kauai Planning Department will issue a Finding of No Significant Impact (FONSI) determination for this proposed Project.

III. LOCATION LAND USE DESIGNATIONS OF PROPERTIES

A. Location. The Subject Properties are located in Kekaha, Kauai, Hawaii, and are shown on the Location Map attached hereto as Exhibit "C-1" and on the Tax Map attached as Exhibit "C-2". Map No. 35 of Land Court Application 1076 is attached as Exhibit "C-3".

B. Land Use Designations. The respective State Land Use Commission ("SLUC"), Kauai General Plan, County of Kauai Comprehensive Zoning Ordinance ("CZO"), and other relevant land use designations for the Subject Properties are described as follows:

1. SLUC. As shown on the Land Use District Boundary Map attached as Exhibit "C-4", the Subject Properties are located in the SLUC Urban District. The Subject Properties have been located in the SLUC Urban District since the inception of the SLUC Districts.

a. Kauai General Plan. As shown on the General Plan Map attached as Exhibit "C-5", the Subject Properties are located in the Kauai General Plan Natural Designation. The Subject Properties were recently designated from the Open Designation to the newly created Natural Designation in the Update to the Kauai General Plan (2018).

b. CZO. As shown on the CZO Map attached as Exhibit "C-6", the Subject Properties are located in the CZO Open District. The Subject Properties have been located in the CZO Open District since the adoption of the CZO.

c. Development Plan Area. The Subject Properties are located within the newly adopted West Kauai Community Plan Area. The Subject Properties are located in the Special Treatment Coastal Edge, as shown in Exhibit "C-7", which this Project necessitates a Use Permit and Class IV Zoning Permit.

d. Special Management Area. As shown on the Special Management Area Map attached as Exhibit "C-8", the Subject Properties are located within the Special Management Area ("SMA") of the County of Kauai. The Subject Properties have been located within the SMA since the adoption of the SMA Rules (December 17, 1979).

e. Shoreline/Shoreline Setback Area. The Subject Properties abut the shoreline and are located within the 500-foot shoreline setback threshold. The Applicant will comply with the shoreline setback requirements, which this Project necessitates a Shoreline Setback Variance as provided herein thus triggering the need for this DEA.

f. Heritage Resources. As shown on the Heritage Resources Map attached as Exhibit "C-9", the Subject Properties are located within the Preserve Heritage Resources Designations (Updated to the Kauai General Plan, 2018).

h. Permits. The Subject Properties were subdivided via a Subdivision Application in 2006, which Exhibit "D-1" provides for the Final Subdivision Map. Further, the Subject Properties undertook Shoreline Certifications, which Exhibit "D-2" provides for the Certified Shorelines.

i. Violations. There are no known violations on the Subject Properties, except for minor grubbing that occurred on the northern boundary of the Subject Properties by the adjacent landowner.

IV. PROJECT PURPOSE AND NEED

The Applicant proposes the Project to establish a commercial boating facility to alleviate customer traffic from the existing Kikiaola Small Boat Harbor. The proposed residential dwelling units will be used by the Applicant for long-term residential use and/or worker housing. The Project as a

whole will entail the parking for an existing customer base for a licensed commercial boating operation, the storage of commercial boats and equipment, a customer intake area, and one (1) 1,000 square foot elevated residence on each of the respective Subject Properties.

V. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The Subject Properties are located between the urban area of Waimea and the residential section of Kekaha. Kikiaola Small Boat Harbor, which was established by the State of Hawaii in 1959, lies southwest of the Subject Properties. The use of Kikiola Small Boat Harbor includes both commercial, recreational, non-commercial fishing, and sight-seeing boating activities. The use of the Subject Properties will be to facilitate an existing commercial boating operation and alleviate user impacts to Kikiaola Small Boat Harbor. There are also adjacent residential uses near the Project area.

VI. LAND USE IMPACTS

A. SLUC Urban District. The Subject Property is located within the SLUC Urban District. Permitted uses in the SLUC Urban District include commercial and residential uses.

B. General Plan Considerations.

1. Kauai General Plan Natural Land Use Designation. The Subject Properties are located in the Kauai General Plan Natural Land Use Designation and contemplates limited residential use and commercial uses with a use permit. The Subject Properties' zoning (Open District) allows for single-family dwelling units. As such, the Project complies with the Natural Land Use Designation.

2. Project's Compliance with Kauai General Plan Standards. The proposed use includes limited residential use, thereby the development itself will have no significant impact on the surrounding environment. The Project will include residential uses that are compatible with other uses in the area, as well as with the surrounding environment. The Project will also include limited commercial use for the intake of commercial boating activities to the adjacent Kikiaola Small Boat Harbor. As such, the Project complies with the Kauai General Plan policy for the Natural Land Use Designation in that it will help alleviate impacts to the Kikiaola Small Boat Harbor and will preserve, maintain and improve the natural characteristics of the area and will allow the area to remain predominantly free of development given the limited land coverage available and the requirement to place improvements mauka of the shoreline to the rear of the Subject Properties.

C. CZO Open District Considerations.

1. CZO Open District. The Project site is located within the CZO Open District. Uses in the CZO Open District are set forth in CZO Article 9, which provides in relevant part as follows:

> **"ARTICLE 9. OPEN DISTRICTS (O)**
>
> **Sec. 8-9.1 Purpose.**
>
> (a) To preserve, maintain or improve the essential characteristics of land and water areas that are:

(1) of significant value to the public as scenic or recreational sources;

(2) important to the overall structure and organization of urban areas and which provide accessible and usable open areas for recreational and aesthetic purposes;

(3) necessary to insulate or buffer the public and places of residence from undesirable environmental factors caused by, or related to, particular uses such as noise, dust, and visually offensive elements.

(b) To preserve, maintain or improve the essential functions of physical and ecological systems, forms or forces which significantly affect the general health, safety and welfare.

(c) To define and regulate use and development within areas which may be potentially hazardous.

(d) To include areas indicated on the County General Plan as open or as parks.

(e) To include areas clearly indicated on the County General Plan or on Zoning maps as "Special Treatment – Open Space" if an applicant represents to government authorities that any properties or areas within a development proposal or subdivision application will remain in either permanent open space or private park areas, or if the Council in the exercise of its zoning power requires as a condition of rezoning that an area be designated for permanent open space or private park. This does not preclude the Council from exercising its zoning authority as provided in Sec. 46-4, Hawai'i Revised Statutes. Within areas so designated, no uses, structures, or development inconsistent with such designation shall be generally permitted or permitted by use permit without express provision to the contrary. The Council is hereby authorized to make such factual determinations as necessary incident to this section.

(f) To provide for other areas which because of more detailed analysis, or because of changing settlement characteristics, are determined to be of significant value to the public.

2. Project's Compliance with CZO Open District Standards. Single-family detached dwelling units and accessory structures are Permitted Uses which are allowed pursuant to CZO Section 8-2.4(s). The Land Coverage on the Subject Property will not exceed the allowed 10% land coverage. The Project itself will have no significant impact on the surrounding environment. The Project will include commercial and residential uses that are compatible with other

uses in the area, as well as with the surrounding environment. As such, the Project complies with CZO Section 8-9.1 in that it: will help to preserve, maintain and improve the natural characteristics of the area; will allow the area to remain predominantly free of development; and will be incidental to the use and open character of the surrounding lands.

D. West Kauai Community Plan Considerations.

1. Community Plan Goals and Objectives. The goals and objectives of the West Kauai Community Plan allow for single-family residences as housing. The residential component of the Project is intended to be a modest long-term rental property for employees of the boating operation or as a long-term rental in compliance with Section 1.1.010.C. Additionally, the promotion of ocean recreation activities facilities the existing tourist-based activities in and near Kikiaola Small Boat Harbor providing jobs to local families and support to local businesses.

2. Project's Compliance with Development Plan Standards. The proposed Project will not conflict with any of the objectives contained in the West Kauai Community Plan. The design, layout and outside appearance of the Project is and will be compatible with the Residential Neighborhood Designation as provided for in the Future Land Use Map. Further, the limitation on land coverage merges this concept by limiting the developable area of the Subject Properties. As noted above, the Subject Properties and the location of the proposed residences and commercial boating activities are not located in the 3.2-foot anticipated sea level rise area and therefore is compliant with the new Special Treatment Coastal Edge overlay within the West Kauai Community Plan. (See, Exhibit "C-11").

E. SMA Considerations.

1. Recreational Resources. Other than beachgoing activities near the shoreline, there are no public recreational opportunities taking place on the Subject Properties. Therefore, the proposed Project will not have any negative impact on any public recreational opportunities located on properties adjacent to the Subject Property. There are beach access easements along the makai portions of the Subject Properties. Therefore, the Project will have no direct impact on any existing public beach, river or mountain access.

2. Historic Resources. The proposed Project will not have any significant impact on historic, cultural or archaeological resources (if any) located on or near the Subject Property. The Project is proposed on a recently approved subdivision. The Applicant performed Archeological Assessment (See, Exhibit "F-3"), which included test trenching, as provided below, in the proposed footing locations of the structures and Exploration Associations, Ltd. did not find any cultural deposits. Additionally, the Applicant's consultant noted nothing was observed on the surface to indicate the presence of subsurface cultural deposits; and while not an impossibility, given the prior ground disturbance on the Subject Property, and the minimal depth of footings for the post on pier construction, the Applicant will comply with HRS Chapter 6E should any cultural deposits be found.

3. Scenic and Open Space Resources. The proposed Project will have only minor impacts on the scenic and open space resources on and around the Subject Property. Any visual impacts from Kaumuali'i Highway will be sufficiently mitigated with landscaping and earth

tone colors and non-reflective windows. (See, enclosed Exhibits "E-1" and "E-2"). The Project will be compatible with and blend into the earth-toned colored structures in the surrounding area.

4. Economic Uses. The Subject Property will be developed for commercial and residential purposes. The proposed Project will create long term economic benefits associated with the construction of the improvements and long-term benefits by providing jobs in the boating industry. The proposed Project will not have any negative impacts on the economy.

5. Managing Development/Public Participation. The Project activities on the Subject Property are complimentary to, and consistent with, present and future coastal zone development in this area of Kauai.

6. Compatibility With Surrounding Uses. The Subject Property is surrounded by properties located within the SLUC Urban District and the CZO Open District. Uses on the surrounding lands include residential uses and commercial uses. The Subject Property is similar in topography, character and nature with adjacent and surrounding properties, and the Project activities are consistent with such surrounding uses.

7. Project's Impacts Within SMA. The Project will have no negative impacts on the SMA. The Project is and will be compatible with existing uses in areas on or around the Subject Properties. The Project will not negatively impact scenic or open space resources within the SMA. The Project will not increase runoff or otherwise endanger the coastal ecosystem. The Project will have no detrimental impact on recreational, historic, or economic resources. The Project will not have detrimental impacts on beach or marine resources. Approval of the Project will not result in the foreclosure of future management options for development in the area. The design, siting, and landscaping of the Project as proposed will ensure that the proposed Project recognizes, preserves, maintains and contributes to the characteristics of the surrounding lands (which lands are recognized to be of particular significance or value to the general public). In particular, the Project will be compatible with, and will protect, the unique natural forms of, biologic systems contained within, and aesthetic characteristic of, the SMA.

The Project activities on the portions of the Subject Properties within the SMA fulfill the provisions of the SMA Rules in that:

a. The Project will have no effect on public access to publicly owned or used beaches and recreational areas.

b. The Project will not detrimentally affect any wildlife or endangered plant or animal species which may be located at this site.

c. Provisions for solid and liquid waste treatment, disposition and management will be developed in order to minimize adverse effects on the Special Management Area.

d. Alteration to existing landforms or vegetation and the construction of structures will cause minimum adverse effects to water resources and scenic and recreational amenities, and will minimize danger of floods, wind damage, storm surge, landslides, erosion, siltation, or failure in the event of earthquake.

e. The Project will not require dredging, filling, or altering any bay, estuary, salt marsh, river mouth, slough or lagoon.

f. The Project will not reduce the size of any beach or other area useable for public recreation.

g. The Project will not reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions or rivers or streams within the Special Management Area and the mean high tide line where there is no beach.

h. The Project will not substantially interfere with or detract from the line of sight toward the sea from the State highway nearest the coast.

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

j. The Project will not have any substantial 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.

k. The Project is consistent with the objectives, policies, and guidelines set forth in HRS Chapter 205A and Sections 3.0 and 4.0 of the SMA Rules.

l. The Project is consistent with permitted uses in the SLUC Urban District, the Kauai General Plan, the West Kauai Community Plan, and the CZO.

VI. SITE IMPACTS

A. Topography. The elevation of the Subject Properties range from approximately 2 to 8 feet above mean sea level. The land elevation of the proposed Project will be at the mauka end of the Subject Properties. As provided for in the Kikiola Coastal Assessment (Exhibit "F-1"), the shoreline fronting the Project site is 312 feet long backed by a beach berm. The beach fronting the Project site rises from the beach toe to a berm with an average slope of about 1 on 7 and an average width of 55 feet. The berm is made of compacted sand with a scarp along the face where waves eat away at the sand supply. Beach users standing on the top of the scarp also promote collapse of the materials. The top of the berm is at approximately +15 Mean Lower Low Water. The back of the berm contains some wind-blown sand and declines with a slope of about 1 on 3 to +9. A swale behind the berm would likely act as a natural drainage basin during heavy rains. Landward, the elevations rise again to +16.5 feet and then decline to +10.5 feet at the roadway (Figure 2-16 of Exhibit "F-1"). The proposed structures associated with the Project will be placed landward of the swale on the high topography at +15.

B. Flora and Fauna. Vegetation within the Subject Properties primarily consists of kiawe, beach heliotrope, and beach wiregrass (See, Exhibit "F-1", Figure 2). Kiawe is categorized

by the State of Hawaii as an invasive noxious weed. The nearshore areas of the Subject Properties also contain dwarf naupaka and Carter's panicgrass.

All plantings directly in the Project area are Kiawe and grasslands, which are not threatened, rare or endangered. During installation of the Project, if any native and other coastal plant species in the region are identified, they will be relocated and planted on undeveloped portions of the Subject Properties. Any other vegetation that is impacted will be temporarily removed and replanted on completion of work. Landscape maintenance will continue in all areas during the construction period. Nature-based features (NNBF) refers to the use of landscape features to produce flood risk management benefits. NNBF projects may also produce other economic, environmental, and social benefits. These landscape features may be natural (produced completely by natural processes) or nature based (produced by a combination of natural processes and human engineering). Landscape features can be used alone, in combination with each other, and in combination with conventional engineering measures such as revetments, seawalls, and other structures.

A large portion of the Subject Properties are covered in invasive kiawe with thorns that are sharp and unpleasant to walk through. Thorns are also a hazard to the proposed future use of the property as they can pierce tires and shoes of visitors. Replacement of the vegetation with native species appropriate for the environment can improve the aesthetics of the property, ease of access to the shoreline, and also provide coastal hazard mitigation.

Coastal erosion along the seaward edge of the Subject Properties can be slowed by planting appropriate vegetation species with root systems to hold sand in the berm together and can help capture wind-blown sand. On exposed ocean coasts subject to significant wave energy, vegetation alone is typically not sufficient to resist wave-induced erosion. While a strong vegetation root system can slow down the erosion rate and the vegetation itself can help dissipate overtopping waves, in most cases, vegetation is quickly overcome by the erosional forces. However, used in conjunction with stronger conventional erosion control/shore protection methods, vegetation can function to help stabilize low-lying ground behind the primary shore protection structure.

Maintaining the existing swale and earthen levee on the property can allow water to accumulate during storm events as a stormwater retention wetland with vegetation that can absorb the water and stabilize soils.

The coastal area on the Subject Properties can be thought of as four zones for Xeriscape landscape planning (See, Exhibit "F-1", Figure 5-1):

- Zone 1 - No irrigation or landscaping is allowed seaward of the certified shoreline because this would encourage encroaching vegetation, which inhibits public access and interferes with coastal processes.
- Zone 2 - Low-lying and loosely bound grasses and vines.
- Zone 3 - Low-lying grasses and vines transition to, or combine with, low-growing shrubs.
- Zone 4 - Larger woody shrubs or shade trees.

Species suggested for the Project area are listed in Table 5-1 of Exhibit "F-1". Additional species can be found in the Hawaii Dune Restoration Manual. New plantings will generally require some irrigation for the first few months in order to get established. Vegetation monitoring would be needed to ensure stability and persistence of any new plant species and removal of invasive species as they appear.

C. Biological Resources. There are no threatened, rare or endangered animal species that are known to occur within the proposed Project area. Avian species observed on the Subject Properties are red jungle fowl, spotted dove, great frigate brid, brown booby, cattle egret, warbling white-eye, common myna, African silverbill, scaly-breasted munia, house sparrow, house finch, northern cardinal, red-crested cardinal, saffron finch, and pacific golden fowl.

Minimal noise is anticipated. Some birds and rodents may be temporarily displaced during construction, but are anticipated to be accommodated in neighboring vegetation, and should quickly re-establish themselves on and around fencing once construction is complete. No sensitive habitat areas have been identified within the project site.

D. Beach Resources. The island of Kauai, the northernmost major island in the Hawaiian chain, is fourth in size with a total area of 620 square miles. The island is roughly circular in shape, with a coastal plain along most of the coast except for the rugged Na Pali cliffs on the northwest shore. The project site is within the town of Kekaha on the southwest coast of Kaua'i (See, Exhibit "F-1", Figure 2-1). Kekaha is located on a drained wetland and was founded as a plantation town. Groundwater in the areas surrounding Kekaha is currently pumped to keep the area dry. Today, Kekaha's town center is dotted with a post office, small commercial uses, schools, and inactive shop fronts lacking multimodal infrastructure. There is no wastewater infrastructure in Kekaha, so residences and businesses rely on individual wastewater treatment systems. Kaumualii Highway (State Highway 50), which runs adjacent to the project area, provides the only access. East of the project area is the Park Hook Tong Chinese Cemetery, Waimea Japanese Cemetery, and the Kikiaola Small Boat Harbor with four moorings, a loading dock, boat ramp, picnic area, washdown station, and public restrooms. Drone aerial images of the Project area show kiawe trees, a paved driveway, murky nearshore conditions, and an erosion scarp along the seaward edge of the lots (See, Exhibit "F-1", Figure 2-2 through Figure 2-5).

The shoreline fronting the Project site is 312 feet long backed by a beach berm (See, Exhibit F-1", Figure 2-6) (See also Exhibit "C-10"). The scarp on the seaward edge of the berm is 2 to 4 feet tall (See, Exhibit "F-1", Figure 2-7). Nearshore waters are typically turbid with strong wave-generated alongshore currents. The coastal waters are designated as Class "A" according to the State of Hawaii Water Quality Classification Standards. Turbidity in the area tends to be characteristically high due to runoff from the Waimea River and high wave action and is monitored by the Clean Water Branch (See, Exhibit "F-1", Figure 2-8). High turbidity was confirmed by observations in September 2022. A nearshore reconnaissance found the bottom to be sparsely covered with patches of algae. The nearshore is classified by the U.S. Fish & Wildlife Service as an M2USP estuarine and marine wetland that is intertidal and irregularly flooded.

Beach widths east of the nearby Kikiaola Small Boat Harbor are much larger than those on the west side. Since the Kikiaola boat harbor was built in 1959, there has been downdrift erosion

along the shoreline fronting the subject properties. The updrift (east) side of the harbor has prograded over 100 meters seaward while the shoreline down drift (west) of the harbor has retreated over 60 meters losing about 50% of its sand volume. United States Army Corps of Engineers investigations identified the littoral impacts of the Boat Harbor to the down-drift shoreline as 3,000 to 6,000 cubic yards of sand per year (SEI and Group 70, 2008).

In 2014, in order to replenish Kikiaola Beach fronting the subject properties on the downdrift side of the Harbor, 45,000 cubic meters of sand was moved, by excavator and truck from Waimea Beach east of the harbor to the 0.3 km portion of Kikiaola Beach immediately west of the harbor (See, Exhibit "F-1", Figure 2-10, Figure 2-11). Monitoring found that the sand excavation sites on the updrift side regained their morphology, but have not regained sand volume (Molina, 2019). It took 65 years for the updrift beach to build up, via alongshore sediment transport, so it is likely that it will take many years to build up once again. Over 2014-2016, the sand placement area maintained a moderate degree of stability; however, since that time it has begun to display erosion of the bypass sand pile (Molina, 2019). The 0.5 km portion of Kikiaola Beach west of the sand placement area displayed only minor fluctuation in beach character, suggesting a lack of impact of the replenishment program on the beach's down drift portion more than two years following the bypass operation.

There seems to be no sediment exchange between Kikiaola Beach and Kekaha Beach due to the rocky headland at Oomano Point west of the project area. This is evidenced by the distinct sand characteristics on either side of the point: terrigenous sediment to the east and calcareous sediment to the west. The Kekaha area is the most arid portion of Kauai receiving on average 19.4 inches of rainfall each year. Nearly all of the streams that drain the mountains of Waimea have been channelized and redirected toward Waimea town by the Waimea and Kekaha irrigation ditches. The soils within the project area are characterized by the USDA as Jacus loamy fine sand (See, Exhibit "F-1", Figure 2-12, USDA, 2019). Loamy fine sand is 50% or more of fine sand or less than 25% very coarse, coarse, and medium sand plus less than 50% very fine sand. Along the seaward edge of the parcels is a beach backed by a berm (See, Exhibit "F-1", Figure 2-13).

On September 27, 2022, a sand sample from the shoreline berm was collected (See, Exhibit "F-1", Figure 2-14). The sample was sent to a lab for a grain size analysis using mechanical analysis and standard sieves. The gradation curve for the grain size distribution is shown in Exhibit "F-1", Figure 2-15. The medium grain-size diameter was 0.25 mm. The sand, with a uniformity coefficient of 2.37, can be described as poorly graded, medium grain, volcaniclastic beach sand with detrital content. The sediment was found to have 3.8% fines (defined as the #200 sieve, 0.074 mm), 0.1% coarse sediment (defined as the #4 sieve, 4.76 mm), and 18% of its mass less than the 0.149 mm (#100) sieve.

E. Air Quality/Noise. The Project will have little or no impact on the air quality and ambient noise levels in the area. Air quality and ambient noise levels may be affected at a very minimal level during the Development activities. All vehicles or equipment used by the Applicants for the prior construction will be properly muffled, housed and maintained to reduce any noise impacts or emission impacts. The Environmental Protection Agency (EPA) and State of Hawaii air quality standards will not be exceeded.

F. Flooding and Drainage. The proposed Project is within Flood Zone XS, as shown on the County of Kauai's flood insurance rate map (Flood Insurance Rate Map 1500020254F) attached as Exhibit "C-9". The Subject Property is located almost entirely within the Flood Zone XS and the Project will meet all of the requirements of the Flood Plain Management Ordinance of the County of Kauai, as contained in Chapter 15, Article 1, of the Kauai County Code, 1987. All drainage resulting from construction activities and from the increase in land coverage will be retained on site and subject to best management practices. No additional drainage is anticipated to significantly or negatively impact the surrounding properties.

G. Utilities. The Subject Properties currently obtains water service from the County of Kauai, Department of Water. The Subject Property obtains electric service from Kauai Island Utility Cooperative, and communication services from either Spectrum or Hawaiian Telcom, Inc. Existing electric and communications facilities are presently adequate to provide the demand for such services that will be generated by the proposed Development.

H. Wastewater Treatment and Disposal. The Subject Properties will install a private individual wastewater system (septic tanks and leach fields) as required by the Department of Health in order to dispose of wastewater. There are no sewer facilities available to the Subject Properties.

I. Solid Waste Disposal. Solid waste collection will be provided by the County of Kauai and by private means. Solid waste will be taken to the County's Transfer Stations for disposal in the County Landfill.

J. Governmental Services. The Project will have the following impacts on governmental services:

1. Fire and Police Services. Fire and police services in the vicinity are located in Waimea, approximately two (2) miles from the Subject Properties. The Project will not significantly increase the need for existing fire and police services.

2. Schools. The closest schools are Kekaha Elementary School located in Kekaha, and Waimea Canyon Middle School and Waimea High School, both of which are located in Waimea. The Project will not generate any significant additional enrollment.

K. Economics. The Project will have the following economic impacts:

1. Jobs. The Project will result in the creation of approximately five (5) temporary job positions (during construction).

2. Housing. The Project will not result in the need for additional housing, as all persons working on the Project will be Kauai residents.

3. Property Values. Since the fair market value of real property is based on the value of the land and physical improvements, the completion of the Project will increase the value of the Subject Properties. This will result in an increase real property taxes on the Subject Property, and increase revenues to the County of Kauai.

L. Population. The Project will not result in an increase in population.

M. Traffic Circulation. The major road which services the Subject Properties is Kaumuali'i Highway. The Project will distribute access to the Subject Properties to a single driveway but will not in and of itself increase traffic on these roads.

N. Heritage Resources. The Subject Properties are located within the Preserve Heritage Resources Designation (Update to the Kauai General Plan, 2018). The Heritage Resources of Kauai include natural, cultural and scenic resources. The proposed Project will not significantly affect any of these resources.

VII. NATIVE HAWAIIAN ISSUES.

A. Cultural Impacts. A Ka Pa'akai Analysis for Lots 64 and 65 of Land Court Application 1076, Map 35 located in Kikiaola, Waimea Ahupua'a, Kona District, Island of Kaua'i, TMK Nos. (4) 1-2-013:039 and 040, has been prepared by Nancy McMahon, M.A., MEd, MS of Exploration Associates Ltd. ("EAL") for the Subject Property, a copy of which is attached hereto as Exhibit "F-2".

B. Recommendations. The Ka Pa'akai Analysis contains the following findings and recommendations:

1. Document Purpose. The project requires compliance with the State of Hawai'i environmental review process Hawai'i Revised Statutes ("HRS") Chapter 343, which requires consideration of a proposed project's effect on cultural practices and resources. Through document research and cultural consultation efforts, this report provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the Office of Environmental Quality Control's Guidelines for Assessing Cultural Impacts). This document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-42 and HAR Chapter 13-284.

2. Community Consultation. Interviews with Native Hawaiian kupuna or elders, cultural practitioners, and individuals from the Waimea, Kekaha, and Kikiaola communities were conducted to identify persons who potentially have knowledge of traditional Hawaiian sites, resources and cultural practices in or adjacent to the Project area.

3. Results of Background Research. Background research for this Project yielded the following results:

(1) Kikiaola is an *'ili* located in the Waimea *ahupua'a*, the largest *ahupua'a* on the Island of Kaua'i. The Waimea *ahupua'a* is composed of several diverse regions, including the Waimea River Canyon, Kōke'e uplands, Alaka'i Plateau, Mānā Plain, and coastal valleys of Nu'alolo and Miloli'i. Kikiaola is generally associated with the broader Kekaha region (described as either an *ili* of Waimea or a distinct *ahupua'a*), which is an arid area with low annual rainfall and no permanent streams.

(2) The Project area is generally associated with *mo'olelo* (legends, oral histories) about the *'auwai* named Kikiaola, commonly known as Menehune Ditch. Additionally, Kikiaoloa is mentioned in a Hawaiian legend regarding the Howea heiau in Waiawa, Pele and Hi'iaka, and Hawaiian chants regarding the winds of Kaua'i. There are no surviving legends or traditional accounts specific to the Subject Properties.

(3) Despite its arid climate, Kikiaola and the broader Kekaha region were permanently inhabited and intensively utilized in pre-Contact times. The area was used for dry land and irrigated agriculture, including taro and *wauke* (Mulberry). Early Land Commission Awards requests also indicate salt beds and at least one fishery. Later, the area was primarily used for cultivation of rice and sugarcane.

(4) Past archaeological studies in Kikiaola have documented several historic properties representing use of the landscape as a cultural resource, including burial sites SIHP # 50-30-05-1853 and 50-30-05-1854 by Waimea Plantation Cottages, burial site SIHP # 50-30-05-3911 at Aloha Kaua'i Villas (4491 Kikiaola Place), and burial site SIHP # 50-30-05-3941 at Kekaha House Lots (TMK: (4) 1-3-05:45). Prior archaeological studies indicate that burials are commonplace in the sandy dunes of Kaua'i.

(5) Significant habitation activity is indicated approximately 500 meters to the east of the project area, but no development is shown in the immediate vicinity of the project area. Although radiocarbon dating from several projects documents a human presence in this area, archaeological evidence is severely limited due to intensive historic and modern activities such as commercial sugarcane cultivation.

(6) No historic properties have been identified within the Project area. However, a Chinese Cemetery (SIHP # 50-30-05-613) and Japanese Cemetery (SIHP # 50-30-05-612) sit just east of the project area.

(7) Although no *heiau* have been described within or in the immediate vicinity of the project area, several *heiau* have been documented in the larger Kekaha/Waimea area, including Howea, Makahoa, Kahelu, Ho'one'enu'u, and Hau'ola *heiau*.

(8) Field investigations of the Project area resulted in no evidence or findings of significant plants or natural resources associated with Hawaiian gathering rights for subsistence, cultural or religious practices. The project area has non-native vegetation.

(9) Early visitors to the Waimea *ahupua'a* describe the use of canoes and surfboards for purposes of fishing, surfing, and transportation. These activities are not restricted by development of the Project area because a lateral easement for public pedestrian access purposes is recorded in the subdivision map and alternate public access to the nearshore area is reasonably accessible.

(10) Over one hundred fifty (150) *kuleana* awards were granted in the Waimea *ahupua'a* and fifteen (15) were awarded in Kikiaola. Most of the land in this area was a part of Crown and Government Land. The current Project area is a portion of 565.56 acres granted to Reverend George B. Rowell in the mid-nineteenth century. The three Land Commission Award ("LCA") Parcels located nearest to the project area are: LCA 387:2 to American Sandwich Island Mission; LCA 362:1, 3 to Naumu; and LCA 7713:42 to V. Kamamalu. None are located in the immediate vicinity of the Project area.

4. Results of Community Consultation. EAL spoke with thirteen (13) community members with personal ties to Kikiaola for the purposes of this Ka Pa'akai Analysis. Community consultation for this Ka Pa'akai Analysis indicates:

(1) Many participants were aware of the project and very supportive, and none had concerns that the project would impact traditional and customary practices.

(2) Despite various mo'olelo and wahi pana relating to the Kekaha region, no ongoing Native Hawaiian cultural resources or practices were identified in the project area.

(3) The Project area and vicinity may contain surface and subsurface cultural and historic properties, including human burials.

(4) Since the construction of the Kīkīaola Small Boat Harbor no one fishes offshore from the Project. Local fishermen support the proposed Project due to its potential to decrease visitor traffic and increase local parking access at Kikiaola Small Boat Harbor.

5. Mitigations. Although initial inspections and subsurface tests yielded negative findings, prior archaeological findings in the surrounding area suggest that the proposed action for Kikiaola may negatively impact Hawaiian beliefs, resources and practices, particularly with regard to the disturbance of burials or *iwi kupuna.* A good faith effort to develop appropriate measures to address concerns and attention to the following recommendations may help mitigate potentially adverse effects of the proposed project on cultural, historic and natural resources in and near the Project area. Based on the findings of this Ka Pa'akai Analysis, it is recommended that:

(1) Project proponents address concerns presented by Ka Pa'akai Analysis participants by avoiding harm as result of ground disturbance to cultural and natural resources (e.g., burials). Minimizing digging in order to prevent disturbance of burials is recommended.

(2) The proposed project proceeds under an archaeological monitoring program that utilizes a combination of on-site and on-call monitoring. As suggested in the companion Archaeological Inventory Survey (AIS) (See, Exhibit "F-3"), due to the sensitive nature of the project area and the potential for project related ground disturbance during construction, a monitoring program would facilitate the identification and documentation of any historic properties that might be discovered during project construction. More specifically, it is suggested that an archaeological monitor be present during all subsurface activities involving deeper excavation work (i.e., septic system). If on-site monitoring continues to yield no subsurface finds, monitoring might be amended from on-site to on-call, with agreement from an SHPD.

(4) The owner be responsible for maintenance and upkeep of vegetation to prevent overgrowth of invasive species.

(5) Generally, it is recommended that Project proponents pursue proactive dialog with concerned Kekaha/Waimea community members and agencies regarding planning, implementation and maintenance of the proposed construction project in order to address issues raised by study participants in this Ka Pa'akai Analysis.

IX. ALTERNATIVE ANALYSIS

Alternative # 1. Complete the Project as proposed with only the commercial boating facility to alleviate congestion at the Kikiaola Small Boat Harbor. This alternative will support alleviating

the existing traffic at the harbor; however, removal of the residential dwellings will eliminate opportunities for long-term housing and/or employee housing.

Alternative #2. Complete the Project as proposes with only the residential dwelling units. The residential dwelling units will be limited to 1,000 square feet given the Shoreline Setback Variance requirements and therefore be modest in nature. These residential dwelling units will support the housing needs of the westside community; however, removing the commercial boat facility will eliminate opportunities to alleviate customer traffic at the Kikiaola Small Boat Harbor.

Alternative # 3 The No-Action Alternative is Alternative 3. Leaving the Subject Properties vacant will eliminate the opportunities to relieve traffic from Kikiaola Small Boat Harbor and to provide needed housing in the Kekaha area. This no action alternative will not support mitigating impacts to Kikiaola Small Boat Harbor and the current need for employee and/or long-term housing.

X. GENERAL DESCRIPTION OF THE ACTION INCLUDING ENVIRONMENTAL AND SOCIOECONOMIC CHARACTERISTICS

The Project should have minimal to no significant environmental and social impacts. The Project will provide commercial boating activity-related job opportunities and employee housing. The siting of the Project was selected to minimize impacts to the nearshore areas and is retreated to mauka side of the Subject Properties as required by the Shoreline Setback Variance requirements. The siting of the Project as far away from the shoreline area will preserve beach access and coastal activities on the nearshore areas of the Subject Properties. This preservation of beach access will continue to provide beach goers and cultural practitioners access along the beach access corridor.

XI. MITIGATION MEASURES

The Applicant anticipates no specific major negative impacts from this Project. The contractor associated with the Project will be required to minimize negative impacts by implementing best management practices. The contractor will be required to install erosion control measures such as silt fencing and storm drain protective devices where appropriate during the construction period. The contractor shall prevent storm water from the open construction area from directly entering the ocean. Lastly, open excavations shall be fenced off or covered when the contractor has left the site.

XII. ANTICIPATED DETERMINATION

The applicant anticipates a Finding of No Significant Impact (FONSI).

XIII. FINDINGS AND REASONS SUPPORTING ANTICIPATED DETERMINATION

The entirety of the Subject Properties are within the Shoreline Setback Area. The County of Kaua`i Shoreline Study Erosion Map for this area (See, Exhibit "C-10") shows that the shoreline fronting the Project area as an eroding shoreline. However, given the depth of the Project area as approximately 312 feet from the certified shoreline, there are no anticipated impacts to the shoreline. Further, the design and setback of the proposed structures will be developed to be resilient to any anticipated coastal hazards.

There are no rare, endangered or threatened species that will be impacted by this Project. There are no historical or cultural features that will be impacted by this Project as evidenced by the archeological and cultural reviews by the Applicant's consultants.

The Project alleviates impacts to the adjacent Kikiaola Small Boat Harbor and provides opportunities for housing for employees of the commercial boating operation.

This Project does not impact public coastal access, which is guaranteed by a coastal accessway fronting this Project area and designated easements, and which is occasionally used by shoreline anglers. That coastal accessway is not within the work area and will not be impaired either during or after construction.

Construction of the Project will ensure that any threat of dust or runoff is minimized. As provided above, best management practices will be employed by the contractor.

This Project meets the requirements of the state Coastal Zone Management Act and the county Special Management Area Rules and Regulations and Shoreline Setback Variance requirements.

IVX. LIST OF PERMITS REQUIRED FOR THIS PROJECT

Class I Zoning Permit, Planning Department

Building Permit, Public Works, Building Permit

Shoreline Setback Variance, Planning Commission

Special Management Area Use Permit, Planning Commission

Use Permit

Class IV Zoning Permit

VX. ENVIRONMENTAL ASSESSMENT PREPARATION INFORMATION

The following agencies will be provided a copy of the DEA. All of the comments that are received will be addressed in the appropriate sections of the Final Environmental Assessment.

STATE AGENCIES
Office of Environmental Quality Control Department of Land and Natural Resources
Department of Land and Natural Resources, State Historic Preservation Division
Department of Land and Natural Resources, Division of Boating and Ocean Recreation

COUNTY OF KAUA'I AGENCIES
Department of Planning
Department of Public Works, Engineering Division

INDIVIDUALS/ORGANIZATIONS
Kikiaola Fishing Club
Individuals Consulted during the Ka Pa'akai Analysis

EXHIBIT "A-1"

AUTHORIZATION

I. APPLICANT.

Name: NATHANIEL FISHER

Address: 159 Wailua Road, Unit A
Kapaa, Hawaii 96746

II. AUTHORIZED AGENT.

Name: Ian K. Jung, Esq.

Address: Belles Graham LLP
3135 Akahi Street, Suite A
Lihue, Kauai, Hawaii 96766

Telephone: (808) 245-2163
Facsimile: (808) 245-3277
Email: ikj@kauai-law.com

III. PROPERTY.

Lots 64 and 65
Land Court Application No. 1076 (Map 7)
Kilauea, Kauai, Hawaii
Kauai Tax Map Key Nos. (4) 1-2-013:039 and 040

IV. AUTHORIZATION.

The Applicant hereby authorizes the Authorized Agent to act on the Applicant's behalf and to file and process on the Applicant's behalf any and all applications necessary to obtain governmental permits relating to the Subject Property, including, but not limited to, the following:

1. Permits and approvals, including but not limited to, building permits, grading permits, use permits, variance permits, zoning permits, and Special Management Area permits, issued by the County Council, or any department, agency, board or commission, of the County of Kauai.

2. Permits and approvals issued by any legislative body or any department, agency, board, or commission of the State of Hawaii, including but not limited to, the Department of Health.

3. Permits and approvals issued by the Board of Land and Natural Resources of the State of Hawaii and/or the Department of Land and Natural Resources of the State of Hawaii.

4. Permits and approvals issued by any legislative body, department, agency, board or commission of the United States of America, including but not limited to, the Army Corps of Engineers.

DATED: _____.

APPLICANT:

DocuSigned by:
02BFB69C27E545D...

NATHANIEL FISHER

EXHIBIT "A-2"

AUTHORIZATION

I. OWNER.

Name: HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company
Attention: Ken Hayashida

Address: 50 Beretania Street, C-119C
Honolulu, Hawaii 96813

II. AUTHORIZED AGENT.

Name: Ian K. Jung, Esq.

Address: Belles Graham LLP
3135 Akahi Street, Suite A
Lihue, Kauai, Hawaii 96766

Telephone: (808) 245-2163
Facsimile: (808) 245-3277
Email: ikj@kauai-law.com

III. PROPERTY.

Lots 64 and 65
Land Court Application No. 1076 (Map 7)
Kilauea, Kauai, Hawaii
Kauai Tax Map Key Nos. (4) 1-2-013:039 and 040

IV. AUTHORIZATION.

The Applicant hereby authorizes the Authorized Agent to act on the Applicant's behalf and to file and process on the Applicant's behalf any and all applications necessary to obtain governmental permits relating to the Subject Property, including, but not limited to, the following:

1. Permits and approvals, including but not limited to, building permits, grading permits, use permits, variance permits, zoning permits, and Special Management Area permits, issued by the County Council, or any department, agency, board or commission, of the County of Kauai.

2. Permits and approvals issued by any legislative body or any department, agency, board, or commission of the State of Hawaii, including but not limited to, the Department of Health.

EXHIBIT "A-2"

3. Permits and approvals issued by the Board of Land and Natural Resources of the State of Hawaii and/or the Department of Land and Natural Resources of the State of Hawaii.

4. Permits and approvals issued by any legislative body, department, agency, board or commission of the United States of America, including but not limited to, the Army Corps of Engineers.

DATED: 10/21/2023.

OWNER:

HOKUAINA DEVELOPMENT, LLC,
a Hawaii limited liability company

By DocuSigned by: Ken Hayashida 41A908593325448...
KEN HAYASHIDA
Its Manager

EXHIBIT "B-1"

PRELIMINARY REPORT
(No Liability Hereunder)

This report (and any revisions thereto) is issued solely for the convenience of the titleholder, the titleholder's agent, counsel, purchaser or mortgagee, or the person ordering it for the purpose of facilitating the issuance of a policy of title insurance by Title Guaranty of Hawaii, LLC and no liability will arise under this report.

SCHEDULE A

Title Guaranty of Hawaii, LLC (the "Company") hereby reports that, subject to those matters set forth in Schedule "B" hereof, the title to the estate or interest to the land described in Schedule "C" hereof is vested in:

HOKUAINA DEVELOPMENT, LLC,
a Hawaii limited liability company,
as Fee Owner

This report is dated as of August 27, 2021 at 8:00 a.m.

Inquiries concerning this report should be directed to:
Title Officer - Dharalyn K. Lim; Office: (808) 521-0249
Email: dlim@tghawaii.com
Please reference Title Order No. 202142902.

EXHIBIT "B-1"

SCHEDULE B
EXCEPTIONS

1. Real Property Taxes, if any, that may be due and owing.

   Tax Key: (4) 1-2-013-039 Area Assessed: 1.112 acres

2. Location of the seaward boundary in accordance with the laws of the State of Hawaii and shoreline setback line in accordance with County regulation and/or ordinance.

3. Claims arising out of customary and traditional rights and practices, including without limitation those exercised for subsistence, cultural, religious, access or gathering purposes, as provided for in the Hawaii Constitution or the Hawaii Revised Statutes.

4. The terms and provisions contained in the following:

   INSTRUMENT : LIMITED WARRANTY DEED WITH COVENANTS, RESERVATIONS, RESTRICTIONS ON SALE, AND DISCLAIMERS

   DATED : November 2, 2000
   FILED : Land Court Document No. 2662386

5. Encroachments or any other facts which a correct boundary and improvement survey or archaeological study would disclose, including, without limitation, trails, rights of way, historic property and burial sites.

6. REAL PROPERTY MORTGAGE; SECURITY AGREEMENT; ASSIGNMENT OF LEASES, AND RENTS; FIXTURE FILING; AND FINANCING STATEMENT

   LOAN/ACCOUNT NO. 8100280695

   MORTGAGOR : HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company

   MORTGAGEE : CENTRAL PACIFIC BANK, a Hawaii corporation

   DATED : March 7, 2006

FILED : Land Court Document No. 3402420
AMOUNT : $2,470,000.00

7. DESIGNATION OF EASEMENT(S) "V"

PURPOSE : public pedestrian access
REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

8. Restriction of vehicular access rights shown on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007.

9. Following reservation and rights as set forth in Land Court Order No. 170601, filed May 16, 2007:

(A) The State of Hawaii reserves and owns all mineral and metallic mines of every kind or description on the property, including geothermal rights, and the right to remove the same.

(B) That the property is subject to the rights of native tenants.

(C) That the State of Hawaii reserves all right, title, interest, or claim to waters having their source upon or flowing over or under the property.

10. DESIGNATION OF EASEMENT(S) Q

PURPOSE : access and utility
REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

11. DESIGNATION OF EASEMENT(S) S

PURPOSE : acces, utility and view corridor
REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

12. Designation of View Corridor Setback Lines (15 feet wide), shown on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

13. The terms and provisions contained in the following:

INSTRUMENT : DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS FOR HOKUAINA BEACH ESTATES

DATED : August 28, 2007
FILED : Land Court Document No. 3648349

The foregoing includes, but is not limited to, matters relating to no direct vehicular access permitted onto Kaumualii Highway from Lots 63 and 66.

Said Declaration was amended by instrument dated April 28, 2010, filed as Land Court Document No. 3961638, and dated May 20, 2015, filed as Land Court Document No. T-9298259.

14. GRANT

TO : KAUAI ISLAND UTILITY COOPERATIVE, a cooperative association formed pursuant to the provision of Chapter 421C of the Hawaii Revised Statutes

DATED : August 19, 2009
FILED : Land Court Document No. 3904605
GRANTING : non-exclusive perpetual right and easement over Easement "Z" for electrical, telephone and cable purposes

15. COVEYANCE OF WATER FACILITY dated November 5, 2008, recorded as Document No. 2009-138956.

END OF SCHEDULE B

SCHEDULE C

All of that certain parcel of land situate at Waimea, Island and County of Kauai,, State of Hawaii, described as follows:

LOT 64, area 1.112 acres, more or less, as shown on Map 35, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1076 of the Trustees of Eric A. and Augustus F. Knudsen.

Together with a right of way across Lot 14-B as reserved in Land Court Document No. 49615.

Together with Easement "T" for access and utility purposes, shown on Map 35, as set forth in Land Court Order No. 170601, filed May 16, 2007.

Being land(s) described in Transfer Certificate of Title No. 893,779 issued to HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company.

BEING THE PREMISES ACQUIRED BY LIMITED WARRANTY DEED

GRANTOR	:	KVH PARTNERS, a Hawaii limited partnership
GRANTEE	:	HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company
DATED	:	March 7, 2006
FILED	:	Land Court Document No. 3402419

END OF SCHEDULE C

GENERAL NOTES

1. There is hereby omitted from any covenants, conditions and reservations contained herein any covenant or restriction based on race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law. Lawful restrictions under state or federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

2. Lot 14-B of Land Court Application No. 1076 has been consolidated with Lots 1-A and 3 of Land Court Application No. 930, Lot 6 of Land Court Application No. 937, Lots 13, 14-A and 14-C of Land Court Application No. 1076, and resubdivided into Lots 1, 2 and 3 of Land Court Consolidation No. 175, by Land Court Order No. 98807, filed July 30, 1990.

GUIDELINES FOR THE ISSUANCE OF INSURANCE

A. Taxes shown in Schedule B are as of the date such information is available from the taxing authority. Evidence of payment of all taxes and assessments subsequent to such date must be provided prior to recordation.

B. Evidence of authority regarding the execution of all documents pertaining to the transaction is required prior to recordation. This includes corporate resolutions, copies of partnership agreements, powers of attorney and trust instruments.

C. If an entity (corporation, partnership, limited liability company, etc.) is not registered in Hawaii, evidence of its formation and existence under the laws where such entity is formed must be presented prior to recordation.

D. If the transaction involves a construction loan, the following is required:

(1) a letter confirming that there is no construction prior to recordation; or

(2) if there is such construction, appropriate indemnity agreements, financial statements and other relevant information from the owner, developer, general contractor and major sub-contractors must be submitted to the Company for approval at least one week prior to the anticipated date of recordation.

Forms are available upon request from the Company.

E. Chapter 669, Hawaii Revised Statutes, sets forth acceptable tolerances for discrepancies in structures or improvements relative to private property boundaries for various classes of real property. If your survey map shows a position discrepancy that falls within the tolerances of Chapter 669, call your title officer as affirmative coverage may be available to insured lenders.

F. The right is reserved to make additional exceptions and/or requirements upon examination of all documents submitted in connection with this transaction.

G. If a policy of title insurance is issued, it will exclude from coverage all matters set forth in Schedule B of this report and in the printed Exclusions from Coverage contained in an ALTA policy or in the Hawaii Standard Owner's Policy, as applicable. Different forms may have different exclusions and should be reviewed. Copies of the policy forms are available upon request from the Company or on our website at www.tghawaii.com.

H. Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

DATE PRINTED: 9/02/2021

STATEMENT OF ASSESSED VALUES AND REAL PROPERTY TAXES DUE

TAX MAP KEY

DIVISION	ZONE	SECTION	PLAT	PARCEL	HPR NO.
(4)	1	2	013	039	0000

CLASS: RESIDENTIAL AREA ASSESSED: 1.112 AC

ASSESSED VALUES FOR CURRENT YEAR TAXES: 2021

The records of this division show the assessed values and taxes on the property designated by Tax Key shown above are as follows:

TOTAL ASSESSED VALUE	$	739,200
TOTAL EXEMPTION	$	0
TOTAL NET VALUE	$	739,200

Installment (1 - due 8/20; 2 - due 2/20) Tax Info As Of - 7/01/2021

Tax Year	Installment	Tax Amount	Penalty Amount	Interest Amount	Other Amount	Total Amount	
2021	2	2,236.08				2,236.08	PENDING
2021	1	2,236.08				2,236.08	PENDING
2020	2	2,236.08				2,236.08	PAID
2020	1	2,236.08				2,236.08	PAID
2019	2	2,236.08				2,236.08	PAID
2019	1	2,236.08				2,236.08	PAID
				Total Amount Due:		4,472.16	

Penalty and Interest Computed to: 7/01/2021

EXHIBIT "B-2"

40

PRELIMINARY REPORT
(No Liability Hereunder)

This report (and any revisions thereto) is issued solely for the convenience of the titleholder, the titleholder's agent, counsel, purchaser or mortgagee, or the person ordering it for the purpose of facilitating the issuance of a policy of title insurance by Title Guaranty of Hawaii, LLC and no liability will arise under this report.

SCHEDULE A

Title Guaranty of Hawaii, LLC (the "Company") hereby reports that, subject to those matters set forth in Schedule "B" hereof, the title to the estate or interest to the land described in Schedule "C" hereof is vested in:

HOKUAINA DEVELOPMENT, LLC,
a Hawaii limited liability company,
as Fee Owner

This report is dated as of August 31, 2021 at 8:00 a.m.

Inquiries concerning this report should be directed to:
Title Officer - Dharalyn K. Lim; Office: (808) 521-0249
Email: dlim@tghawaii.com
Please reference Title Order No. 202142903.

EXHIBIT "B-2"

SCHEDULE B
EXCEPTIONS

1. Real Property Taxes, if any, that may be due and owing.

   Tax Key: (4) 1-2-013-040 Area Assessed: 1.188 acres

2. Location of the seaward boundary in accordance with the laws of the State of Hawaii and shoreline setback line in accordance with County regulation and/or ordinance.

3. Claims arising out of customary and traditional rights and practices, including without limitation those exercised for subsistence, cultural, religious, access or gathering purposes, as provided for in the Hawaii Constitution or the Hawaii Revised Statutes.

4. The terms and provisions contained in the following:

   INSTRUMENT : LIMITED WARRANTY DEED WITH COVENANTS, RESERVATIONS, RESTRICTIONS ON SALE, AND DISCLAIMERS

   DATED : November 2, 2000
   FILED : Land Court Document No. 2662386

5. DESIGNATION OF EASEMENT(S) R

   PURPOSE : access and utility
   REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

6. DESIGNATION OF EASEMENT(S) T

   PURPOSE : access, utility and view corridor
   REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

7. DESIGNATION OF EASEMENT(S) V

PURPOSE : public pedestrian access purposes
REFERENCED : on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007

8. Restriction of vehicular access rights shown on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007.

9. Designation of View Corridor Setback Lines (15 feet wide), shown on Map 35, as set forth by Land Court Order No. 170601, filed May 16, 2007.

10. Following reservation and rights as set forth in Land Court Order No. 170601, filed May 16, 2007:

(A) The State of Hawaii reserves and owns all mineral and metallic mines of every kind or description on the property, including geothermal rights, and the right to remove the same.

(B) That the property is subject to the rights of native tenants.

(C) That the State of Hawaii reserves all right, title, interest, or claim to waters having their source upon or flowing over or under the property.

11. The terms and provisions contained in the following:

INSTRUMENT : DECLARATION OF PROTECTIVE COVENANTS, CONDITIONS AND RESTRICTIONS FOR HOKUAINA BEACH ESTATES

DATED : August 28, 2007
FILED : Land Court Document No. 3648349

Said Declaration was amended by instruments dated April 28, 2010, filed as Land Court Document No. 3961638, and dated effective as of May 20, 2015, filed as Land Court Document No. T-9298259.

The foregoing includes, but is not limited to, matters relating to no direct vehicular access permitted onto Kaumualii Highway from Lots 63 and 66.

AGREEMENT REGARDING CANCELLATION OF EASEMENT RIGHTS dated effective as of May 20, 2015, filed as Land Court Document No. T-9298258, by and between HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company ("Hokuaina") and KVH WAIMEA BEACHFRONT, LLC, a Hawaii limited liability company ("KVH").

12. DESIGNATION OF EASEMENT(S) Y (10 feet wide)

PURPOSE : electrical, telephone and cable
REFERENCED : on Map 36, as set forth by Land Court Order No. 173837, filed February 22, 2008

13. GRANT

TO : KAUAI ISLAND UTILITY COOPERATIVE, a cooperative association formed pursuant to the provision of Chapter 421C of the Hawaii Revised Statutes

DATED : August 19, 2009
FILED : Land Court Document No. 3904605
GRANTING : non-exclusive right and easement over Easement "Y" for electrical, telephone and cable purposes

14. CONVEYANCE OF WATER FACILITY dated November 5, 2008, recorded as Document No. 2009-138956.

END OF SCHEDULE B

SCHEDULE C

All of that certain parcel of land situate at Waimea, Island and County of Kauai, State of Hawaii, described as follows:

LOT 65, area 1.188 acres, more or less, as shown on Map 35, filed in the Office of the Assistant Registrar of the Land Court of the State of Hawaii with Land Court Application No. 1076 of the Trustees of Eric A. and Augustus F. Knudsen.

Together with a right of way across Lot 14-B as reserved in Land Court Document No. 49615.

Together with Easement "S" for access and utility purposes, shown on Map 35, as set forth in Land Court Order No. 170601, filed May 16, 2007.

Being land(s) described in Transfer Certificate of Title No. 893,779 issued to HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company.

BEING THE PREMISES ACQUIRED BY LIMITED WARRANTY DEED

GRANTOR	:	KVH PARTNERS, a Hawaii limited partnership
GRANTEE	:	HOKUAINA DEVELOPMENT, LLC, a Hawaii limited liability company
DATED	:	March 7, 2006
FILED	:	Land Court Document No. 3402419

END OF SCHEDULE C

GENERAL NOTES

1. There is hereby omitted from any covenants, conditions and reservations contained herein any covenant or restriction based on race, color, religion, sex, sexual orientation, familial status, marital status, disability, handicap, national origin, ancestry, or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law. Lawful restrictions under state or federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

2. Lot 14-B of Land Court Application No. 1076 has been consolidated with Lots 1-A and 3 of Land Court Application No. 930, Lot 6 of Land Court Application No. 937, Lots 13, 14-A and 14-C of Land Court Application No. 1076, and resubdivided into Lots 1, 2 and 3 of Land Court Consolidation No. 175, by Land Court Order No. 98807, filed July 30, 1990.

GUIDELINES FOR THE ISSUANCE OF INSURANCE

A. Taxes shown in Schedule B are as of the date such information is available from the taxing authority. Evidence of payment of all taxes and assessments subsequent to such date must be provided prior to recordation.

B. Evidence of authority regarding the execution of all documents pertaining to the transaction is required prior to recordation. This includes corporate resolutions, copies of partnership agreements, powers of attorney and trust instruments.

C. If an entity (corporation, partnership, limited liability company, etc.) is not registered in Hawaii, evidence of its formation and existence under the laws where such entity is formed must be presented prior to recordation.

D. If the transaction involves a construction loan, the following is required:

(1) a letter confirming that there is no construction prior to recordation; or

(2) if there is such construction, appropriate indemnity agreements, financial statements and other relevant information from the owner, developer, general contractor and major sub-contractors must be submitted to the Company for approval at least one week prior to the anticipated date of recordation.

Forms are available upon request from the Company.

E. Chapter 669, Hawaii Revised Statutes, sets forth acceptable tolerances for discrepancies in structures or improvements relative to private property boundaries for various classes of real property. If your survey map shows a position discrepancy that falls within the tolerances of Chapter 669, call your title officer as affirmative coverage may be available to insured lenders.

F. The right is reserved to make additional exceptions and/or requirements upon examination of all documents submitted in connection with this transaction.

G. If a policy of title insurance is issued, it will exclude from coverage all matters set forth in Schedule B of this report and in the printed Exclusions from Coverage contained in an ALTA policy or in the Hawaii Standard Owner's Policy, as applicable. Different forms may have different exclusions and should be reviewed. Copies of the policy forms are available upon request from the Company or on our website at www.tghawaii.com.

H. Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

DATE PRINTED: 9/03/2021

STATEMENT OF ASSESSED VALUES AND REAL PROPERTY TAXES DUE

TAX MAP KEY

DIVISION	ZONE	SECTION	PLAT	PARCEL	HPR NO.
(4)	1	2	013	040	0000

CLASS: RESIDENTIAL AREA ASSESSED: 1.188 AC

ASSESSED VALUES FOR CURRENT YEAR TAXES: 2021

The records of this division show the assessed values and taxes on the property designated by Tax Key shown above are as follows:

TOTAL ASSESSED VALUE	$	765,800
TOTAL EXEMPTION	$	0
TOTAL NET VALUE	$	765,800

Installment (1 - due 8/20; 2 - due 2/20) Tax Info As Of - 7/01/2021

Tax Year	Installment	Tax Amount	Penalty Amount	Interest Amount	Other Amount	Total Amount	
2021	2	2,316.54				2,316.54	PENDING
2021	1	2,316.55				2,316.55	PENDING
2020	2	2,316.54				2,316.54	PAID
2020	1	2,316.55				2,316.55	PAID
2019	2	2,316.54				2,316.54	PAID
2019	1	2,316.55				2,316.55	PAID
					Total Amount Due:	4,633.09	

Penalty and Interest Computed to: 7/01/2021

EXHIBIT "C-1"

County of Kaua'i
State of Hawai'i

Overview

Legend

- Parcels
- CPR Units
- Roads

Parcel ID	120130400000	**Situs/Physical Address**	KAUMUALII HWY	**Total Market Value**	$837,600	**Last 2 Sales**		
Acreage	1.188	**Mailing Address**	HOKUAINA DEVELOPMENT LLC	**Total Assessed Value**	$837,600	**Date**	**Price**	**Reason**
Class	RESIDENTIAL		50 S BERETANIA ST UNIT C-119C	**Total Exemptions**	$0	n/a	0	n/a
			HONOLULU HI 96813	**Total Net Taxable Value**	$837,600	n/a	0	n/a

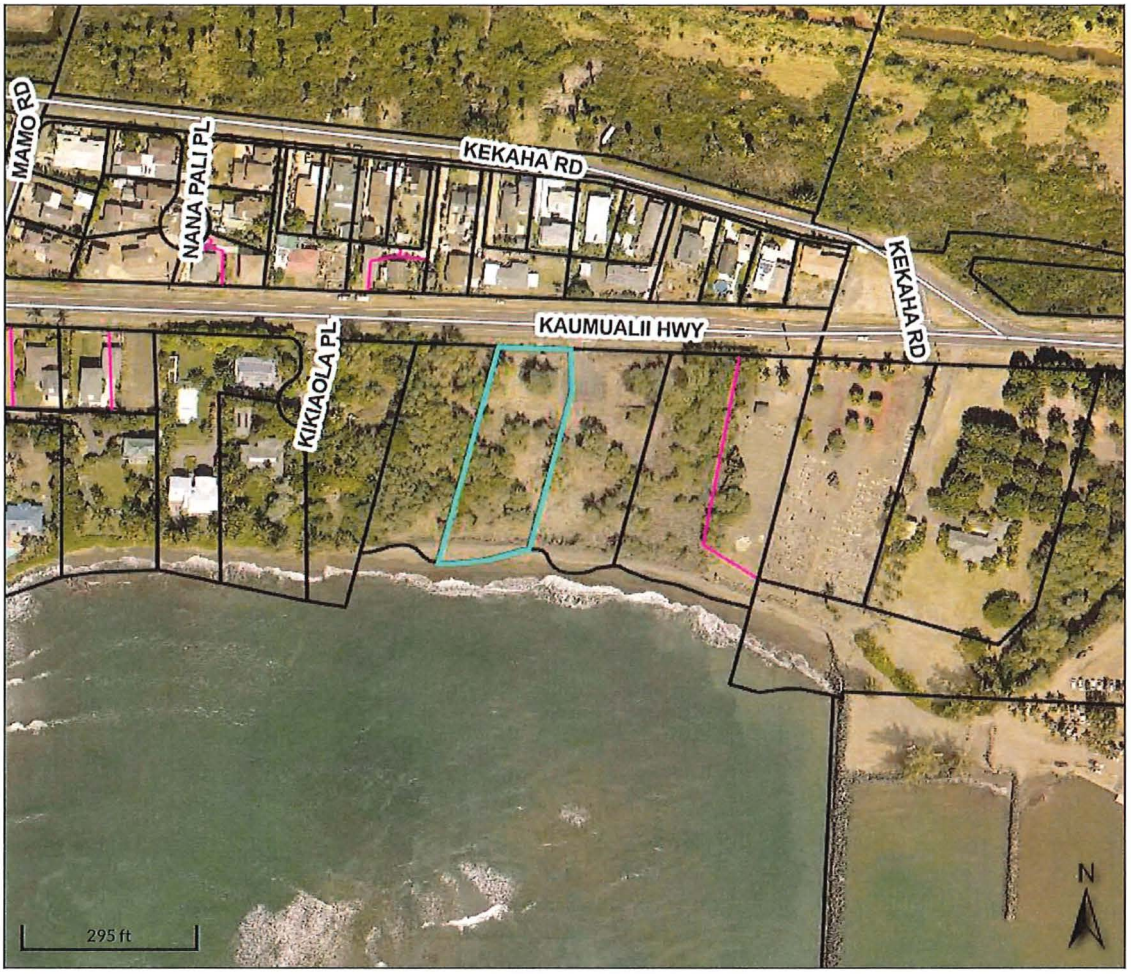
Brief Tax Description LOT 65 MAP 35 LD CT APP 1076 1.188 AC
(Note: Not to be used on legal documents)

Date created: 10/20/2023
Last Data Uploaded: 10/20/2023 3:38:16 AM

Developed by Schneider GEOSPATIAL

EXHIBIT "C-1"

County of Kaua'i
State of Hawai'i



Overview

Legend

- Parcels
- CPR Units
- Roads

Parcel ID	120130390000	**Situs/Physical Address**	KAUMUALII HWY	**Total Market Value**	$822,400	**Last 2 Sales**		
Acreage	1.112	**Mailing Address**	HOKUAINA DEVELOPMENT LLC	**Total Assessed Value**	$822,400	**Date**	**Price**	**Reason**
Class	RESIDENTIAL		50 S BERETANIA ST UNIT C-119C	**Total Exemptions**	$0	n/a	0	n/a
			HONOLULU HI 96813	**Total Net Taxable Value**	$822,400	n/a	0	n/a

Brief Tax Description LOT 64 MAP 35 LD CT APP 1076 1.112 AC
(Note: Not to be used on legal documents)

Date created: 10/20/2023
Last Data Uploaded: 10/20/2023 3:38:16 AM

Developed by Schneider GEOSPATIAL

EXHIBIT "C-2"

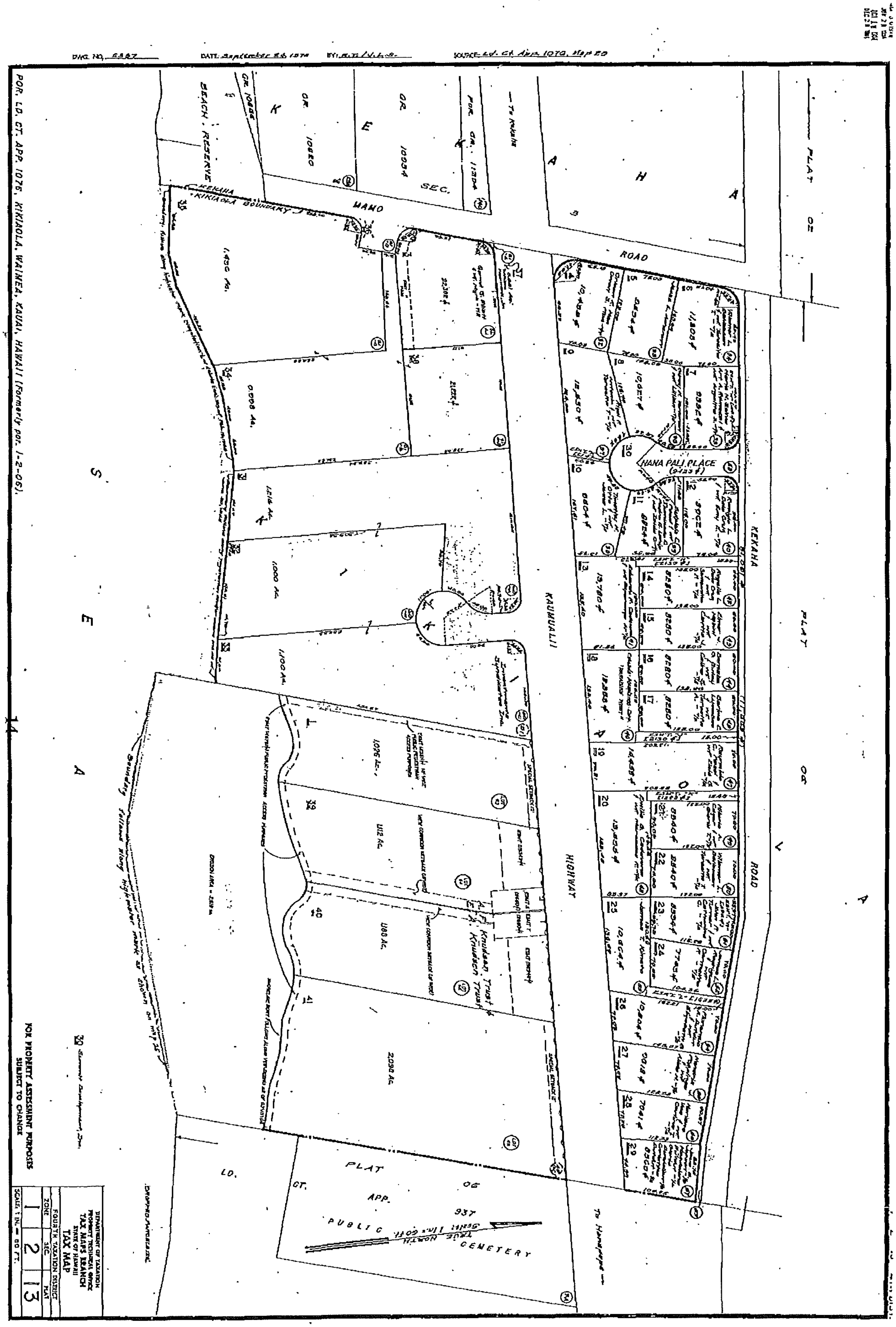

POR. LD. CT. APP. 1076, KIKIAOLA, WAIMEA, KAUAI, HAWAII (Formerly por. 1-2-06).
KAUMUALII HIGHWAY
KEKAHA ROAD
MAMO ROAD
HANA PALI PLACE
PLAT OF KEKAHA
SEA
PLAT OF LD. CT. APP. 937
PUBLIC CEMETERY
FOR PROPERTY ASSESSMENT PURPOSES SUBJECT TO CHANGE
DEPARTMENT OF TAXATION
TAX MAPS BRANCH
STATE OF HAWAII
TAX MAP
FOURTH TAXATION DISTRICT
ZONE SEC. PLAT
1 2 13

EXHIBIT "C-2"

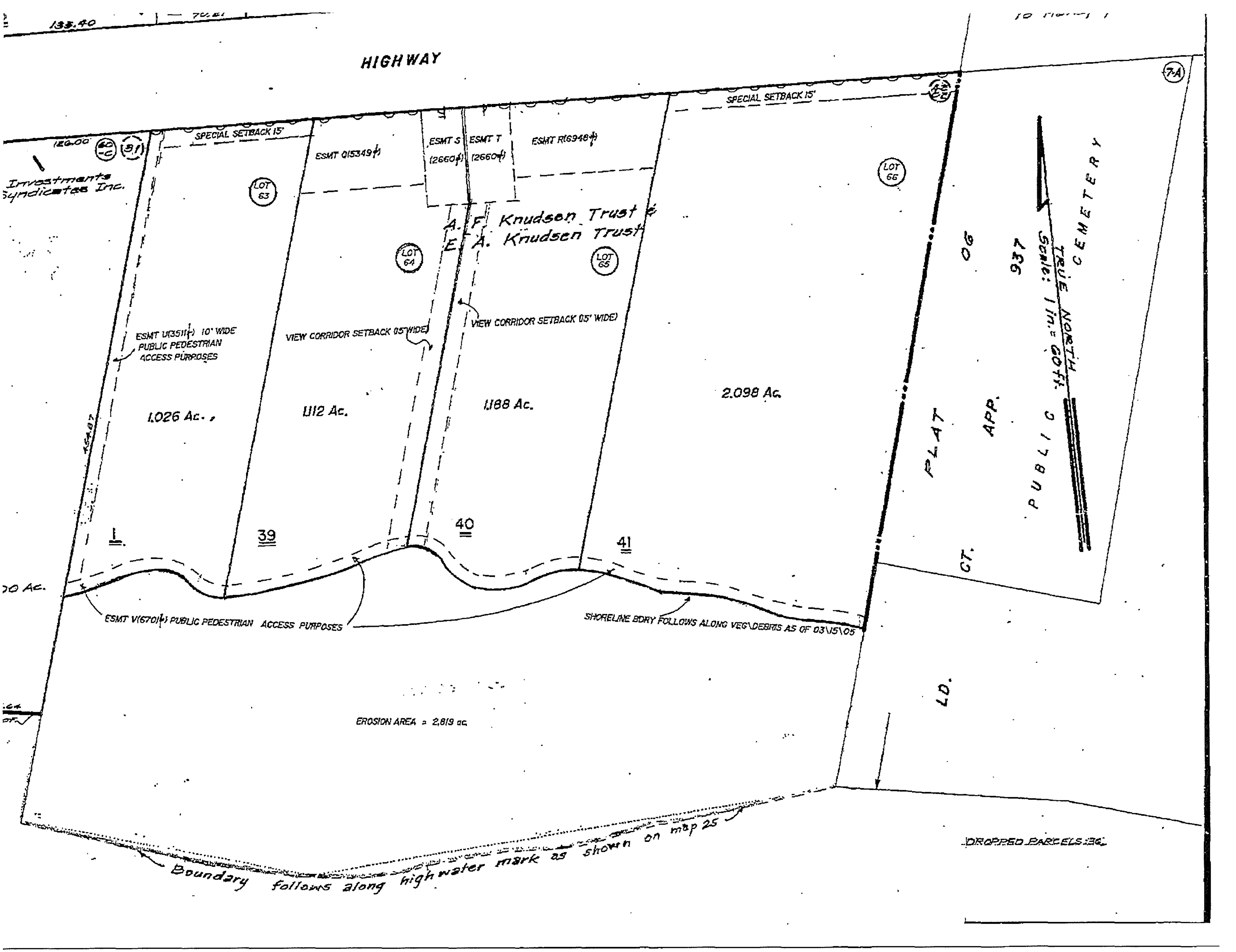
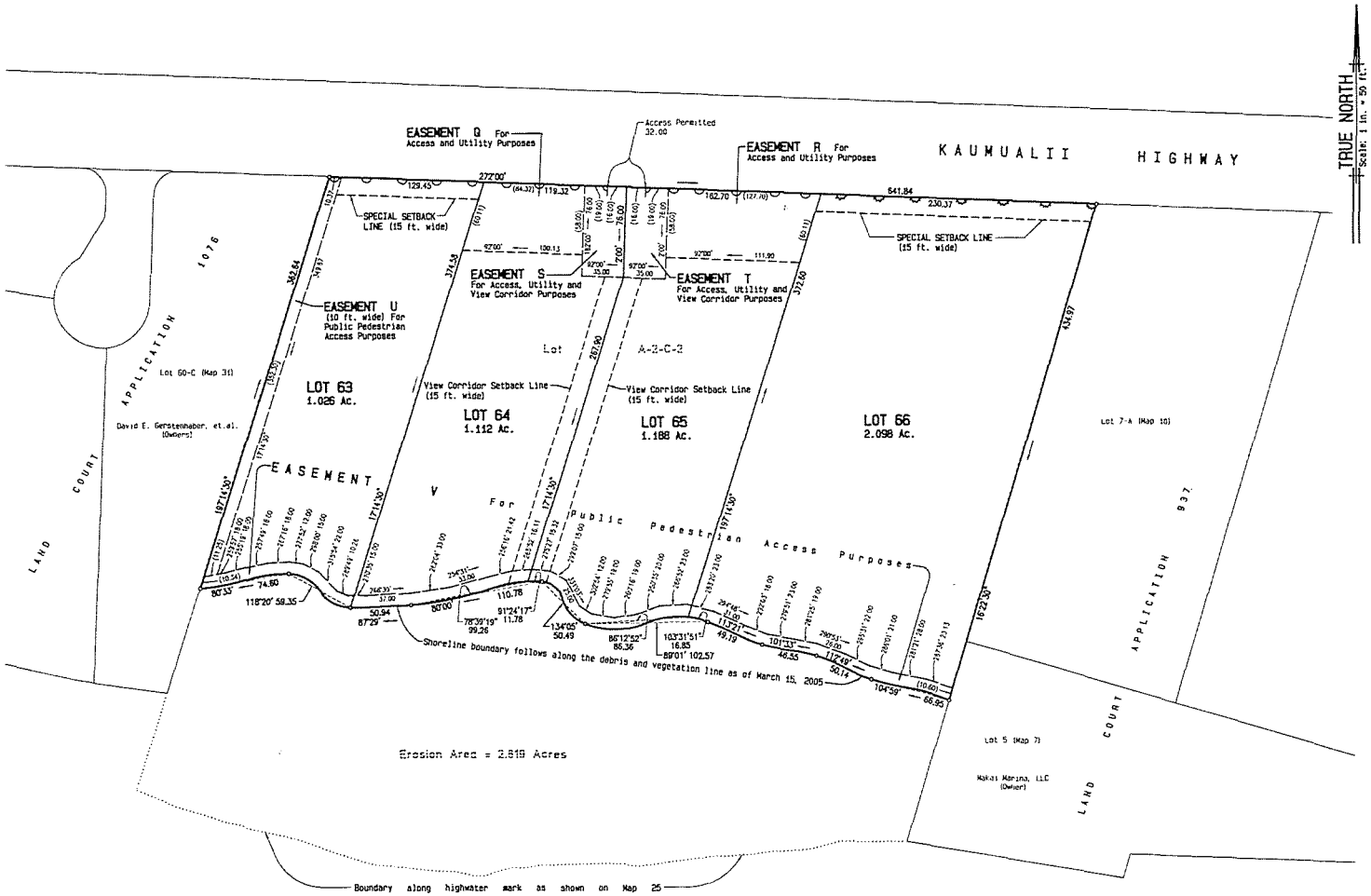

HIGHWAY
SPECIAL SETBACK 15'
SPECIAL SETBACK 15'
ESMT Q(5349)
ESMT S (2660)
ESMT T (2660)
ESMT R(6948)
Investments Syndicates Inc.
LOT 63
LOT 64
LOT 65
LOT 66
A. F. Knudsen Trust &
E. A. Knudsen Trust
ESMT U(3511) 10' WIDE PUBLIC PEDESTRIAN ACCESS PURPOSES
VIEW CORRIDOR SETBACK (05' WIDE)
VIEW CORRIDOR SETBACK (05' WIDE)
1.026 Ac.
1.112 Ac.
1.188 Ac.
2.098 Ac.
1
39
40
41
ESMT V(6701) PUBLIC PEDESTRIAN ACCESS PURPOSES
SHORELINE BDRY FOLLOWS ALONG VEG\DEBRIS AS OF 03\15\05
EROSION AREA = 2.819 ac.
PUBLIC CEMETERY
TRUE NORTH
Scale: 1 in. = 60 ft.
PLAT 937 OG
APP. CT. LD.
7-A
Boundary follows along high water mark as shown on map 25
DROPPED PARCELS:36

EXHIBIT "C-3"

1076

MAP 35



LAND COURT

STATE OF HAWAII

LAND COURT APPLICATION 1076

EROSION TO LOT A-2-C-2 AS SHOWN ON MAP 25
AND SUBDIVISION OF SAID LOT A-2-C-2 LESS EROSION
INTO LOTS 63, 64, 65 AND 66,
DESIGNATION OF EASEMENTS Q, R, S, T, U AND V,
DESIGNATION OF SPECIAL SETBACK LINES
AFFECTING LOTS 63 AND 66,
DESIGNATION OF VIEW CORRIDOR SETBACK
LINES (15 FT. WIDE) AFFECTING LOTS 64 AND 65
AND DESIGNATION OF RESTRICTION OF VEHICULAR
ACCESS RIGHTS AFFECTING LOTS 63, 64, 65 AND 66

AT KIKIAOLA, WAIMEA, KAUAI, HAWAII

New shoreline boundary (debris and vegetation line) as shown hereon is from an actual survey on the ground made under the direction and supervision of the undersigned on March 15, 2005 and may be checked by the State Surveyor with my Field Book Number 1573 and Worksheet and Calculation in Project Number 4162-2.

OWNER: Hokuaina Development, LLC
TRANSFER CERTIFICATE OF TITLE: 796,640

2153 North King Street
Suite 200
Honolulu, Hawaii 96819

March 23, 2006

BELT COLLINS HAWAII LTD.

Robert W. Cunningham
Licensed Professional Land Surveyor
Certificate Number 4188 (expires 4/30/08)
Land Court Certificate Number 183

ROBERT W. CUNNINGHAM LICENSED PROFESSIONAL LAND SURVEYOR No. 4188 HAWAII, U.S.A.

EXHIBIT "C-3"

NOTES:

AREA OF EASEMENTS:

Easement Q For Access and Utility Purposes affecting Lot 64 = 5349 Sq.Ft.
Easement R For Access and Utility Purposes affecting Lot 65 = 6948 Sq.Ft.
Easement S For Access, Utility and View Corridor Purposes affecting Lot 64 = 2660 Sq.Ft.
Easement T For Access, Utility and View Corridor Purposes affecting Lot 65 = 2660 Sq.Ft.
Easement U (10 ft. wide) For Public Pedestrian Access Purposes affecting Lot 63 = 3511 Sq.Ft.
Easement V For Public Pedestrian Access Purposes affecting Lots 63, 64, 65 and 66 = 6701 Sq.Ft.

denotes no vehicular access permitted
denotes access permitted

I hereby certify that the description of survey and map hereon designating the boundaries of lots G3, G4, G5 and GG as of March 15, 2005 have been checked and the same found to be in accord.

Honolulu, Hawaii
November 1, 2006
State Land Surveyor

The restriction of vehicular access rights affecting Lot GG as shown hereon has been cancelled by Order of the Judge of the Land Court dated July 9, 2015.

Honolulu, Hawaii
July 9, 2015
State Land Surveyor

I hereby certify that Decree re-establishing high-water mark as of March 15, 2005 of Lot A-2-C-2, and approving the subdivision of said Lot A-2-C-2 into Lots G3, G4, G5 and GG, designation of Easements Q, R, S, T, U and V, designation of special setback lines affecting Lots G3 and GG, designation of view corridor setback lines (15 ft. wide) affecting Lots G4 and G5 and designation of restriction of vehicular access rights affecting Lots G3, G4, G5 and GG as requested in the herein application has been entered on April 16, 2007.

Honolulu, Hawaii
April 16, 2007
Registrar of the Land Court

Filed October 5, 2006 Kathleen Hanawahine, Registrar

Tax Map Key: 4th Div., 1-2-13: 1

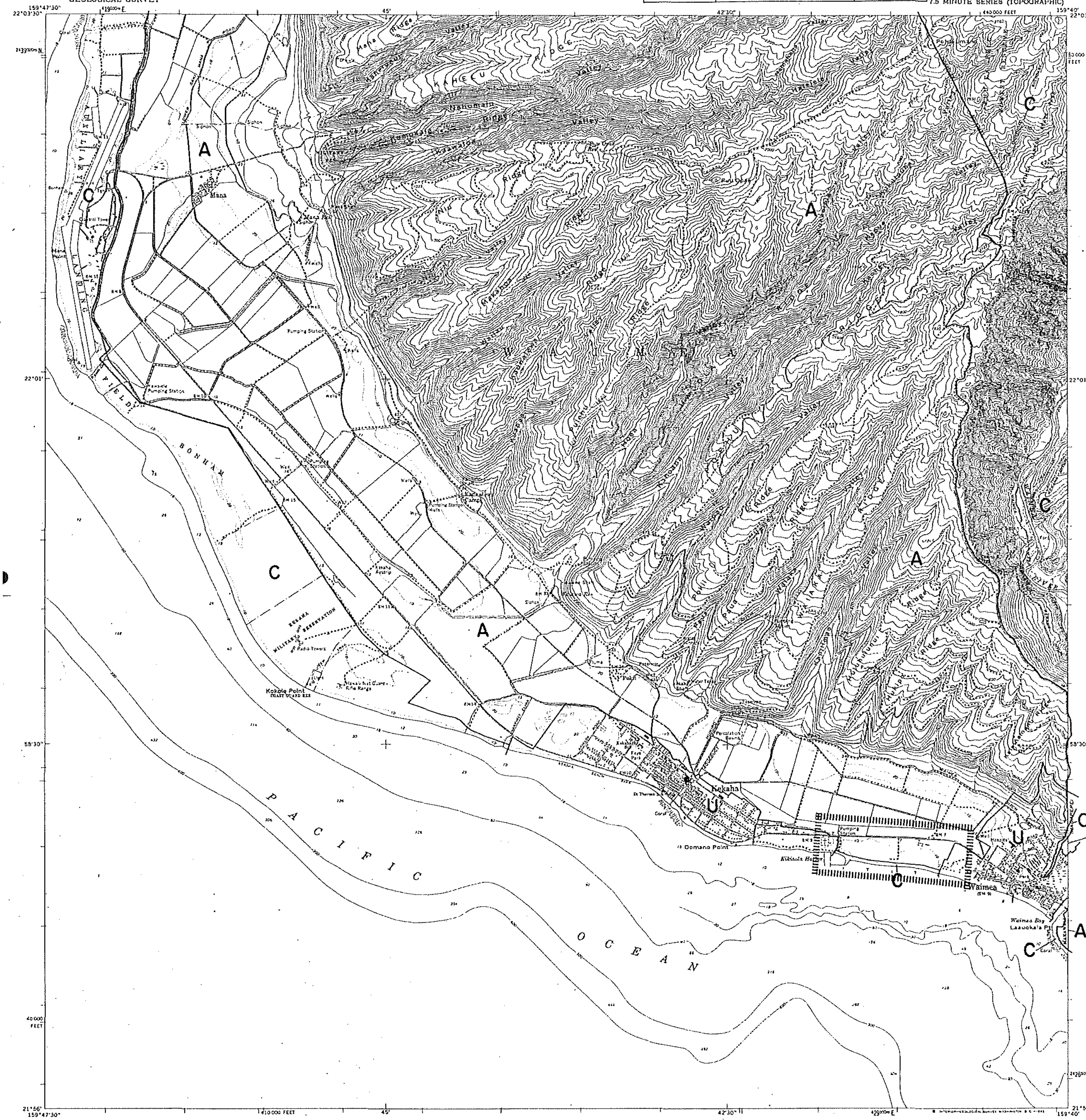
21" x 32" = 4.67 Sq.Ft.

EXHIBIT "C-4"

LAND USE DISTRICT BOUNDARIES		
DISTRICT MAP	STATE OF HAWAII LAND USE COMMISSION DEPT. OF PLANNING & ECONOMIC DEVELOPMENT EFFECTIVE DATE: DEC 2 0 1974	DISTRICTS U = URBAN R = RURAL A = AGRICULTURAL C = CONSERVATION
K-2		

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

KEKAHA QUADRANGLE
HAWAII—KAUAI CO.
ISLAND OF KAUAI—WAIMEA DISTRICT
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS, USC&GS, and Hawaii State Survey

Topography by photogrammetric methods from aerial photographs taken 1960. Field checked 1963

Selected hydrographic data compiled from USC&GS Charts 4100 (1959) and 4114 (1952)
This information is not intended for navigational purposes

Polyconic projection. Old Hawaiian datum
10,000-foot grid based on Hawaii coordinate system, zone 4
1000-meter Universal Transverse Mercator grid ticks, zone 4, shown in blue

Fine red dashed lines indicate selected fence lines

TRUE NORTH / MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1963

SCALE 1:24000

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOWER LOW WATER

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

BOUNDARY AMENDMENTS	
DOCKET NO.	DATE
A88-6 A to U	NOV 01, 1988 KIKIAOLA LAND CO.

ROAD CLASSIFICATION
Medium-duty Light-duty
Unimproved dirt
State Route

KEKAHA, HAWAII
N2156—W15940/7.5
1963

2 . K-2

SPECIAL PRINTING

EXHIBIT "C-4"

State of Hawaii Land Use District Boundaries Map - January 2018

State of Hawaii Land Use District Boundaries Map - January 2018

EXHIBIT "C-5"

Figure 5-7 North Shore Land Use Map

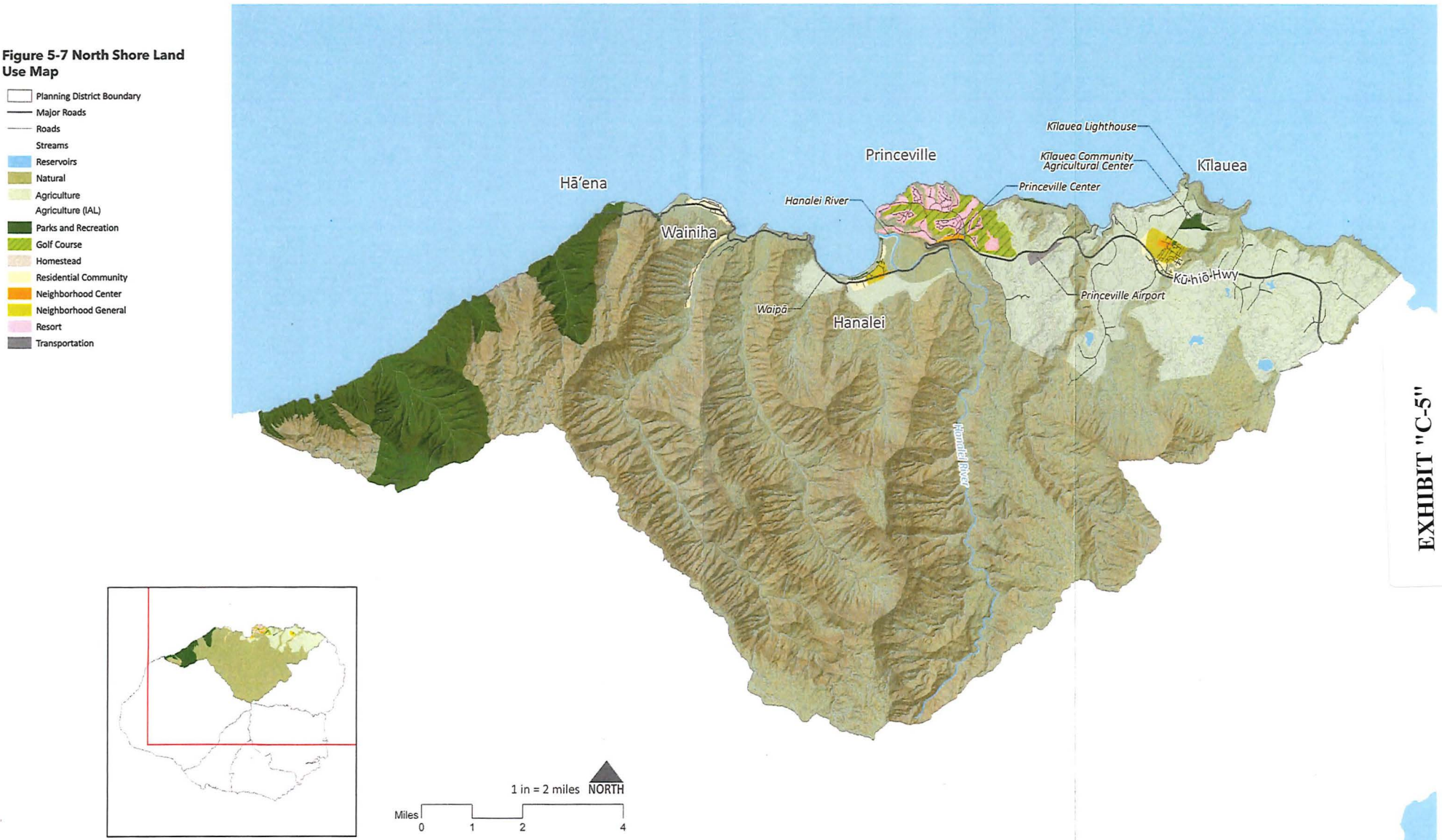


EXHIBIT "C-5"

EXHIBIT "C-6"

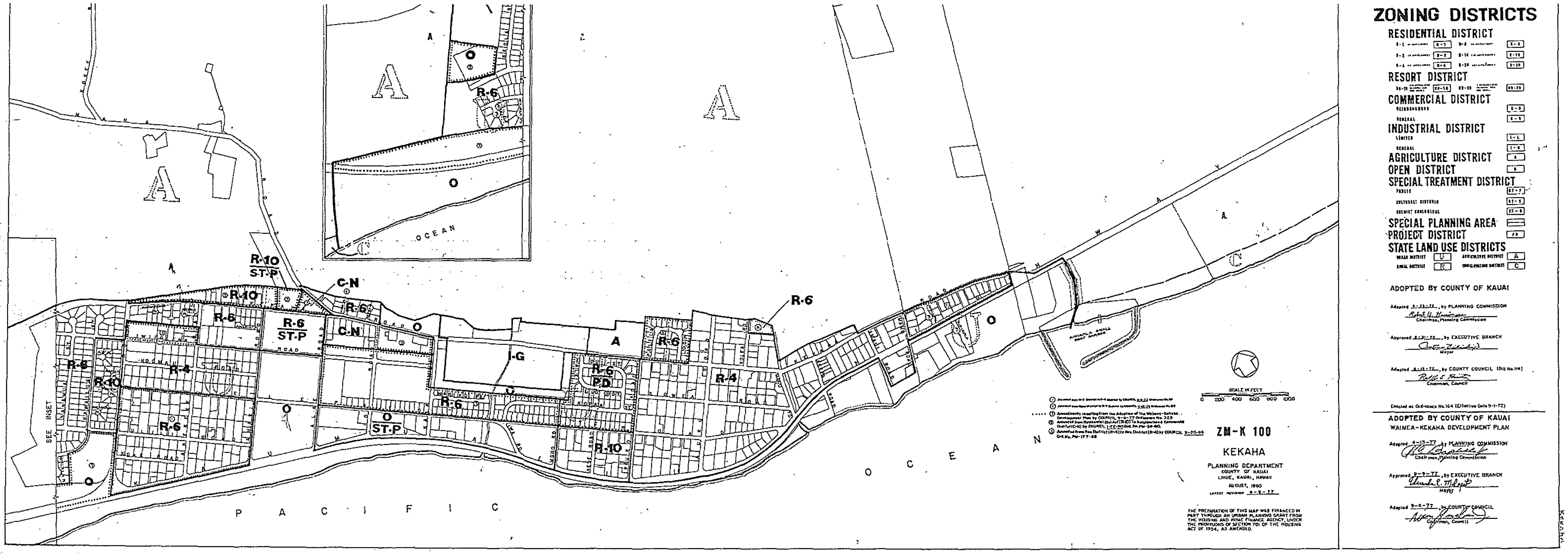

ZONING DISTRICTS
RESIDENTIAL DISTRICT
RESORT DISTRICT
COMMERCIAL DISTRICT
INDUSTRIAL DISTRICT
AGRICULTURE DISTRICT
OPEN DISTRICT
SPECIAL TREATMENT DISTRICT
SPECIAL PLANNING AREA
PROJECT DISTRICT
STATE LAND USE DISTRICTS
ADOPTED BY COUNTY OF KAUAI
ADOPTED BY COUNTY OF KAUAI
WAIMEA-KEKAHA DEVELOPMENT PLAN
ZM-K 100
KEKAHA
PLANNING DEPARTMENT
COUNTY OF KAUAI
LIHUE, KAUAI, HAWAII
AUGUST, 1960
P A C I F I C
O C E A N
SEE INSET
A
R-6
R-4
R-10
R-10
ST-P
C-N
I-G
R-6
PD
O
ST-P

EXHIBIT "C-6"

County of Kauai Zoning Map

200 ft

South Kauai Form Based Code

West Kauai Form Based Code (FBC)

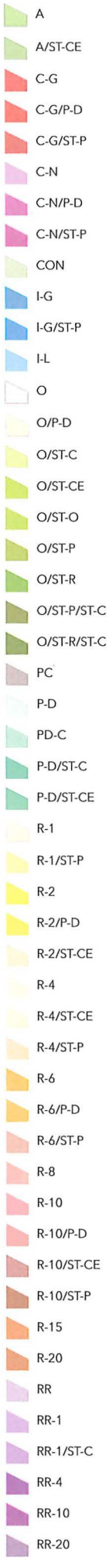
Special Planning Areas (SPA)

Parcels and CPRs - ALL Parcels CPRs

- TMK Parcel
- CPR Unit
- Public Roadway
- Non-TMK area

Zoning

- SEE PLANNING DEPT


A
A/ST-CE
C-G
C-G/P-D
C-G/ST-P
C-N
C-N/P-D
C-N/ST-P
CON
I-G
I-G/ST-P
I-L
O
O/P-D
O/ST-C
O/ST-CE
O/ST-O
O/ST-P
O/ST-R
O/ST-P/ST-C
O/ST-R/ST-C
PC
P-D
PD-C
P-D/ST-C
P-D/ST-CE
R-1
R-1/ST-P
R-2
R-2/P-D
R-2/ST-CE
R-4
R-4/ST-CE
R-4/ST-P
R-6
R-6/P-D
R-6/ST-P
R-8
R-10
R-10/P-D
R-10/ST-CE
R-10/ST-P
R-15
R-20
RR
RR-1
RR-1/ST-C
RR-4
RR-10
RR-20

SPA-A
ST-C
ST-R
UNV
NO ZONING

TMK Parcel

TMK Parcel

Tax Map Key	412013040
Owner	HOKUAINA DEVELOPMENT LLC
Real Property Parcel Information	View
Parcel Type	TMK Parcel

County of Kauai Zoning: O/ST-CE (Open Space/Special Treatment - Coastal Edge)

County of Kauai Zoning: O/ST-CE (Open Space/Special Treatment - Coastal Edge)

ZONING	O/ST-CE
DESCRIPTION	Open Space/Special Treatment - Coastal Edge

County of Kauai Zoning Map

200 ft

South Kauai Form Based Code

West Kauai Form Based Code (FBC)

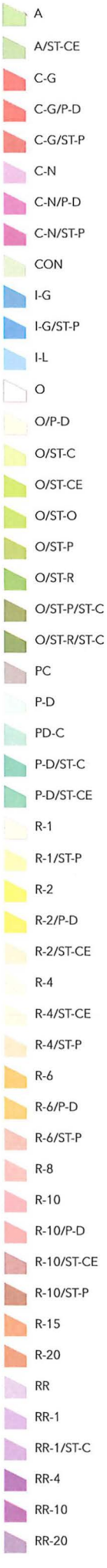
Special Planning Areas (SPA)

Parcels and CPRs - ALL Parcels CPRs

- TMK Parcel
- CPR Unit
- Public Roadway
- Non-TMK area

Zoning

- SEE PLANNING DEPT


A
A/ST-CE
C-G
C-G/P-D
C-G/ST-P
C-N
C-N/P-D
C-N/ST-P
CON
I-G
I-G/ST-P
I-L
O
O/P-D
O/ST-C
O/ST-CE
O/ST-O
O/ST-P
O/ST-R
O/ST-P/ST-C
O/ST-R/ST-C
PC
P-D
PD-C
P-D/ST-C
P-D/ST-CE
R-1
R-1/ST-P
R-2
R-2/P-D
R-2/ST-CE
R-4
R-4/ST-CE
R-4/ST-P
R-6
R-6/P-D
R-6/ST-P
R-8
R-10
R-10/P-D
R-10/ST-CE
R-10/ST-P
R-15
R-20
RR
RR-1
RR-1/ST-C
RR-4
RR-10
RR-20

TMK Parcel

TMK Parcel

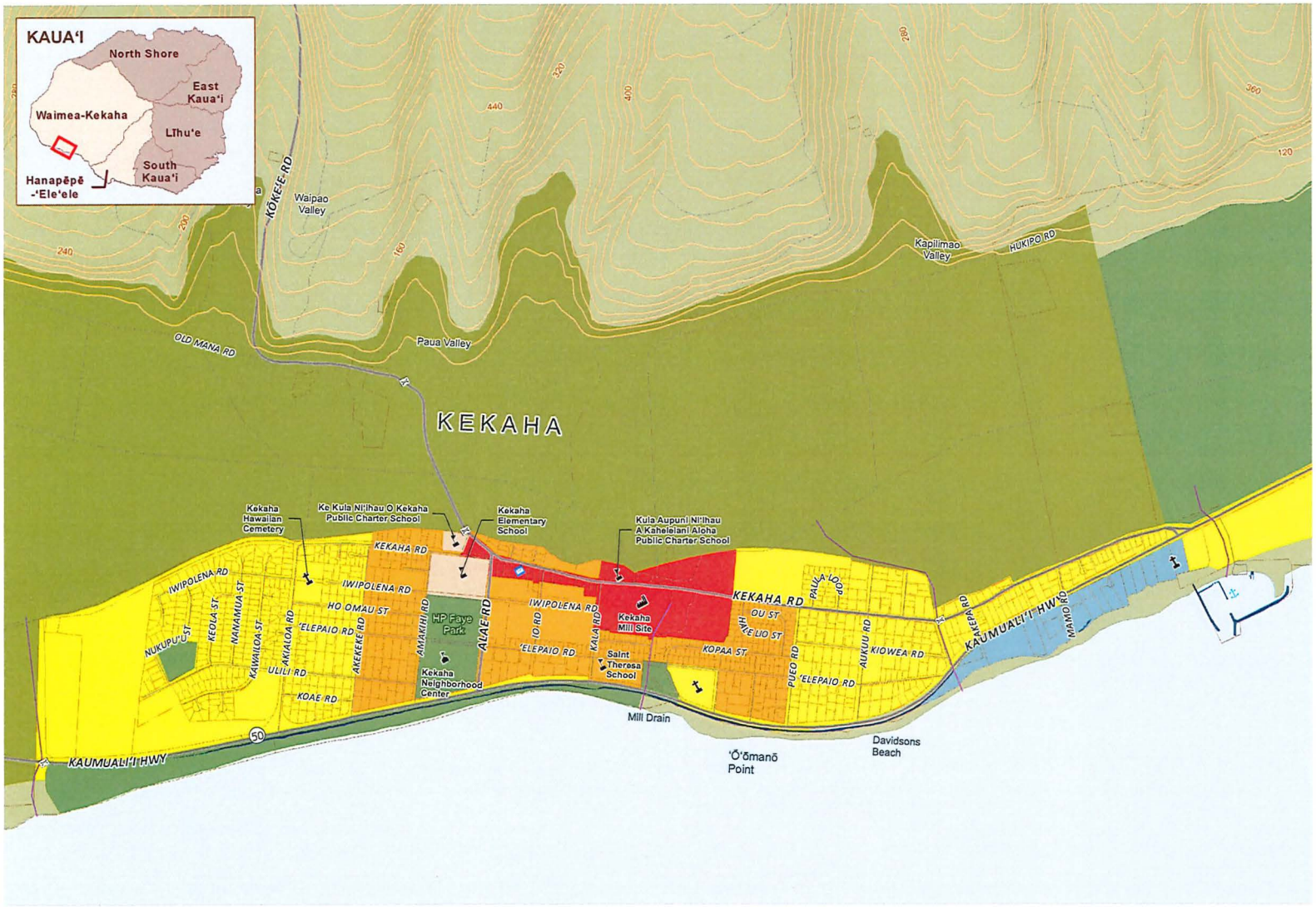
Tax Map Key	412013039
Owner	HOKUAINA DEVELOPMENT LLC
Real Property Parcel Information	View
Parcel Type	TMK Parcel

County of Kauai Zoning: O/ST-CE (Open Space/Special Treatment - Coastal Edge)

County of Kauai Zoning: O/ST-CE (Open Space/Special Treatment - Coastal Edge)

ZONING	O/ST-CE
DESCRIPTION	Open Space/Special Treatment - Coastal Edge

EXHIBIT "C-7"



KEKAHA TOWN PLAN MAP

Legend

- Town Center
- Walkable Neighborhood
- Residential Neighborhood
- Public Facilities
- Coastal Edge
- Agriculture
- Park
- Natural
- TMK Parcels
- Bridge
- Cemetery
- Harbor
- Mill
- Neighborhood Center
- Post Office
- School
- Contour 40ft
- Ditches
- Shoreline Armoring Structures
- Local Roads
- Other Roads
- Highways

0 600 1,200 FT

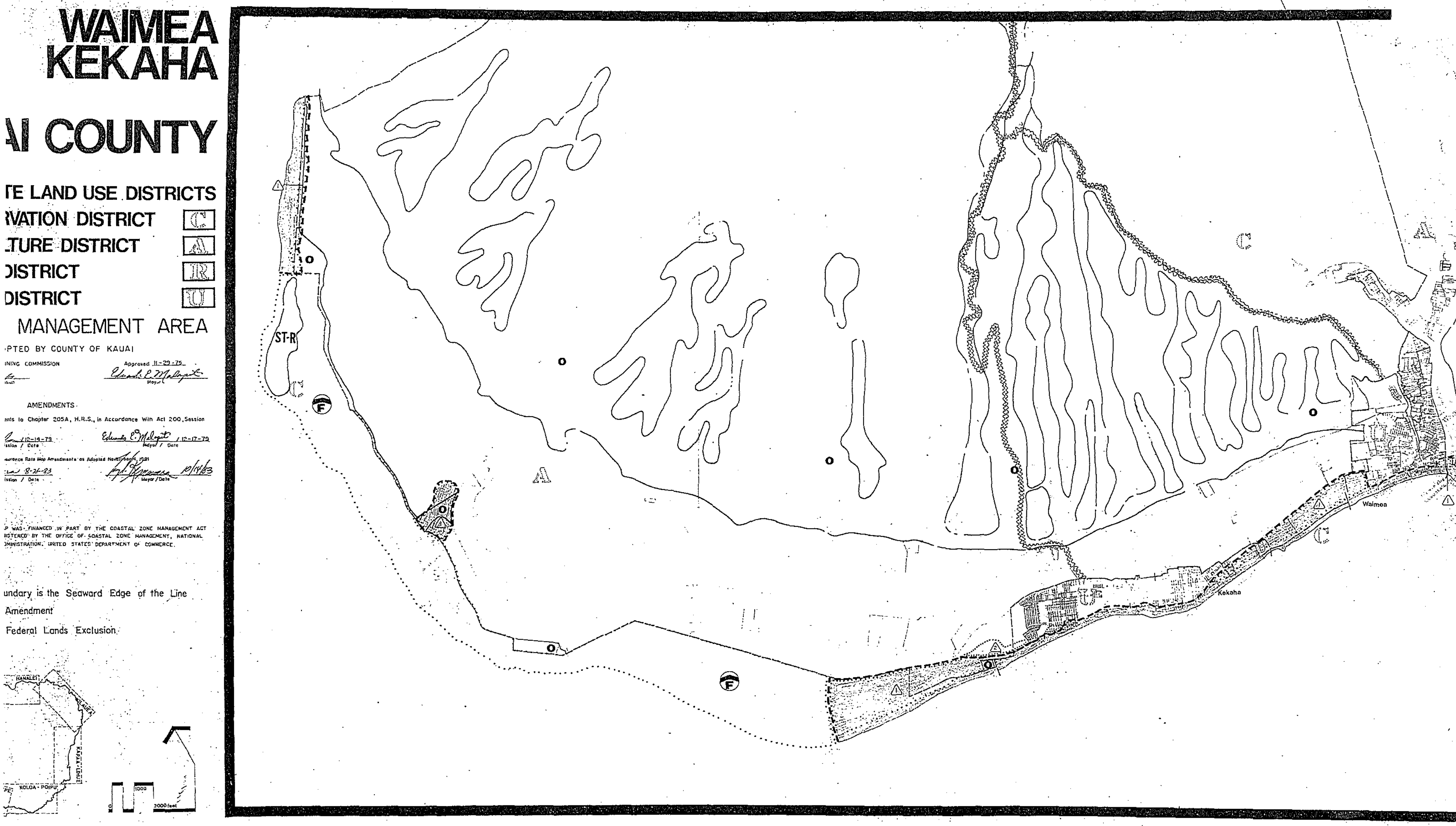
Data Sources: County of Kaua'i, Hawai'i State GIS Program, USGS National Map, and ESRI Basemaps

EXHIBIT "C-7"

FIGURE 13 | Kekaha Town Plan Map

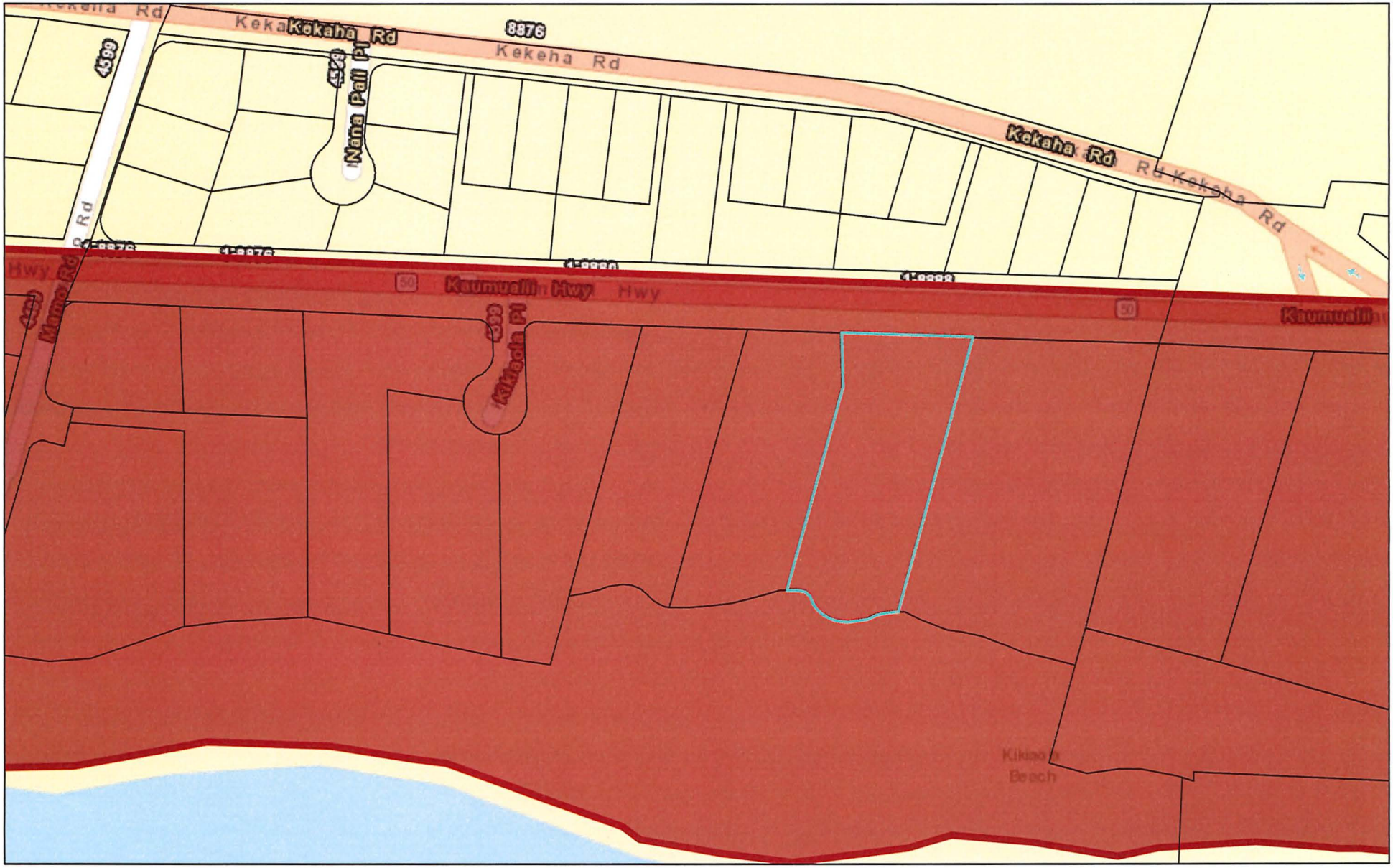
EXHIBIT "C-8"

EXHIBIT "C-8"



WAIMEA
KEKAHA
AI COUNTY
TE LAND USE DISTRICTS
RVATION DISTRICT C
LTURE DISTRICT A
DISTRICT R
DISTRICT U
MANAGEMENT AREA
PTED BY COUNTY OF KAUAI
AMENDMENTS
undary is the Seaward Edge of the Line
Amendment
Federal Lands Exclusion
ST-R
C
A
U
Waimea
Kekaha
HANALEI
KOLOA - POIPU
KAPAA - LIHUE
1000
2000 feet

SMA



October 21, 2023

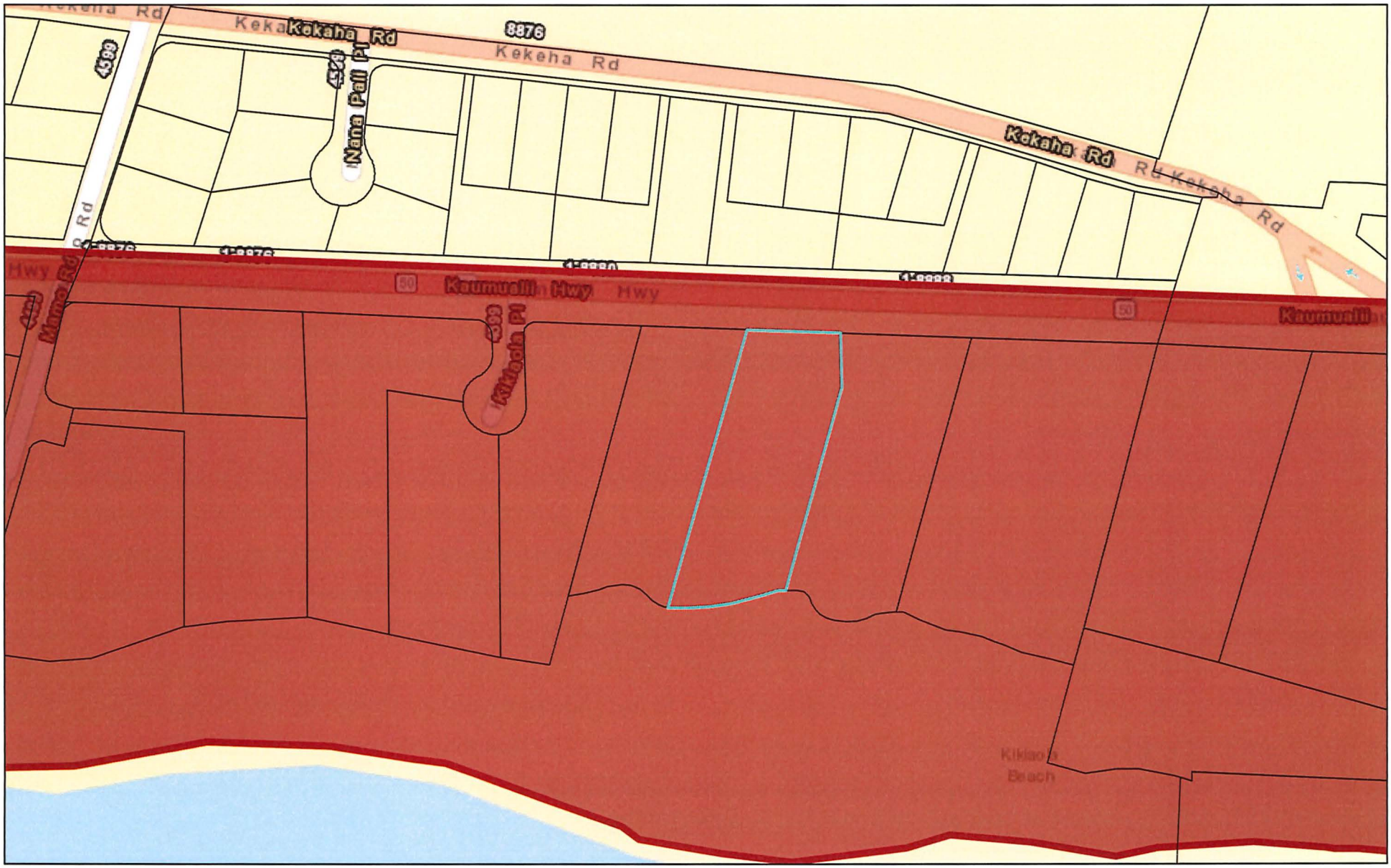
1:2,257

0 0.02 0.04 0.07 mi

0 0.03 0.06 0.11 km

Esri, HERE, Garmin, NGA, USGS, Esri, HERE

SMA



October 21, 2023

1:2,257

0 0.02 0.04 0.07 mi

0 0.03 0.06 0.11 km

Esri, HERE, Garmin, NGA, USGS, Esri, HERE

EXHIBIT "C-9"

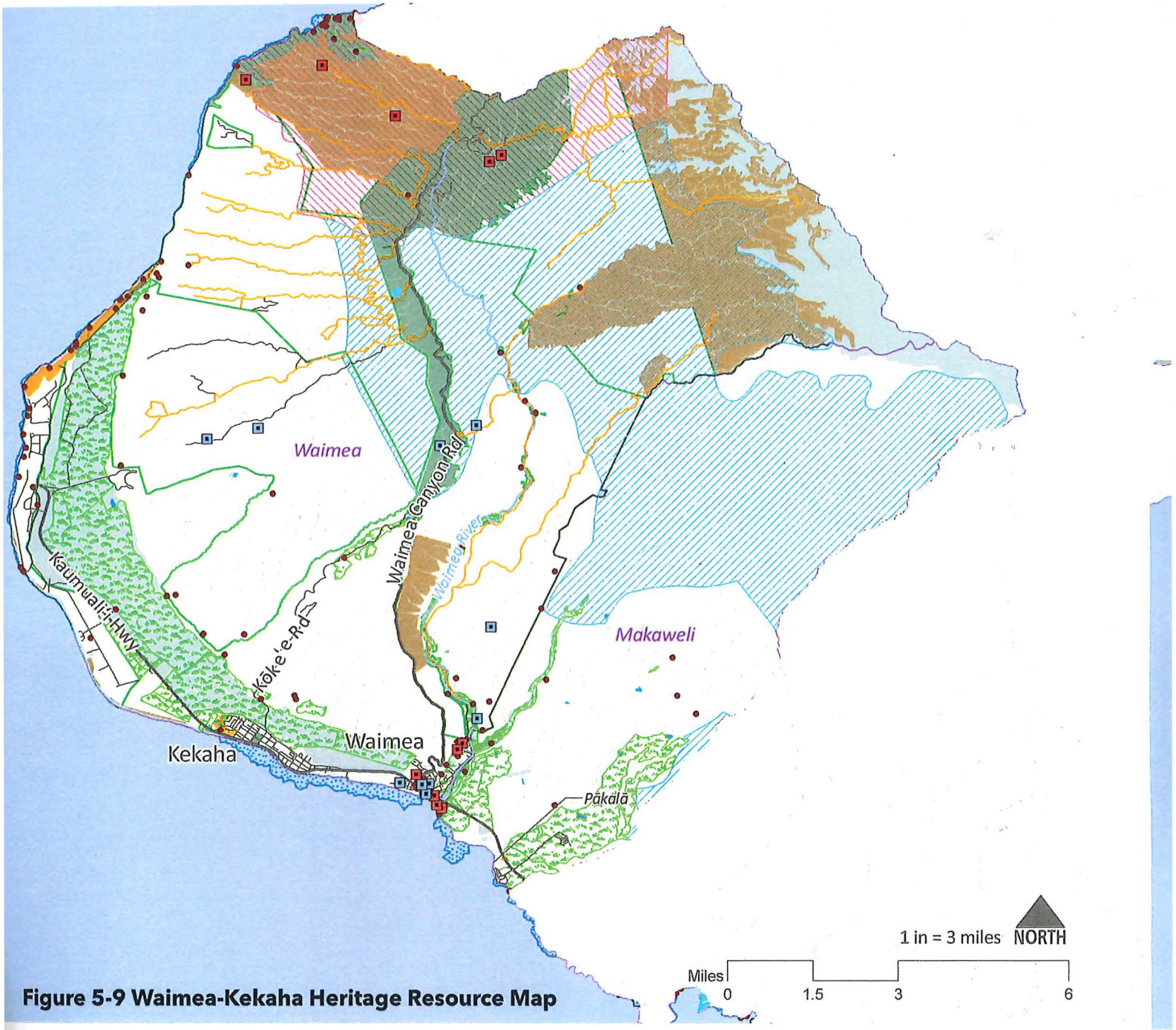


Figure 5-9 Waimea-Kekaha Heritage Resource Map

Registered Historic Sites
- State
- National
- State & National

- Cultural Features
- Priority Public Access Points
- Fish Ponds
- Streams & Waterbodies
- Major Roads
- Roads

- Trails
- Planning District Boundary
- Ahupua'a Boundaries
- Wetlands
- Coral Reefs
- Regulated Fishing Areas
- State & County Parks
- Preserves
- Reservoirs

- Traditional Cultivation Areas
- Sand Dunes
- Open Space Acquisition Priorities
- Critical Habitat

Threatened & Endangered Species
- High Density
- Very High Density

EXHIBIT "C-9"

EXHIBIT "C-10"

Kauai Shoreline Change Map

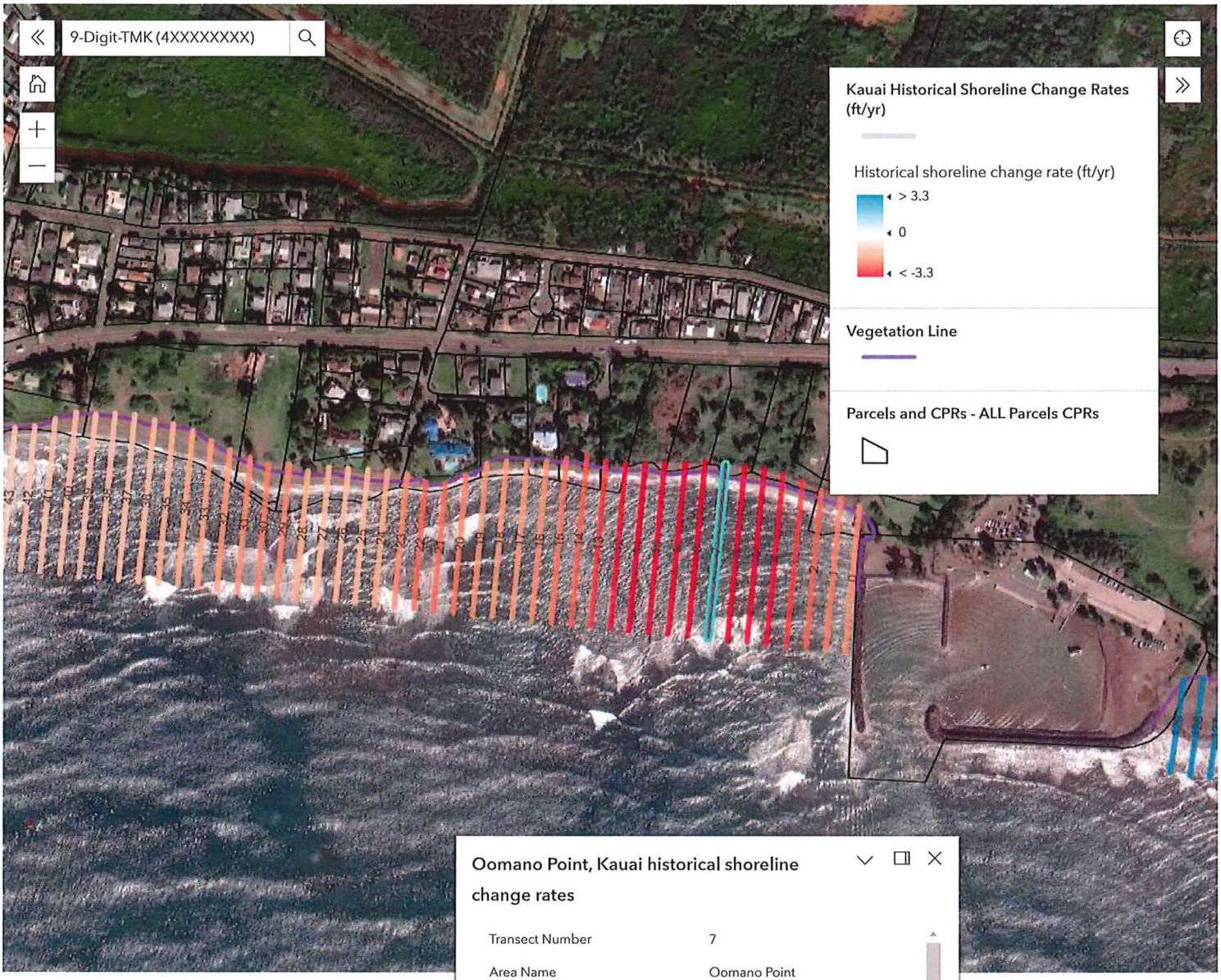
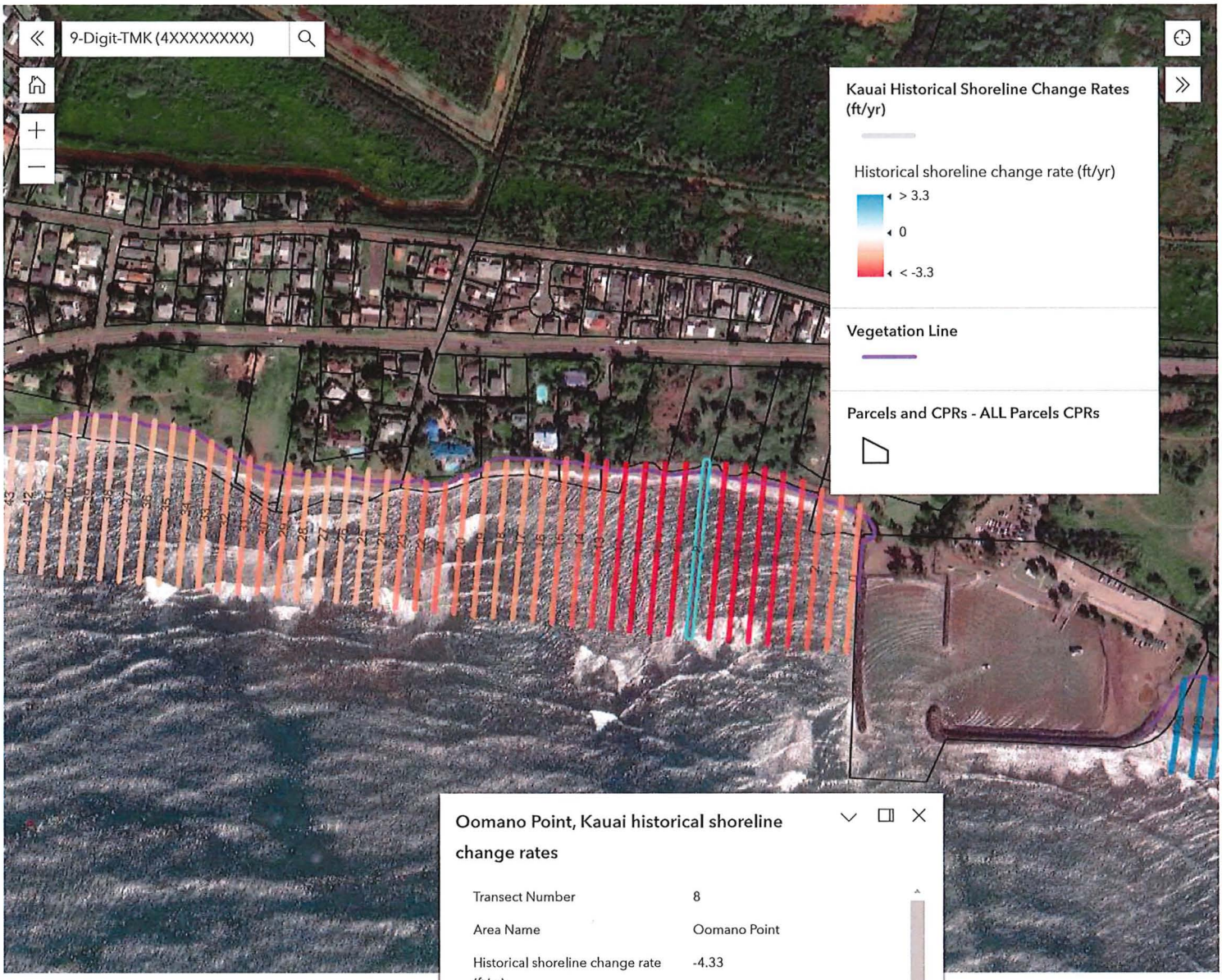


EXHIBIT "C-10"

Kauai Shoreline Change Map



Kauai Shoreline Change Map

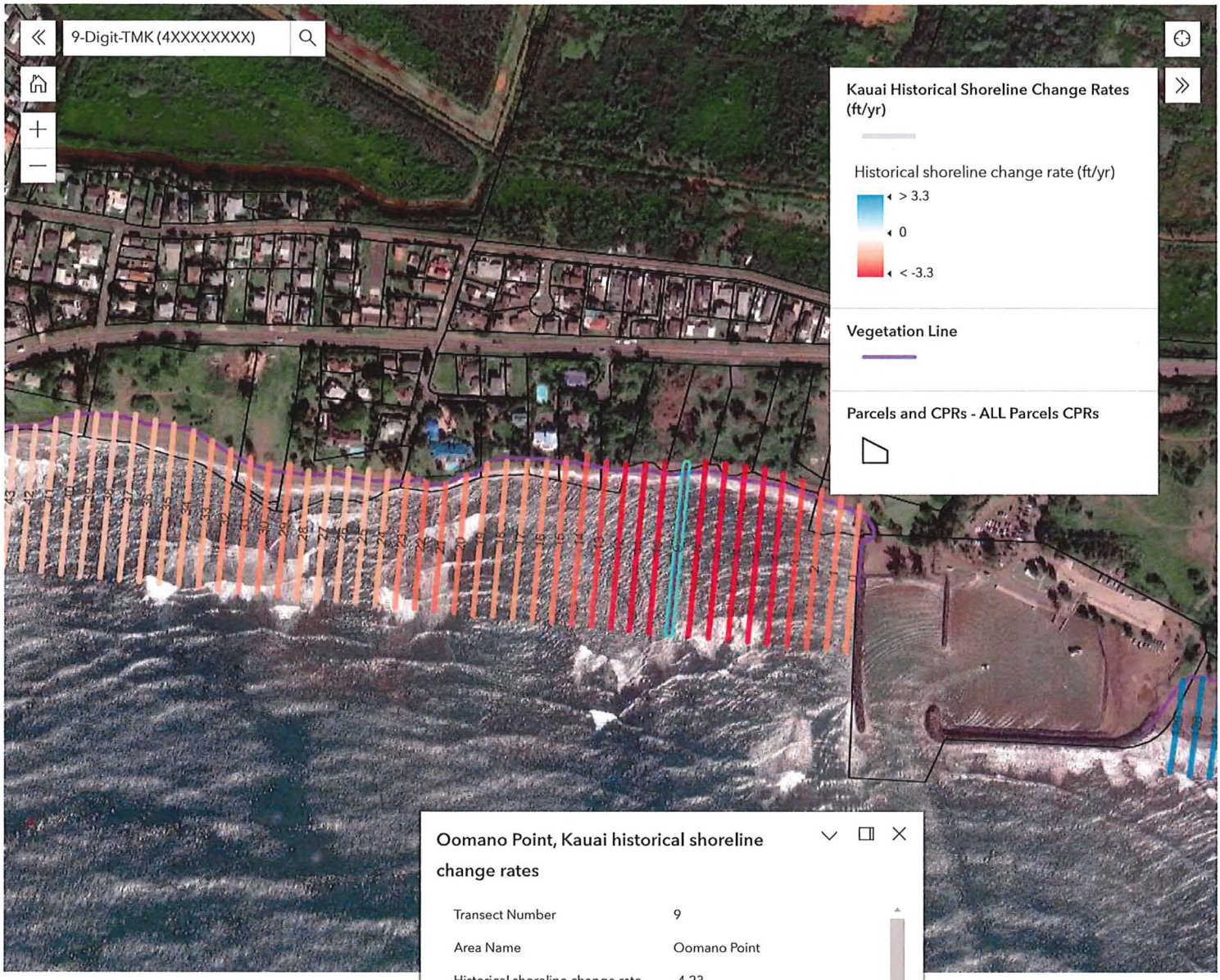


EXHIBIT "C-11"

Kaua'i Sea Level Rise Constraint District Viewer

EXHIBIT "C-11"

100 ft

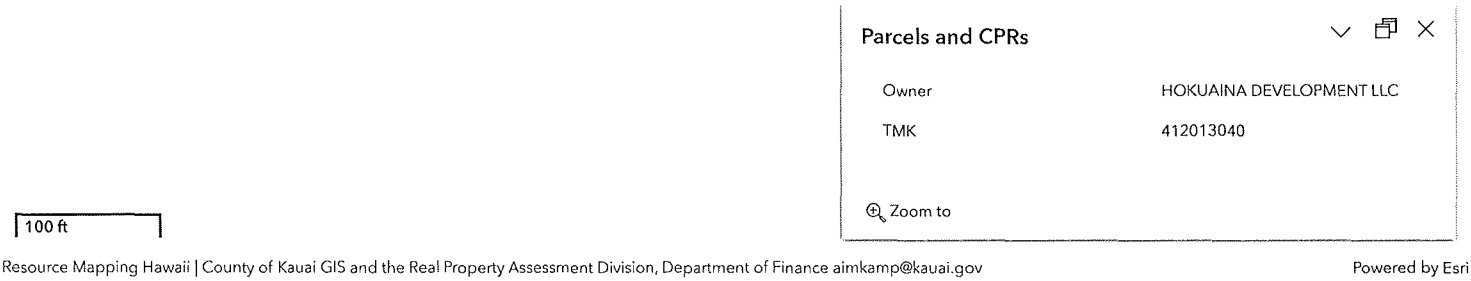
Kaua'i Sea Level Rise Constraint District Viewer

Parcels and CPRs

Owner	HOKUAINA DEVELOPMENT LLC
TMK	412013040

Zoom to

100 ft


Parcels and CPRs
Owner
HOKUAINA DEVELOPMENT LLC
TMK
412013040
Zoom to
100 ft
Resource Mapping Hawaii | County of Kauai GIS and the Real Property Assessment Division, Department of Finance aimkamp@kauai.gov
Powered by Esri

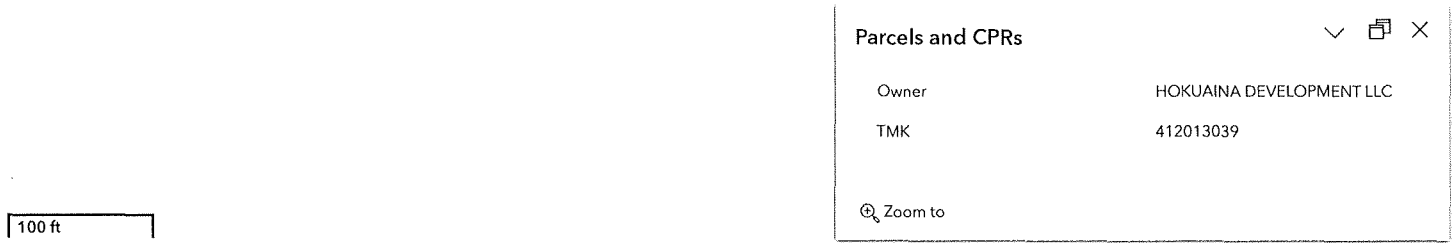
Kaua'i Sea Level Rise Constraint District Viewer

Parcels and CPRs

Owner	HOKUAINA DEVELOPMENT LLC
TMK	412013039

Zoom to

100 ft



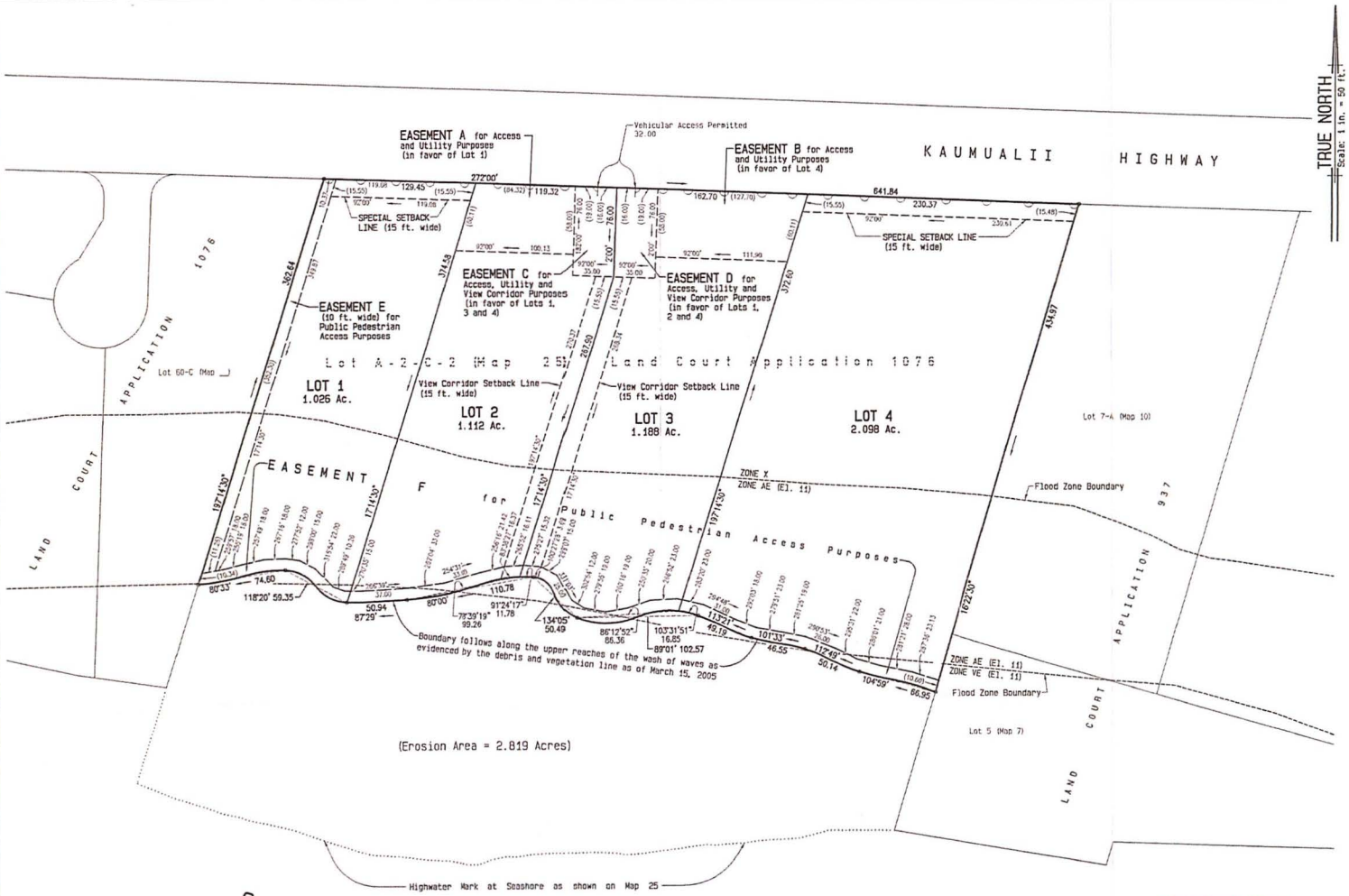
Resource Mapping Hawaii | County of Kauai GIS and the Real Property Assessment Division, Department of Finance aimkamp@kauai.gov

Powered by Esri

EXHIBIT "D-1"

APP. 1076

MAP



LAND COURT

STATE OF HAWAII

LAND COURT APPLICATION 1076

EROSION TO LOT A-2-C-2 AS SHOWN ON MAP 25, SUBDIVISION OF SAID LOT A-2-C-2 LESS EROSION INTO LOTS 1, 2, 3 AND 4, DESIGNATION OF EASEMENTS A, B, C, D, E AND F, DESIGNATION OF SPECIAL SETBACK LINES AFFECTING LOTS 1 AND 4, DESIGNATION OF VIEW CORRIDOR SETBACK LINES (15 FT. WIDE) AFFECTING LOTS 2 AND 3 AND DESIGNATION OF RESTRICTION OF VEHICULAR ACCESS RIGHTS AFFECTING LOTS 1, 2, 3 AND 4

AT KIKIAOLA, WAIMEA, KAUAI, HAWAII

New shoreline boundary (debris and vegetation line) as shown hereon is from an actual survey on the ground made under the direction and supervision of the undersigned on March 15, 2005 and may be checked by the State Surveyor with my Field Book Number 1573 and Worksheet and Calculation in Project Number 4162-2.

OWNER: KVH Partners

TRANSFER CERTIFICATE OF TITLE: 573, 349

2153 North King Street
Suite 200
Honolulu, Hawaii 96819

March 23, 2006

BELT COLLINS HAWAII LTD.

ROBERT W. CUNNINGHAM
LICENSED PROFESSIONAL LAND SURVEYOR
No. 4188
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

This map was approved by the Planning Commission of the County of Kauai, at their Meeting on JUL 11 2006
Approved by Chairman, Planning Commission County of Kauai

NOTES:

AREA OF EASEMENTS:

Easement A for Access and Utility Purposes affecting Lot 2 = 5349 Sq.Ft.
Easement B for Access and Utility Purposes affecting Lot 3 = 6948 Sq.Ft.
Easement C for Access, Utility and View Corridor Purposes affecting Lots 1, 3 and 4 = 2650 Sq.Ft.
Easement D for Access, Utility and View Corridor Purposes affecting Lots 1, 2 and 4 = 2650 Sq.Ft.
Easement E (10 ft. wide) for Public Pedestrian Access Purposes affecting Lot 1 = 3511 Sq.Ft.
Easement F for Public Pedestrian Access Purposes affecting Lots 1, 2, 3 and 4 = 6701 Sq.Ft.

NOTES:

1. _____ denotes no vehicular access permitted
2. ____d____h____ denotes vehicular access permitted
3. Flood zone boundaries from FIRM map as shown are approximate.

NOTE:

Domestic water service will not be available until the required construction improvements for this subdivision are completed and accepted by the Department of Water, County of Kauai.

NOTE:

THE LOT OWNER SHALL PROVIDE A DRAINAGE BASIN WITH THE MINIMUM VOLUME LISTED ON TABLE 1. ACTUAL BASIN QUANTITY, GEOMETRY AND LOCATIONS SHALL BE DETERMINED AS PART OF THE GRADING AND DRAINAGE DESIGN FOR EACH LOT. PERCOLATION TESTS SHALL BE PERFORMED PRIOR TO RECEIVING BUILDING PERMIT APPROVAL. STORM BASINS FOR EACH LOT SHALL BE MAINTAINED BY EACH INDIVIDUAL OWNER IN PERPETUITY.

FINAL MAP ACCEPTED ON JUL 10 2006
By Planning Department

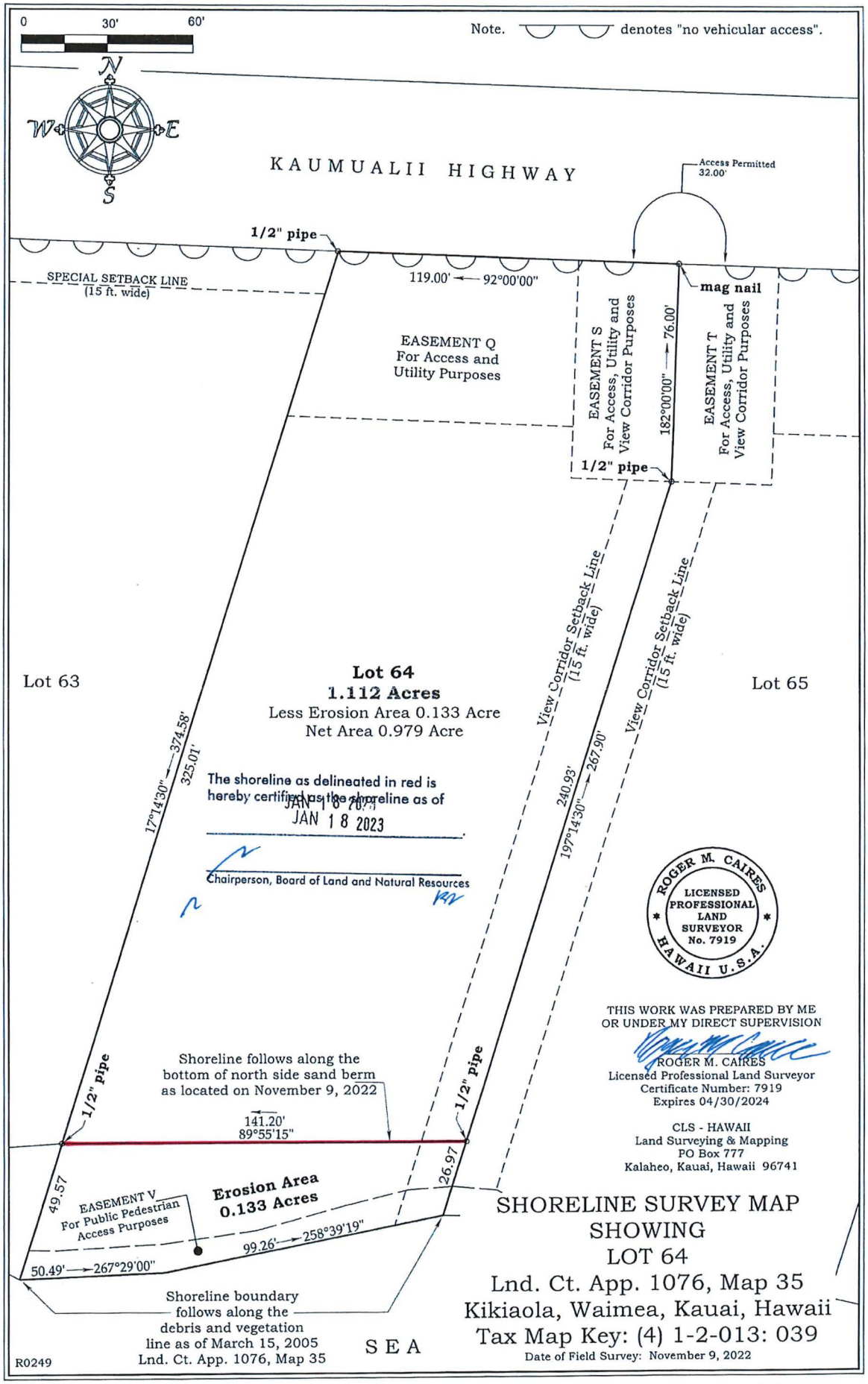
TABLE 1	
LOT	REQUIRED VOLUME
1	4,904 CF
2	5,394 CF
3	5,885 CF
4	10,298 CF

Tax Map Key: 1-2-13: 1, 4th Div.

FILE COPY

EXHIBIT "D-1"

EXHIBIT "D-2"



Traverse PC

EXHIBIT "D-2"

SURVEY OFFICE COPY

CLS HAWAII
Land Surveying & Mapping

PO Box 777
Kalaheo, Kauai, Hawaii 96741
Office (808) 635-3700 - Fax (866) 592-2475
www.clshawaii.com
surveyor1@clshawaii.com

TMK: (4) 1-2-013: 039, Lot 64

Photo A

Date: November 9, 2022

Time: 2:00pm

CLS HAWAII
Land Surveying & Mapping

PO Box 777
Kalaheo, Kauai, Hawaii 96741
Office (808) 635-3700 - Fax (866) 592-2475
www.clshawaii.com
surveyor1@clshawaii.com

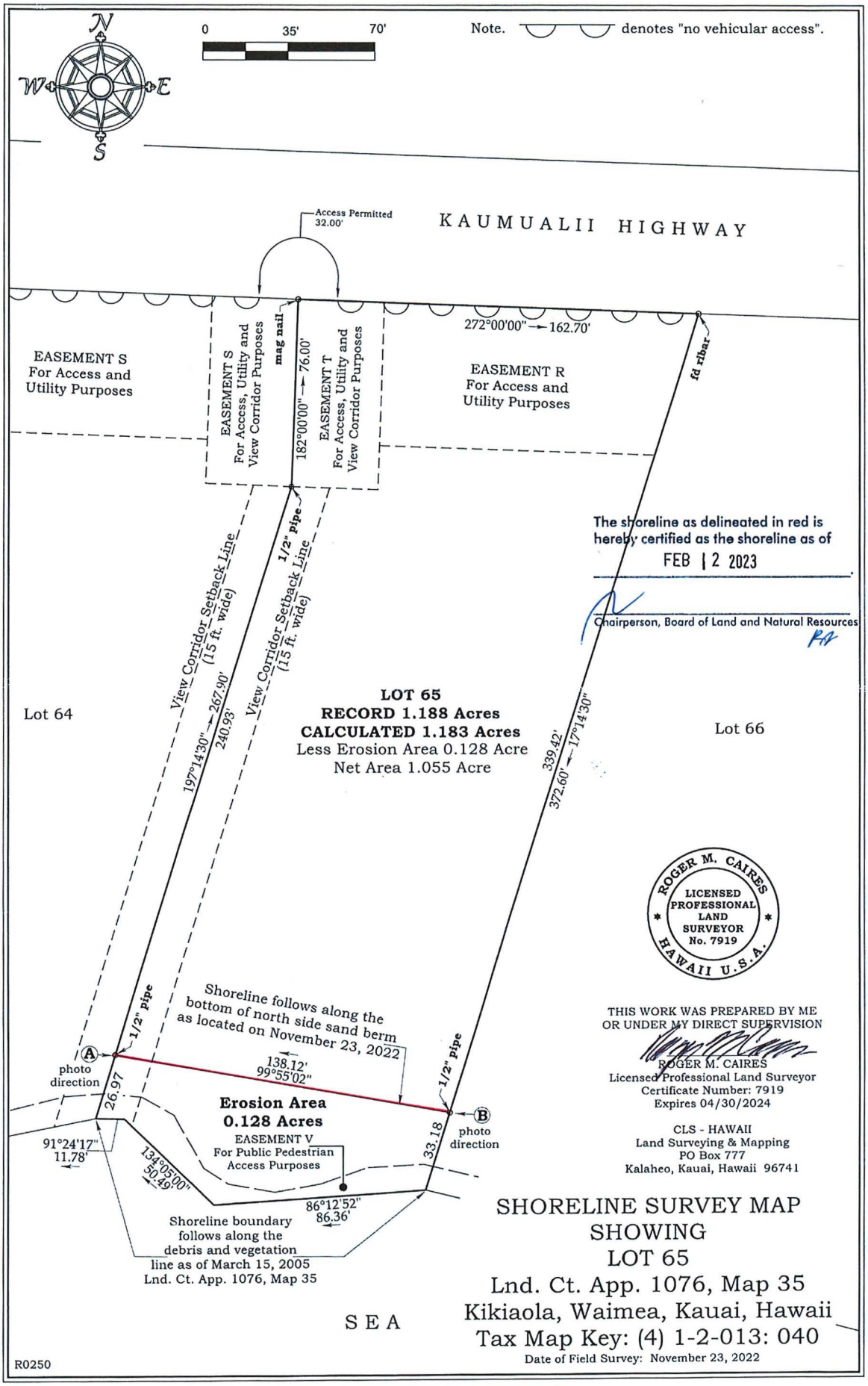
TMK: (4) 1-2-013: 039 Lot 64

Photo B

Date: November 9, 2022

Time: 2:00pm

SURVEY OFFICE COPY



Traverse PC

CLS HAWAII
Land Surveying & Mapping

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Kalaheo, Kauai, Hawaii 96741
Office (808) 635-3700 - Fax (866) 592-2475
www.clshawaii.com
surveyor1@clshawaii.com

TMK: (4) 1-2-013: 040, Lot 65

Photo A

Date: November 23, 2022

Time: 2:00 pm

CLS HAWAII
Land Surveying & Mapping

PO Box 777
Kalaheo, Kauai, Hawaii 96741
Office (808) 635-3700 - Fax (866) 592-2475
www.clshawaii.com
surveyor1@clshawaii.com

TMK: (4) 1-2-013: 040, Lot 65

Photo B

Date: November 23, 2022

Time: 2:00 pm

EXHIBIT "E-1"

HALE WA'A (LOT 64)

EXHIBIT "E-1"

PROJECT DIRECTORY

OWNER:	NATHANIEL FISHER #Client Address1 KEKAHA, HI 96752 (808) 635 - 6263
ARCHITECT:	KANOA CHUNG NOHO WORKSHOP 1970 KOLO RD. KILAUEA, HI 96754 (808) 651-4979 KANOA@NOHOWORKSHOP.COM
STRUCTURAL ENGINEERING CONSULTANT:	NAME COMPANY NAME ADDRESS CITY, STATE ZIPCODE PHONE NUMBER EMAIL

PROJECT INFROMATION

PROJECT ADDRESS:	KAUMUALII HWY. Kekaha, HI 96752
TMK:	(4) 1-2-013-039:0000
PROPERTY SIZE:	1.112 ACRES 48,439 SF
ZONING:	OP
BUILDING USE:	SINGLE-FAMILY RESIDENCE
OCCUPANCY GROUP:	RESIDENTIAL
CONSTRUCTION TYPE:	V-B
CLIMATE ZONE:	1
FLOOD ZONE:	#Flood Zone
EFFECTIVE WIND SPEED:	120 MPH
EXPOSURE CATEGORY:	C
SPRINKLERED:	NO
BUILDING CODE:	#Building Code
SCOPE OF WORK:	CONSTRUCTION OF A NEW SINGLE FAMILY HOME PLUS BOAT SHED

ENCLOSED AREA

HOUSE	1,060.00

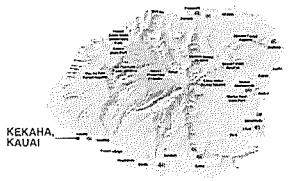
COVERED EXTERIOR

DECK & STAIRS	72.45
BOAT SHED	2,160.00
	3,232.45 ft²

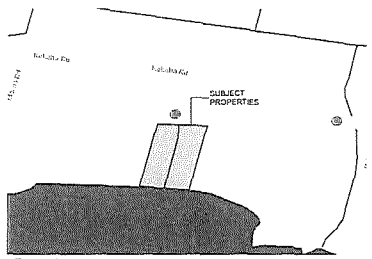
LOT COVERAGE INFROMATION

BUILDING FOOTPRINT (INCLUDES ALL ENCLOSED AREAS, DECKS, WALKS)	3,579.93
DRIVEWAY	1,618.01
TOTAL LOT COVERAGE	4,851.94
LOT AREA LOT COVERAGE AS %	48,439 SF 10%

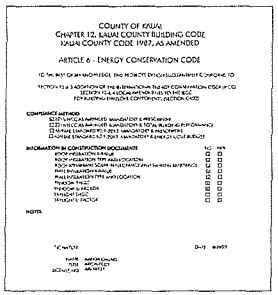
SHEET INDEX



A LOCATION MAP
NOT TO SCALE

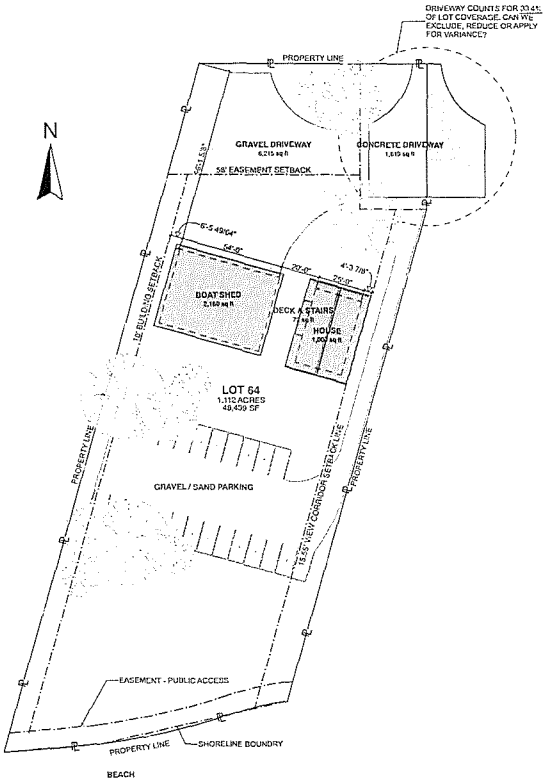


A VICINITY MAP
NOT TO SCALE



COUNTY OF KAUAI
CHAPTER 12, KAUAI COUNTY BUILDING CODE
KAUAI COUNTY CODE 1987, AS AMENDED

ARTICLE 6 - ENERGY CONSERVATION CODE



8 SITE PLAN
SCALE: 1" = 30'

ARCHITECT

noho 工作坊

NOHO WORKSHOP
KANOA CHUNG
ARCHITECT, AR-18731
1970 KOLO RD.
KILAUEA, HI 96754
P: (808) 651-4979
E: KANOA@NOHOWORKSHOP.COM

CLIENT

NATHANIEL FISHER
KAUMUALII HWY.
Kekaha, HI 96752

CERTIFICATION

PROJECT

HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

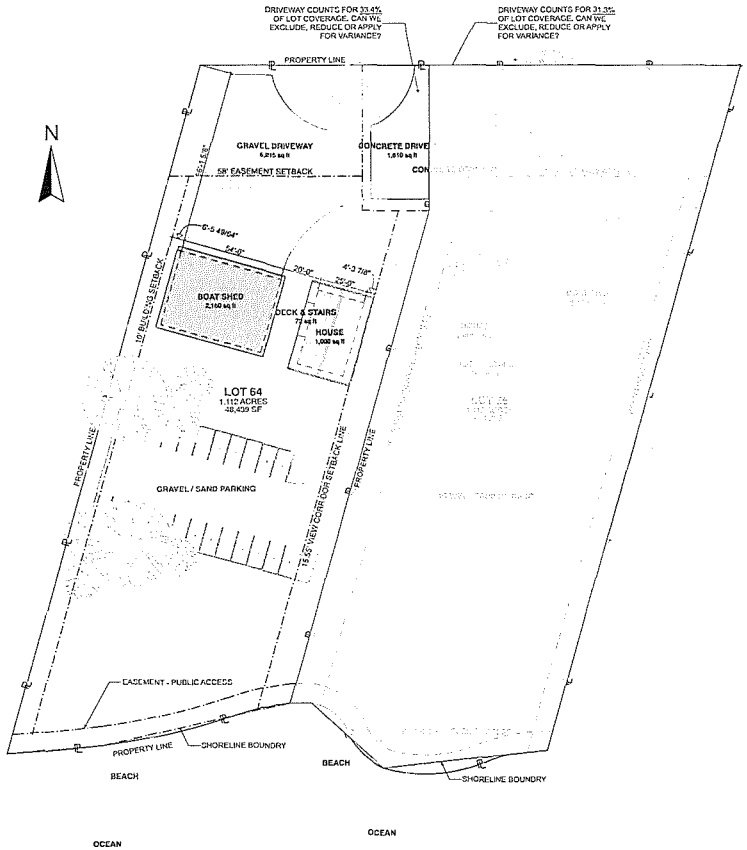
DRAWING ISSUE:

TITLE SHEET & SITE PLAN

A.001

PERMIT ID

C01



1 SITE PLAN
SCALE: 1" = 30'

ARCHITECT

noho 工作坊

NOHO WORKSHOP
KANOA CHUNG
ARCHITECT, AR-18731
1970 KOLO RD.
KILAUEA, HI 96754
P: (808) 651-4075
E: KANOA@NOHOWORKSHOP.COM

CLIENT

NATHANIEL FISHER
KAUMUALII HWY.
Kekaha, HI 96752

CERTIFICATION

THESE PLANS WERE PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

PROJECT

HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

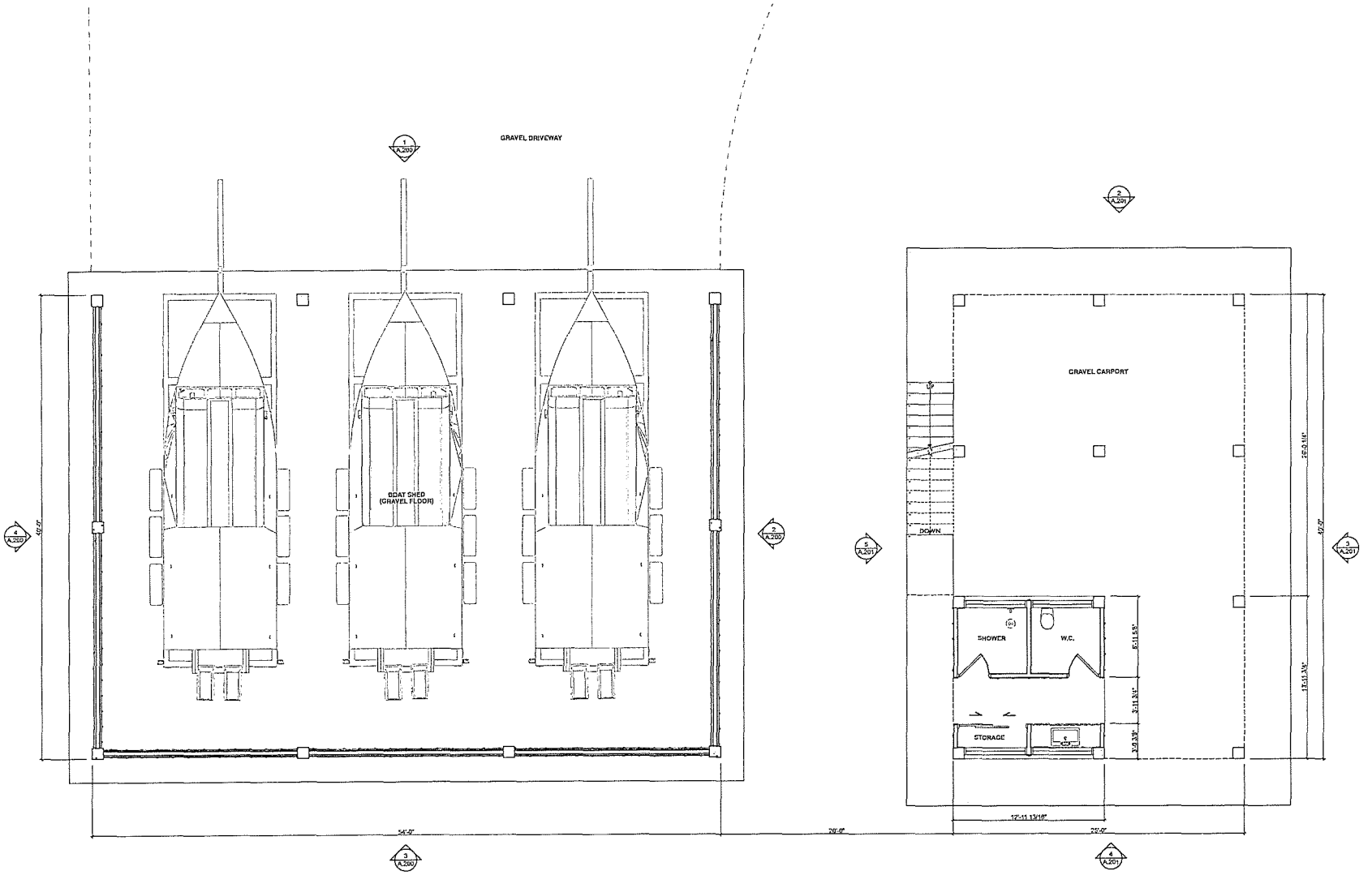
DRAWING ISSUE:

OVERALL SITE PLAN

A.013

PERMIT ID

C02



1 0. FIRST FLOOR
SCALE: 1/4" = 1'-0"

ARCHITECT

noho 工作坊

NOHO WORKSHOP
KANOA CHUNG
ARCHITECT, AR-18731
1970 KOLO RD.
KILAUEA, HI 96754
P: (808) 651-4978
E: KANOA@NOHOWORKSHOP.COM

CLIENT

NATHANIEL FISHER
KAUMUALII HWY.
Kekaha, HI 96752

CERTIFICATION

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

PROJECT

HALE WA'A

#Street Address:
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

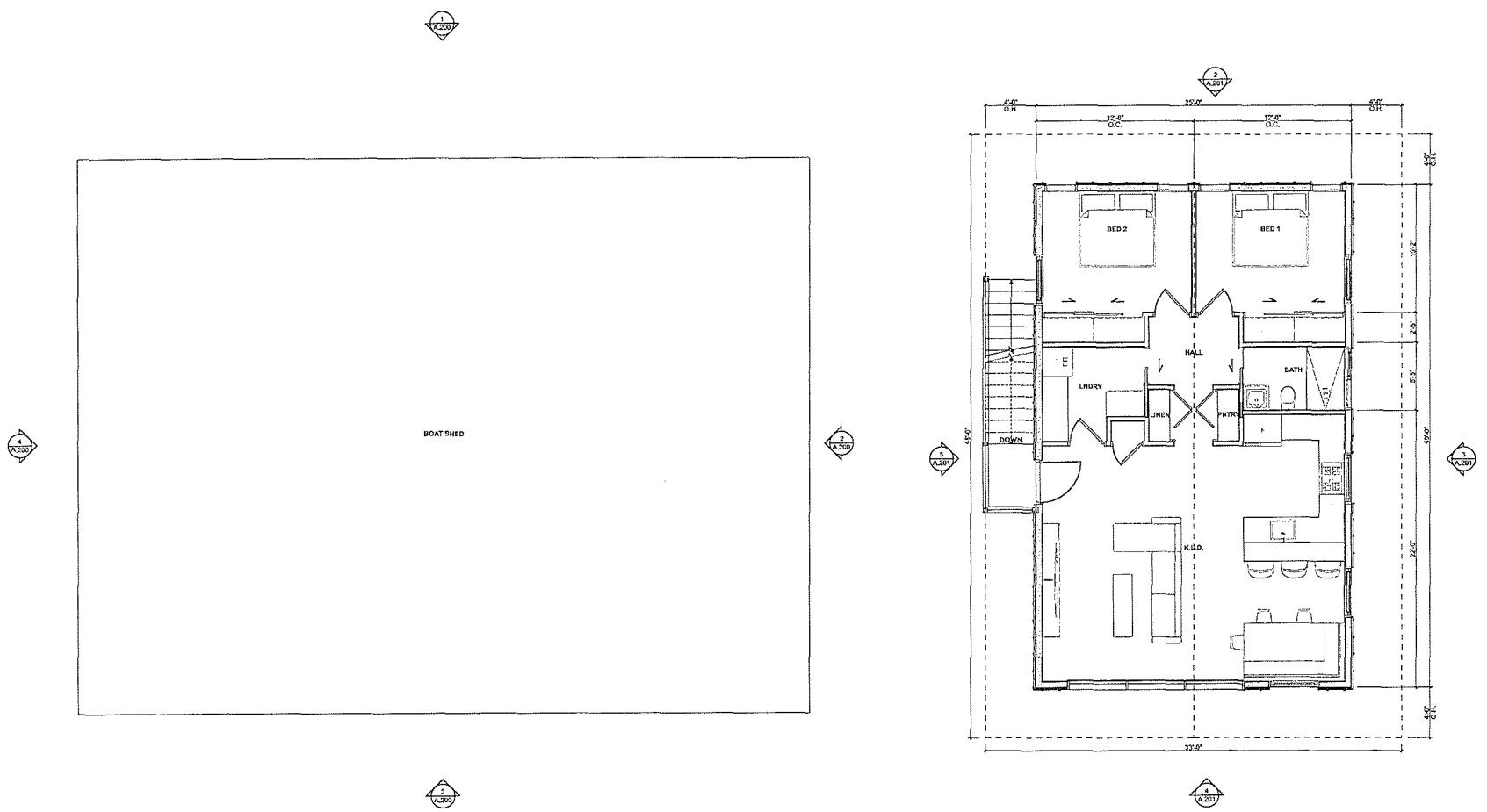
DRAWING ISSUE:

GROUND LEVEL FLOOR PLAN

A.100

PERMIT ID

A01



1 2. SECOND LEVEL
SCALE: 1/4" = 1'-0"

ARCHITECT

noho 工作坊

NOHO WORKSHOP
KANOA CHUNG
ARCHITECT, AR-18731
1970 KOLO RD.
KILAUEA, HI 96754
P: (808) 651-4979
E: KANOA@NOHOWORKSHOP.COM

CLIENT

NATHANIEL FISHER
KAUMUALII HWY.
Kekaha, HI 96752

CERTIFICATION

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

PROJECT

HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

2ND LEVEL FLOOR PLAN

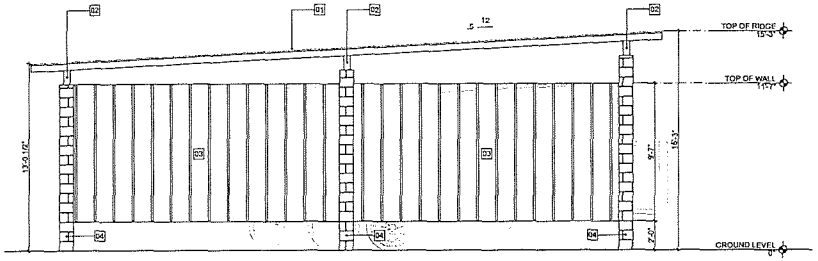
A.101

PERMIT ID

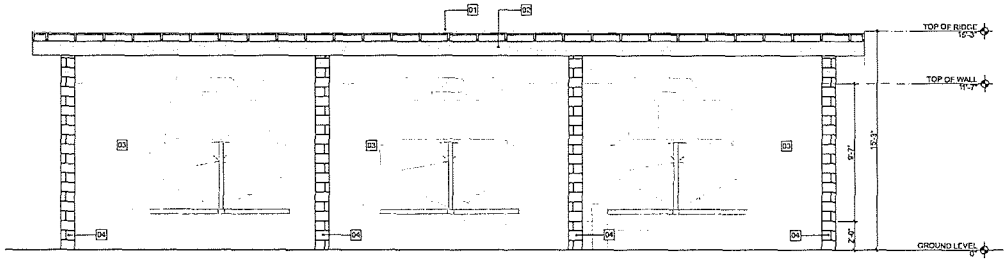
A02

ELEVATION AND SECTION KEYNOTES

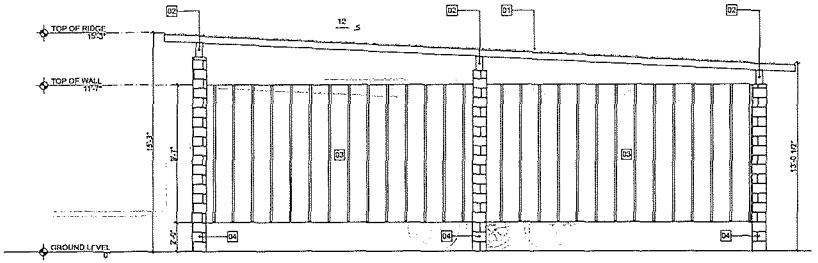
01	CORRUGATED METAL ROOF (COLOR - DARK GREY)
02	STRUCTURAL WOOD BEAM (COLOR - NATURAL WOOD)
03	BOARD AND BATTEN SIDING (COLOR - DARK GREY)
04	STRUCTURAL CMU COLUMN (COLOR - NATURAL WOOD)
05	BELLY BAND (COLOR - NATURAL WOOD)
06	DOORS (COLOR - NATURAL WOOD)
07	WINDOWS (COLOR - NATURAL WOOD)
08	DECK RAILING (COLOR - NATURAL IPE)
09	DECKING (COLOR - NATURAL IPE)
10	METAL ROOF FLASHING (COLOR - DARK GREY)



2 A-02 EAST
SCALE: 1/4" = 1'-0"



1 A-01 NORTH
SCALE: 1/4" = 1'-0"



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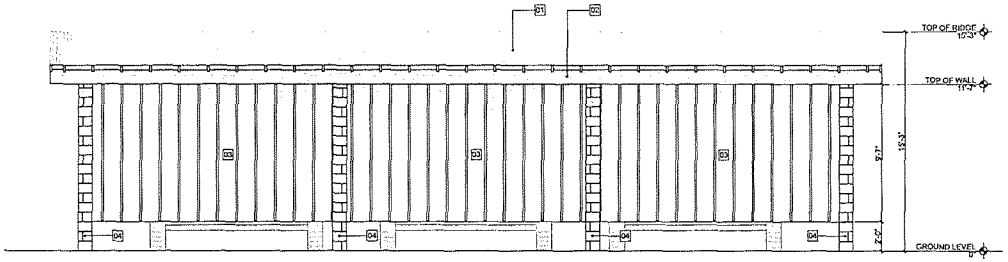
SCALE: 1/4" = 1'-0"



3 A-03 SOUTH
SCALE: 1/4" = 1'-0"

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CERTIFICATION

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PROJECT

HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

BOAT SHED ELEVATIONS

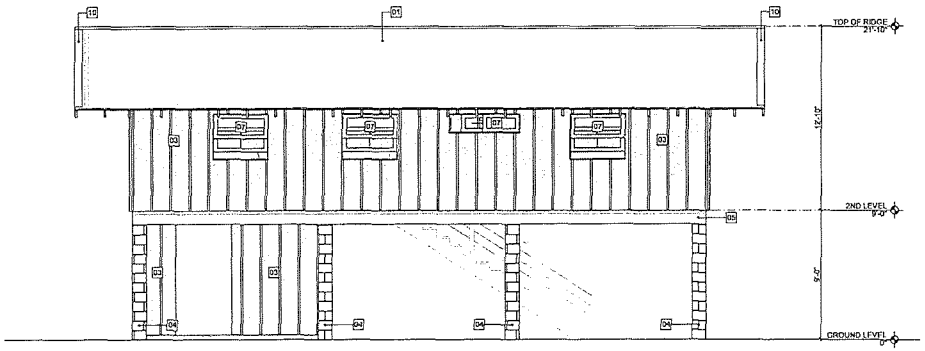
A.200

PERMIT ID

A03

ELEVATION AND SECTION KEYNOTES

01	CORRUGATED METAL ROOF (COLOR - DARK GREY)
02	STRUCTURAL WOOD BEAM (COLOR - NATURAL WOOD)
03	BOARD AND BATTEN SIDING (COLOR - DARK GREY)
04	STRUCTURAL CMU COLUMN (COLOR - NATURAL WOOD)
05	BELLY BAND (COLOR - NATURAL WOOD)
06	DOORS (COLOR - NATURAL WOOD)
07	WINDOWS (COLOR - NATURAL WOOD)
08	DECK RAILING (COLOR - NATURAL IPE)
09	DECKING (COLOR - NATURAL IPE)
10	METAL ROOF FLASHING (COLOR - DARK GREY)



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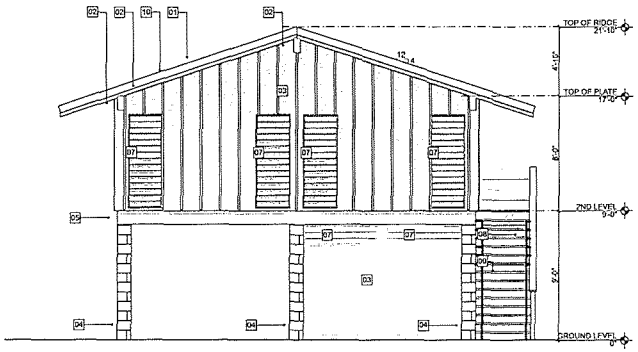
SCALE: 1/4" = 1'-0"



2 B-01 North
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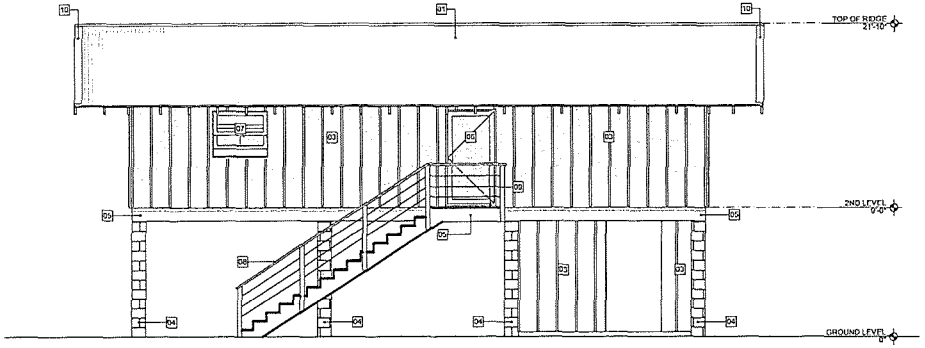
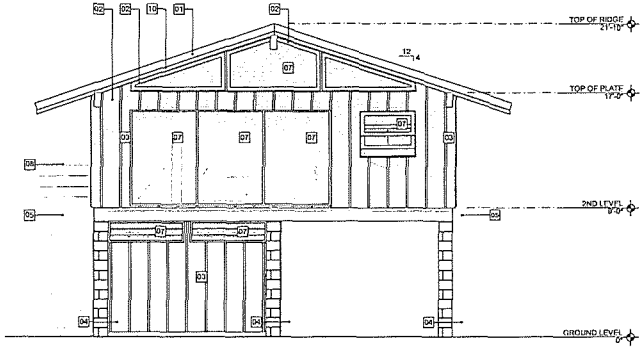


5 B-04 WEST
SCALE: 1/4" = 1'-0"



4 B-03 SOUTH
SCALE: 1/4" = 1'-0"

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CERTIFICATION

PROJECT

HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

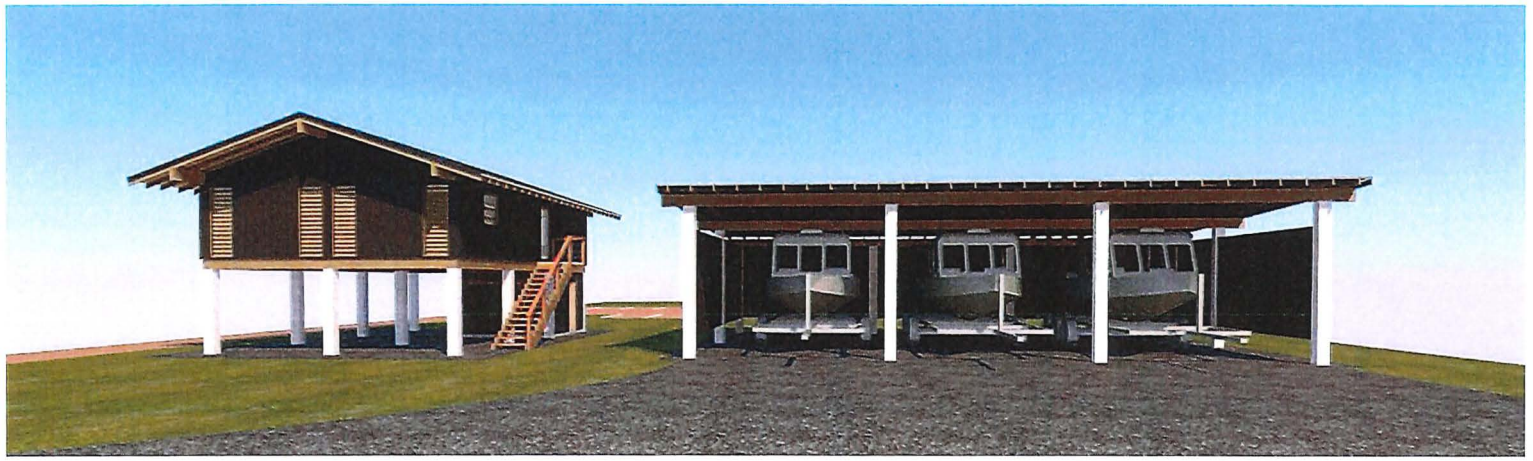
DRAWING ISSUE:

HOUSE ELEVATIONS

A.201

PERMIT ID

A04



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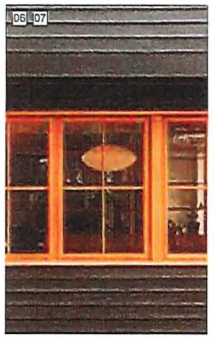
05 BELLY BAND (COLOR - NATURAL WOOD)
06 DOORS (COLOR - NATURAL WOOD)
07 WINDOWS (COLOR - NATURAL WOOD)
08 DECK RAILING (COLOR - NATURAL IPE)
09 DECKING (COLOR - NATURAL IPE)
10 METAL ROOF FLASHING (COLOR - DARK GREY)



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HALE WA'A

#Street Address
(4) 1-2-013-039:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

COLOR PALETTE

PERMIT ID

A05

EXHIBIT "E-2"

HALE WA'A (LOT 65)

EXHIBIT "E-2"

PROJECT DIRECTORY

OWNER:	NATHANIEL FISHER #Client Address1 KEKAHA,HI 96752 (808) 635 - 0283
ARCHITECT:	KANOA CHUNG NOHO WORKSHOP 1970 KOLO RD. KILAUEA, HI 96754 (808) 651-4979 KANOA@NOHOWORKSHOP.COM
STRUCTURAL ENGINEERING CONSULTANT:	NAME COMPANY NAME ADDRESS CITY, STATE ZIPCODE PHONE NUMBER EMAIL

PROJECT INFROMATION

PROJECT ADDRESS:	KAUMUALII HWY, Kekaha, HI 96752
TMK:	(4) 1-2-013-040:0000
PROPERTY SIZE:	1.188 ACRES 51,749 SF
ZONING:	OP
BUILDING USE:	SINGLE-FAMILY RESIDENCE
OCCUPANCY GROUP:	RESIDENTIAL
CONSTRUCTION TYPE:	V-B
CLIMATE ZONE:	1
FLOOD ZONE:	#Flood Zone
EFFECTIVE WIND SPEED:	120 MPH
EXPOSURE CATEGORY:	C
SPRINKLERED:	NO
BUILDING CODE:	#Building Code
SCOPE OF WORK:	CONSTRUCTION OF A NEW SINGLE FAMILY HOME PLUS BOAT SHED

GENERAL BUILDING INFORMATION

ENCLOSED AREA

HOUSE	1,000.00

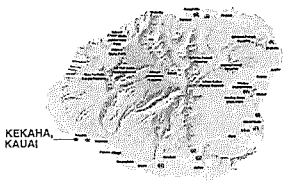
COVERED EXTERIOR

DECK & STAIRS	303.83
BOAT SHED	2,160.00
	3,463.83 ft²

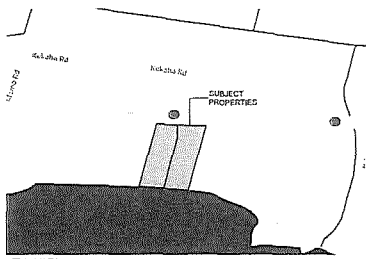
LOT COVERAGE INFROMATION

BUILDING FOOTPRINT (INCLUDES ALL ENCLOSED AREAS, DECKS, WALKS)	3,463.83
DRIVEWAY	1,618.61
LOT COVERAGE	5,082.44
LOT AREA LOT COVERAGE AS %	51,749 SF 9.7%

SHEET INDEX



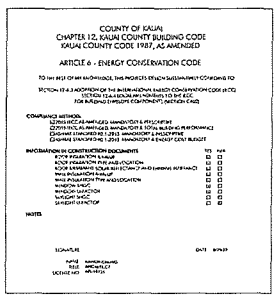
LOCATION MAP
NOT TO SCALE

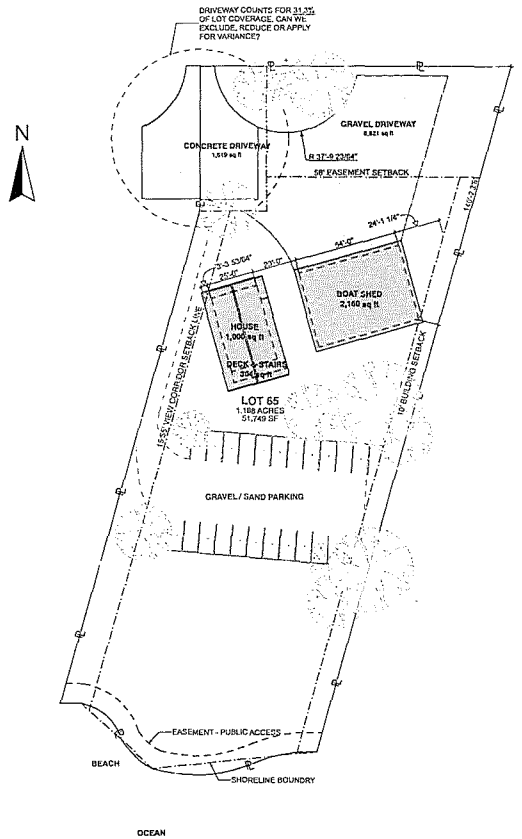


VICINITY MAP
NOT TO SCALE

COUNTY OF KAUAI
CHAPTER 12, KAUAI COUNTY BUILDING CODE
KAUAI COUNTY CODE 1987, AS AMENDED

ARTICLE 6 - ENERGY CONSERVATION CODE





5 SITE PLAN
SCALE: 1" = 30'

ARCHITECT

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Kekaha, HI 96752

CERTIFICATION

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PROJECT

NATE - WORKER HOUSING

#Street Address
(4) 1-2-013-040:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

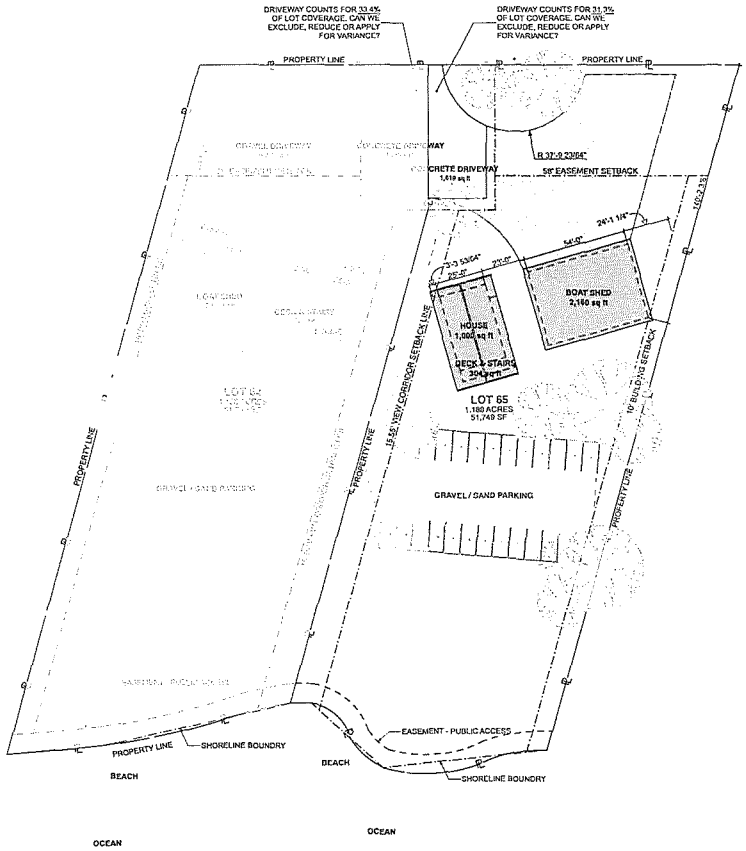
DRAWING ISSUE:

TITLE SHEET & SITE PLAN

A.001

PERMIT ID

C01



1 SITE PLAN
SCALE: 1" = 30'

ARCHITECT

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Kekaha, HI 96752

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PROJECT

NATE - WORKER HOUSING

#Street Address
(4) 1-2-013-040:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

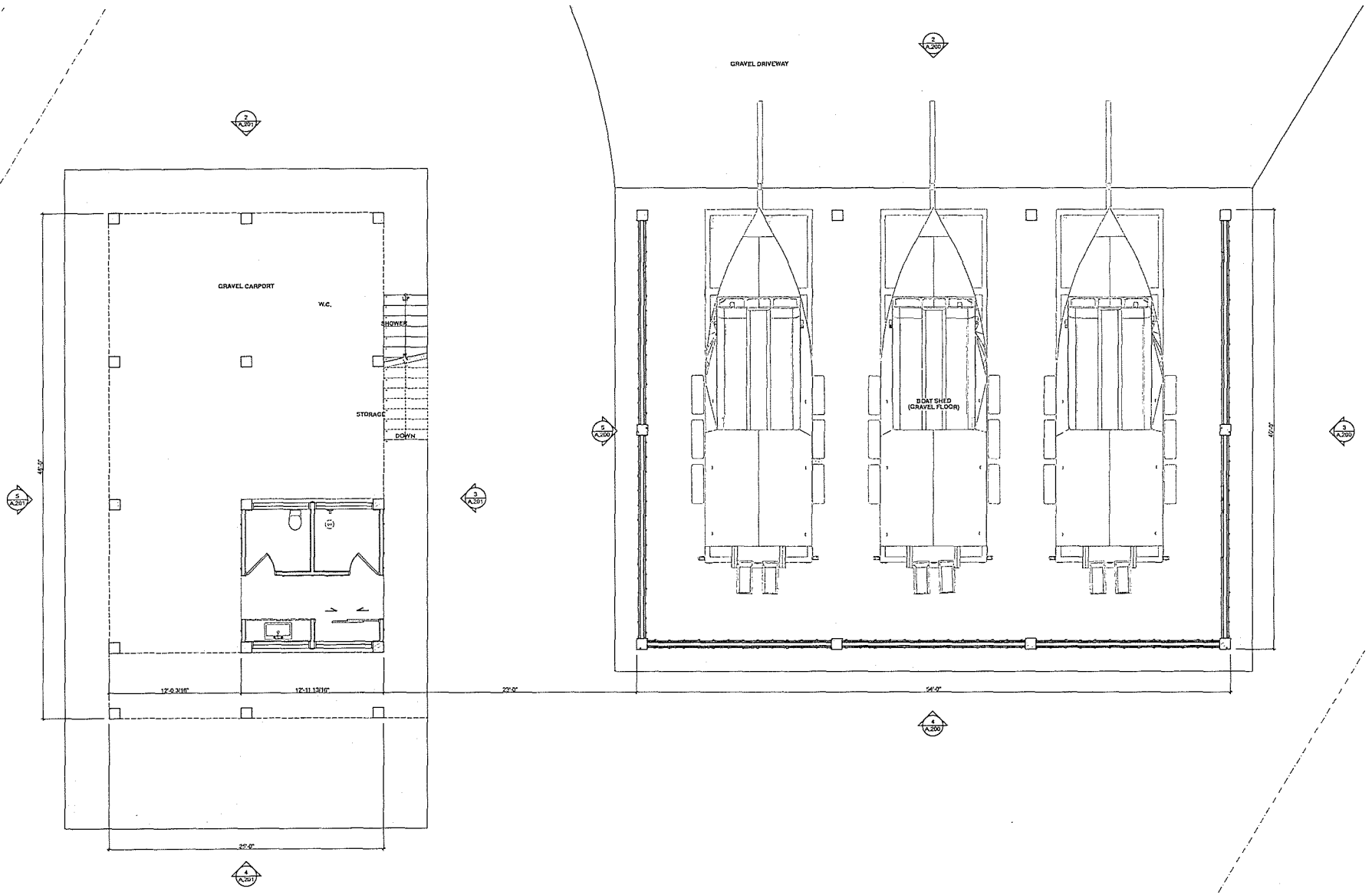
DRAWING ISSUE:

SITE PLAN

A.013

PERMIT ID

C02



0. FIRST FLOOR
SCALE: 1/4" = 1'-0"

ARCHITECT

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PROJECT

NATE - WORKER HOUSING

#Street Address
(4) 1-2-013-040:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

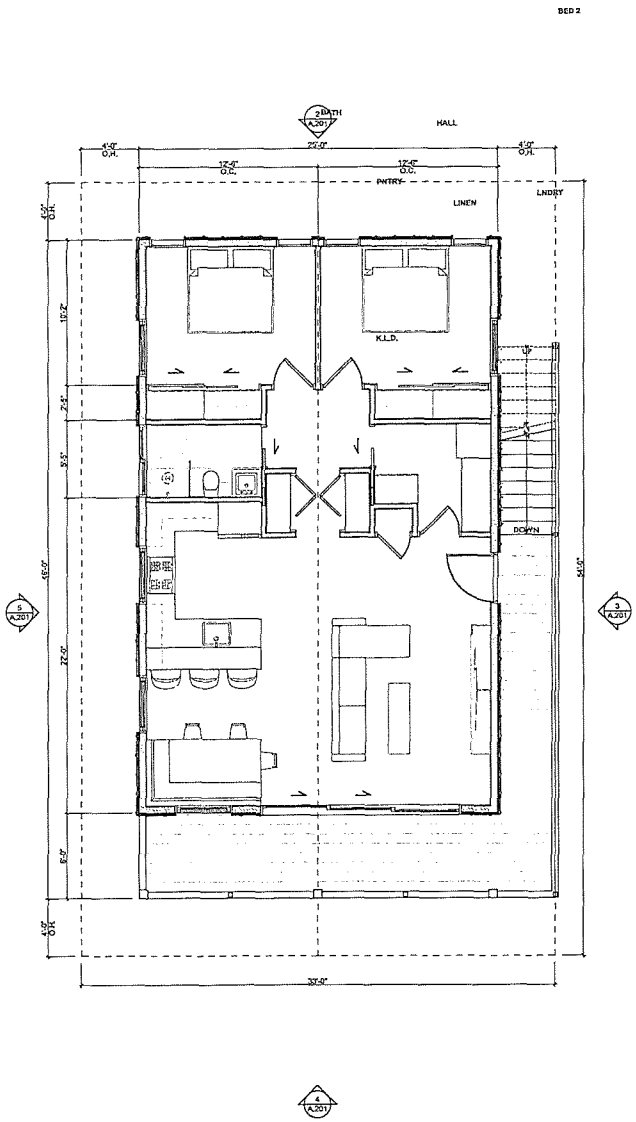
DRAWING ISSUE:

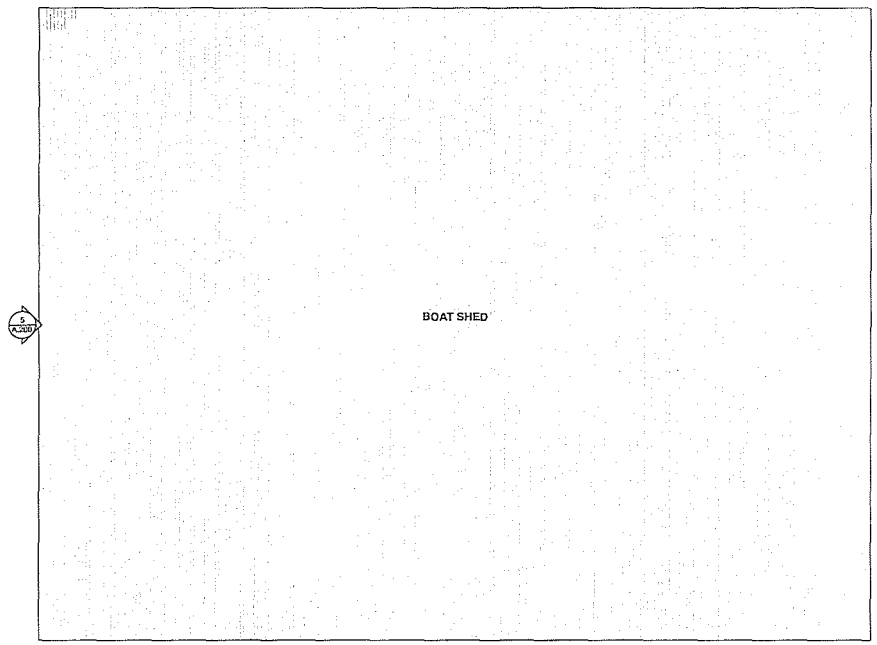
GROUND LEVEL FLOOR PLAN

A.100

PERMIT ID

A01





1 2. SECOND LEVEL
SCALE: 1/4" = 1'-0"

ARCHITECT

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Kekaha, HI 96752

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PROJECT

NATE - WORKER HOUSING

#Street Address
(4) 1-2-013-040:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

2ND LEVEL FLOOR PLAN

A.101

PERMIT ID

A02

ELEVATION AND SECTION KEYNOTES

01	CORRUGATED METAL ROOF (COLOR - DARK GREY)
02	STRUCTURAL WOOD (COLOR - NATURAL WOOD)
03	BOARD AND BATTEN SIDING (COLOR - DARK GREY)
04	STRUCTURAL CMU COLUMN (COLOR - NATURAL WOOD)
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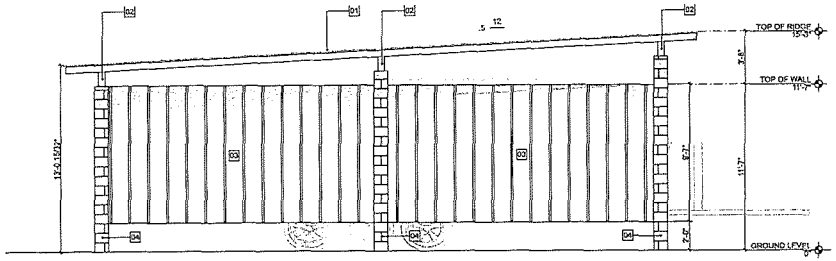
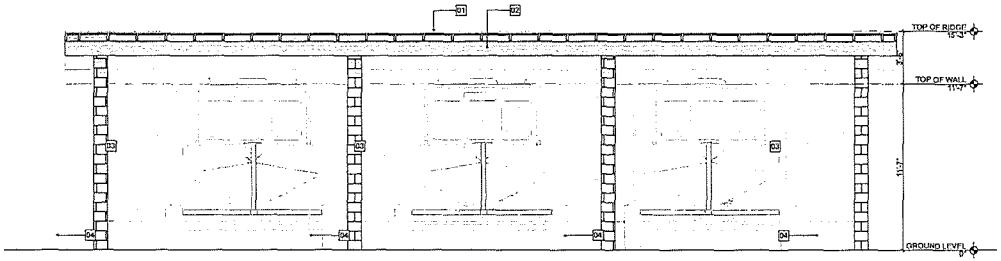
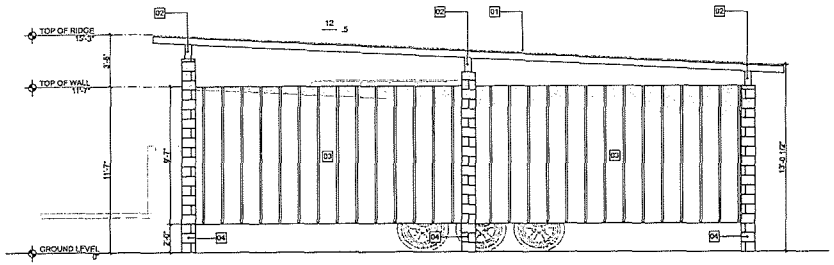
06	DOORS (COLOR - NATURAL WOOD)
07	WINDOWS (COLOR - NATURAL WOOD)
08	DECK RAILING (COLOR - NATURAL IPE)
09	DECKING (COLOR - NATURAL IPE)
10	METAL ROOF FLASHING (COLOR - DARK GREY)



3 A-02 EAST
SCALE: 1/4" = 1'-0"



2 A-01 NORTH
SCALE: 1/4" = 1'-0"



5 A-04 WEST
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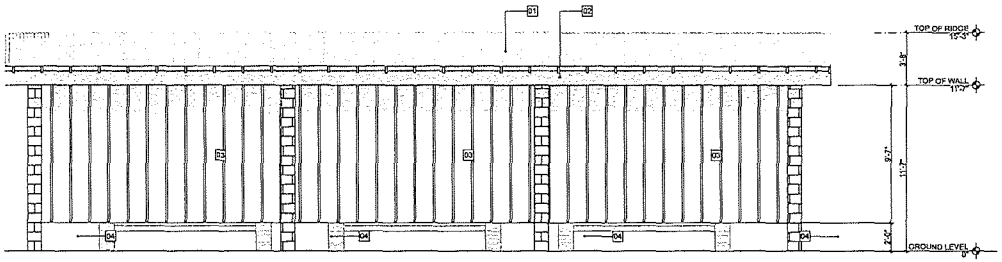

4 A-03 SOUTH
SCALE: 1/4" = 1'-0"

ARCHITECT

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PROJECT

NATE - WORKER HOUSING

#Street Address
(4) 1-2-013-040:0000

PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

BOAT SHED ELEVATIONS

A.200

PERMIT ID

A03

ELEVATION AND SECTION KEYNOTES

01	CORRUGATED METAL ROOF (COLOR - DARK GREY)
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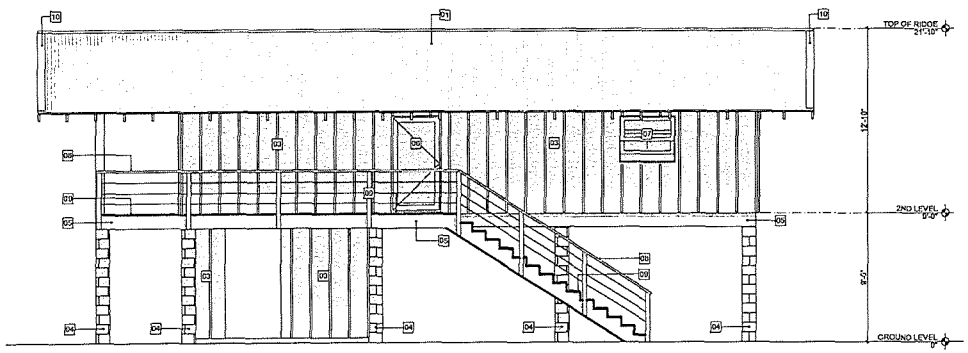
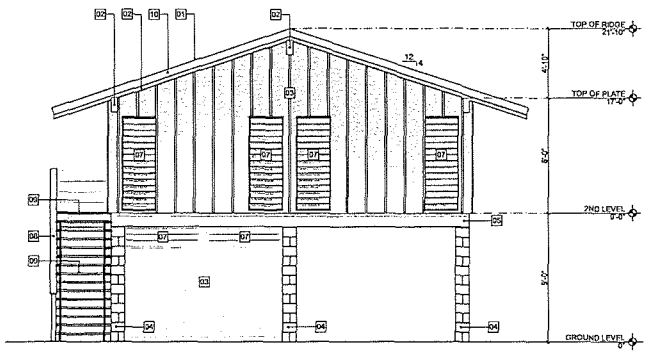


3 B-03 EAST
SCALE: 1/4" = 1'-0"



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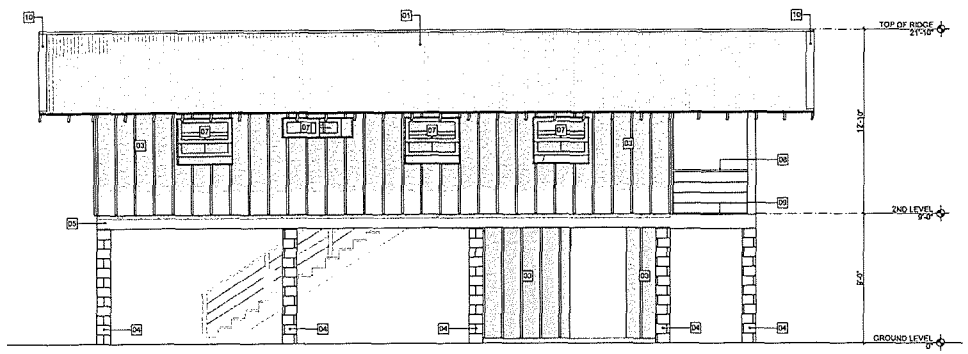

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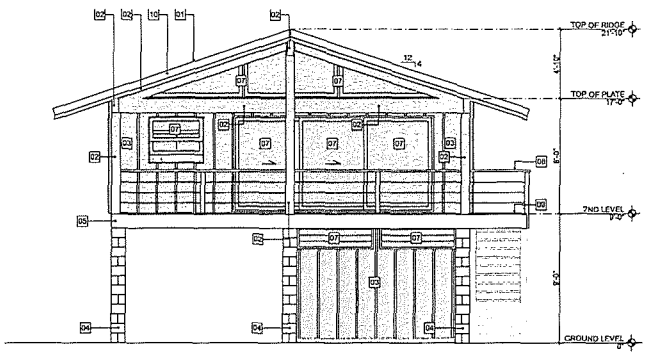

4 B-03 SOUTH
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CERTIFICATION

PROJECT

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#Street Address
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PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

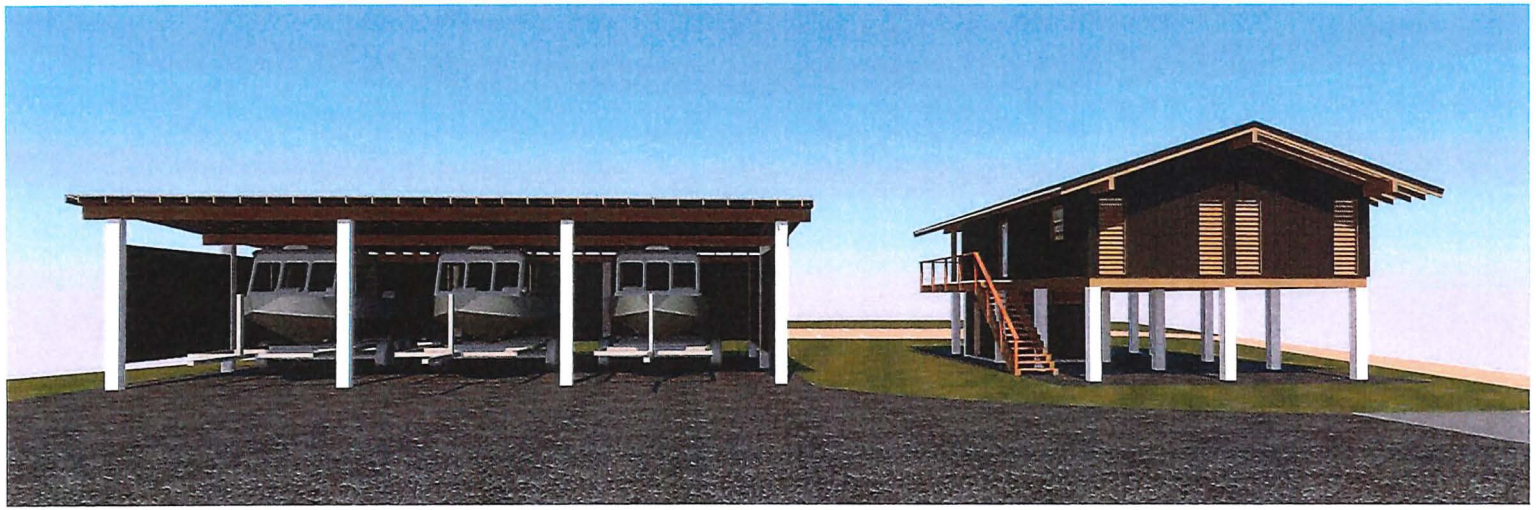
DRAWING ISSUE:

HOUSE ELEVATIONS

A.201

PERMIT ID

A04



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Kekaha, HI 96752

CERTIFICATION

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PROJECT NUMBER: 22018

ISSUE DATE: 8/29/22

DRAWING ISSUE:

COLOR PALETTE

PERMIT ID

A05

EXHIBIT "F-1"

Kikiaola Coastal Assessment

Kekaha, Kaua'i

January 2023

Prepared for:
Nathaniel Fisher
159 A Wailua Road
Kapaa, HI 96746

Prepared by:
Sea Engineering, Inc.
Makai Research Pier
Waimanalo, HI 96795

Job No. 25908

EXHIBIT "F-1"

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. INTRODUCTION

1.1 Background

The subject properties, Tax Map Keys (4) 1-2-013:039 and 040, are located along Kaumuali'i Highway (State Highway 50) in Kekaha on the Island of Kaua'i (Figure 1-1). The two parcels make up 2.28 acres of undeveloped land. Prior to making plans for development on the shoreline parcels, this coastal assessment provides baseline information that can be used for planning and decision making on how to best use the land.

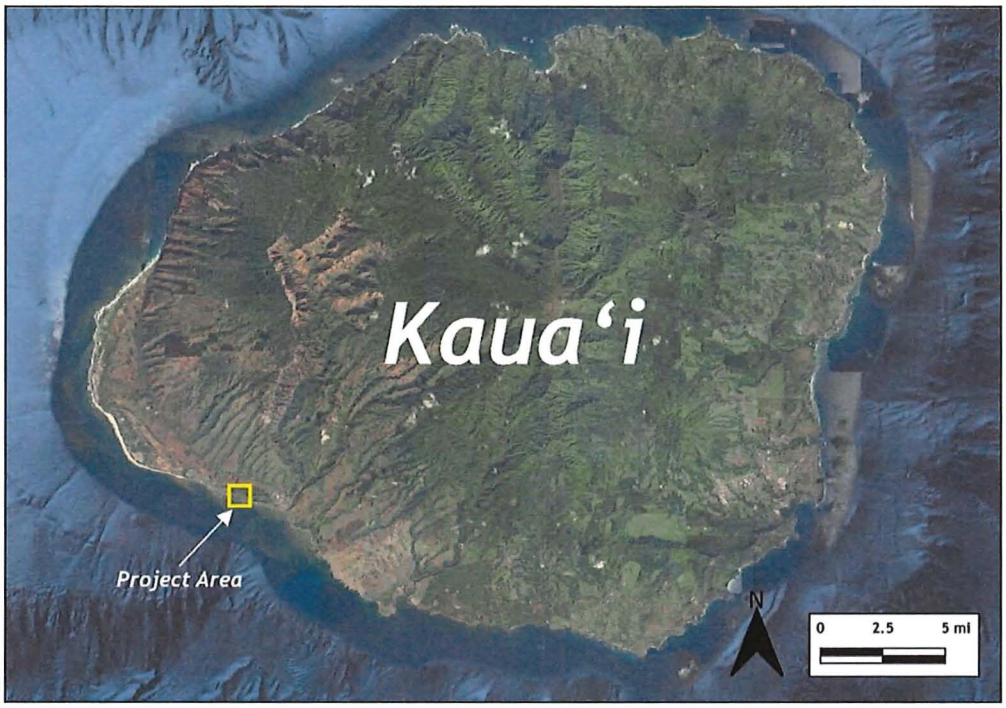

Figure 1-1: Overview of project area on the Island of Kaua'i (Google Earth, 2022).

1.2 Purpose

This Coastal Assessment is a key step for understanding the physical conditions and coastal hazards at the subject properties. Understanding the projected future coastal hazards is critical for evaluating potential future development. This Coastal Assessment presents the data collected and analysis completed for the shoreline area and discusses the existing conditions in terms of hazard mitigation.

2. PHYSICAL SETTING

2.1 Regional Setting

The island of Kaua'i, the northernmost major island in the Hawaiian chain, is fourth in size with a total area of 620 square miles[1]. The island is roughly circular in shape, with a coastal plain along most of the coast except for the rugged Na Pali cliffs on the northwest shore. The project site is within the town of Kekaha on the southwest coast of Kaua'i (Figure 2-1). Kekaha is located on a drained wetland and was founded as a plantation town. Groundwater in the areas surrounding Kekaha is currently pumped to keep the area dry. Today, Kekaha's town center is dotted with a post office, small commercial uses, schools, and inactive shop fronts lacking multimodal infrastructure. There is no wastewater infrastructure in Kekaha, so residences and businesses rely on individual wastewater treatment systems. Kaumualii Highway (State Highway 50), which runs adjacent to the project area, provides the only access. East of the project area is the Park Hook Tong Chinese Cemetery, Waimea Japanese Cemetery, and the Kikiaola Small Boat Harbor with four moorings, a loading dock, boat ramp, picnic area, washdown station, and public restrooms. Drone aerial images of the project area show kiawe trees, a paved driveway, murky nearshore conditions, and an erosion scarp along the seaward edge of the lots (Figure 2-2 through Figure 2-5).

The project area is within the Special Management Area, regulated by the County Department of Planning. The shoreline seaward of the certified shoreline is in the Conservation District regulated by the State Office of Conservation and Coastal Lands. The Kaua'i Sea Level Rise Constraint District encompasses the entire project area and is regulated by the County of Kaua'i Department of Planning. The project area is located in the Kona Moku and the Waimea Ahupua'a.

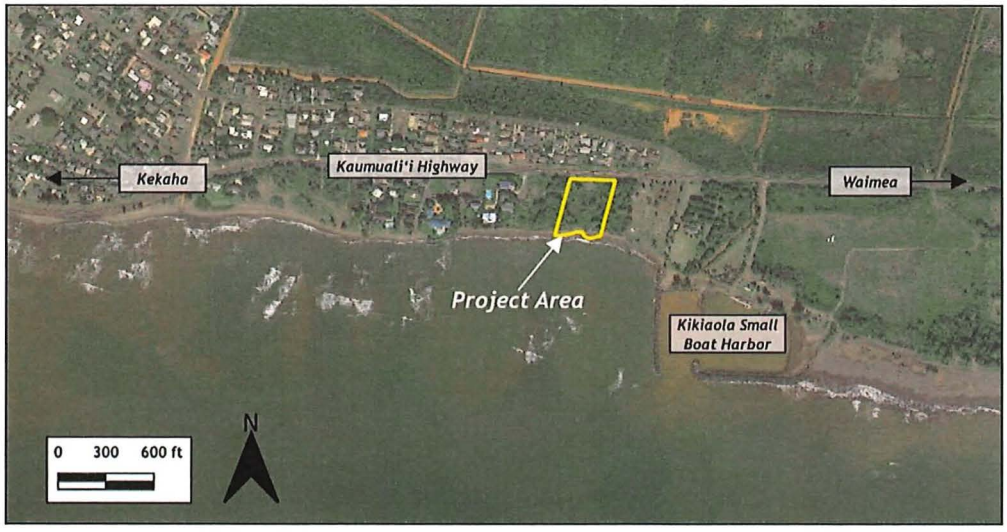

Figure 2-1: Vicinity map near the project site (Google Earth, 2022).

[1] 2021 State of Hawaii Data Book

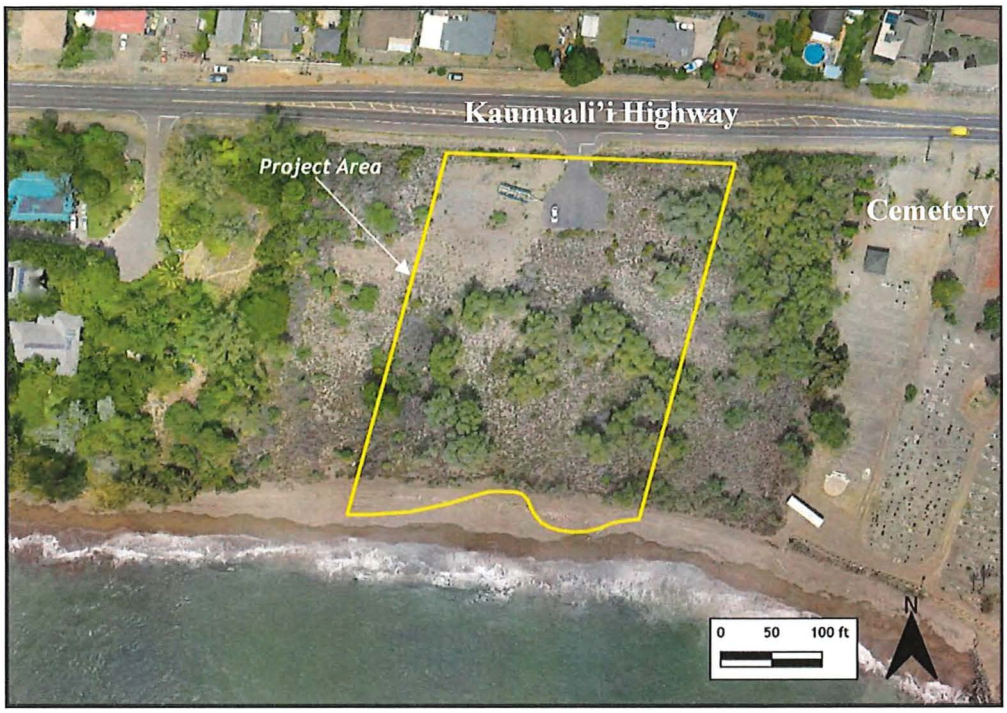

Figure 2-2: Location map, with outer boundary of the tax map key parcels outlined in yellow (Drone orthomosaic, 09/27/2022).

Figure 2-3: Oblique aerial view of the project area, facing northeast (09/27/2022).

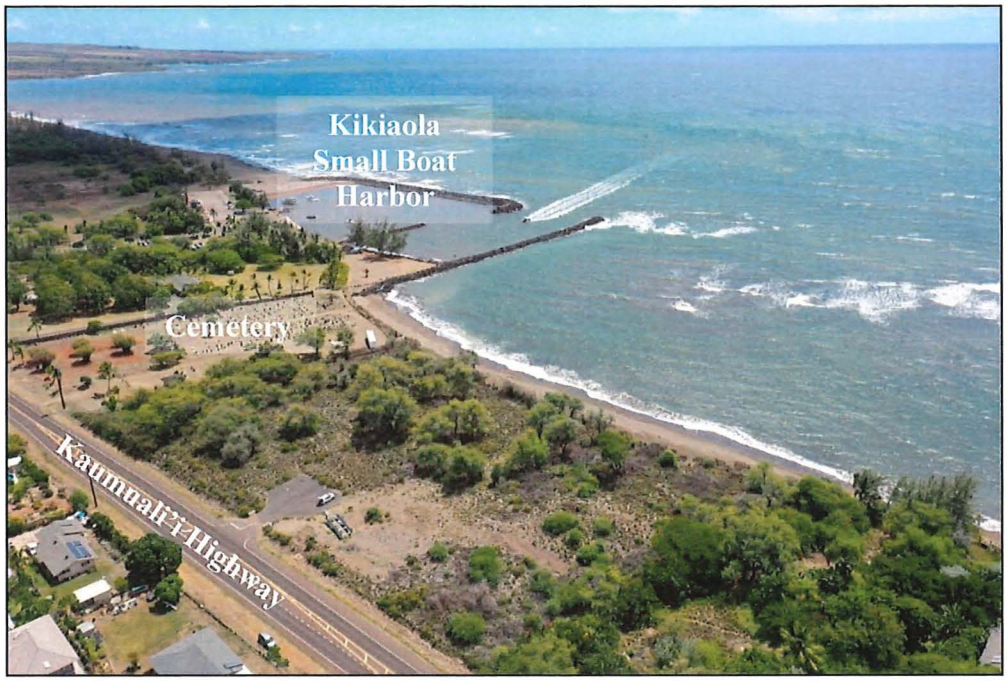

Figure 2-4: Oblique aerial view of the project area, facing southeast (09/27/2022).

Figure 2-5: Oblique aerial view of the project area, facing north (09/27/2022).

2.1 Shoreline Description

The shoreline fronting the project site is 312 feet long backed by a beach berm (Figure 2-6). The scarp on the seaward edge of the berm is 2 to 4 feet tall (Figure 2-7). Nearshore waters are typically turbid with strong wave-generated alongshore currents. The coastal waters are designated as Class "A" according to the State of Hawai'i Water Quality Classification Standards. Turbidity in the area tends to be characteristically high due to runoff from the Waimea River and high wave action and is monitored by the Clean Water Branch (Figure 2-8). High turbidity was confirmed by observations in September 2022. A nearshore reconnaissance found the bottom to be sparsely covered with patches of algae. The nearshore is classified by the U.S. Fish & Wildlife Service as an M2USP estuarine and marine wetland that is intertidal and irregularly flooded.

Vegetation on the lots consists primarily of kiawe, beach heliotrope, and beach wiregrass (Figure 2-9). Kiawe is categorized by the State of Hawai'i as an invasive noxious weed[2]. Thorns on kiawe grow up to 4 inches long that can pierce through shoes and vehicle tires. The thorns have poison-tipped ends that can cause bruises and swelling. The endangered Awiwi, Carter's Panicgrass, Dwarf Naupaka, Ihi, Lau 'ehu, 'Ōhai, Pōpolo, and 'u'uka'a may also exist within the study region[3].

Birds observed include the red junglefowl, spotted dove, zebra dove, great frigatebird, brown booby, cattle egret, warbling white-eye, common myna, African silverbill, scaly-breasted munia, house sparrow, house finch, northern cardinal, red-crested cardinal, saffron finch, and pacific golden plover. The endangered band-rumped storm petrel, Hawaiian duck, Hawaiian common gallinule, Hawaiian coot, Hawaiian petrel, Hawaiian stilt, and short-tailed albatross may occur within the study area. The threatened Hawaiian goose, Newell's Townsend's shearwater, Hawaiian hoary bat, and green sea turtle may also occur. No designated critical habitats are within the study area.

Beach widths east of the nearby Kikiaola Small Boat Harbor are much larger than those on the west side. Since the Kikiaola boat harbor was built in 1959, there has been downdrift erosion along the shoreline fronting the subject properties. The updrift (east) side of the harbor has prograded over 100 meters seaward while the shoreline down drift (west) of the harbor has retreated over 60 meters losing about 50% of its sand volume. United States Army Corps of Engineers investigations identified the littoral impacts of the Boat Harbor to the down-drift shoreline as 3,000 to 6,000 cubic yards of sand per year (SEI and Group 70, 2008).

In 2014, in order to replenish Kikiaola Beach fronting the subject properties on the downdrift side of the Harbor, 45,000 cubic meters of sand was moved, by excavator and truck from Waimea Beach east of the harbor to the 0.3 km portion of Kikiaola Beach immediately west of the harbor (Figure 2-10, Figure 2-11). Monitoring found that the sand excavation sites on the updrift side regained their morphology, but have not regained sand volume (Molina, 2019). It took 65 years for the updrift beach to build up, via alongshore sediment transport, so it is likely

[2] DLNR Hawai'i Invasive Species Council

[3] USFWS Information for Planning and Consulting

that it will take many years to build up once again. Over 2014-2016, the sand placement area maintained a moderate degree of stability; however, since that time it has begun to display erosion of the bypass sand pile (Molina, 2019). The 0.5 km portion of Kikiaola Beach west of the sand placement area displayed only minor fluctuation in beach character, suggesting a lack of impact of the replenishment program on the beach's down drift portion more than two years following the bypass operation.

There seems to be no sediment exchange between Kikiaola Beach and Kekaha Beach due to the rocky headland at Oomano Point west of the project area. This is evidenced by the distinct sand characteristics on either side of the point: terrigenous sediment to the east and calcareous sediment to the west.

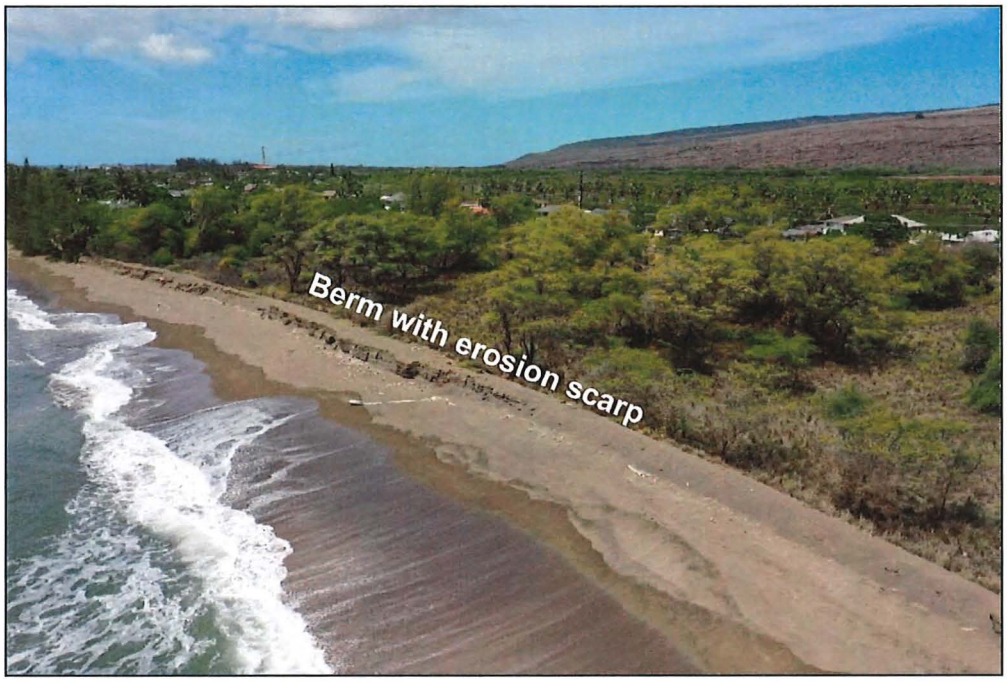

Figure 2-6: Shoreline fronting the project site backed by a berm with an erosion scarp (09/27/2022)

Figure 2-7: Berm fronting the study area with an erosion scarp along the seaward edge

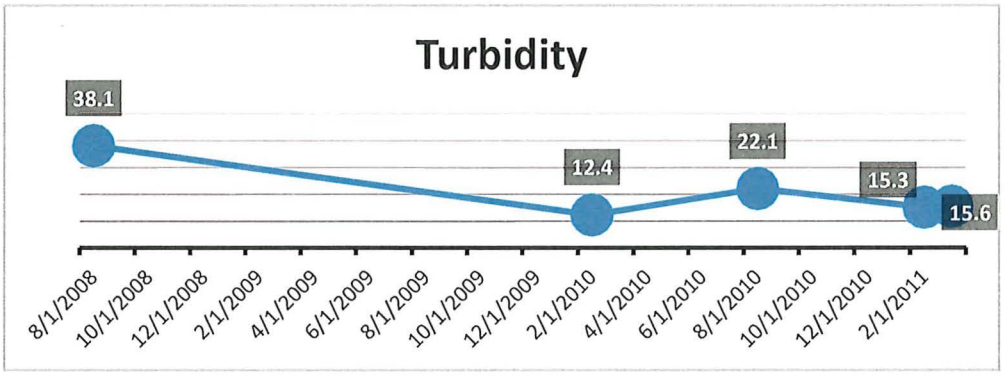

Figure 2-8: Turbidity water quality monitoring fronting cemetery (Clean Water Branch).

Figure 2-9: Representative vegetation within the study area

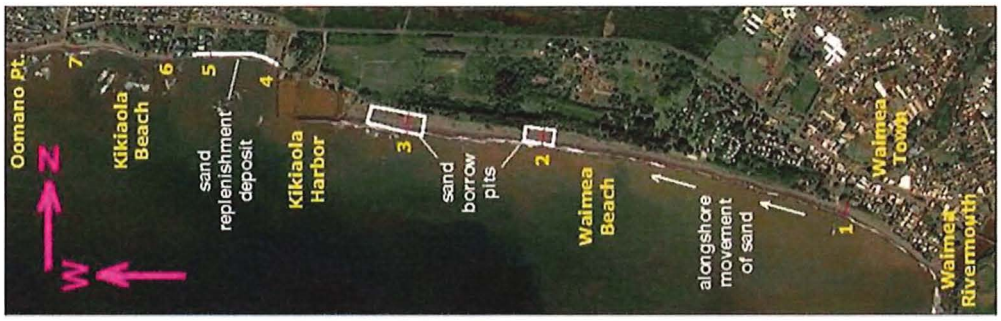

Figure 2-10: 2014 Sand bypass project moving sand from (2) and (3) to (4) and (5).

Figure 2-11: 2014 Sand placed in front of the project area.

2.2 Geology and Soils

The Kekaha area is the most arid portion of Kaua'i receiving on average 19.4 inches of rainfall each year[4]. Nearly all of the streams that drain the mountains of Waimea have been channelized and redirected toward Waimea town by the Waimea and Kekaha irrigation ditches. The soils within the project area are characterized by the USDA as Jacus loamy fine sand (Figure 2-12, USDA, 2019). Loamy fine sand is 50% or more of fine sand or less than 25% very coarse, coarse, and medium sand plus less than 50% very fine sand. Along the seaward edge of the parcels is a beach backed by a berm (Figure 2-13).

On September 27, 2022, a sand sample from the shoreline berm was collected (Figure 2-14). The sample was sent to a lab for a grain size analysis using mechanical analysis and standard sieves. The gradation curve for the grain size distribution is shown in Figure 2-15. The medium grain-size diameter was 0.25 mm. The sand, with a uniformity coefficient of 2.37, can be described as poorly graded, medium grain, volcaniclastic beach sand with detrital content. The sediment was found to have 3.8% fines (defined as the #200 sieve, 0.074 mm), 0.1% coarse sediment (defined as the #4 sieve, 4.76 mm), and 18% of its mass less than the 0.149 mm (#100) sieve.

[4] 2021 Hawai'i Data Book

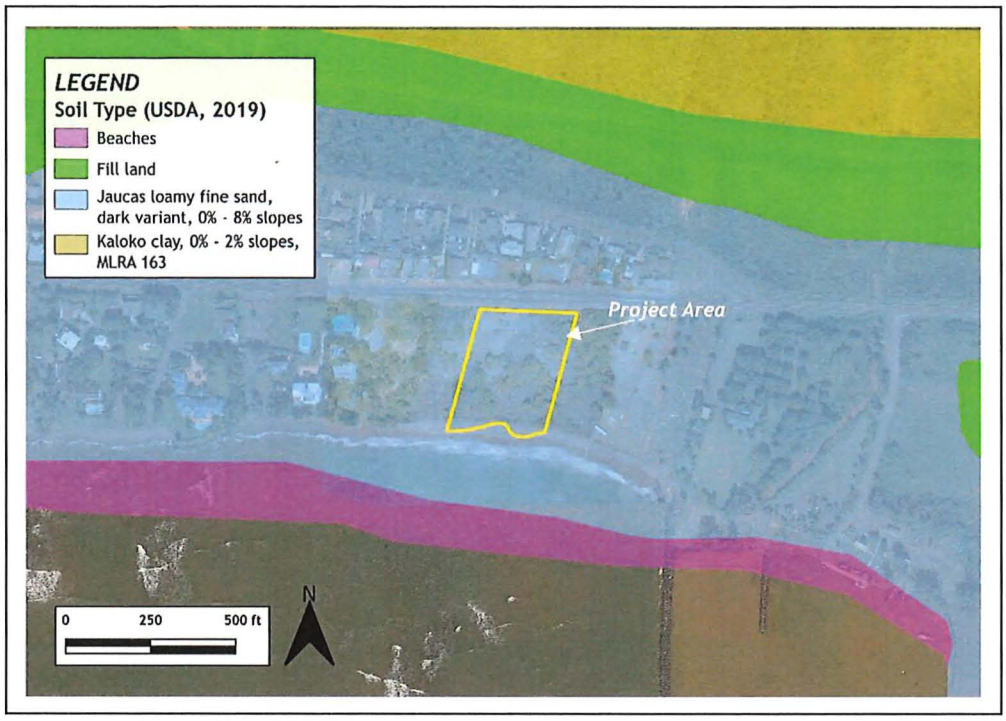

Figure 2-12: Soils type classifications in the project site vicinity

Figure 2-13: Sand at the top of the berm facing landward (09/27/2022)

Figure 2-14: Sand sample collected from the base of the berm in the center of the study area (09/27/2022)

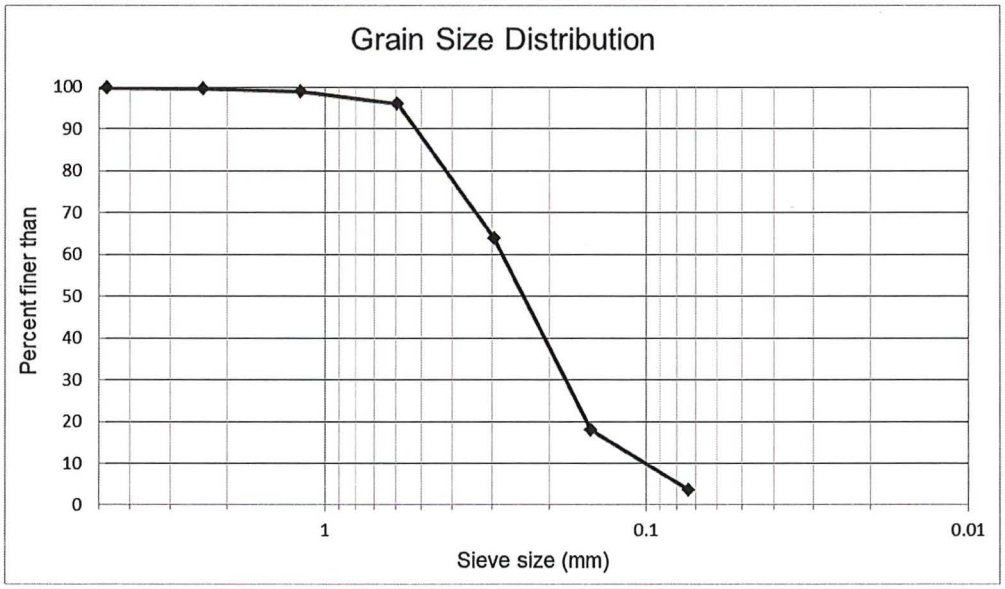

Figure 2-15: Grain size analysis results for sediment sample taken from the berm fronting the project area.

2.3 Topography

At the time of the site visit, the beach fronting the project site rises from the beach toe to a berm with an average slope of about 1 on 7 and an average width of 55 feet. The berm is made of compacted sand with a scarp along the face where waves eat away at the sand supply. Beach users standing on the top of the scarp also promote collapse of the materials. The top of the berm is at approximately +15 Mean Lower Low Water. The back of the berm contains some wind-blown sand and declines with a slope of about 1 on 3 to +9. A swale behind the berm would likely act as a natural drainage basin during heavy rains. Landward, the elevations rise again to +16.5 feet and then decline to +10.5 feet at the roadway (Figure 2-16). The proposed structures would be placed landward of the swale on the high topography at +15.

Figure 2-16: Topography of the study area

3. OCEANOGRAPHIC SETTING

The project area's beach is a 312-foot portion of a 1.5-mile sandy shoreline just west of the Kikiaola boat ramp. The location of the beach makes it highly exposed to waves from the southerly direction. A shelf parallels the coast extending approximately 2,800 feet (0.5 miles) offshore with depths up to 25 feet. The shallow depth of the shelf dissipates some of the offshore wave energy and directs the incoming wave angle that controls the orientation of the sandy beach. Water depths along the nearshore of the project area range from 0 to 10 feet (Figure 3-1). The seafloor is characterized by 50-90% turf algae on boulder/rocks (NCCOS, 2007).

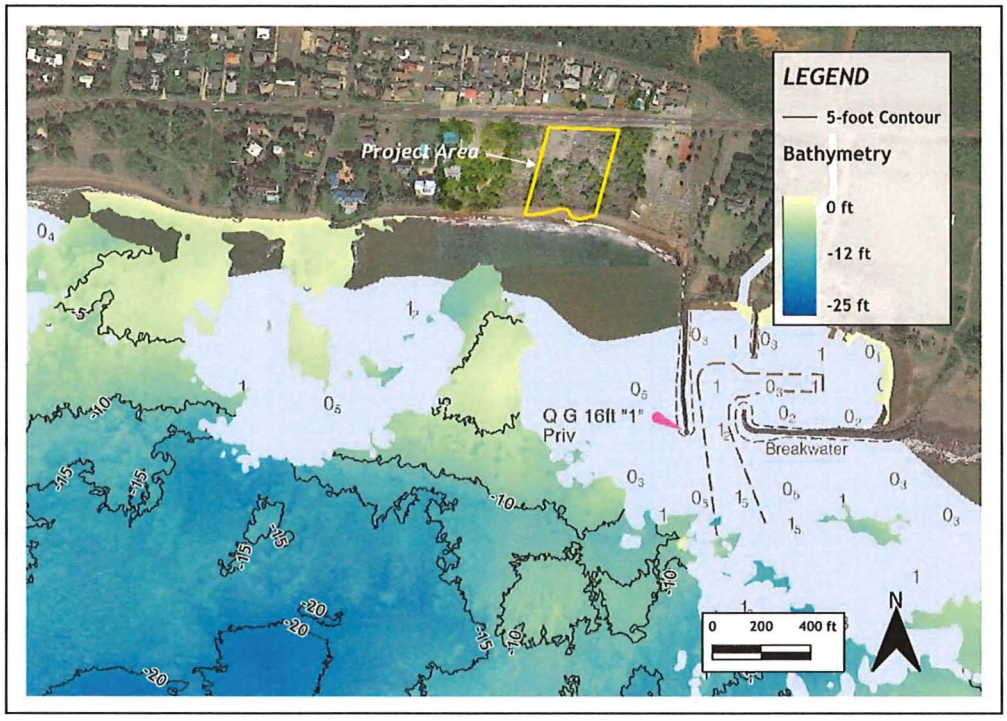

Figure 3-1: Bathymetry offshore near project site in Kikiaola.

3.1 Currents

Local currents in the Hawaiian Islands are generally driven by the semi-diurnal tides, wind, and breaking waves. The predominant current can differ between the nearshore (inside the wave breaker zone) and the offshore. Offshore surface currents are a combination of geostrophic and wind-driven Ekman flow. Large-scale currents north and south of Kaua'i, the North Hawaiian Ridge Current and Hawai'i Lee current respectively, flow from the southeast to the northwest (Figure 3-2). When the tide is rising, the current generally moves westward with an approximately 3-hour lag between peak tide and maximum tidal current speed. When the tide falls it generally moves eastward. Tidal currents result from tidal variations of sea level, and nearshore are often stronger than the large-scale circulation. During high surf a strong west-moving alongshore current develops landward of the surf zone in Kekaha. When tides are large, the top of the beach that is normally dry during calm wave conditions can become submerged (Figure 3-3).

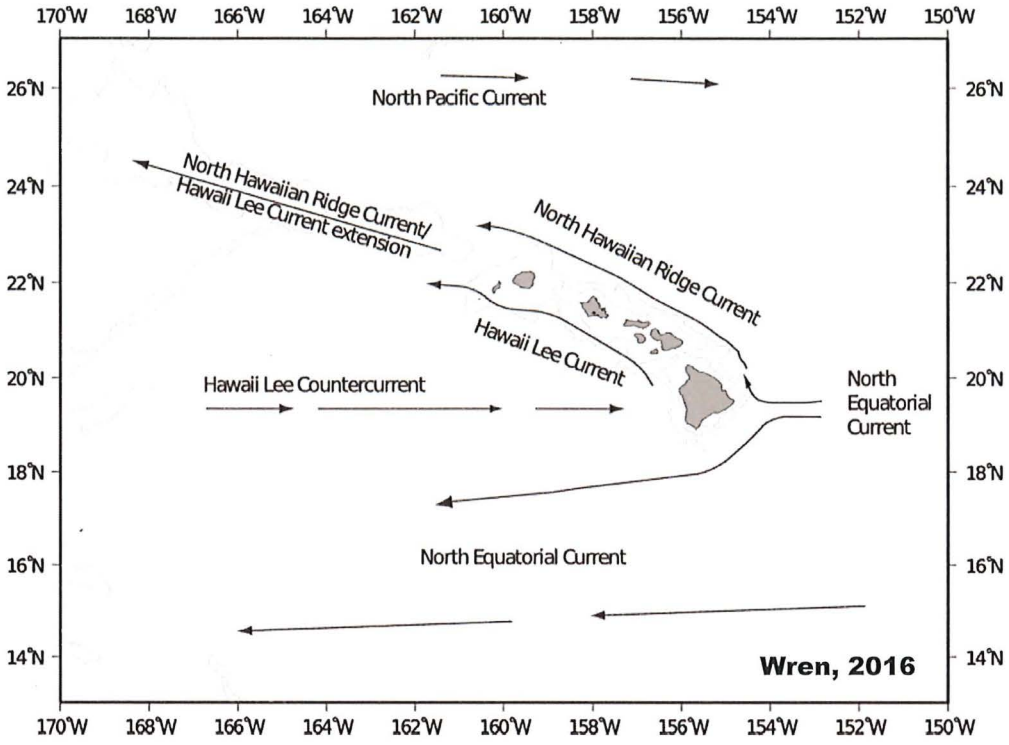

Figure 3-2 Surface currents around the Main Hawaiian Islands

Figure 3-3 High tide west of Kikiaola Harbor (08/10/2018, WKCVA, 2020)

3.2 Waves

The wave climate in Hawai'i is dominated by long-period swell generated by distant storm systems; by relatively low amplitude, short period waves generated by local winds; and the occasional bursts of energy associated with intense local storms. Typically, Hawai'i receives four general wave types: 1) northeast tradewind waves, 2) southern swell, 3) North Pacific swell, and 4) Kona wind waves. The dominant swell regimes for Kaua'i Island are shown in Figure 3-4. A wave rose distribution of wave heights and directions near the project site is given in Figure 3-5.

As waves reach shallow nearshore waters, they shoal, increase in amplitude, and eventually break (Rapaport, 2013). Short period trade wind swell generates waves with short wavelengths and in turn relatively small wave heights. Large surf is produced by the long period swell from distant storms because of the correspondingly longer wavelengths. The north shores of the Hawaiian Islands receive this long period swell in the northern hemisphere winter and the south shores in the southern hemisphere winter. Tropical storms and hurricanes also generate waves that can approach the islands from virtually any direction. Unlike winds, all these wave conditions may occur at the same time.

Northeast trade waves, which are generated by the prevailing trade winds, are present throughout the year. These waves usually have periods ranging from 6 to 12 seconds and heights ranging from 4 to 12 feet, and approach most frequently from the northeast and east. These waves refract and diffract around the southeastern and northwestern ends of the island. The Island of Kaua'i itself and Kikiaola Harbor shelter the project area from northeast trade swell.

Southern swells are generated during the winter season in the southern hemisphere (the summer months of April through November in the Hawaiian Islands). These long, low waves have periods ranging from 14 to 22 seconds and heights ranging from 1 to 4 feet.

North Pacific swells are waves produced by storms in the Aleutian area and by mid-latitude lows and may arrive in the Hawaiian Islands throughout the year; however, they are the largest and most numerous from October through March. Waves approach from the northwest, north, or northeast and typically have periods of about 10 to 15 seconds and heights from 8 to 14 feet. These waves refract around the west end of Kaua'i and approach the study area from the northwest.

Kona waves are generated by intense winds associated with local fronts or Hawaiian lows. Kona waves have periods of 6 to 10 seconds and heights ranging from 10 to 15 feet. These waves may approach the island of Kaua'i from any direction between the southeast and the west.

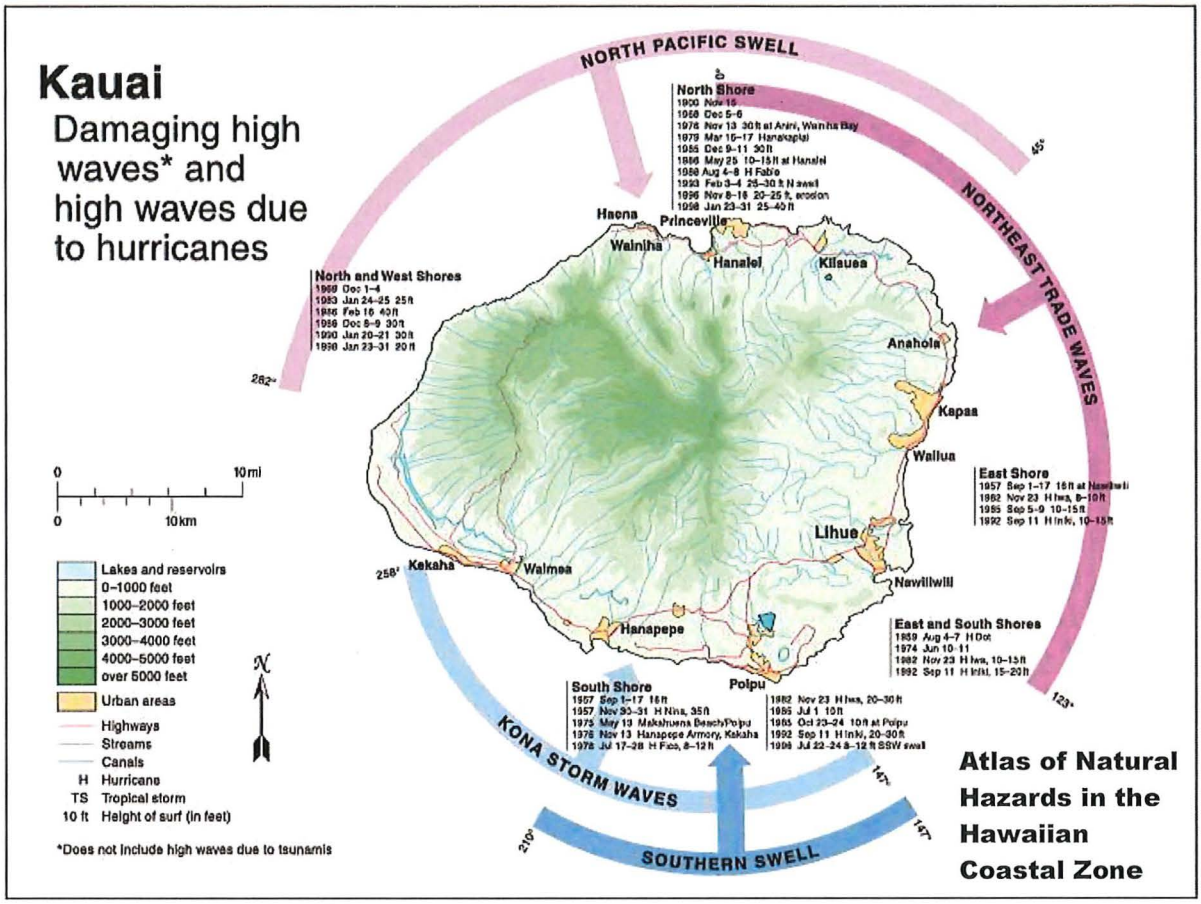

Figure 3-4 Kaua'i island dominant swell regimes

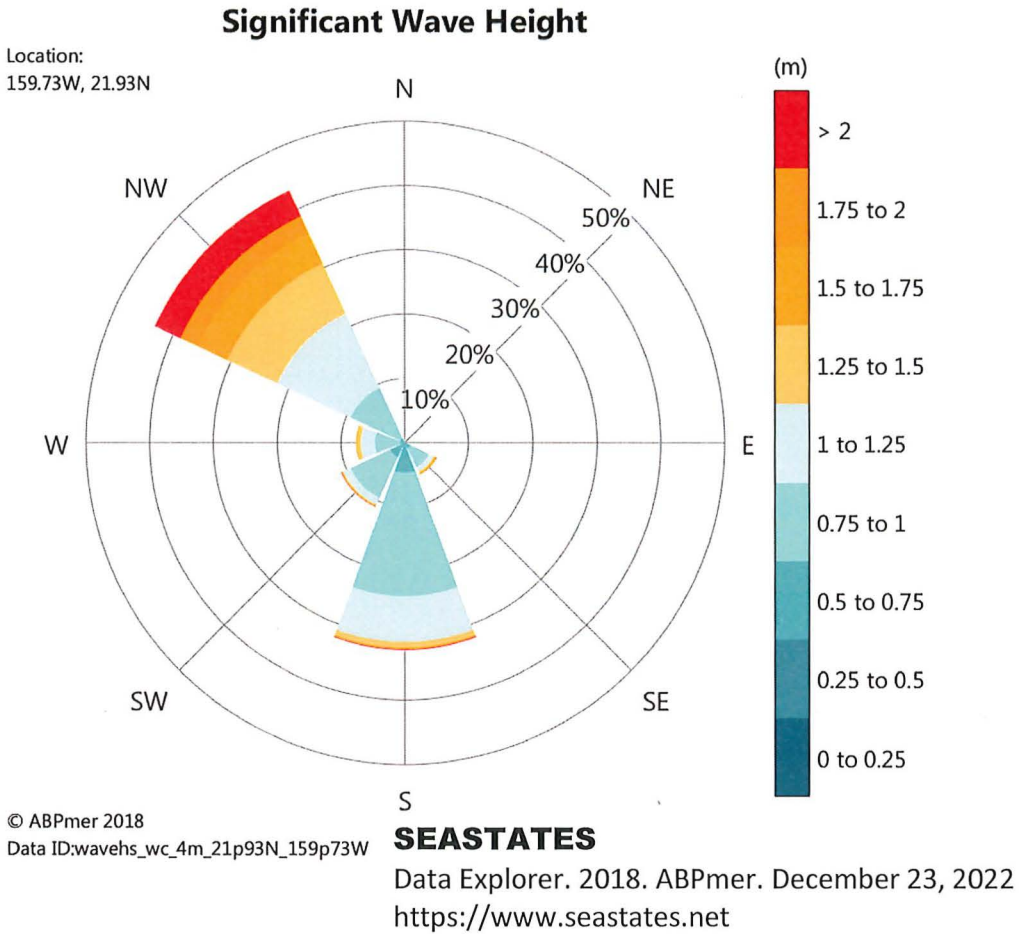

Figure 3-5 Significant wave height rose 3.16 miles SW of the project area

4. COASTAL HAZARDS ANALYSIS

A coastal hazard analysis includes an examination of relevant coastal processes, such as seasonal wave patterns, historic damaging high waves, high winds and water levels, vulnerability to tsunamis. This will also include a discussion on sea-level rise with current projections for the central Pacific.

4.1 Kona Storms and Tropical Cyclones

The Hawaiian Islands are annually exposed to severe storms and storm waves generated by passing low-pressure systems (Kona storms) and tropical cyclonic storms (hurricanes). Kona storms occur when the winter low-pressure systems that travel across the North Pacific Ocean dip south and approach the islands. Strong southerly and southwesterly winds generated by these storms result in large waves on exposed shorelines, and often heavy rains. Kona storms typically generate waves with significant wave heights of 10 to 18 feet and periods of 7 to 12 seconds.

Hurricanes, the worst-case tropical cyclones, are caused by intense low-pressure vortices that are usually created in the eastern tropical Pacific Ocean and travel westward. While they typically pass south of the Hawaiian Islands, their paths are unpredictable, and they will occasionally pass near or over the islands. A total of nine (9) hurricanes have caused damage on Kaua'i. Hurricane Iwa (1982) and Hurricane Iniki (1992) directly hit the island and resulted in large damaging waves (20-30 feet) along the southern and eastern shores of Kaua'i. Wind gusts during Hurricane Iniki at Port Allen, just nine (9) miles southeast of the project site, reached 143 mph.

4.2 Tsunami

Tsunami are waves that result from large-scale displacements of the seafloor. They are most commonly caused by large magnitude earthquakes (typically magnitude 7.0 or greater). If the earthquake involves a large segment of land that displaces a large volume of water, the water will travel outwards in a series of waves, each of which extends from the ocean surface to the seafloor where the earthquake originated. Tsunami waves typically have small wave heights in deep water but can have wavelengths of hundreds of miles and travel at speeds up to 500 miles per hour. A tsunami can travel from one side of the Pacific to the other in less than a day. The speed decreases rapidly as the water shoals (becomes shallower) approaching land and the waves greatly increase in height as they shoal and can push inland. The water then recedes, also at considerable speed, and the recession often causes as much damage as the original wave front itself.

Most tsunamis in Hawai'i originate from the tectonically active areas located around the Pacific Rim (e.g., Alaska, Japan, and Chile). Waves created by earthquakes in these areas take hours to reach Hawai'i, and the network of sensors that is part of the Pacific Tsunami Warning System can provide Hawai'i with several hours of warning before the arrival of tsunami waves generated from these locations. Less commonly, tsunamis originate from seismic activity in the Hawaiian Islands themselves, and there is limited advance warning for these locally generated events.

The recorded history of Hawaiian tsunamis shows that 26 large tsunamis have made landfall within the islands and eight have had significant damaging effects on Kaua'i. The last of these damaging tsunamis occurred in 1964 (U.S. Geological Survey, 2002). The highest recorded tsunami wave runups observed at the shoreline near the project area are shown in Table 4-1. The U.S. Geological Survey (Fletcher et al., 2002) has given the project area a high tsunami hazard rating where the coastal slopes are low (Figure 4-1).

The project site is located in the tsunami evacuation area and is directly exposed to tsunami waves traveling anywhere from the south to west of the project site. The project area is also affected by northeastern traveling tsunami waves, as wrap-around effects (refraction) of tsunami waves around the southern point of Kaua'i result in wave impact (i.e., tsunami wave runup occurring in the 1960 Central Chilean source event). Given these considerations, the project area is deemed to be vulnerable to tsunami hazards.

Table 4-1: Tsunami events wave runup elevation in the project vicinity.

Tsunami Event	Source Location	Wave runup elevation (feet)
1946	Aleutian Islands, Alaska	8
1957	Aleutian Islands, Alaska	7
1960	Chile	10

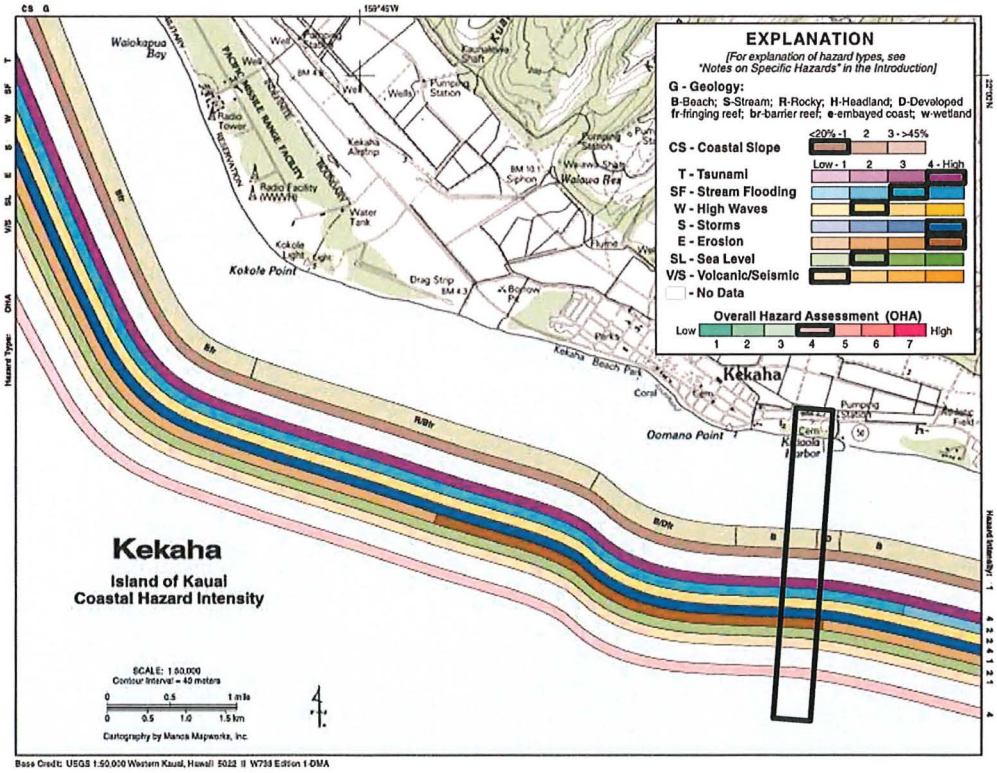

Figure 4-1 Composite hazard map with the project area shown in black

4.3 Sea Level Rise

Sea level is the average height of the entire ocean surface. Global mean sea level rise (SLR) is primarily driven by the additional water generated from melting land-based ice sheets and glaciers and the expansion of seawater as it warms. The present rate of global mean SLR is +3.1 millimeters per year (mm/yr) (Sweet, 2022, Figure 4-2). SLR appears to be accelerating compared to the mean of the 20th Century. Regional effects cause sea levels to increase in some parts of the planet while decreasing or remaining relatively stable in other areas.

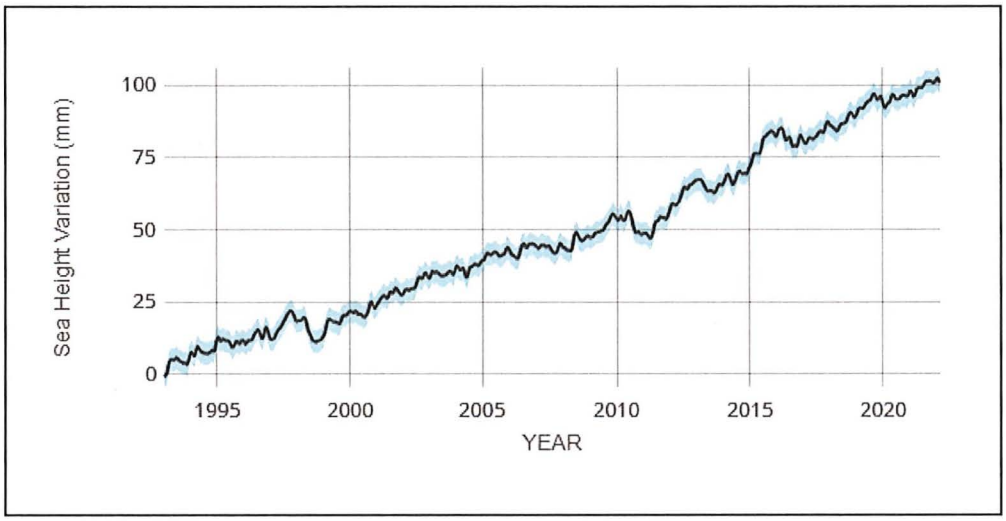

Figure 4-2 Global satellite sea level variation data (1993 to 2022)

SLR is negatively impacting beaches and shorelines in Hawai'i. Impacts include beach narrowing and beach loss, loss of land due to erosion, and infrastructure damage due to inundation and flooding. Anderson et.al. (2015) found that, due to increasing SLR, the average shoreline recession (erosion) in Hawai'i is expected to be nearly twice the historical extrapolation by the year 2050, and nearly 2.5 times the historical extrapolation by the year 2100. The impacts from anomalous sea level events (e.g., king tides, mesoscale eddies, storm surges) are also likely to increase.

Sweet et.al. (2017 and 2022) identify specific regions that are susceptible to a greater-than-average rise in sea level. Hawai'i thus far has seen a rate of SLR (+1.55 mm/yr) less than the global average (+3.1 mm/year); however, this is expected to change in the future as Hawai'i is in the "far-field" of the effects of melting land ice. This means that those effects have been significantly less in Hawai'i compared to areas nearer to the ice melt. Over the next few decades, these effects will spread to Hawai'i, which is then projected to experience a SLR greater than the global average.

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. The IPCC was created to provide policymakers with periodic scientific assessments on climate change, its implications, and potential future risks. As part of this effort, the IPCC surveys and distills the scientific literature and provides consensus projections on future sea levels across the globe under a range of possible future

scenarios. Five Shared Socioeconomic Pathways (SSPs) representing future scenarios are described with SLR projections for each. The five scenarios are:

- SSP1-1.9 holds warming to approximately 1.5°C above 1850-1900 in 2100 after a slight overshoot (median) and implies net zero CO_2 emissions around the middle of the century.
- SSP1-2.6 stays below 2.0°C warming relative to 1850-1900 (median) with implied net zero emissions in the second half of the century.
- SSP2-4.5 is approximately in line with the upper end of aggregate Nationally Determined Contribution (NDC) emission levels by 2030. SR1.5 assessed temperature projections for NDCs to be between 2.7 and 3.4°C by 2100, corresponding to the upper half of projected warming under SSP2-4.5. New or updated NDCs by the end of 2020 did not significantly change the emissions projections up to 2030, although more countries adopted 2050 net zero targets in line with SSP1-1.9 or SSP1-2.6. The SSP2-4.5 scenario deviates mildly from a "no-additional-climate-policy" reference scenario, resulting in best-estimate warming of around 2.7°C by the end of the 21st century relative to 1850-1900.
- SSP3-7.0 is a medium to high reference scenario resulting from no additional climate policy under the SSP3 socioeconomic development narrative. SSP3-7.0 has particularly high non-CO_2 emissions, including high aerosol emissions.
- SSP5-8.5 is a high reference scenario with no additional climate policy. Emission levels as high as SSP5-8.5 are not obtained by Integrated Assessment Models under any of the SSPs other than the fossil-fueled SSP5 socioeconomic development pathway.

Estimates of Kaua'i SLR scenarios based on the IPCC AR6 SSPs, taking into account the far-field effects are presented in Table 4-2 and Figure 4-3 (IPCC, 2022).

In 2017 the Hawai'i Climate Change Mitigation and Adaptation Commission published the *Hawai'i Sea Level Rise Vulnerability and Adaptation Report* providing the first state-wide assessment of Hawaii's vulnerability to SLR and recommendations to reduce our exposure and sensitivity to SLR and increase our adaptive capacity. A key recommendation was that 3.2 feet of SLR should be adopted as a statewide vulnerability zone for planning purposes.

Table 4-2: Kaua'i sea level rise scenario projections, 83 percentiles.

Scenario (ft)	2020	2030	2040	2050	2060	2070	2080	2090	2100	2150
SSP 1.19	0.31	0.46	0.64	0.89	1.10	1.36	1.60	1.88	2.18	3.44
SSP 1.26	0.29	0.48	0.69	0.95	1.20	1.50	1.80	2.09	2.38	3.97
SSP 2.45	0.28	0.49	0.72	1.02	1.32	1.68	2.08	2.51	3.00	5.22
SSP 3.70	0.28	0.47	0.72	1.07	1.42	1.85	2.34	2.89	3.54	6.43
SSP 5.85	0.31	0.53	0.79	1.15	1.56	2.06	2.61	3.28	4.00	7.33

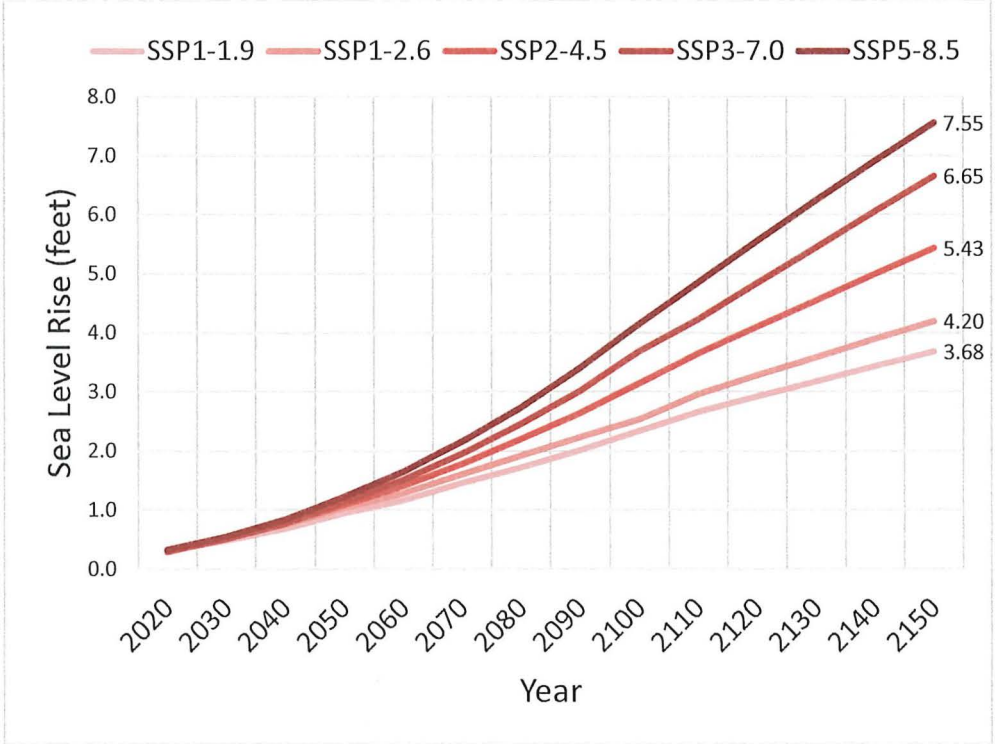

Figure 4-3: Nāwiliwili Bay, Kaua'i sea level rise scenario projections, 83 percentiles.

The University of Hawaii (UH) modeled the potential impacts that a sea level rise of 3.2 feet would have on coastal hazards including:

- Passive flooding: "still water" high tide flooding without consideration of influence from waves or other ocean/atmospheric phenomena;
- Annual high wave flooding: wave overwash landward of the present beach area during the largest wave events of the year; and,
- Coastal erosion: exposure to future land loss from coastal erosion.

The footprint of these three hazards was combined to define the projected extent of chronic flooding due to SLR, referred to as the Sea Level Rise Exposure Area (SLR-XA, Figure 4-5). The passive flooding projection is shown in Figure 4-5. Annual high wave flooding using the University of Hawai'i model is shown in Figure 4-6. Using the long-term shoreline change trend, UH calculates coastal erosion for various SLR projections. At the subject property, the calculation of the exposure area uses shoreline from before and after (1950-2014) the Kikiaola Small Boat Harbor was built (1959) and the sand bypass project occurred giving an inaccurate depiction of the erosion that has occurred and is therefore not shown here. A new coastal erosion analysis is provided in Section 4.5 using updated data.

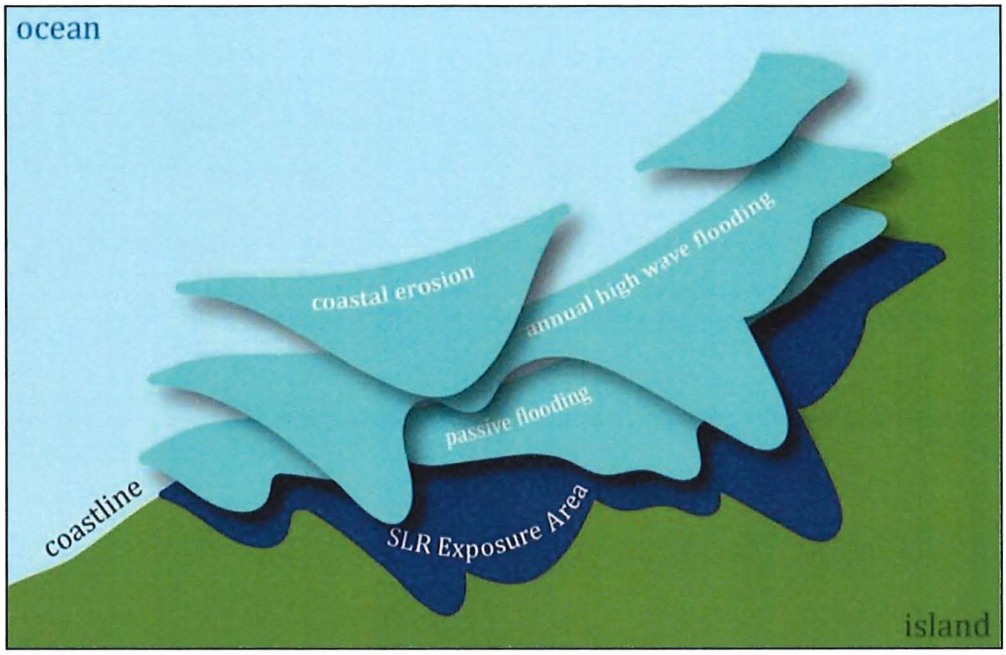

Figure 4-4 Sea level rise exposure as the cumulative impact of passive flooding, annual high wave flooding, and coastal erosion.

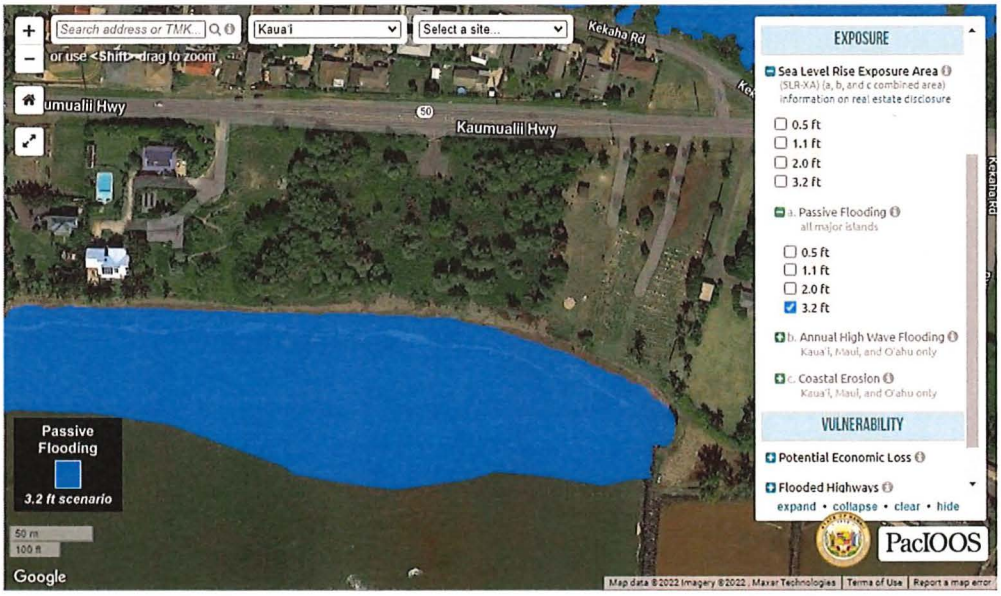

Figure 4-5 Passive flooding with 3.2 feet of sea level rise.

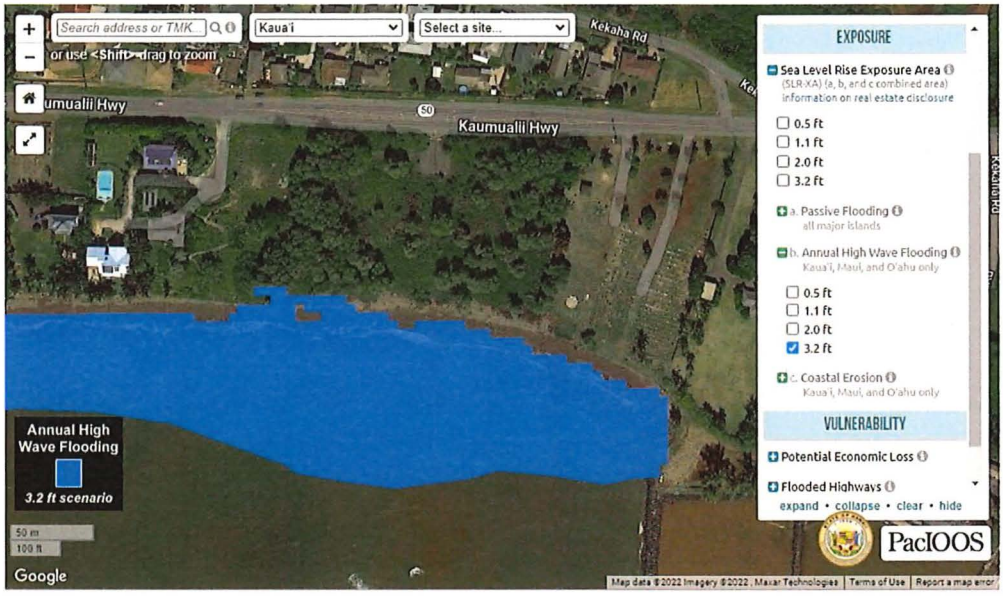

Figure 4-6 Annual high wave flooding with 3.2 feet of sea level rise.

4.4 Coastal Flooding

The UH annual high wave model was developed on an island-scale and has limitations at the parcel level. To improve hazard analysis projections, Sea Engineering (SEI) created a new site-specific high resolution one-dimensional (1-D) XBeach model to view potential coastal flooding caused by the annual wave in addition to +3.2 feet of sea level rise Both the UH and SEI models use an annually occuring wave height and period that is calculated using offshore wave buoy data (4.2 feet, 16.3 seconds). The deep-water offshore wave transformation is modeled over the nearshore bathymetry of the project site and up onto the beach. The SEI model uses a bathymetry grid with a finer resolution and a transect centered within the study area improving results.

The SEI modeling study found greater flooding in the study area than what is indicated in the coarse UH model (Figure 4-7). The flooding extends inland past the beach with flood depths of 0.5 to 2 feet. Thus virtually the entire property is potentially subject to annual flooding with SLR of 3.2 feet.

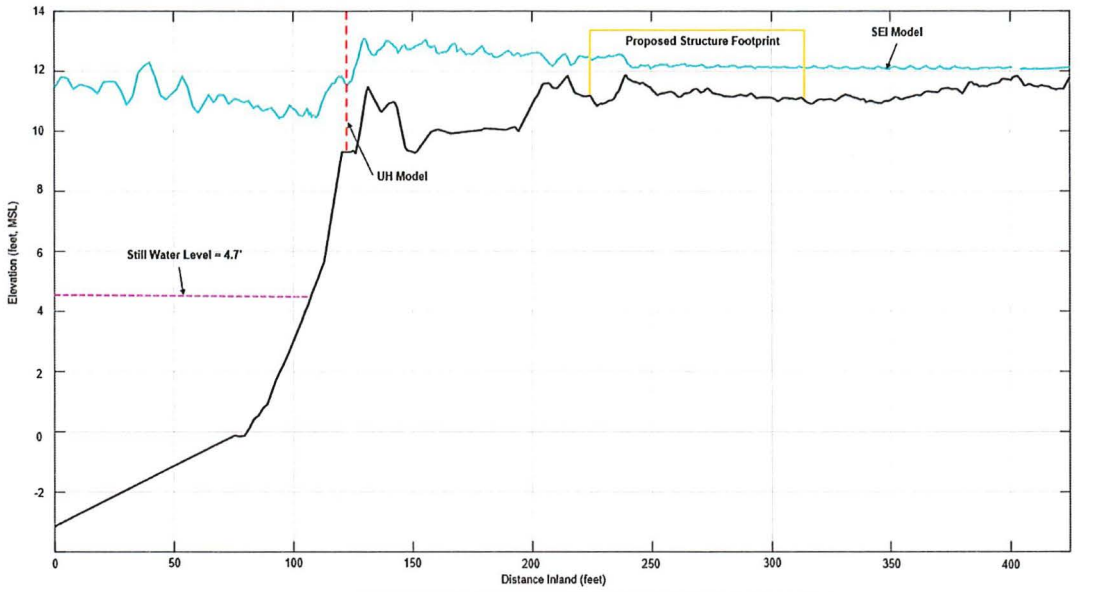

Figure 4-7: Annual high wave models flood results with +3.2 feet of sea level rise.

The National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA), produces maps identifying flood hazards and risks. Figure 4-8 shows the flood hazard map for the project area. The map indicates that the shoreline area is rated as Flood Zone VE in red. Zone VE designates areas subject to inundation by the 1% annual chance flood event with additional hazards due to storm-induced velocity wave action. The Base Flood Elevation (BFE) is 11 feet. The seaward edge of the properties are in Flood Zone AE with a Base Flood Elevation of 11 feet. Zone AE designates an area inundated by 1% annual chance of flooding, for which BFEs have been determined. The remainder of the subject properties are in zone XS. Zone XS designates an area of 0.2% chance of flood; areas of 1% annual change of 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. FEMA does not update maps regularly based on updated sea level rise projections. Use of the SEI modeling study results is recommended for site planning.

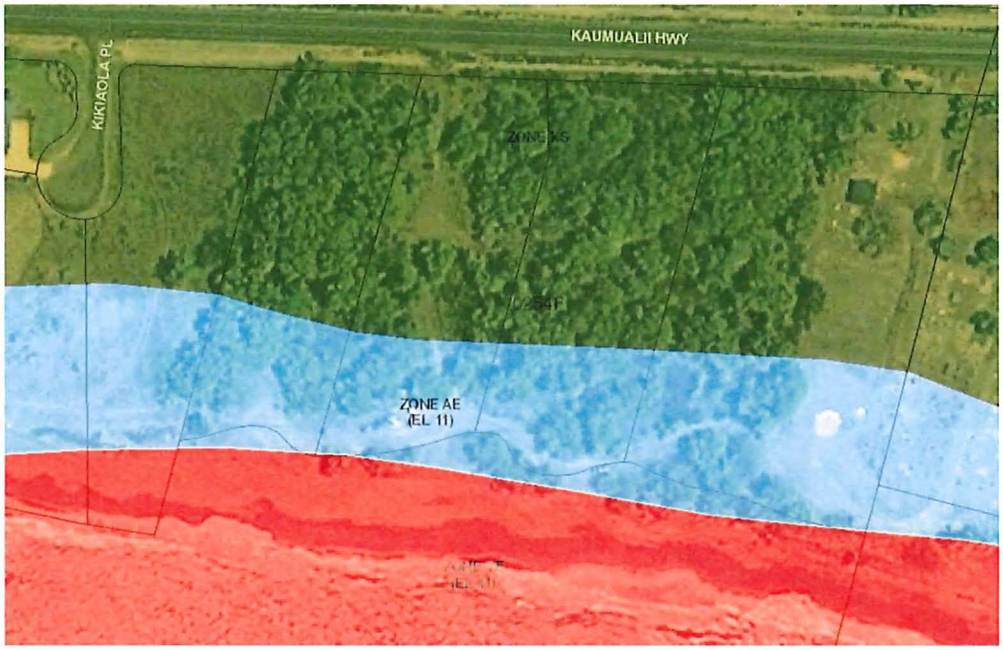

Figure 4-8 FEMA Flood hazard zones within the project area

4.5 Coastal Erosion

The University of Hawaii Coastal Geology Group (UHCGG) analyzed a series of historical aerial photographs to determine historical shoreline change trends along sandy shorelines on Kaua'i. The UHCGG calculated shoreline change rates for the study area based on aerial imagery from 1950 to 2014. The calculation uses shorelines from before and after the Kikiaola Small Boat Harbor was built (1959) and the sand bypass project occurred (2014). The annual erosion hazard rate was -4.1 to -4.49 feet per year.

An updated study by Sea Engineering uses aerial images from 2015, 2021, and 2022 that are all after the sand by-passing project occurred. This analysis uses the erosion scarp on the berm as the reference feature for measuring shoreline change. The scarp appears as a change in color or tone in vertical aerial photographs. Rates of erosion were calculated at three transects for each time period (Figure 4-9). Since the sand bypass project in 2014, there has been a landward migration of the berm at an overall average of -6.1 feet per year. The initial adjustment period eroding the uncompacted sand may account for the recent high erosion rates.

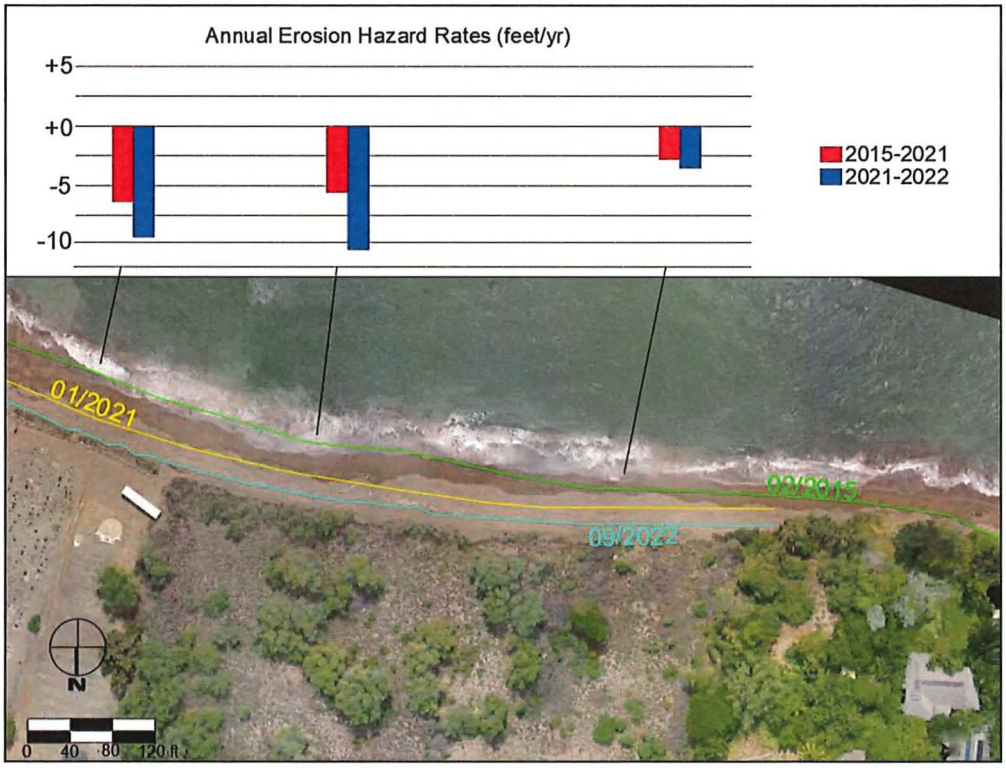

Figure 4-9: Annual erosion hazard rates (feet/year) at the shoreline fronting the project site.

5. COASTAL HAZARD MITIGATION TECHNIQUES

Projected future coastal hazards at the project site show that virtually the entire property area could potentially be flooded by sea level rise coupled with large waves, coastal erosion, and storms. To manage the water and forces from these hazards, mitigation can be in the form of vertical retreat through the building design, nature-based adaptation, accommodation, and engineering adaptation. All of these methods involve varying regulatory requirements, social and economic considerations, possible environmental impacts, and varying degrees of financial cost. Implementation should consider the Kekaha community goals and align to them where possible to gain community support.

5.1 Community Goals

The residents of Kekaha came together over a long community engagement process to develop the 2020 West Kaua'i Community Plan. Outcomes from the community led plan included a policy to increase the resiliency of flood-prone neighborhoods through flood mitigation, drainage improvements, and updated building standards. Future use of the subject properties could improve drainage within the lots to align with this policy. Building standards have been updated through the 2022 Kaua'i Sea Level Rise Constraint District and will be incorporated into building design.

Additional goals of the community of Kekaha are:

- Create a drainage master plan for future projects that utilize low-impact development practices to minimize stormwater runoff
- Develop an overall strategy to protect Kekaha Town and its sandy beaches from the impacts of sea level rise using the best available science and accounting for natural shoreline processes and drainage issues
- Collaborate with scientists and stakeholders to conduct a focused hydrological assessment of Kekaha including groundwater and the effectiveness of pumps, ditches, canals, pipes, and outfalls to manage projected sea level rise.

While these goals are more regional in nature, future work at these parcels could support the goals by creating a drainage plan and accommodating shoreline processes. There is no wastewater treatment in Kekaha, so on-site wastewater treatment should be placed out of the sea level rise hazard area and could consider beneficial reuse systems to help irrigate nature-based adaptation methods.

5.2 Nature-Based Adaptation

Nature-based adaptation can include beach nourishment, the creation or maintenance of a dune or berm, vegetation, wetland restoration, or other nature-based solutions that create a natural buffer between rising water levels and backshore areas at risk. The effectiveness of nature-based protection solutions can vary where there is exposure to high wave energy, in low-energy settings they can reduce coastal erosion rates and improve resiliency. Soft protection methods are often preferable over hard protection since they can provide other benefits, such as habitat creation or enhancement, positive visual impacts, and recreation opportunities.

5.2.1 *Vegetation*

Nature-based features (NNBF) refers to the use of landscape features to produce flood risk management benefits (Bridges, 2021). NNBF projects may also produce other economic, environmental, and social benefits. These landscape features may be natural (produced completely by natural processes) or nature based (produced by a combination of natural processes and human engineering). Landscape features can be used alone, in combination with each other, and in combination with conventional engineering measures such as revetments, seawalls, and other structures.

A large portion of the subject properties are covered in invasive kiawe with thorns that are sharp and unpleasant to walk through. Thorns are also a hazard to the proposed future use of the property as they can pierce tires and shoes of visitors. Replacement of the vegetation with native species appropriate for the environment can improve the aesthetics of the property, ease of access to the shoreline, and also provide coastal hazard mitigation.

Coastal erosion along the seaward edge of the property can be slowed by planting appropriate vegetation species with root systems to hold sand in the berm together and can help capture wind-blown sand. On exposed ocean coasts subject to significant wave energy, vegetation alone is typically not sufficient to resist wave-induced erosion. While a strong vegetation root system can slow down the erosion rate and the vegetation itself can help dissipate overtopping waves, in most cases, vegetation is quickly overcome by the erosional forces. However, used in conjunction with stronger conventional erosion control/shore protection methods, vegetation can function to help stabilize low-lying ground behind the primary shore protection structure. Maintaining the existing swale and earthen levee on the property can allow water to accumulate during storm events as a stormwater retention wetland with vegetation that can absorb the water and stabilize soils.

The coastal area on the subject properties can be thought of as four zones for Xeriscape landscape planning (Figure 5-1):

- Zone 1 - No irrigation or landscaping is allowed seaward of the certified shoreline because this would encourage encroaching vegetation, which inhibits public access and interferes with coastal processes.
- Zone 2 - Low-lying and loosely bound grasses and vines.
- Zone 3 - Low-lying grasses and vines transition to, or combine with, low-growing shrubs.
- Zone 4 - Larger woody shrubs or shade trees.

Species suggested for the project area are listed in Table 5-1. Additional species can be found in the Hawai‘i Dune Restoration Manual. New plantings will generally require some irrigation for the first few months in order to get established. Vegetation monitoring would be needed to ensure stability and persistence of any new plant species and removal of invasive species as they appear.

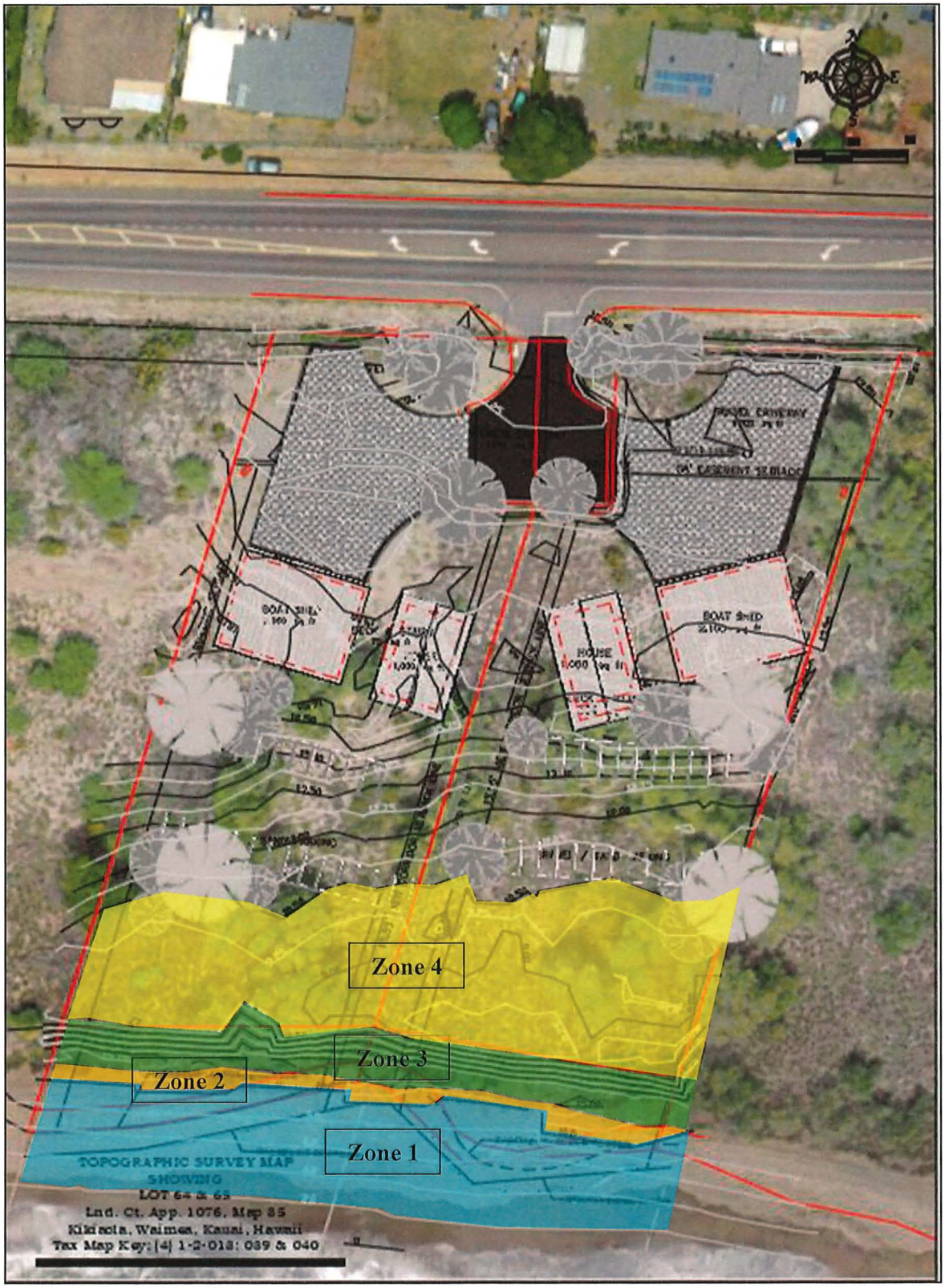

Figure 5-1: Native vegetation planting areas to provide nature-based coastal erosion protection and flood mitigation.

Table 5-1: Native vegetation appropriate for the coastal zones.

	Hawaiian Name	Scientific Name	Comment
Zones 2 and 3			
	ʻAkiʻaki	*Sporobolus virginicus*	Long-lived perennial tolerant of salt air and hot sun. Can grow in low nutrient soils with some organic matter. Roots form a mat under the sand that can resist erosion.
	Pōhuehue (Beach Morning Glory)	*Ipomoea pescaprae*	Fast-growing long-lived salt- and heat-tolerant perennial with pink or light purple flowers that live for one day. Roots form a mat under the sand that can resist erosion. Prone to pests.
	ʻĀkulikuli	*Sesuvium portulacastrum*	One of the most salt-tolerant of all coastal plants. Provides habitat for invertebrates used as food by native waterbirds. Roots filter and clear water of toxins and other unwanted materials. Leaves and stems are a fleshy red or green with a white or pale violet flower.
	Pōhinahina (Beach Vitex)	*Vitex rotundifolia*	Edible good-smelling long-lived low lying creeper shrub with light green, grayish, or silvery leaves and a blue or purplish flower.
Zones 3 and 4			
	Hinahina	*Heliotropium anomalum*	A long-lived perennial that grows close the ground able to suppress weeds. Its leaves have a greenish & grayish appearance with a white fragrant flower.
	Nanea	*Vigna marina*	Nitrogen-fixing sprawling vine with small yellow flowers that will provide other plants growing in the area with a source of free fertilizer in the form of nitrogen.
	Maiapilo	*Capparis sanwichiana*	Long-lived shrub with bright white fragrant flowers. Maiapilo attracts birds and butterflies.
Zone 4			
	Beach Heliotrope	*Hiliotropium arboreum*	A small to medium flowering tree/bush, that is not native to Hawaii, but is generally recognized as a suitable coastal shade tree.

	Milo	*Thespesia populnea*	A shade tree with shiny green heart shaped leaves, and yellowish flowers. Messy when leaves and seeds drop. Wind and salt-tolerant.
	Hala	*Pandanus tectorius*	Xeric and salt-tolerant tree that can stabilize coastal soils with its expansive root system and makes a good coastal windbreak. Leaf edges are serrated and roots may be a tripping hazard.
	Kou	*Cordia subcordata*	A shade tree with up to 35 foot canopy. Has large orange flowers and a shallow root system and can be damaged by too much surface disturbance. Many parts of the tree are useful for products.
	Kamani	*Calophyllum inophyllum*	Shade tree with fragrant white flowers that makes a good coastal windbreak. Grows best in sandy well drained soils and is tolerant of sea spray. Many parts of the tree are useful for products.

5.2.2 *Sand Fencing*

The project area has some wind-blown sand accumulating along the landward side of the shoreline berm. Additional sand may be able to accumulate with sand fencing. Sand fencing consists of a low-lying, temporary fence, typically made of wood slats, that captures and accumulates windblown sand grains rapidly along its base. At a wind dominated site, sand fencing can encourage sand accumulation when installed at a 45 - 90 degree angle to the predominant wind direction. Sand fencing can also serve a secondary purpose of creating a visible barrier to foot traffic and directing pedestrian flow to safe pathways to prevent trampling of vegetation and disruption of dune formation. While sand fencing can be a quick and effective way to encourage dune building, the fence must be maintained, removed, or replaced as it gets buried, torn by the wind, or degraded by the sun. In addition, the most effective sand fencing products are generally not biodegradable and eventually must be removed and discarded.

Figure 5-2 Sand fencing at Kanaha Beach, Maui

5.2.3 *Slope Stabilization*

A more robust alternative to natural shoreline stabilization and protection would be to install a slope reinforcement system composed of a combination of geo-grids or cells, turf reinforcement mats, and vegetation. The geogrid consists of interconnected cells that are anchored into the ground and filled with sand, sediment, or soil. A turf reinforcement mat is then overlain on the grid and dressed with soil or hydromulch. Desired vegetation that dissipates wave energy can then be planted in the infill within each cell, thus creating a vegetated slope. The weight of the infill in addition to the vegetation roots aid in stabilizing the slope. This type of shoreline protection method works best in low-wave energy environments. Presto GeoSystems is one such company that has created a product called GEOWEB® Geocells[5] that can be installed and used to mitigate erosion in coastal areas. Figure 5-3 shows the installation of the GEOWEB system along the shoreline at Lagoon 1 in Ko Olina, O'ahu, and the successful post-construction condition. Figure 5-4 shows a slope stabilization project in Lā'ie using coir material. The primary advantages of a slope reinforcement alternative include lower cost, ease of construction, and use of vegetation to provide a green alternative.

[5] https://www.prestogeo.com/products/soil-stabilization/geoweb-geocells/

Figure 5-3 Slope stabilization with GEOCELLS and vegetation providing soft shoreline protection (Koʻolina, Oʻahu)

Figure 5-4 Slope stabilization with native vegetation planting on biodegradable coir providing soft shoreline protection (Lāʻie, Oʻahu)

5.2.4 *Sand Backpassing*

Sand backpassing involves recovering sand from areas of accretion and placing it in areas of erosion. Sand backpassing was conducted at the project area in 2014 taking sand from east of Kikiaola Harbor (Figure 5-5). Sand backpassing counters the natural longshore movement of sand and can be an effective beach maintenance strategy in areas with limited sediment budgets. The sand source area that was used last time would need to be replenished with sand before it can be used to repeat the project. Discussions with regulatory agencies are encouraged to find out if a plan to regularly conduct sand backpassing is being considered.

Figure 5-5: 2014 Placement of bypassed sand in front of the project area.

5.2.5 *Beach Nourishment*

Constructing or nourishing a protective beach by placing suitable sand in an appropriately designed manner along a shoreline can be an effective and attractive means of mitigating beach loss, protecting against shoreline recession, protecting the backshore area, and providing for recreational and aesthetic enjoyment. The State DLNR and the CZM Program has begun to actively encourage the development of beach nourishment projects, as illustrated by their funding of beach nourishment studies and support for a joint Federal/State General Permit for Small-Scale Beach Nourishment to simplify the permit and approval process for beach restoration projects (Figure 5-6). Beach nourishment requires a source of suitable beach-quality sand and sufficient quantity to meet the needs of the project. Hawaii sand is calcareous (calcium carbonate, primarily from corals and the shells of marine life), and State rules require that only calcareous sand be introduced into the marine environment. There are currently no on-land sources of commercially available calcareous beach sand and limited offshore deposits of suitable beach sand that can be recovered. Offshore sand deposits generally tend to have a particle size finer than desirable for beach nourishment, with a significant fraction of less than sand-size material, and are gray due to the presence of ferrous oxide produced by anaerobic conditions. In addition, environmental assessment and permitting of offshore sand recovery can be an expensive and lengthy process, and the sand recovery itself can be expensive.

A recent example of beach nourishment can be seen in recent State DLNR-sponsored projects to nourish Waikiki beach in 2012 and again in 2021 (Figure 5-7). For each nourishment, approximately 24,000 cubic yards (cy) of sand was recovered from a deposit 2,000 feet offshore, transported to an onshore de-watering basin, and then placed along 1,700 feet of shoreline. This was not inexpensive. In 2012 the in-place sand cost was about $100/cy, and in 2021 it was $180/cy. Unfortunately, Waikiki Beach is chronically eroding so beach nourishment is only a temporary improvement, and will have to be repeated every 10 years or so to maintain the beach.

Figure 5-6 Small-scale beach nourishment at Paia, Maui (2016)

Figure 5-7 Waikīkī Beach beach nourishment: Before (left, 2009), After (right, 2012)

5.2.6 *Beach Nourishment with Stabilization*

On chronically eroding shorelines which would necessitate extensive regular nourishment to maintain the effectiveness of the beach for shore protection, and for which periodic sand nourishment alone is not cost-effective or a sustainable source of suitable sand is not available, structures can be used to stabilize the beach fill and reduce significantly the need for re-nourishment.

Groins are typically used to prevent longshore transport of sand and delaying erosion of an existing beach. A local example is the Royal Hawaiian Groin on O'ahu (Figure 5-8). Where there is significant longshore sand volume available, and adverse impacts to downdrift shorelines are not a problem, groins can be used to trap sand and build a protective beach. However, modern coastal engineering practice typically includes a regional perspective that considers the stability of adjacent beaches and shorelines, and thus groin emplacement may also involve beach fill to not remove sand from the overall beach system. For a long shoreline reach a groin "field" is typically utilized, with the distance between groins a function of the design wave conditions, the length of the individual groins, and the extend of shoreline re-adjustment desired. A sandy shoreline will also adjust its position between groins to align itself parallel to the incident wave crests, resulting in the landward recession of the shoreline on the updrift side and accretion on the downdrift side. Because groins block the longshore transport of sand their use must carefully consider possible downdrift effects.

The Iroquois Point Beach Nourishment and Stabilization project is a good example of a stabilized beach nourishment project. Nine rock T-head groins were used to stabilize 95,000 cubic yards of sand placed along 4,200 linear feet of chronically eroding shoreline (Figure 5-9). The project created seven acres of stable beach recreation area, and project impact monitoring has shown that the habitat created by the rock groins has resulted in a very significant increase in marine species density and diversity in the project area.

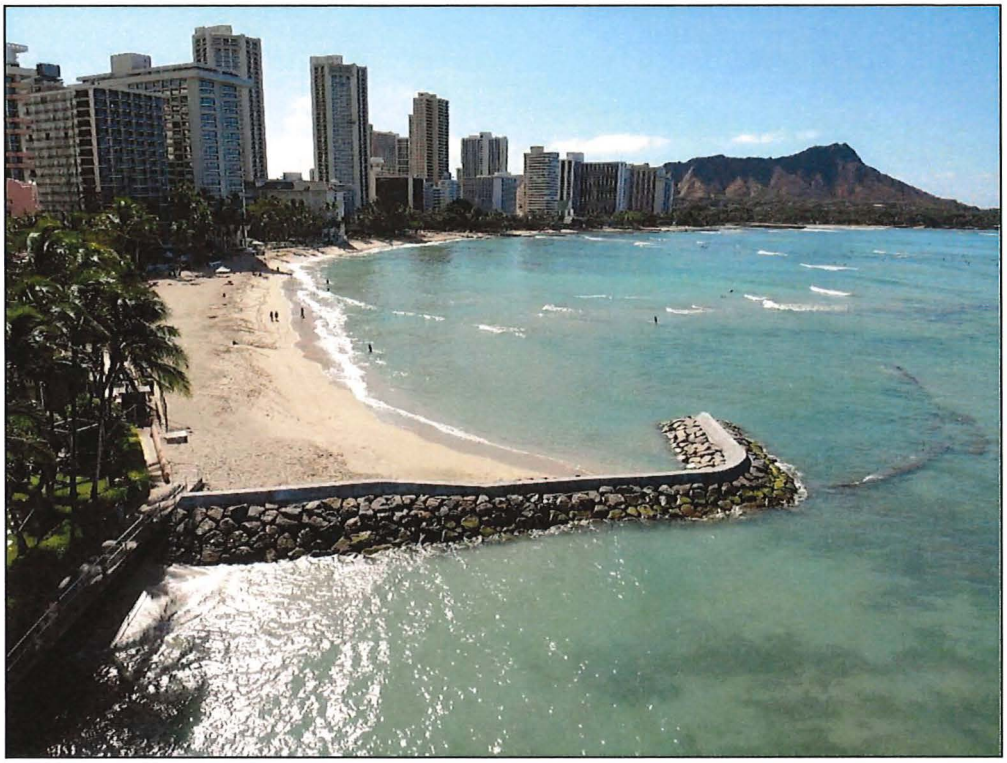

Figure 5-8 Beach stabilization with L-head groin (Waikīkī, O'ahu)

Figure 5-9 Beach stabilization with T-head groins (Iroquois Point, O'ahu)

5.3 Accommodation

Accommodation reduces the coastal impacts, e.g. it happens but you can live with it. Accommodating rising water levels is primarily accomplished by raising the existing ground elevation above the projected increased water level, or by raising the structure or infrastructure above the water level.

5.3.1 *Building Design*

Building plans on the properties will avoid flood hazards by building above the Federal Emergency Management Agency (FEMA) base flood elevation (BFE) based on flood hazard mapping. The BFE is an elevation indicated on the Preliminary Flood Insurance Rate Map defining the elevation of a potential flood. The seaward half of project area has a BFE of 11 feet. The landward half has no BFE.

In the design of a structure located within the shoreline floodplain, an additional height is required to put the structure above the elevation of a potential flood. This additional height is called the freeboard. In normal flood protection design a free board of 1 to 2 feet is common. The higher the freeboard designed, the less the risk of flooding.

The Kaua'i Sea Level Rise Constraint District requires all new construction and substantial improvements to have the lowest floor (including basements) elevated at least two (2) feet above the highest sea level rise flood elevation (SLRFE) located within the respective building footprint. This additional two (2) feet shall be calculated from the top of the SLRFE to the bottom of the lowest horizontal structural member of the lowest floor, excluding pilings, columns, and vertical accesses.

For example, Figure 5-10 shows an example of a home that was built to accommodate coastal hazards. The ground level is open and allows water to flow through the structure during extreme events. The residential portion of the structure is at a higher elevation. At the subject properties, this design flood elevation on top of the topography can be visualized as Figure 5-11. Any structures built on the lots needs to be above these elevations.

Figure 5-10 Example of vertical accommodation (freeboard) on Moloka'i

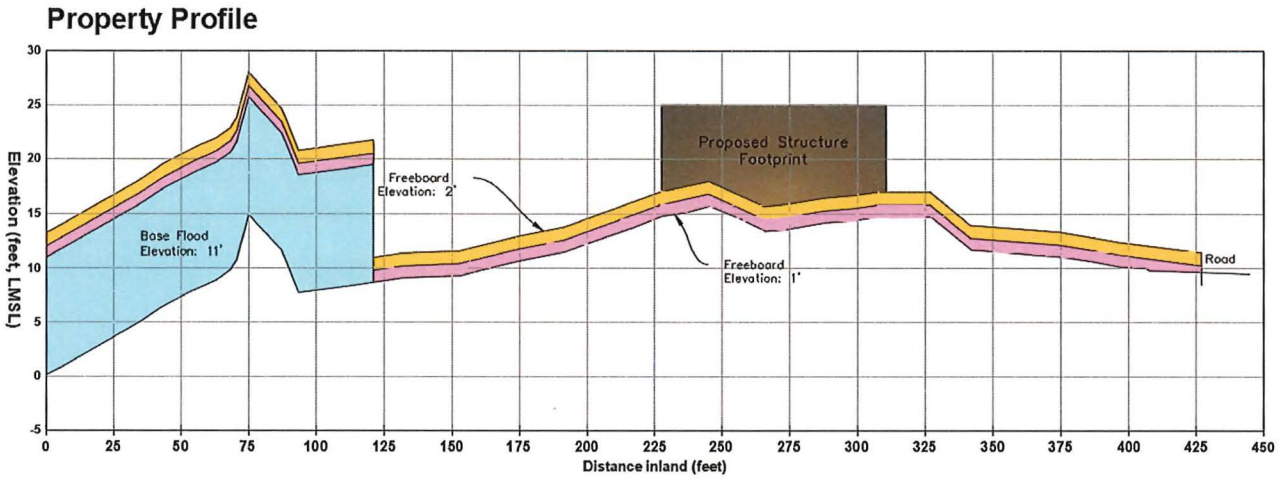

Figure 5-11: Design flood elevations on top of representative topography within the project area.

5.3.2 *Berm Walkovers*

Berm walkovers or other foot-traffic management methods can protect the trampling of installed nature-based adaptation solutions. Foot traffic and trampling of vegetation are often the primary threats to the maintenance or re-establishment of coastal dunes. Local topography and usage will heavily influence the types of access paths needed. At this project site, an elevated boardwalk could be a good fit leading from guests in the parking lot to the shoreline. Boardwalks could be simple over the swale and berm or they could be more intricate with bird viewing areas under shade trees, picnic table platforms, informative signs, etc. depending on the owner's preferences. Boardwalks have the potential to be damaged by coastal hazards. Structures constructed of biodegradable materials that can give way to hazards and rebuilt if destroyed are suggested. An example of a walkover structure is provided in the Hawai'i Dune Restoration Manual (Figure 5-12).

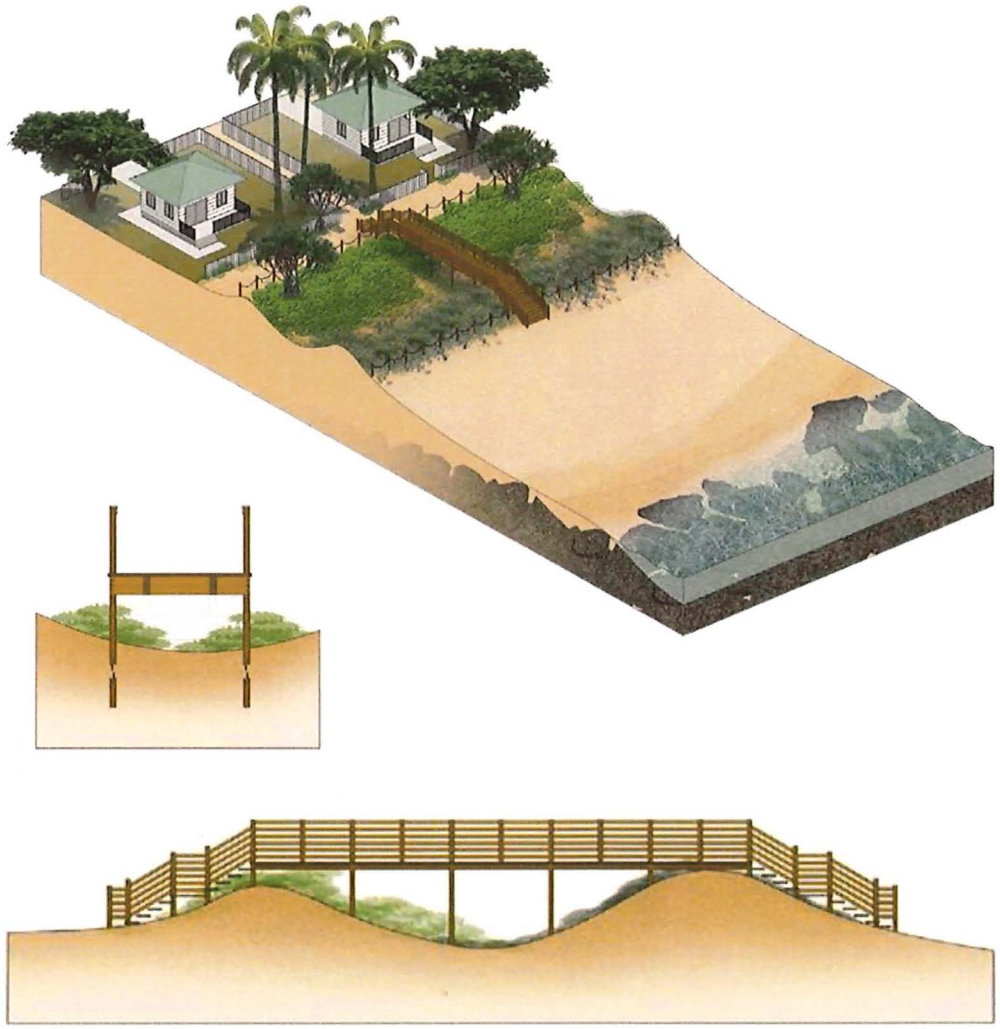

Figure 5-12 Example of elevated walking platforms.

5.3.3 *Parking Lot Drainage*

The proposed future use of the properties would add parking lots and washdown areas. Paved surfaces can lead to stormwater runoff that and flooding of areas adjacent to the pavement. In addition to coastal hazards during a storm, the cumulative flood hazard is greater. Methods exist to allow for drainage in and around paved areas, sometimes referred to as blue-green streets.

Pervious asphalt, pervious concrete, interlocking pavers, and plastic grid pavers, allow rain to seep through the surface down to underlying layers of soil and gravel (Figure 5-13). In addition to reducing the runoff from the rain that falls on them, permeable pavements can help filter out pollutants that contribute to water pollution. The Environmental Protection Agency compiles resources on permeable pavement options that could be used by the architect for the proposed development if desired by the owner[6]. Around the edges of paved surfaces, small vegetated swales can help absorb excess water (Figure 5-14).

Figure 5-13 Some examples of pervious pavement types (Sprouse, 2020).

[6] https://www.epa.gov/soakuptherain/soak-rain-permeable-pavement

Figure 5-14: Example of vegetated swales located around paved areas.

5.4 Engineering Adaptation

Construction of shore-parallel materials armoring the shoreline to prevent erosion and fix its position is typically accomplished by constructing sloping rock revetments, vertical cemented rock or concrete seawalls, or vertical sheet pile bulkheads. Onshore, shore-parallel structures are designed to prevent the retreat of the landward region they protect and do nothing to reduce erosion of the beach. These methods are effective for stabilizing the shoreline, however, on sandy shorelines suffering chronic long-term beach erosion they will likely result in the loss of the sand beach. Some hard protection options include:

- Seawall
- Revetment
- Hybrid Seawall-Revetment
- Buried bulkheads
- Offshore Breakwater

Some existing examples of protection in Kekaha are the revetment 0.5 miles west of the project area protecting Kaumualii Highway and the Geotextile sandbags fronting a property 0.17 miles west in response to erosion.

5.4.1 *Seawall*

A seawall is a vertical or sloping concrete or concrete-rock-masonry wall used to protect the land from wave damage and erosion. A seawall, if properly designed and constructed, is a proven, long-lasting, and relatively low-maintenance shore protection method. Seawalls also have the advantage of requiring limited horizontal space along the shore. However, the impervious and vertical face of a seawall results in very little wave energy dissipation. Wave energy is deflected both upward and downward, and a large amount of incident wave energy is reflected seaward. The downward energy component can cause scour at the base of the wall, and thus the foundation of a seawall is critical for its stability, particularly on a sandy and eroding shoreline. Ideally, a seawall should be constructed on a solid, non-erodible substrate. Seawalls are not flexible structures, and their structural stability is largely dependent on the stability of their foundations. Reflected wave energy can inhibit beach formation in front of the wall, and thus seawalls are not the best alternative if maintaining a beach seaward of the structure is desired. Figure 5-15 illustrates a concrete seawall.

Figure 5-15 Typical concrete seawall providing hard shoreline protection

5.4.2 *Revetment*

A revetment is a sloping uncemented structure built of wave-resistant material. The most common method of revetment construction is to place an armor layer of stone, sized according to the design wave height, over an under-layer and filter designed to distribute the weight of the armor layer and to prevent loss of fine material through voids between stones. In low wave height environments, a well-graded range of stone sizes may be used in place of uniform armor stone. An important aspect of revetment design (or any type of wall) on loose, unconsolidated material is to prevent scour around the toe which could result in collapse and failure of the structure. Toe scour protection can be provided by excavating to place the toe on a solid substrate where possible, constructing the foundation below the maximum depth of anticipated scour, or extending the toe to provide a scour apron of excess stone. Properly designed and constructed rock revetments are durable, flexible, and highly resistant to wave damage. The rough and porous surface and flatter slope absorbs and dissipates more wave energy than smooth vertical walls, thus reducing wave reflection, run-up, and overtopping. However, the sloping revetment does occupy more horizontal space and has a larger footprint than a seawall would. A typical rock riprap revetment is shown in Figure 5-16.

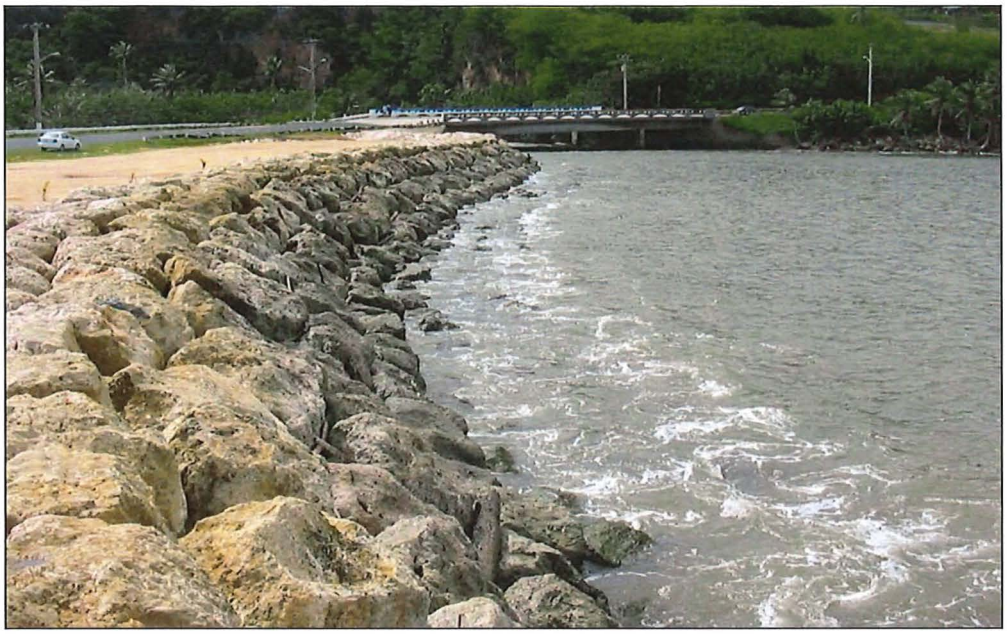

Figure 5-16 Typical rock revetment providing hard shoreline protection

5.4.3 *Hybrid Seawall-Revetment*

A hybrid seawall-revetment is a shore protection structure that combines a vertical seawall with a sloping rock revetment. A hybrid seawall-revetment would be composed of two primary elements: a seawall (i.e. sheet pile, reinforced concrete, or cemented rock masonry) and a uniform armor rock rubblemound revetment. An example of a hybrid seawall-revetment is shown in Figure 5-17.

Figure 5-17 Hybrid seawall-revetment(Kapa'a, Kaua'i)

5.4.4 *Buried Bulkheads*

Buried bulkheads are hard protection that extend below ground to provide shore protection prior to erosion events. Bulkheads can be used to protect critical infrastructure. Some examples are Secant Pile walls and Sheet Pile walls.

Secant pile walls are typically constructed of reinforced concrete piles that interlock. Secant pile walls offer increased wall stiffness compared to sheet piles and can be installed in more difficult ground conditions. An example of a concrete secant pile wall is shown in Figure 5-18. Concrete secant pile walls have a small structural footprint and does not require the installation of soil anchors. If a concrete secant pile wall is exposed by erosion, it would be less susceptible to corrosion than a steel sheet pile wall.

Sheet piles are sections of material, typically steel or vinyl, with interlocking edges that are driven into the ground. Steel sheet piles, while very strong, are vulnerable to corrosion in the coastal environment and often require an earth anchoring system. An example of a steel sheet pile wall with earth anchors is shown in Figure 5-19. A steel sheet pile wall is thinner in section and may require less clearance for installation than a concrete secant pile wall.

Figure 5-18 Example of a concrete secant pile wall

Figure 5-19 Example of a steel sheet pile wall with earth anchors (Kahana, Maui)

5.4.5 *Offshore Breakwater*

Offshore breakwaters are typically segmented structures oriented parallel to the shoreline, and provide protection from wave energy for the shoreline on their leeward side. This reduction of wave energy in the breakwaters shadow reduces the transport of sand by wave action and sand transported by a predominant longshore current will tend to be deposited in the lee of the structure. This deposition causes the growth of a cuspate spit extending from the shoreline, and if the breakwater's length is great enough in relation to its distance offshore, the cuspate spit may connect to the breakwater, forming a tombolo. Thus, breakwaters provide protection to the backshore property not only by reducing incident wave energy, but also by helping to build a wider protective beach. As with revetments and groins offshore breakwaters are typically of rock rubblemound construction.

A major issue in designing an offshore breakwater for shore protection is whether to design for cuspate spit or tombolo formation by the adjusted shoreline. Tombolo formation will completely block longshore transport along the shore, and potentially result in erosion downdrift of the structure. A cuspate spit may allow some transport of sand along the shore, thus reducing impacts to downdrift shorelines. Both cuspate spit and tombolo formation do not provide uniform protection along the entire shoreline, with the shoreline moving seaward in their lee and moving landward in the gaps between breakwaters. In addition, functional design guidance for offshore breakwaters is lacking, and prediction of their performance is inexact, thus they have not been used extensively in the United States.

Figure 5-6 shows an offshore breakwater constructed in 1965 at Haleiwa Beach Park on Oahu in an effort to reduce erosion and stabilize the shoreline fronting the park pavilion. However, as is evident in the photo, the breakwater has been completely unsuccessful in achieving its intended purpose. This illustrates the care which must be taken when designing beach stabilization structures.

Figure 5-20. Offshore breakwater at Haleiwa Beach Park

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EXHIBIT "F-2"

Ka Paʻakai Analysis For Hale Waʻa

Native Hawaiian Traditions, Customary Practices and Perspectives of
Waimea Ahupua`a, *ʻili* of "Kīkīaola,
Moku o Kona, Kaua`i Island
for
TMK (4) 1-2-013:039 and 040

Prepared for
Nathaniel Fisher
Na Pali Experience LLC.

Prepared by
Exploration Associates Ltd.

March 2023

EXHIBIT "F-2"

Table of Contents

INTRODUCTION

At the request of Nathaniel Fisher of Na Pali Experience, LLC, Exploration Associates (EAL) conducted a Ka Pa'akai analysis of 2 parcels (TMK (4) 1-2-013:039 and 040 (lots 64 and 65) which is in the Waimea Ahupua`a, *'ili* of "Kīkīaola, Kona District on Kaua`i Island (Figures 1 - 4). Hereinafter referred to as "*project area and/or the subject properties*". The subject properties are located makai of Kaumualii Hwy. To the northwest and north are residential properties and undeveloped lands. To the southeast is an undeveloped parcel and two County cemeteries. The property is vacant and undeveloped with a cul-de-sac with existing utilities outlets for all the lots at the corners of the parcels.

The proposed plans are to develop the two parcels to have in the mirrored site plans for single family residences (1000 sq. ft. per house) and boatsheds (2,160 sq. ft. per boatshed). One of each on each parcel (Figure 4). Lot 64 parcel 39 is 1.11 acres and Lot 65 is parcel 40 which is 1.118 acre. The County Zoning is Open and in the special management area (SMA). The County Planning Department now requires all land use permits address the proposed project's effects on traditional Hawaiian practices, customs, and beliefs. This Ka Pa`akai analysis provides information pertinent to the evaluation of the proposed project's cultural impacts.

METHODOLOGY

Methodologies guided by indigenous Hawaiian cultural perspectives and intellect were used to conduct this study. It is always imperative that traditional values of *aloha* and *hō`ihi* (sincerity, love, and respect) are ever present in the actions of the research and investigative team that engages with the natural environments, resources, people and communities from which/whom information will be gathered for this work. Special focus and attention is given to the examination of the land, water and atmospheric features that are applicable to the study project area and all lands and environments associated with it.

At the onset of this project, EAL entered this work with much enthusiasm and confidence of already "knowing" this place. Even with a limited window of time to conform to, EAL knew that only a little had been documented to bring forth the values and depth of traditional Hawaiian knowledge and customary practices of *'ili*)of "Kīkīaola's ancient past. Information and personal experiences that EAL possessed provided an advantage to accomplish the task of completing this Ka Pa`akai analysis.

Much of the effort in conducting studies such as this is to review and evaluate the land allocated for the project area and any possible adverse influences and consequences relating to indigenous Hawaiian beliefs and practices. Over the

years, much has changed in this area except for the bust in tourism and the boating industry. Waimea is still a town community descended from a rich and vibrant Native Hawaiian culture and ancestors who knew this land these islands so intimately. The relationships they held with the natural world as divine and godly, influenced levels of consciousness that dictated every aspect of native Hawaiian life ways and cultural practices.

Scope of Work

(1) The identity and scope of valued cultural, historical, or natural resources that are found within the proposed project area and relevant areas within the ahupua'a of Waimea and nearby Kekaha, including the extent to which traditional and customary Native Hawaiian rights are exercised.

(2) The extent to which those resources – including traditional and customary Native Hawaiian rights – will be affected or impaired by the proposed action.

(3) The feasible action, if any, to be taken by the agency to reasonablyprotect Native Hawaiian rights if they are found to exist. (Ka Pa'akai, 94 Haw. at 19, 7 P.3d at 1084.)

ENVIRONMENTAL SETTING

Kaua'i is the oldest of the Hawaiian Islands. Geologically, the original volcano, located in the middle of the island went through a period of weathering and erosion. There were voluminous rejuvenated stage lavas which represent the later eruptive stages of the volcano. The primary basaltic rocks from the original volcano are the Waimea Canyon series. The innumerable lava flows are divided into three major geologic formations: the Napali formation, the Olokele formation, and the Makaweli formation. The Napali formation of the Waimea Canyon series is the most permeable of the three.

After the original flows, the Kōloa volcanic series covered most of the eastern part of the island. The Kōloa series are less permeable than the Napali formation lavas. The Kōloa series of flows were deposited in relatively flat layers compared to the Napali flows. The Olokele and Makaweli formations are also relatively flat but more permeable than the Kōloa series.

Topography and Soils

The project area is situated at 2.0–4.0 m above mean sea level (AMSL). According to the USDA Web Soil Survey, the soils in the project area are classified as Jaucas

loamy fine sand, dark variant, with 0 to 8 percent slopes (JkB), as shown in Figure 3. The Jaucas series are found on vegetated beach areas along the shore. This soil is formed in calcareous sand deposits. They are very deep, excessively drained, and have very rapid permeability (Soil Survey Staff 2017). Areas containing these soils are typically used for recreation and as marine wildlife refuges.

Beaches are described as follows: Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite. Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development [Foote et al. 1972:28].

From a historic preservation perspective, Jaucas sand deposits are associated with the presence of traditional Hawaiian burials and subsurface cultural deposits.

Rainfall and Vegetation

Located on the drier leeward coast of Kauaʻi, annual rainfall at the project area averages 512.5 millimeters (mm) (20.18 in) per year, with most rain falling in the months between October and March. Giambelluca et al. 2013). The project area is situated makai of the Kuamualii Highway.

Vegetation along this arid coast is sparse. With 20 inches or less of rain annually, only the hardiest plants adapted to the coastal environments can thrive in this zone. The vegetation is typical of dry seashore environments in Hawaiʻi and is dominated by alien species. The parcel is intermittently vegetated with *kiawe* (*Prosopis padilla*), *koa haole* (*Leucaena leucocephala*), and various grasses, such as bristly foxtail (*Setaria verticillata*), bermudagrass (*Cynodon dactylon*), a fingergrass (*Chloris* sp.).

Temperatures in the southwest and west sides of Kauaʻi average between approximately 60 and 90 degrees, with prevailing northeast trade winds (Armstrong 1983:64–65).

Built Environment

The project area lies in a relatively undeveloped stretch of land between the urban/suburban centers of Waimea (approximately 700 m to the southeast) and Kekaha to the north and northwest. Kaumualii Highway, the major vehicular artery to west Kauaʻi, lies along the north end of the project area. The Kīkīaola Small Boat Harbor, located just southeast of the project area, was originally developed by the State of Hawai'i in 1959 and is named after the land area (*'ili*) of "Kīkīaola." Kīkīaola is best known as the name of a historic irrigation ditch (*'auwai)* also known as

"Menehune Ditch" or "Pe'ekaua'i Ditch," SIHP # 50-30-09-00026, that is traditionally believed to have been built by the Menehune (legendary small people); the ditch was added to the National Register of Historic Places on 16 November 1984.

The current project is surrounded by residential housing to the north, undeveloped land to the east, and Kīkīaola Small Boat Harbor and the ocean to the south (including the two cemeteries).

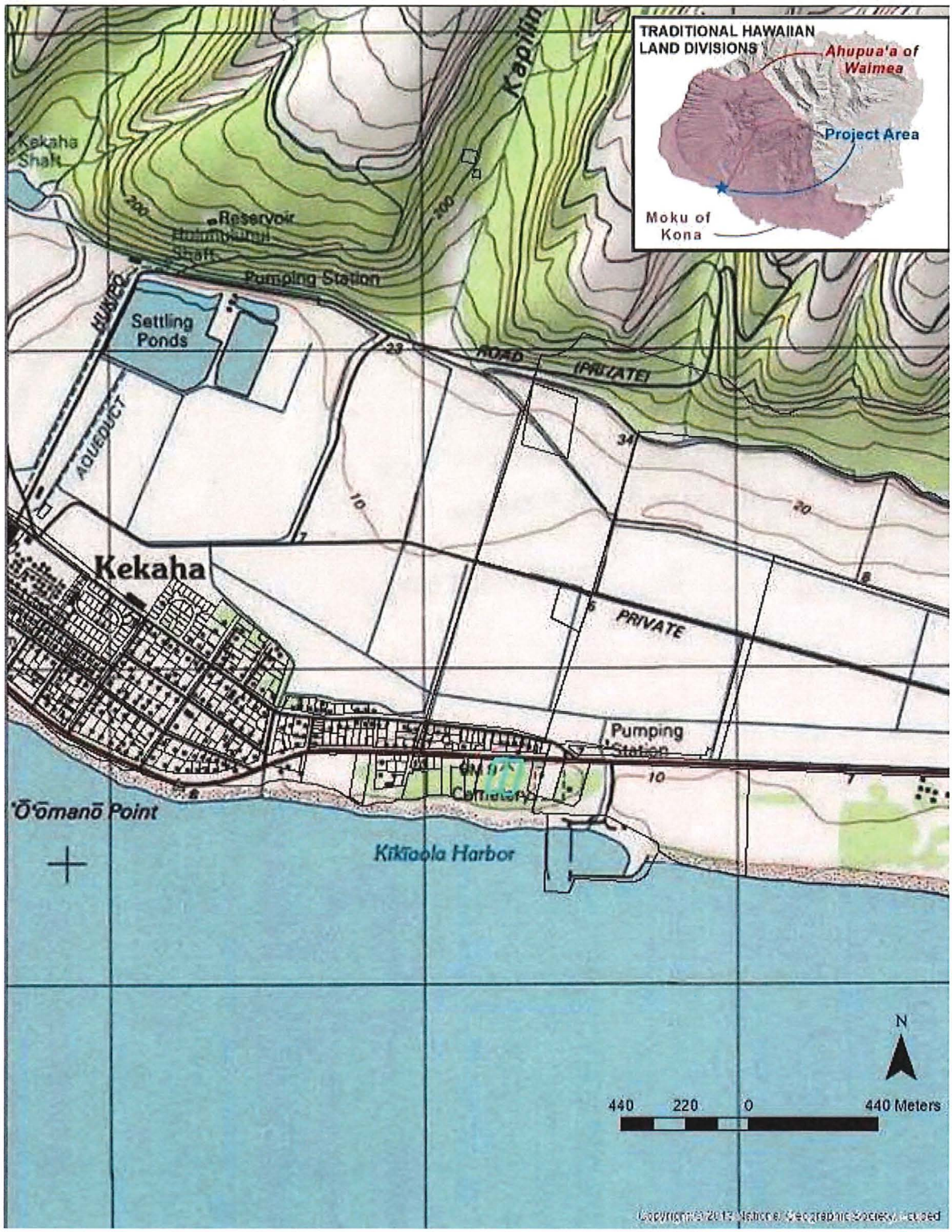


Figure 1. USGS Kekaha Quad Map of the Project Area in Blue.

Figure 2. Aerial image indicating location of project areas in blue and green.

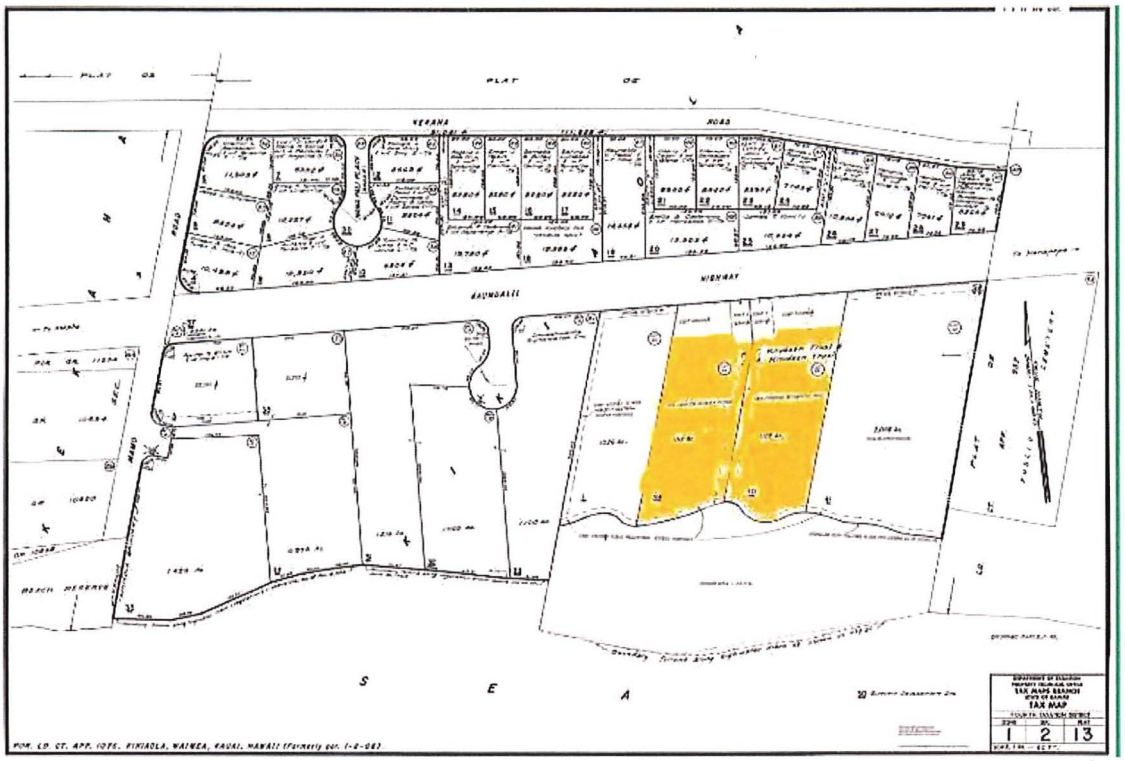


Figure 3. TMK Location parcel 39 (lot 64) and parcel 40 (lot 65).

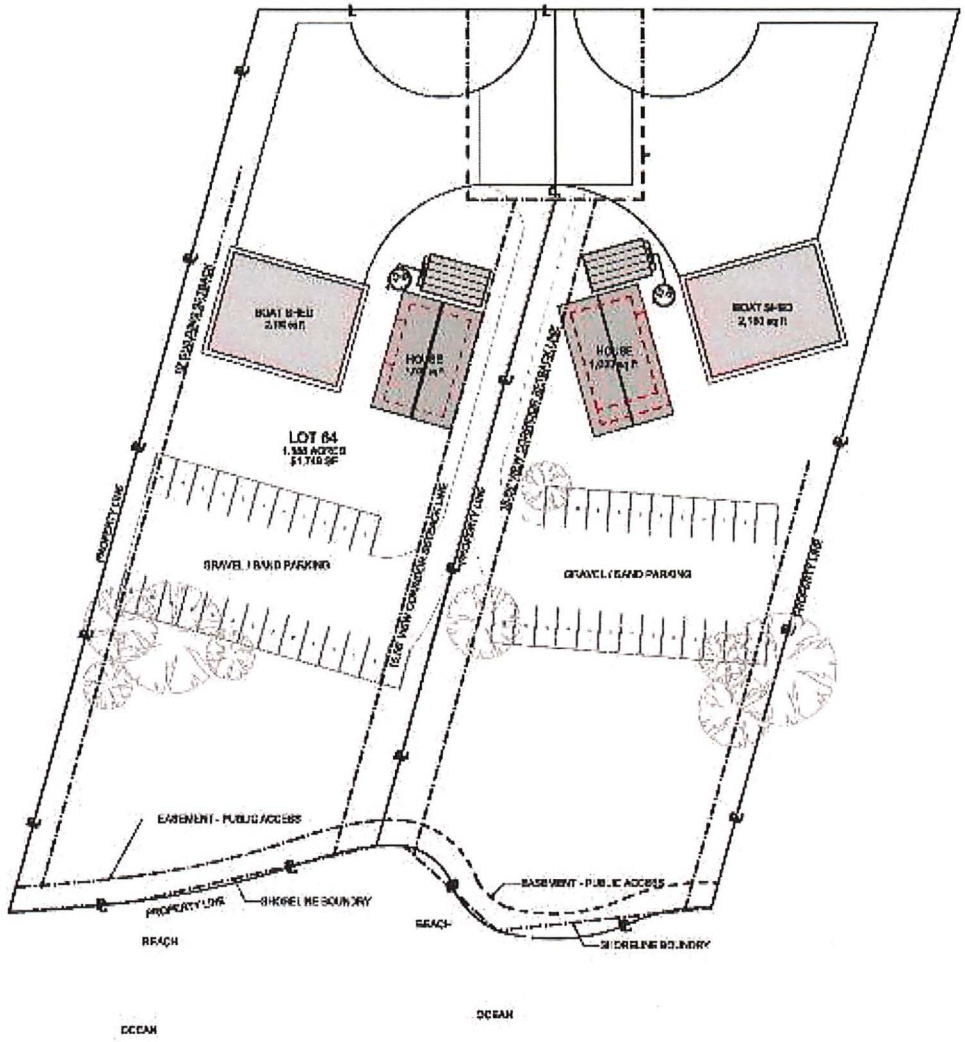


Figure 4. Site plan for both lots.

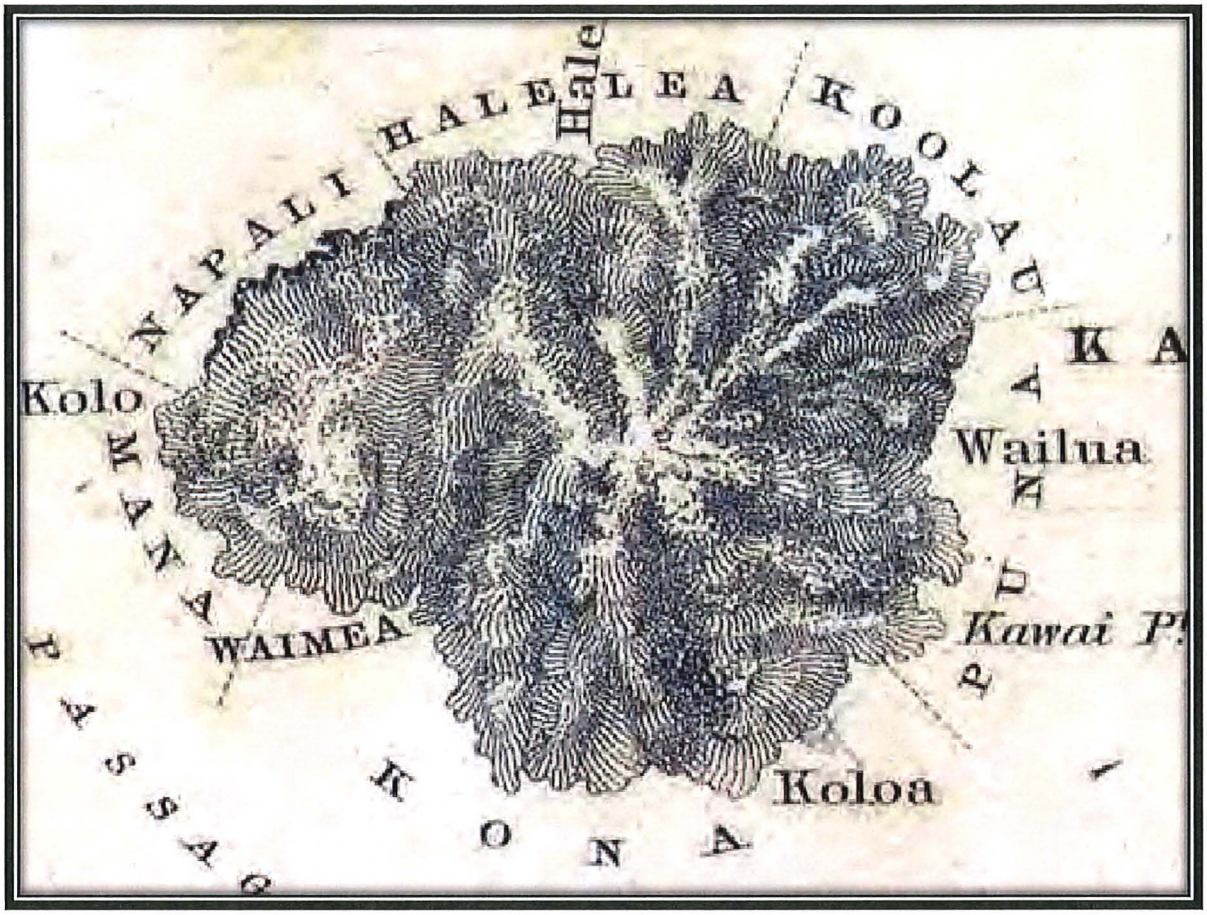


Figure 5. 1845 Map of Kaua`i by Charles Wilkes for U.S. Mapping Expedition. Note that it shows 6 moku or districts including Ko`olau, Halele`a, Nā Pali, Kona and Mānā. Typically, Kaua`i is dividied into 5 moku. Mānā is usually considered as part of the Kona moku.

Geologically, Kaua`i is the oldest of the main inhabited islands in the chain. It is also the northwestern-most island, with O`ahu as its closest volcanic sibling separated by the tempestuous Ka`ie`ie Channel which is more than 72 miles long. In centuries past, Kaua`i's isolation from the other islands kept it safe from outside invasion and unwarranted conflict.

Waimea *ahupua'a is* in the ancient district of Kona, Waimea *'okana* (a district or subdivision) on the southwest side of the island of Kaua'i. Waimea Ahupuaʻa is located on the west side of Kauaʻi and covers more than one-quarter of the island. This *ahupua'a* (traditional Hawaiian land division) comprises the Waimea River Canyon, the Kōkeʻe uplands, Alakaʻi Plateau, numerous inland and coastal valleys, and Mānā Plain.

Waimea *Ahupua'a* is by far the largest on the island, comprising 92,646 acres and accounting for more than a quarter of the total land area of Kaua'i. It encompasses all the Waimea River Canyon area, the uplands of Kōke'e, the high swampy plateau of Alaka'i, and the northwestern coastal valleys of Nu'alolo and Miloli'i (Gray 1875: 140-146). Waimea *ahupua'a* is composed of several regions, which are very different in climate and terrain. These differences essentially dictated the kinds of resources that were available, and hence had much to do with the way the *ahupua'a* was settled by pre-Contact Hawaiians. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture and represents the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972). On the southwestern leeward coast, about three miles from Waimea Bay, a broad, flat plain stretches between the Waimea River delta and Polihale to the west (Handy and Handy 1972). It is here that Kekaha, Pōki'i, Wai'awa and Mānā are located, backed on the *mauka* (towards the mountain) side by steep low cliffs and a series of small valleys and gulches. Just below, *makai* (towards the ocean) of the ridges and valleys, lies the Kekaha Ditch, which winds its way down from the Waimea River in the mountains. From the edge of Kekaha Ditch to the ocean lie the former swamp lands of the Kekaha-Mānā plains, now planted in corn and truck produce, and previously in sugar cane.

Within *ahupua'a* are now *'ili'āina* (a further division of land within the *ahupua'a*). This area is called the*'ili* of "Kīkīaola.

CULTURAL OVERVIEW

Poetically the island is called, *"Manōkalanipō"*, or *"Kaua`i a Manō"* after the ancient chief who was largely responsible for elevating Kaua`i's ancient society to sophisticated heights of advancement and productivity. For centuries, from the time of Manōkalanipō's reign, through Kamehameha's unsuccessful attempts to invade Kaua`i in 1796 and 1804, Kaua`i remained free from warfare.

In 1810, Kaumuali`i accepted Kamehameha as the supreme ali`i by peacefully ceding Kaua`i to the newly United Kingdom of Hawai`i. With honor, Kaumuali`i was encouraged to return to rule on Kaua`i as its tributary chief under Kamehameha I.

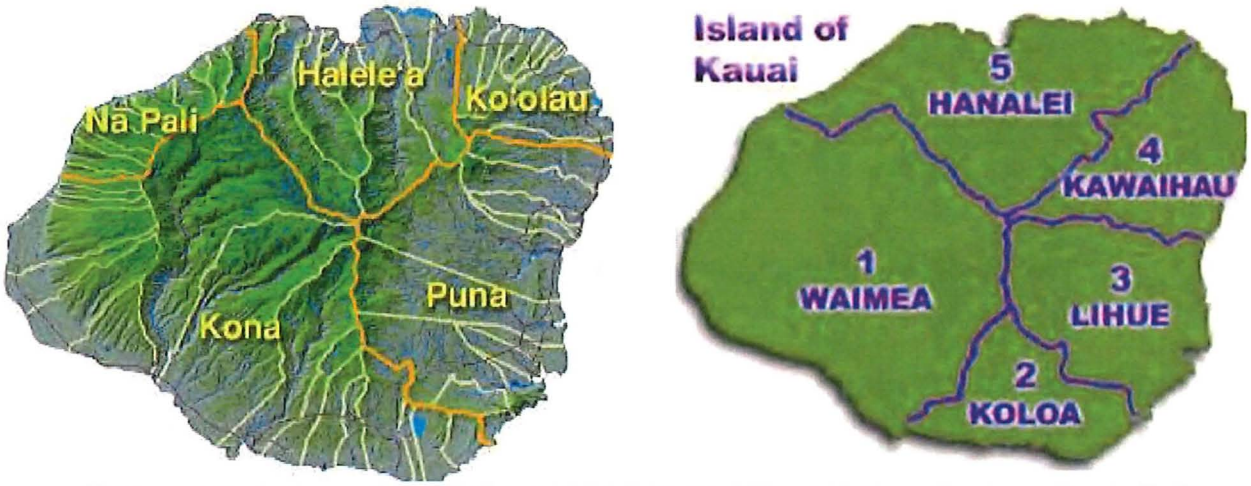
In accordance with the ancient land division system, an entire island is referred to as a *mokupuni*. While the word, moku by itself can also mean island, it is a term that is more specifically used to identify a district. Puni means, *controlled, surrounded, to gain control of*. It comes from the word, *aupuni* which is used to

describe a government, kingdom, dominion, nation, or population that is governed or under the leadership of a ruler. In ancient times, a mokupuni could include an entire island as well as multiple islands that was ruled by an Ali`i Nui or paramount chief. Historically, the mokupuni of Kaua`i has included the islands of Ni`ihau as well as Lehua.

Kaua`i Island has traditionally been divided into 5 moku including: Ko`olau, Halele`a, Nā Pali, Kona and Puna. The ali`i nui appointed *ali`i `ai moku* or district chiefs to manage the various moku.

Common district names that are universally used across of the Hawaiian archipelago include "Ko`olau" marking the windward sides of the islands; "Kona" - the leeward sides of the islands; and "Puna" - indicating regions where springs and fresh water abound.

The boundaries of the five moku on Kaua`i were changed in the late 1800s to reflect the present-day judicial land districts. The Project Area is in the Kona district upon land within the Waimea ahupua`a.



Figures 6 & 7 show Kaua`i Island Districts and Boundaries. Fig 6 on the left show the original moku of Ko`olau, Halele`a, Nā Pali, Kona and Puna. Fig 7 on the right show the revised boundaries and judicial land districts of Kawaihau, Hanalei, Waimea, Kōloa and Līhu`e.

Traditionally, the districts were further divided into smaller land divisions known as *ahupua`a* which included the abundance of land and resources from the mountain to the sea. Under the direction of the ali`i `ai moku, the *ali`i `ai ahupua`a* or land division chief was put in charge of governing the ahupua`a. The ali`i `ai ahupua`a appointed *konohiki* who served as the headman of the ahupua`a land division, and was solely responsible for the management of land, water and fishing rights. An ingenious concept, the ancient design of the ahupua`a system continues to be an excellent model for sustainability and land and natural resource management today. The common description that ahupua`a are "pie-shaped" is inaccurate. However, it is a general practice to apply triangulation of the 3-main boundary points of the ahupua`a when identifying its respective division lines. Additionally, ahupua`a do not terminate at the ocean ward boundary points. The boundary lines are purposely extended into the ocean so that it also includes the resources and minerals of the reef and ocean as well.

The ahupua`a, although it has a typical "pie-slice" shape, encompasses a width of land from stream to ridge, rather than the more common pattern of ridge to ridge. The generalization and clustering of traditional places to common districts (i.e. Anahola, Kapa`a, Līhu`e, etc.) has become acceptable, widespread practice in the western framework of identifying and relating to places on Kaua`i. Therein lays an example of how easily a traditional Hawaiian land area or division can be incorrectly identified, misunderstood, and misinterpreted as a significant place of its own. In contrast, Kekaha and other settlements on the Mānā plain suffered from a definite lack of fresh surface water. The *mauka* (inland) gulches had only intermittent stream flows, and water sources were primarily springs along the base of the cliffs. Therefore, descriptions of Waimea Bay and Valley do not necessarily extrapolate to the adjoining areas of the Kekaha to Mānā Region.

A major element of focus for this Ka Pa`akai analysis is based on the `āina or land that is the project area, as well as surrounding lands and natural resources that are linked to the project area. It is important to readers of this Ka Pa`akai analysis to have a basic understanding of the ancient land division system and the various words, terms and idioms associated with Hawaiian land designation and Hawaiian land use. This is especially helpful in identifying and relating to specific locations and place names that are pertinent to this study.

HISTORICAL BACKGROUND

This section presents ethnohistorical and archaeological background information for the project area. Data from the background research were compiled to create an overview of traditional Hawaiian and historic-era land use and subsistence practices. Previous archaeological research in the vicinity of the project area is reviewed and

anticipated archaeological findings are discussed.

Traditional History

The Hawaiian cultural landscape can be described through *mo'ōlelo* and *wahi pana* (significant Hawaiian place names). Mo'ōlelo may be myths, legends, proverbs, and events surrounding well-known individuals in Hawaiian history (Pukui and Elbert 1986:254). The following is a discussion of the mythological, traditional, and early historic accounts specific to the study area. The reader is referred to O'Hare et al. (2015) for a broader background of the *ahupua'a* of Waimea.

The project area is situated in the *'ili1* of Kīkīaola, on the west, and Pe'ekaua'i, on the east. Hawaiian legends associated with this portion of Kaua'i are related to the *'auwai* (irrigation ditch) named Kīkīaola ("container [acquired] by [Chief] 'Ola" [Pukui et al. 1974:110]), which is more commonly known as Menehune Ditch, the namesake of its builders (see Kaiwi 1917:114-118). The impressive *'auwai* carried water around the cliff 24 feet above the Waimea River (Handy and Handy 1972:270) and fed a network of *lo'i* (irrigated taro terrace) below the cliff. Bennett (1931) recorded this as Site 26 (State Inventory of Historic Places [SIHP] 50-30-09-0026) during his survey of the island:

> The noted Menehune ditch (Site 26) is the acme of stone-faced ditches. The problem was that of carrying the water, at a high level, around the corner of a jutting cliff. An added difficulty was the necessity of placing the base of the causeway in the river itself where it was constantly in danger of being washed away by a freshet. It is the Menehune ditch alone that has any record preserved of its construction—and that is a myth [Bennett 14 1931:23–24].

The legend of the *'auwai* construction was recorded by Christopher B. Hofgaard in the early 1900s for the *Kauai Historical Society* and is relayed by Bennett (Hofgaard N.D. in Bennett 1931:24). The story tells of how the Menehune (a legendary race of small people) were hired by the landowner, Pi, to prepare the stones and construct the *'auwai*.

> When the time came, he went to the point where the dam was to be built and waited. At the dead of the night, he hears the noise and hum of the voices of the Menehunes, on their way to , each of whom was carrying a stone. The dam was fully constructed, every stone fitting in its proper place, and also the stone auwai, or watercourse, laid round the band at Kīkīaola . Before the break of day the work was completed and the water of the Waimea River turned in by the dam into the water-course and through the same on to the flats at Waimea [Hofgaard N.D. in Bennett 1931:24].

***Nā Wahi Pana* (Place Names, Sacred Places, and Landscapes)**

A Hawaiian *wahi pana* is also referred to as a place name. "In Hawaiian culture, if a particular spot is given a name, it is because an event occurred there which has meaning for the people of that time" (McGuire and Hammatt 2000:17). *Nā*

wahi pana were passed on through the oral tradition, preserving the unique significance of each place. *Nā wahi pana* can refer to natural geographic locations, such as streams, peaks, rock formations, ridges, and offshore islands and reefs, or they can refer to Hawaiian divisions, such as *ahupua'a, 'ili, mo'o* (narrow strip of land), and man-made structures, such as fishponds, reservoirs, *kula* (farm pasture), and *kauhale* (group of houses). Hawaiians named all sorts of objects, places, and points of interest. As previously mentioned, the current project area is located between the urban/suburban centers of Waimea and Kekaha.

Wahi pana are celebrated and storied places that illuminate generations of reciprocal connection and relationships between indigenous Hawaiians and the land and seascapes and natural resources that supported their existence. For well over two thousand years, native Hawaiians have held intimate bonds with their islands and special places upon them. Wahi pana continue to be integral, living components of a Hawaiian world view today.

Literally, the word "*wahi*" simply means, "*place or location*". *Pana* is defined as "*celebrated and storied*". Another definition of the word, pana is, "*heartbeat or pulse*".

The latter elevates and distinguishes a place as a wahi pana from any other ordinary location. Nature's forces, combined with the intangible spiritual energy source known to indigenous Hawaiians as mana are prevalent at many wahi pana throughout Hawai`i. Additionally, these wahi have specific stories, purpose and function that have influenced the lives of `ōiwi kānaka or Hawai`i's native people for myriad generations. Transmitted orally from generation to generation, their experiences have been preserved through mo`olelo (legends and stories), mele oli (chants), mele hula (dances) and `oihana Hawai`i (practices), maintaining memory and knowledge of places that should be honored and respected. Wahi pana are excellent teaching tools that continue to be extremely valuable today in its capacity to inform and demonstrate the cultural traditions, practices, values, and beliefs of Hawai`i's ancestors and people.

Wahi pana vary. They include but are not limited to sacred sites such as heiau, and ancient burial caves and burial grounds. Alluvial valley floors which were cleared for the construction of elaborate irrigated systems of lo`i terraces, as well as fishing grounds and surf sites in the ocean are wahi pana as well. Mountain peaks, cliffs, valleys, rivers and streams too, have emerged over time as places of cultural importance.

All discernible features in every land division, district and island were given specific names that inspired life and meaning to these places as wahi pana. Every stream, spring, beach, fishing hole, reef, promontory, winds, and rains, etc. all have names. These elements of nature provided the foundation for the creative and productive industries of the ancient Hawaiians.

The perpetuation of cultural practices and experiences held in close attachment to wahi pana and the reoccurring elemental phenomena specific to places illustrate the unique relationships of stewardship and kinship by native Hawaiians and the natural environment.

As successive generations of Hawaiians empowered these islands and their sacred and storied places with their prayers, ceremonies and labor, they left their indelible and enduring mark on the landscape; both seen and unseen. Tangible and indefinable sources of mana or spiritual power and energy unique to different places are also a result of generations of relationships that were nurtured between mankind and these special wahi or storied places. These are the multi-faceted qualities that have elevated wahi pana to the realms of Hawaiian consciousness. The land, the sea, the atmosphere and all the natural resources and phenomena that were held within each of its boundaries were considered as akua, divine and sacred. All of it was godly. The proverb below, explains the concept that Hawaiians value of the reciprocal relationships of land, environment, and man.

E mālama pono i ka ʻāina; nānā mai ke ola.
Take good care of the land; it grants you life.

On the southwest side of Kauaʻi, **Waimea** is the name of a canyon, river, and *ahupuaʻa*. Waimea is literally translated as "reddish water" (*wai* – water, *mea* – reddish), and it is at Waimea where Captain Cook first landed in Hawaiʻi in 1778 (Pukui et al. 1974:225). The proposed project area, located south of the *ʻili* (small land division) Kīkīaola, extends across Waimea River into two *ahupuaʻa*: Waimea and Makaweli.

Waimea, of southwest Kauaʻi, is the name of the canyon, land division and *ahupuaʻa*. **Kekaha**, an *ʻili* within the *ahupuaʻa* of Waimea, is literally translated as "the place" (Pukui et al. 1974:106). **Mānā**, also in *ʻili* in the *ahupuaʻa* of Waimea, literally translates as "arid" (Pukui et al. 1974:144). Wichman describes Mānā, with its rich history, many stories, and legends with the following:

> [A] land of sand, marsh, and heat, intermingled fresh and salt water, a land of decorated gourds and of fishermen, the home of supernatural white and black dogs, a land where confused spirits of the newly dead wandered, was not at first a desirable place to live. [Wichman 1998:158–159]

Polihale, "house bosom" is referred to as a beach, *heiau* (pre-Christian place of worship), cliff, and spring (Soehren 2013:165; Wichman 1998:162). Wichman explains

that the spirits of the dead from all over Kaua'i came to Polihale and gathered in **Kā'ana**, then followed **Hikimoe**, a stream to the *heiau* to rest. The spirits would then climb to the top of the cliff and leap into the ocean and into Pō (Wichman 1998:163).

Pōki'i, the name of the ridge and *'ili* within Waimea Ahupua'a, literally translates as "youngest brother or sister" (Pukui et al. 1974:188). **Kaunalewa** is the land section and ridge in the Waimea District and literally translates as "swaying place" (Pukui et al. 1974:95), perhaps referring to a coconut grove that was once there.

The sacred *heiau* of **Makahoa** is located *mauka* of the current study area and literally translates as "friendly point" (Pukui et al. 1974:140). According to a community member, this *wahi pana* was used for astronomy purposes such as ceremonies during the solstices. The Makahoa Heiau was described as destroyed. Bennett describes the *heiau* as Makahoe, marking its location on Niu Ridge in Kaunalewa (Bennett 1931:102).

Kahelu Heiau was once located in the Mānā area and is literally translated as "the number" or "the scratch" (Pukui et al. 1974:64). Thrum describes the *heiau* as "A heiau of platform character at the base of the hill, about 6 feet high in front, not of large size" (Bennett 1931:102).

Ho'one'enu'u Heiau is located *mauka* of the current study area on Kaunalewa Ridge. According to Pukui and Elbert (1986), "*ho'one'e*" literally translates as "to move along" (Pukui and Elbert 1986:82) and "*nu'u*" translates as "high place" (Pukui and Elbert 1986:273). The literal translation for Ho'one'enu'u may therefore be "to move along to the high place."

Kapua'i refers to a point; it literally means "the bubbling & flowing out of fresh water" (Flores et al. 1993:II-11; Motteler 1974:29). Wichman (1998:160) cites this as "where the beach makes its turn on the way to Waimea."

Nohili is the name for a swamp, ditch, point, beach area, and sand dune (Flores et al. 1993:II-14, Motteler 1974:29). Wichman (1998:160) writes, "Behind Kapu'ai is a series of large sand dunes called Ke-one-kani-o-Nohili." Pukui also refers to Nohili: "Nohili is the old name, famed in song and chant, for Barking Sands, Mānā, Kaua'i" (Pukui 1983:190 #1774). She even refers to the beach at Nohili and the strange noises it makes (Pukui 1983:269 #2468). Motteler mentions Nohili pond (Motteler 1974:30).

Keanapuka refers to the "Beach area, Canoe Landing, Fishing Village. Lit, the passage [through the beach rock and reef to the ocean]" (Flores et al. 1993:II-12). Pukui cites the canoe landing in a *'ōlelo no'eau* (Hawaiian proverb) mentioned in a later paragraph (Pukui 1983:318–319 #2910).

Moelola refers to a locality and means striped tapa (Flores et al. 1993:II-14). There is

no other mention of this place.

Kuaki'i refers to a stone *ki'i* (image) and a beach, meaning "image [of the] back, referring to the image of a person's side-view on a stone that is submerged in the ocean just off the reef areaat this site" (Flores et al. 1993:II-13). An oral tale concerning this name was given in an interview done by Flores et al.:

> There were a few individuals that were going from Mānā to the island of Ni'ihau in an outrigger canoe. Therefore,—in order to protect themselves from the spirits on that island—the men put a stone image carved in the shape of a person in the front of their canoe. If the spirits should attack them when they landed on Ni'ihau, the spirits would bite into this stone image and break their teeth. However, after launching their canoe from the shores of Kaua'i—their canoe overturned a short distance from the beach near the off-shore surf. After being able to only retrieve one half of this stone image, they continued on their journey to Ni'ihau. It is said that the other half is still submerged off-shore and can be seen even until this day. The shape of this stone is said to resemble the side-profile of a person's back and leg. [Flores et al. 1993:IV-66–67]

Palaiholani is a beach area, a boat landing, and a point (Flores et al. 1993:II-14). Flores et al. 1993 quote some of the elders of the area about this place. Some of the elders recall boats being launched from here (Flores et al. 1993:V-71).

Travelling from Mānā to the Nā Pali area was usually done on the ocean where the canoes and boats could be launched from beaches with unobstructed reefs and passageways such as at Palaiholani, Keanapuka, Po'oahonu, Keawanai'a, and Polihale. [Fores et al. 1993:VI–I]

Kohomahana is a beach area (Flores et al. 1993:II-12). An interview with an elder recalls Kohomahana:

> The corral used to be over here [*mauka* side of road across from the Japanese cemetery at Pacific Missle Range Facility (PMRF)]. And used to get a fence running straight. That's Kohomahana [toward the beach] right over there where that stuff stay. That's Kohomahana fence. When we used to come to go that side [toward Polihale], this was the best way to go—no more mud. This place when rain, you never can make it to go Polihale. Never. You got to come inside here and then you stay on that sand to go Polihale. This place [was] all swamp. But plenty fish those days [in the swamp]! [Flores et al. 1993:V-59]

Kawai'ele is a pond (Motteler 1974:30). It is also referred to as a beach area point, fishing grounds, ditch, and pumping station (Flores et al. 1993:II-12).

Waiokapua, also known as Major's Bay or Waiokapua'a, is a beach and bay area as well as a point meaning water of the pig (Flores et al. 1993:II-17; Motteler 1974:29).

Waiolono is a beach area and point, meaning water of Lono (Flores et al. 1993:II-17).

Kokole refers to a point and lighthouse, meaning any food crop stunted by weeds or drought (Flores et al. 1993:II-12).

Waimea Ahupua'a is composed of several regions that are very different in climate and terrain. These differences essentially dictated the kinds of resources that were available, and hence had much to do with the way the *ahupua'a* was settled by prehistoric Hawaiians. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397).

In contrast, Kekaha and other settlements on the Mānā plain suffered from a definite lack of fresh surface water. The *mauka* gulches had only intermittent stream flows, and water sources were primarily springs along the base of the cliffs. For this reason, this portion of the report will focus mainly on the specific area of Kekaha and not attempt to cover the entire *ahupua'a* of Waimea.

Although the Boundary Commission officially surveyed and set the bounds of the *ahupua'a* of Waimea in 1875, as generally described previously, there are a few sources which contradict this, maintaining that Kekaha was a separate *ahupua'a*. Kīkīaola was a smaller land division (*'ili*) sometimes regarded as a subset of Kekaha and/or Waimea. Our earliest (1885) identified detailed map of the project area vicinity indicates that a 565.56-acre coastal portion of the 1,123- acre Kīkīaola 'Ili was awarded as Grant 532 to George B. Rowell. Significant habitation activity is indicated approximately 500 m to the east of the project area (toward Waimea Town), but no development is shown in the immediate vicinity of the project area. Testimony in the mid-1800s that supports the native land claim of R. Naumu refers to "Kekaha ahupua'a" in describing the properties (Native Testimony, n.d.:11:15).

Valdemar Knudsen, an early haole (non-native) settler in the area, also refers to the "ahupua'a of Ketaha [sic]" in a letter to John Dominis, Commissioner of Crown Lands (Knudsen 1866:3). A late nineteenth century map (Imlay 1891) shows a pie-shaped land section labeled "Kekaha," indicated by a dotted line boundary that encompasses the area from the top of Waiaka ridge to the shoreline.
Handy and Handy (1972:427) imply that Kekaha, as well as Polihale and Mānā, were

individual ahupua'a of Waimea, though the reasoning for this is not given. However, the native land claim of Elia Lihau for the land of Wai'awa, just west of Kekaha, concedes that this area was indeed part of the ahupua'a of Waimea (Native Register 1848:9:244).

Admittedly, it is unusual for a single ahupua'a to occupy such a large percentage of the land area of a major Hawaiian island. It could easily be argued that the comparatively low agricultural productivity of the Mānā plain, due to the scarcity of water, is the basis for its inclusion in Waimea. However, the same cannot be said for the well-watered valleys of Nu'alolo and Miloli'i, both of which could easily support typical and self-contained valley settlements of perhaps small but stable populations.

It could also be speculated that Waimea, being one of the two areas of the island that traditionally was the domain of the high chiefs (the other being Wailua), commanded the resources of the large upland region of Kōke'e and Alaka'i, among them the large *koa* trees out of which the hulls of canoes were hewn, and forest birds which supplied the feathers for cloaks, capes, and other items associated with the *ali'i* (chiefly class). It is quite possible that at one time Waimea was divided into several smaller *ahupua'a*, perhaps before the Māhele, or even during the pre- Contact period.

Pukui et al. (1974:106) give the literal translation of Kekaha as "the place." However, Handy and Handy's (1972:54) definition gives more insight into the description of the place name: "Kaha was a special term applied to areas facing the shore but not favorable for planting. Kekaha in Kona, Hawaii, was one so named, and Kekaha on Kauai another."

Kelly (1971:2) describes Kekaha on the island of Hawai'i as *'āina malo'o* or "dry land," and indeed the same could be said of Kekaha, Kaua'i, if one considered the area's low annual rainfall and lack of permanent streams. Kekaha, however, was neither void of water nor of a pre-Contact population that made use of the local resources.

Kekaha *Ahupua'ā*, according to the Ulukau database (www.ulukau.com), is "One of 9 Crown la ds, formerly an *ah* the *'okana* of Waimea. Not named in Mahele Book" (Pukui et. al. 1974, Kelly (1971:2).

The name, "Kekaha," can be interpreted to mean "dry land" or an area near the shore that is not favorable for planting. The Kekaha region of Kaua`i has low annual rainfall and no permanent streams. Despite the low rainfall, early visitors from Oahu in the late 1700s indicate that the Kekaha area was well-populated. Inhabitants manufactured cloth from *wauke* (Mulberry) and grew taro and sugarcane in the swampy ground. In the mid-1800s, Land Commission Awards (LCA) requests show

that there was both dry land and irrigated agriculture occurring in the region along with salt beds and at least one fishery. Valdemar Knudsen settled in Wai'awa in 1854. His agricultural and pastoral lands covered much of the region and eventually he had control over the entire district. Knudsen made use of local labor by requiring residents to work for him three days each month as rental payment.

A Chinese immigrant, Leong Pah On, began growing rice commercially in the 1860s in the drained swamplands of the area, eventually cultivating 600 acres throughout Mānā, Kekaha, and Waimea for rice production. Pah On imported laborers from China to work the rice fields, presumably creating a significant Chinese population in the area. Rice cultivation continued until 1922 when the Kekaha Sugar Co. assumed ownership of the lands. The Kekaha Sugar mill closed in 2000 and the DLNR managed these lands until ADC was awarded them by the state in 2003.

According to Ms. Christina Faye, Kekaha did not exist prior to the plantation which was established prior to the *mahele* (Pers. Comm.). As stated above, Pukui et al. (1974:106) provides the literal translation of Kekaha (Ke-kaha) as "the place" and, according to Ms. Faye, "the place" refers to the location of the sugar mill. According to Faye, the name Kekaha was used for the region because it was "the place" where the plantation was located. All mention of a village at Kekaha dates to after the establishment of the plantation, except for the village of "A-Tappa" in the 1798 Beresford account.

MO`OLELO: STORIED ORIGINS & TRADITIONAL PLACES

Mo`o Ōlelo is the succession of talk; or the continuation and perpetuation of oral histories and traditions that were passed on in story and chant forms. It is from this that the word mo`olelo is derived - stories, tales, myths, legends, and chronicles; records of information that was storied in the memories of Hawai`i's ancient people. Another term that is used is kā`ao - oral traditions and myths that represent the cultural truths, wisdom, and experiences of kūpuna.

Throughout the Ka Paakai analysis, examples of traditional Hawaiian mo`olelo are presented to link the reader with traditional places, beliefs and practices associated with the ancestral worldview of Hawai`i's indigenous Hawaiian people. Mo`olelo and kā`ao are not viewed as fanciful fairy tales or fictional stories woven to entertain. Laden with skillful use of metaphors and poetic expressions, they are invaluable sources of information that have preserved a sense of consciousness and inner connection of the *kānaka `ōiwi* with his multidimensional world.

It is estimated that the Hawaiian island chain was first settled upon more than 2000 years ago by Polynesians who arrived from Nukuhiwa (also pronounced

Nu`uhiwa) or the Marquesas Islands. Early migration chants and oral traditions provide insight to the discovery and settling upon these islands. One story tells of a man named Hawai`iloa who is credited with first discovering Hawai`i when he set out from a land called, "Ka `āina kai melemele a Kāne, *(The land of the yellow sea of Kāne)* on a long fishing expedition. He sails back to his homeland and returns with his wife and followers, including eight navigators. Because his wife is the only female on this return journey, it is said that all Hawaiians are descended from him. The largest island in the chain - Hawai`i, is named in his honor, while the additional islands of Kaua`i, Maui and O`ahu are named after his children.

From Hawai`iloa, the heritage of long, distant voyaging, non-instrument navigation and way finding is established using phenomenal skills of keen observation and comprehension of stars and constellations in the heavens. He is the primal ancestor of the Hawaiian people who also introduces the astronomical wisdom of the atmosphere and its phenomena, including the weather and climate. He is also an expert on the ancient sciences associated with the physical, geological and biological features of the oceans.

From the union of Papahānaumoku and Wākea - preeminent mākua or parents of the Hawaiian universe is born Hāloa...our very connection to kalo, the sacred staple that has fed and nourished the Hawaiian people since time immemorial.

The genealogical ko`ihonua of Hawai`i's ancestral Earth Mother and Sky Father bring forth the paradigm that bind generations of Native Hawaiian families to this storied progenitor. Through the traditions of Papa and Wākea, the energy of the Hawaiian family system that includes both nuclear and extended `ohana is born. From this legacy comes the skills and intelligence of the mahi`ai - the native planter that tends to Hāloa, the taro plant and elder brother that continues to sustain families today. Indigenous agriculture and cultivation practices are dependent on acquiring intimate knowledge of water cycles, moon phases and weather phenomena. There is a constant nurturing of familial relationships to land, environment, and elements of the Hawaiian universe.

The epic saga of Pelehonuamea describes in detail the journey of the fire clan aboard the mythical wa`a (canoe) named Honuaiākea. Their quest is to search for a new fire source and a home from which to generate sources of life. It too, is a story of genealogy and migration, establishing cyclical movements of life upon these lands. The sun is a fundamental and reoccurring theme of substance that is essential to physical, spiritual, and intellectual wellbeing.

The chants of the mo`olelo of Pele and Hi`iaka provide detailed accounts that speak to the importance of relationships that the indigenous Hawaiian hold in high esteem with `ohana or familial relationships; not just with mankind, but with their environment as well as with that of the atmosphere and the elements. This

is a profound expression of connection that taps into the inner sources of life and healing. Through this ancient oral tradition, we are provided with formulas and procedures of Hawaiian protocols and ceremonies that are still applicable for the native Hawaiian in the 21st century.

These are just a few examples of the incalculable volumes of "unwritten literature" - primal sources of Hawaiian chants and the impressive accounts within them chronicle centuries of Hawai`i's fascinating history and culture. Embedded in the narratives of these ancient traditions are valuable details that provide us with a deeper understanding and a closer look at the worldview, life ways and experiences of Hawai`i's people prior to the turbulent changes that unfolded in post-contact times.

The significance and merit of mo`o `ōlelo - what an ingenious tradition of transmitting wisdom, knowledge, history and more through the succession of the voice conveyed through the telling of stories and the perpetuation of the art form of chants and the oral traditions that inspire the essence of indigenous Hawaiian cultural practices and beliefs.

Ancient Chants that Extol the Land & Environment as Relations

References and examples of chants from Hawai`i's ancient repository of oral and literary traditions have been included in this Ka Pa`akai analysis to elaborate upon the traditional beliefs and cultural practices of native Hawaiians. These practices continue to this day. Mele oli, mele pule, mele hula and mo`olelo provide authentic examples of this continuing practices. They also speak to the relationships held between *nā kānaka* - mankind, their environment, and their gods.

The ancients viewed facets of nature such as the heavens and earth as a godly and divine pairing of male and female procreative energies. Wākea - the broad, wide expanse of the atmosphere is male. The moisture that gathers and collects in the clouds and sky produces rain, which is also a male force. The earth is female, and is known to Hawaiians as Papahānaumoku, or literally, *Papa that gives birth to islands.*

Adapted from Hawaiian Antiquities by David Malo (p.243) the mele ko`ihonua or genealogical chant on the following page speaks to the birthing of the Hawaiian Islands. Wākea - the male, is embodied in the expanse of the atmosphere and the heavens. Papahānaumoku - the female is Papa who gives birth (hānau) to islands. This ancient chant was revived into modern day cultural practice as a means of expressing native Hawaiians' familial relationship with the natural world and the `āina or land. Papa and Wākea - Sky Father and Earth Mother, along with their offspring, Ho`ohōkūlani are the divine characters and procreative

forces that are also revered for the gift and traditions of the sacred kalo or taro plant. They are viewed and respected as ancestral progenitors of native Hawaiians.

`O Wākea noho ia Papahānaumoku

Hānau 'o Hawai'i, he moku Hānau
'o Maui, he moku

Ho'i hou 'o Wākea noho ia Ho'ohōkūkalani Hānau

'o Moloka'i, he moku
Hānau 'o Lāna'i, Ka 'ula, he moku

Līlī `ōpū punalua 'o Papa iā Ho'ohōkūlani ho'i hou
'o Papa noho iā Wākea

Hānau 'o O'ahu, he moku Hānau
'o Kaua'i, he moku Hānau 'o
Ni'ihau, he moku He 'ula a'o
Kaho'olawe!

Translation:

Wākea lived with Papa, begetter of islands

Begotten was Hawai'i, an island
Begotten was Maui, an island

Wakea made a new departure
And lived with Ho'ohōkūkalani

Begotten was Moloka'i, an island
Begotten was Lāna'i, an island

The womb of Papa became jealous at its partnership with
Ho'ohōkūkalani Papa returned and lived with Wākea

Begotten was O'ahu, an island Begotten
was Kaua'i, an island Begotten was
Ni'ihau, an island A red rock was
Kaho'olawe!

The significance and understanding of *mana* as physical, mental, and spiritual nourishment is preeminent in the customs of old Hawai`i. It is essential to the health and wellbeing of the family system and community.

Every fragment of Hawaiian history and culture was documented to memory and orally transmitted from one generation to the next via chants. The births of gods, mankind, celebrated chiefs, and more were often the subjects of lengthy, detailed chants.

Amongst them were *mele mo`okū`auhau* or genealogy chants, which are still considered to be one of the most prized family possessions of the native Hawaiian people. Kūpuna or elders were careful to designate individuals in the following generations of their families to be groomed as stewards of the `ohana's genealogy. All knowledge was committed to memory, which included the names, unions and offspring in the family's ancestors. Mo`okū`auhau hold us accountable to our ancestors. It strengthens our cultural identity and inspires the mana of our being.

However, mo`okū`auhau were not limited to families of humans only. Literary accounts of mo`okū`auhau also included family lines of many other nature forms as well. This included mountains, sharks, water sources and elements of the natural world.

HAWAIIAN RELIGIOUS & CULTURAL PRACTICES, GATHERING RIGHTS IN THE WAIMEA AHUPUA`A

Field investigations of the project area resulted in no evidence or findings of significant plants or natural resources that are associated with Hawaiian gathering rights for subsistence, cultural or religious practices. The project area has non-native vegetation.

Past history of land use has easily obliterated any cultural or religious sites that may have previously existed in the area.

Perhaps it is appropriate to study the origin of the Hawaiian language as it relates to place names. Because of the obeisance that these ancient people had for the awesome, primeval forces of nature, we are the beneficiaries of a fabulous collection of beautiful and imaginative names wherever we go in modern Hawaii. Through the modernization of these islands, some of the lore of this language escapes our grasp because the origins have faded into antiquity.

An exhaustive search of Hawaiian legends and myths in print produced some references to Waimea or other places in the *ahupua`a*. There are no surviving legends or traditional accounts specific to the project parcel, however, Kīkīaola is mentioned in one Hawaiian legend regarding the *heiau* (pre-Christian place of worship) called Howea in Waiawa.

Howea was the principal heiau of that land. Mr. Knudsen now owns the land that the heiau stood on. This is an ancient heiau. I do not know which chief built it but guess it may have been either Kaeo or his grandfather. I do not know the name of the priests who officiated in it. [HEN VI, Hms 43, informant Kanakahelela 1885]

[...] these are the things of which this heiau was well known in the olden days. There was a man named Ola whose mother was Kahapula. At one time, long ago, there was a battle fought between those of Waimea and those of Kekaha. In this battle, Ola, one of Waimea's warriors was taken captive by (the warrior of) Kekaha and was taken to the heiau with the idea that he was to be killed next day. But on the night before he was to be sacrificed, Kahapula, his mother, heard of it while she was in the uplands of Mahaikona, Makaweli. She took two kukui nuts and juggled with them as she went straight down to Waiawa where the heiau stood. Her son was held captive within. As his mother went along casting up her kukui nuts, she chanted a song as was customary in the olden days. This game was called kimo puili and this was the chant she used [...]

Part 1. Two days they came in,

Two days remained away, etc., etc.

Part II. That is one; that is two;

That is three; that is four;

Neither side has won the game

They clashed, clashed (till the noise) reached the skies

The fifth was indistinctly heard

The sixth led up to the seventh

The eighth is for Kamalalawalu (a chief of Maui)

The ninth ran away

ran crookedly into a circle

I have completed a fiery circle, once.

[...] thus went the old woman till she passed the waters of Waimea, and on to the plains of Kekaha till she reached the plain of Waiawa. She went up outside of the heiau. The kukui nuts that she juggled with did

not fall out of her hand once so she knew that this was a good omen and she would have no trouble in going into the heiau. She felt encouraged and went in to get her son. When she entered she saw that everyone had fallen asleep and only her son, who was bound with ropes, was awake. She untied the ropes to free him and together they went out and ran away to hide themselves from the guards. When the guards awoke, they found their prisoner gone and they were disappointed indeed.

The mother and son went home in peace. The son made a walled ditch for the purpose of raising water to a higher elevation. It was a good deed for the water still flows in that ditch to this day. That place is called Kīkīaola . [HEN #15]

Wichman (2003) explains some points of a different version of this legend, however, he does not mention Kekaha. In his version, the heirs of a chief of Kaua'i named Kū'alu-nui-paukū-mokumoku kept dying, and the chief suspected that his *kahuna* (priest), who wished to return to the mythical homeland of the Hawaiian people, was responsible. To secure an heir, he married a woman named Kahāpula, who became pregnant. He then accused his right-hand man Pi'i of being the father and banished both to a remote valley in Waimea canyon. He gave Kahāpula a red *malo* (loincloth) and a *lei 'ōpu'u* (whale tooth pendant on a cord of human hair), and told her to give them to his son, who would present them as proof of his identity to his father when he reached adulthood. He also told her to plant a *kukui* nut near her new home. Kahāpula soon gave birth to a son, which along with the *kukui* tree, soon grew.

When the chief judged that his son was old enough to soon come to him, he ordered the construction of a *heiau* in Wai'awa Valley. He also ordered that a fish trap be built, so that enough food would be available for a celebration. The mischievous son of Kahāpula took some of the fish from this fish trap, but since the fish trap had a *kapu* (tabu) set on it, he was apprehended, and it was decided that he would be the human sacrifice to dedicate the new *heiau*. He was held prisoner at the new *heiau* in Wai'awa.

His mother, Kahāpula consulted Pi'i, who told her that she must pick six *kukui* nuts from the tree near the house and juggle the nuts as she walked to Wai'awa. He told her if she dropped a nut, her son would die, but if she caught them all, then his life would be spared. The road to Wai'awa was rocky and difficult, but the inhabitants went before Kahāpula, clearing her way by moving rocks and branches. She reached Wai'awa, released her son, and clothed him in the red *malo* and *lei 'opu'u*. When Kū'alu-nui-paukū-mokumoku and his *kahuna* came to the *heiau*, the boy proclaimed that he was the chief's son. The *kahuna*, in anger, threw a spear at the boy, who casually tossed it aside. Since the *kahuna*

had defiled the temple, he stabbed himself, and instead became the sacrifice for the *heiau*. The chief named his son "Ola", meaning "life," and named the *heiau* "Hau-ola", meaning "life offering" or "dew of life" (Wichman 2003:7-9).

A few *'ili* on Kaua'i had an associated wind and In the Legend of Kūapāka`a, the hero who controls the wind gourd of La`amaomao chants the winds of Kaua`i. For the project area, the winds are as follows:

> The aikoo is of Nualolo *He aikoo ko Nualolo,*
> The kuehukai is of Milolii, *He kuehu kai ko Milolii,*
> The puukapele is of Mana, *He puukapele ko Mana,*
> The moeahua is of Kekaha, *He moeahua ko Kekaha,*
> The waipaoa is of Waimea, *He waipaoa ko Waimea,*
> [The kapaahoa is of Kahana], *He kapaahoa ko Kahana,*
> The makaupili is of Peapea, *He makaupili ko Peapea,*
> The aoaoa is of Hanapepe, *He aoaoa ko Hanapepe,*
> The naulu is of Wahiawa, *He naulu ko Wahiawa,*
> The kuuanu is of Kalaleo [Kalāheo], *He kuuuanu ko Kalāheo,*
> [Fornander 1918:5:94–97]

The chief Ola is associated with several other sites in Waimea Ahupua'a, including Hau'ola Heiau (built by his father near Kekaha), Ahululu Heiau at the foot of Pu'ukapele Crater, and Kīpapa-a-Ola, a trail paved with sticks that crossed the Alaka'i Swamp and connected Kōke'e with Wainiha Valley on the island's north shore (Beckwith 1970:328–229). Any attempt to date these sites or the Menehune Ditch even roughly through genealogical means would probably be fruitless. Although Ola is a very popular *ali'i* in legends, his name cannot be found in any surviving Kaua'i genealogy (Luomala 1955:132).

When the Hawaiian goddess, Pele, traveled to Kaua'i, she recited the winds of Kaua'i to her lover Lohi'au and his people. Several place names, generally names of *'ili* and other place names within the *ahupua'a* of Waimea, Makaweli, Hanapēpē, Wahiawa, and Kalāheo are found.

The winds of Kaua'i blow, urged on...	*A pa a noua ka makani o Kaua'i...*
Kaua'i is what I see and know	*'O Kaua'i ka'u i 'ike*
A land where the winds assemble...	*He 'āina na ka makani i ho'olulu ai...*
Pōki'i has a Lamalamapū'ilikai wind...	*He Lamalamapū'ilikai ko Pōki'i...*
'Āina'ike has a Mau'umae wind...	*He Mau'umae ko 'Āina'ike...*
Kapa'eli has a Holonaku wind	*He Holonaku ko Kapa'eli*

Kekaha has a Moeahua wind — *He Moeahua ko Kekaha*

Pu'upu'upa'akai has a Moehau wind — *He Moehau ko Pu'upu'upa'akai*

Pāwehe has an Ulumano wind — *He Ulumano ko Pāwehe*

Pa'ena'ena has a Lapawai wind — *He Lapawai ko Pa'ena'ena*

Waimea has a Ho'okomowaipao wind — *He Ho'okomowaipao ko Waimea*

Kīkīlaola has a Kiuwai'ula wind — *He Kiuwai'ula ko Kīkīlaola*

Koai'e has a Wai'alae wind — *He Wai'alae ko Koai'e*

Mokihana has a Kumulipoho'ouluali'i wind — *He Kumulipoho'ouluali'i ko Mokihana...*

Waiahulu has a Waikea wind — *He Waikea ko Waiahulu*

Makaweli has a Pūnohu'ula wind... — *He Pūnohu'ula ko Makaweli...*

Kahana has a Kapāhoa wind — *He Kapāhoa ko Kahana*

Pe'ape'a has a Pilialoha wind — *He Pilialoha ko Pe'ape'a*

Kekupua has a Punohu'ula wind — *He Pūnohu'ula ko Kekupua*

Mahinauli has a Mo'oholoawāwa wind — *He Mo'oholoawāwa ko Mahinauli*

Pu'uopāpa'i has a Kula'imano wind — *He Kula'imano ko Pu'uopāpa'i*

Manuahi has a Hulikīlele wind — *He Hulikīlele ko Manuahi*

Ka'awanui has an Uhao'ōwili wind — *He Uhao'ōwili ko Ka'awanui*

Kawaiki has a Palai wind — *He Palai ko Kawaiki*

Mokupapa has an 'Ololīawāwaholo makani wind — *He 'Ololīawāwaholomakani ko Mokupapa*

Hanapēpē has an 'Aoa wind... — *He 'Aoa ko Hanapēpē*

Ukula has a Wai'ono wind — *He Wai'ono ko Ukula*

Kāne'ōhi'a has a Pu'ukapu wind — *He Pu'ukapu ko Kāne'ōhi'a*

Kalae has a Holoholokula wind — *He Holoholokula ko Kalae*

Wahiawa has an Unulau wind... — *He Unulau ko Wahiawa...*

Kalāheo has a Kiuanu wind... — *He Kiuanu ko Kalāheo...*

[Ho'oulumāhiehie 2008a:16–17; Ho'oulumāhiehie 2008b:16–17]

Pele and Her Sisters

There are many legends of the Hawaiian volcano goddess Pele. Pele and her sisters left their ancestral home of Hawaiki (the Marquesan Islands) and journeyed to Hawai'i. On Kaua'i, Pele's siblings, her sisters Kapo'ulakina'u (Kapo), a brother Kahuilaokalani (Kahuila), and the youngest sister, Kapokūlanimoeha'unaiki (Moeha'una) landed on the shores of Mānā, an *'ili* of the western section of Waimea. A handsome chief, Limaloa, with a feather cape greeted the travelers. Limaloa fell in love with Moeha'una and begged her to stay with him in Mānā as the other siblings traveled onward east toward Waimea village. The group stopped on a ridge, missing their sister, and looked back toward Mānā. To commemorate the spot, Kahuila suggested they name the ridge Pōki'ikauna, meaning "the yearning for the little sister." This may be a reference to the ridge called Pōki'i (Wichman 1991:32–38).

When Pele's beloved sister, Hi'iaka, and her companions were sailing in a canoe past the shore of Waimea, she called the following chant:

'O a'u mau wai aloha 'elua lā	My two beloved waters
'O ka wai 'ula lā a me ka wai kea	Water running red and water running white
Ke wilia maila e ka makani	Swirled together by the wind
'O a'u mau makani aloha i ka pali o Kīkīaola	My beloved winds on the cliffs of Kīkīaola
'O Kaho'okomowaipao me Kiuwai'ula	The Kaho'okomowaipao and the Kiuwai'ula
E keuhu nei i ke one kahakai lā	Stirring up the sand there at the shore
Aloha wale Papa'ena'ena lā	Beloved indeed in Papa'ena'ena
I ka mālie a'e ho'i ē.	There beyond, in the calm.

[Hoomaliemahie 2008a:252, 2008b:236]

This chant also refers to Waimea and the land of "two beloved waters." An *'ōlelo no'eau*, a Hawaiian proverb, explains this reference.

Ka wai 'ula 'ilahi of Waimea

The red sandalwood water of Waimea.

This expression is sometimes used in old chants of Waimea, Kaua'i. After a storm Waimea Stream is said to run red. Where it meets Makaweli Stream to form Waimea River, the water is sometimes red on one side and clear on the other. The red side is called *wai'ula'iliahi*. [Pukui 1983:179 #1662]

Hawaiians gave names to the winds, rains, surf, and seas in each area. The wind of Waimea was *Waipao*, which means "wind-scooped" (Kent 1986:443). A storm in the northeast portion ofWaimea was called *'E'elokoa* (meaning "stormy") (Pukui and Elbert 1986:37). A chilly rain andwind of Waimea was called *Kīpu'upu'u* and was used as a metaphor in some chants as a buffeting or ravaged feeling, as follows:

> *Hole* ***Wai-mea*** *i ke ahe a ka makani, hao mai nā 'ale a ke Kīpu'upu'u,*
>
> **Wai-mea** is rasped by the blowing of the wind, billows of the Kīpu'upu'u wind ravage.
>
> *Kū i ka Kīpu'upu'u,* buffeted by the Kīpu'upu'u [of hurt feelings].
>
> [Pukui and Elbert 1986:155]

Possibly the first descriptions by Westerners of a surfboard, used as a paddleboard in this case, were made either off the Waimea shore of Kaua'i or off the island of Ni'ihau. Charles Clerke, an officer sailing with Captain Cook in 1778, reported seeing the following:

> a thin piece of Board about 2 feet broad & 6 or 8 long, exactly in the Shape of one of our bone paper cutters; upon this they get astride with their legs, then laying their breast along upon it, they paddle with their Hands and steer with their feet, and gain such Way thro' the Water that they would fairly go round the best going Boats we had in the two Ships, in spight [sic] of every Exertion of the Crew, in the space of a very few minutes. [Beaglehole 1974:675]

William Ellis, the surgeon's mate of the expedition, also saw surfboards, this time definitely at Waimea, Kaua'i. He described these as "very light flat pieces of boards, which we called sharkboards, from the similitude the anterior part bore to the head of that fish" (Ellis 1783:179).

Mary Kawena Pukui of the Bishop Museum made a list of surfing spots mentioned in Hawaiian oral traditions. For Waimea, she found references for the surfs *Kaua* (meaning "war"), *Kualua* ("twice"), and *Po'o* ("head") (Finney and Houston 1996:31). John Papa 'I'ī, the early Hawaiian historian, had a similar list of Kaua'i surfing spots:

> The surf of Kamakaiwa is in Kapaa, Kauai, and so is the surf of Kaohala and one that runs to the sand of Wailua. Others are the surfs of Poo, Koalua, and the one that runs to the mouth of the sand-bottomed stream of Waimea, and the surfs of Manalau is in Waioli. ['Ī'ī 1959:135]

The Menehune and Kīkīaola Ditch

Hawaiian legends concerning Waimea focus on the engineering feats that made the agricultural abundance of the *ahupua'a* possible. Especially noteworthy are the legends narrating the origins of the cut stone-lined *'auwai* (irrigation ditch) called Kīkīaola, popularly known as the "Menehune Ditch." On a portion of the Thrum and Evans map, the *'auwai* is also labeled Pe'ekaua'i, meaning "hidden Kauai." Wichman (1998:9) says the original settlers named the farmland in this area Pe'e Kaua'i after the name of their ancient homeland. In the Māhele land records, Pe'ekaua'i is listed as the name of an *'ili* near the Waimea coast and along the west bank of the Waimea River. The Pe'ekaua'i *'auwai* watered the plain west of the Waimea river, and its most notable section transported the water along the face of a cliff, some 20 ft above the river, by means of an aqueduct constructed of intricately fitted, cut and dressed stones (Bennett 1931:23, 105–107).

Martha Beckwith (1970:329–330) associates the name Kīkīaola (meaning, "container acquired by 'Ola"; Pukui et al. 1974:110) with three versions of the legend of Ola, an *ali'i* (chief) of Waimea. In one version (Rice 1923:45), Ola, "desiring to bring water to the taro patches of the Waimea flats . . . summon[s] the Menehune people [who] each bring a stone and the watercourse (Kiki-a-Ola) is laid in a single night." In another version (Thrum 1908:110–111), Kīkīaola is not the name of the watercourse itself: "Pi is the chief of Waimea who gets the Menehune to construct for him a dam across the Waimea river and a watercourse leading from it to a place above Kiki-a-ola."

Thrum says of the *menehune*,

> Their dwelling place was in the mountains, above Waimea, near, perhaps, to a place known as Waineki. The watercourse of Kīkīaola , above the Waimea river, was built by this race of Menehunes The chief that encouraged this race of Menehunes to the task rejoiced greatly at hearing of and seeing the completion of the watercourse of Kīkīaola , to benefit the laboring people residing at *Paliuli*, and the water flowing down its course to enable the taro to grow thriftily for their sustenance. [Thrum 1923:214, 216]

Thus, Thrum identifies the land east and adjacent to the Kīkīaola Ditch as the land (*'ili*) of Pali'uli, a Hawaiian word for "green cliff." In the third version (Luomala 1951:23), "Kiki-a-ola is the chief of Waimea" who "seems to be the sacrifice to be offered" at the completion of the dam and watercourse of Waimea by the *menehune*.

Menehune, a Tahitian term meaning "commoner," came to refer to a mythical race of small industrious people who were alleged to have built many of the fishponds, irrigation systems, and *heiau* on Kaua'i (Mills 1996:63). The *menehune* overseer of the Pe'ekaua'i *'auwai* project was named Papa'ena'ena, which according to an 1891

map, is the place name of the Waimea shore near the old wharf. Papa'ena'ena means "red, hot, lowland," according to information on place names collected by Francis Gay in 1873 (Gay 1873:33). In Rice's version, Papa'ena'ena is the name of a stone on the Waimea shore. "At one time the Menehune hollowed out a huge stone, and carried it to Waimea, where the head Menehune fisherman used it as a house.

It was called Papa'ena'ena, from his name. He sat in this house and watched his men fish" (Rice 1923:36). Wichman (1998:8) also states this is the stone Papa'ena'ena sat on to direct his *menehune* workers when they built the irrigation ditch, Kīkīaola, which means "container acquired by Ola." The chief Ola is associated with several other sites in Waimea Ahupua'a, including Hau'ola Heiau (built by his father near Kekaha), Ahululu Heiau at the foot of Pu'ukapele Crater, and Kīpapa-a-Ola, a trail paved with sticks that crossed the Alaka'i Swamp and connected Kōke'e with Wainiha Valley on the island's north shore (Beckwith 1970:328–229). Any attempt to date these sites or the Menehune Ditch even roughly through genealogical means would probably be fruitless. Although Ola is a very popular *ali'i* in legends, his name cannot be found in any surviving Kaua'i genealogy (Luomala 1955:132).

LAND COMMISSION AWARD CLAIMS KEKAHA AHUPUA`A AND ASSOCIATED KNOWLEDGE

Land Commission Awards and Mahele Awards are Sources of Title adjudicated by the Land Commissioners to claimants. Mahele Awards are Sources of Title specifically issued to those chiefs who received their lands from the king but failed to present their claims before the Land Commission and thus received titles to their lands from the Minister of the Interior. Kamehameha Deeds are Sources of Title to Crown Lands that Kamehameha III, IV and V conveyed. Minister of Interior Deeds were Sources of Titles that conveyed lands from the government to private individuals by the Minister of the Interior during the Kingdom of the Monarchy. Patents - both Royal and Land - were issued on the awards as evidence that the Government's right to commutation therein was satisfied. An award together with a patent perfected the awardee's title to the property. Grants by Royal Patent and Land Patent were Sources of Title deriving from the sales of government lands. The term "Royal" indicates that the document was issued during the Hawaiian Monarchy (up to 1893). The Land Patent or Land Patent Grant thus means the document was issued after the monarchy.

The Kuleana Act of 1850 allowed maka'āinana (Native Hawaiian commoners), in principle, to own land parcels at which they were currently and actively cultivating and/or residing.

The Boundary Commission officially surveyed and set the bounds of the *ahupua`a* of Waimea in 1875; Native claims for land made to the Board of Commissioners to Quiet Land titles in 1848 also shed some light on to settlement and land use in the area during the early historic period.

Traditional Land Use

Much of what is known of traditional land use comes from ethnohistorical accounts of visitors to Waimea beginning with Captain James Cook. Archaeological evidence is limited due to historic and modern activities, such as commercial sugarcane cultivation and development of Waimea Town (Mills 2005:49). Of the few radiocarbon dates for this portion of Kona District, the earliest was yielded from Waimea Town and ranges from A.D. 1000-1275 (Hammatt and Ida 1993 in O'Hare et al. 2015:51). The following section presents several descriptions of Waimea during the late eighteenth and early nineteenth centuries.

Captain James Cook anchored in Waimea Bay on January 20, 1778. After a visit to land, Cook and Lieutenant James King recorded land descriptions in their log. King noted roughly 60 grass thatched houses west of the Waimea River along the coast and around 40 more inland (Cook 1813:205; Handy and Handy 1972:408). It was estimated that more than 2,000 individuals greeted their arrival (Rickman 1781:217). Cook wrote of the *lo'i*:

> The greatest part of the ground was quite flat, with ditches full of water intersecting different parts, and roads that seemed artificially raised to some height. The interspaces were, in general, planted with taro, which grows here with great strength, as the fields are sunk below the common level, so as to contain the water necessary to nourish the roots. This water probably comes from the same source, which supplies the large pool from which we filled our casks [Cook 1813:187].

According to Hawaiian tradition, Cook's landing site was seaward of the native village on a beach of fine black sand called Luhi or Keoneluhi (Joerger and Streck 1979:8). Luhi means "tedious or tired," as in the saying, *Ho'i i ke one o Luhi* ("Go back to Tired Beach"). This saying refers to one returning to an unpleasant task (Pukui et al. 1974:135). A *kama'āina* of Waimea, quoting her father, relates that the beach was named this because warriors used the area for training, running on the sand to strengthen their legs, which made them very tired and weary (Joerger and Streck 1979:8). The *kama'āina* reported the ancient landing site of Waimea was midway between the river mouth and the pier; this may also have been the landing area for Cook's men.

The first contact began badly. A small landing party was sent in a small boat to

reconnoiter the anchorage. As it landed, it was surrounded by about 100 Hawaiians; some jumped in the boat and one man grabbed a boat hook. Cook's Third Lieutenant John Williamson hit the man with a rifle butt, and when the man tried to hit him, Williamson shot and killed the man. Like the first visit to the Hawaiian Islands, Cook's last visit was not so good for him.

When British Captain Nathanial Portlock arrived at Waimea in 1786, Kā'eokūlani, who had been ruling regent of Maui and Moloka'i, ruled Kaua'i and Ni'ihau with his wife Kamakahelei. Their son, Kaumauali'i, was later the last *ali'i nui* of Kauai'i and Ni'ihau before Kamehameha I unified the Hawaiian Islands (Bingham 1855:42; Kuykendall 1938:39). While Wailua was the main royal residence on the island (Bennett 1930:57; Bennett 1931:96), seasonal royal residences were present at Waimea Village (Bingham 1855:242; Cox 1975:5). Portlock noted these large homes during his visit:

> Being on shore: myself, with my old friend Abbenooe, I observed in the village of Wymoa, about three hundred yards from the beach, a firing of four or five houses, tolerably, large in very good order, with-out inhabitants; on- my asking. Abbenooe the reason of their being tabooed, he. informed me that they were houses built for the king, whenever he honoured Wymoa with a visit, and that no persons whatever were allowed the use of them in his absence [Portlock 1789:189–190].

Between the swamp and the shoreline was a broad sand deposit, likely inhabited by fishermen on the *makai* (seaward) side. The only canoe landing at Pu'upu'upa'akai ("salt piled in heaps") was through the reef on the shore directly *makai* of the sugar mill. A "large settlement" was there with "canoe sheds lining the beach" (Knudsen and Noble 1945:50).

Mid 1800's to 1900's

Prior to 1848, all land belonged to the *akua* (God), held in trust for them by the paramount chief and managed by subordinate chiefs. Traditional land divisions of the fifteenth and sixteenth centuries persisted until 1848 Māhele (Kamakau 1991:54). In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). In the mid-1800s, Kamehameha III decreed a division of lands called the Māhele, which divided lands and introduced private land ownership into Hawaiian society (Chinen 1958). In 1848, Kamehameha III divided the land into four groupings: Crown Lands reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali'i* and their *konohiki* (supervisors); and *kuleana,* habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).During the

Māhele, the Land Commission required the Hawaiian chiefs and *konohiki* (land agent for the *ali'i*) to present their claims to the Land Commission. In return they were granted awards for the land quit-claimed to them by Kamehameha III. The remaining unclaimed land was then sold publicly, "subject to the rights of the native tenants" (Chinen 1958:29). The new western system of ownership resulted in many losing their land. Often claims would be made for discontiguous cultivated plots with varying crops, but only one parcel would be awarded. However, foreigners were not allowed to have land.

The Kuleana Act was legislated in 1850, allowing *maka'āinana* (commoners) to own land parcels they were currently and actively cultivating and/or residing. In theory, this "set aside" hundreds of thousands of acres as potential *kuleana* parcels; about 10,000 claimants obtained approximately 30,000 acres. The *konohiki*, 252 chiefs, divided up about a million acres. Many Hawaiians were disenfranchised by these acts (Cordy et al. 1991).

The Alien Lad Ownership Act was enacted on July 10, 1850, a statue that allowed foreigners (aliens) to obtain and sell fee simple estate in lands. The first foreigners filing applications to purchase land were the missionaries, soon thereafter were individuals who became engaged in the sugar industry. As early as 1852, natives petitioned those in power to sell the lands to natives first or to stop raising the price of lands so natives could afford to purchase them (Chinen 2002:135-140).

Native claims for land made to the Board of Commissioners to Quiet Land titles in 1848 also shed some light as to settlement and land use in the area during the early historic period. In Waimea Ahupua'a, more than 150 *kuleana* awards were granted (Kamai et al. 2015a:27). Fifteen claims were awarded in Kīkīaola 'Ili, on the west side of Kana'ana Ridge. Over 50 claims were awarded in the *'ili* of Pe'ekaua'i, on the east and west sides of Kana'ana and Poki'i Ridge. The land east and west of the Kana'ana Ridge was mainly Crown and Government Land, some of which had already been given or sold to individuals and associations. The current project area is situated within and adjacent to Crown Land and several LCAs, which were primarily house lots, or *pahale*. Those nearest to the project area are listed in Table 1, which are not very close at all. Maps from the early twentieth century, (Figures 8), illustrate the location of LCA parcels in relation to the project area. Missionaries began arriving in Waimea in the early nineteenth century. In 1926, there was both flooding and an influenza epidemic in Waimea (Joerger and Streck 1979:10; Kamakau 1992:274). The flood caused extensive damage to both the *lo'i* and the newly constructed western structures built by the missionaries. Over the next few decades, the population in the Waimea area declined dramatically until the 1870s (Schmitt 1977:13).

The Reverend George B. Rowell arrived in Hawai'i with his wife Malvina Rowell in 1842 with the Tenth Company of American missionaries and arrived at the Wai'oli mission

station on Kaua'i in 1843. Rowell became the minister at Wai'oli, taking over the duties of Reverend William Patterson Alexander. Rowell was then reassigned to Waimea and moved into the former home of Reverend Peter Gulick. Rowell was expelled from the church by the American Board of Commissions for Foreign Missions, but soon opened a new Protestant church in Waimea called the Independent, or Makai Church. Rowell, who spoke fluent Hawaiian, served for 41 years on Kaua'i, passing away on 15 June 1884 (Hawaiian Encyclopedia.com: unpaginated). Rowell received a 565.56-acre coastal portion of the 1,123-acre Kīkīaola 'Ili as Grant 532 including the area immediately inland of the Kīkīaola Small Boat Harbor, which includes the current project area.

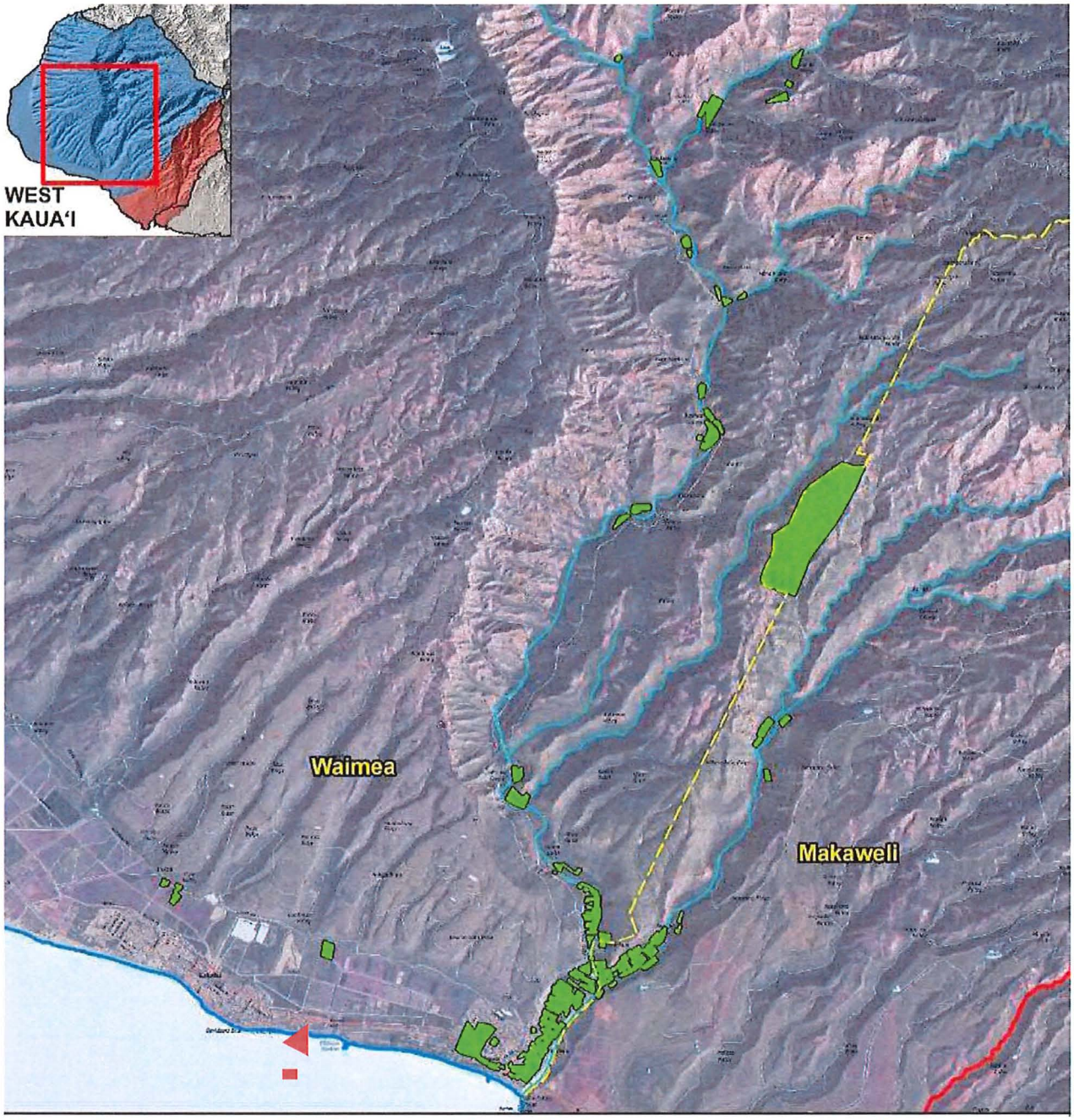


Figure 8. In green are the locatios of the 150 LCA awards in Waimea. The red arrow is the project area.

Table 1. Land Commission Award Parcels near the Project Area.

LCA	Awardee	Description
387:2	American Sandwich Island Mission	House lot with pasture land
5362:1, 3	Naumu	Lo'i, house, lot,salt bed and muliwai
7713:42	V. Kamamalu	Kīkīaola 'Ili

Rice Cultivation

Commercial rice growing came to the Kekaha-Mānā plain in the 1860s. The area's most prolific planter was Leong Pah On, a Chinese immigrant (Joesting 1984:206). Pah On started farming in Waimea Valley and eventually met Valdemar Knudsen who allowed him to cultivate the swamplands. He imported Chinese laborers, drained the swamps with ditches, brought in water buffaloes, and eventually acquired more land. At his peak he had about 600 acres in rice throughout Mānā, Kekaha, and Waimea (Char and Char 1979:21).

Pah On's enterprise ended suddenly in 1922. The leases on government lands were expiring and H.P. Fayé, manager of the Kekaha Sugar Company, convinced Pah On not to bid on new leases and let the sugar company take over control of the land. In return, Kekaha Sugar would sublease the rice fields back to Pah On. The successful rice grower could have easily out-bid the sugar concern but agreed to the plan. When Kekaha Sugar secured the leases its board of directors overruled Fayé and denied any subleases to Pah On (Char and Char 1979:22).

As for rice, it was not a successful crop in the Waimea area, and beginning in the 1930s the fields were being reclaimed for sugar cultivation (Hammatt 2008:27). From the end of the nineteenth century on, the population of Waimea grew (Schmitt 1977:13) and the area saw a boom in development with the rise of sugar, followed by tourism (Coffin 1930:48).

During the second half of the nineteenth century, agriculture shifted in Waimea from taro to rice and sugar cultivation. *Lo'i* were converted to commercial rice fields beginning in the 1860s, often leased by Chinese immigrants (Coulter and Chun 1937:62; Cozad 2008:45; Thrum 1877:49). In 1878, Valdemar Knudsen and Christian L'Orange began the first commercial sugar cane production in the Waimea area at Kekaha near Pōki'i (Condé and Best 1973:141). At its height, Kekaha Sugar Company spanned all of the district, less the *kuleana* lands, from Nu'alolo to Waimea (Kamai et al. 2015a:31–32).

Sugar Cultivation

The Reciprocity Treat of 1876 between the United States and Hawai'i was the impetus for the expansion of the sugar industry throughout the Islands. The first

commercial cane in the Kekaha area was planted in 1878 near Pōki'i by Knudsen and a partner, Christian L'Orange. Hane P. Fayé, Knudsen's nephew, was brought in as another grower, and it was he who dug the first artesian wells in the Islands at Kekaha. With a steady—but still small—water source, investors showed interest and the Kekaha Sugar Company was incorporated in 1898 (Wenkam 1977:63; Joesting 1984:216–217; Wenkam 1977:63).

In 1880, the Waimea Sugar Mill Company was established by Conrad and Borghrevink. This estate was much smaller than Kekaha Sugar Company and comprised 200 acres leased from the missionary George Rowell (Soboleski 2015:199). The following is a reminiscence from the son of George Rowell, William E. Rowell, who was born in Hanalei in 1845 and moved to Waimea when he was one year old:

> With regard to the Waimea Mill Co., the mill, as I remember it, was established and run by the Honolulu Iron Works Co. and Conrad and Borghrevink were planters, and then finally when the planters failed, the Waimea Mill Co. was formed to handle the whole business. The land belonged mostly to my mother, and was leased to the planters in the first instance, and then to the Mill Co. Yes, I was one of the large stockholders, was president for some time, but strange to say, I can't recall how I got my stock, but one thing I am clear about, I haven't got it now [Lydgate 1991:96].

The mill was constructed and operated by W.D. Schmidt. In 1903, Waimea Ditch was constructed, which carried water four miles from Waimea River to the plantation and replaced the use of brackish water for irrigation (Soboleski 2015:200). The following year, H.P. Faye, a manager at Kekaha Sugar Company, bought the land owned by Rowell and gained controlling interest in the Waimea Sugar Mill Company. In the following years several improvements were made to the operation: the Waimea Ditch was realigned, and flumes were replaced with tunnels; the seashore marsh was drained to increase acreage; a railroad was built; and the mill was reconstructed.

A railroad was constructed for the Kekaha Sugar Company in 1884 that ran from Waimea to the sugar mill at Kekaha. This railroad ran well inland of the current project area, connecting the fields, mill, and wharf. These improvements, along with a higher yielding cane, heavy fertilization, ratoon planting, and mechanization, led to the operation being one of the more modern and efficient in Hawai'i (Soboleski 2015:200 and Vernon et. al. 2020). By 1935, 530 acres were under cultivation. The Waimea Sugar Mill Company operated until 1969, at which time Kekaha Sugar Company leased the land.

The Kekaha Sugar Co. saw expansion after 1907 under the management of Hans Peter Faye when the construction of the plantation's major irrigation ditch was

completed. Most of the cane was initially transported by flume. By 1910 the plantation had 15 miles of permanent railroad track transporting cane from collection points to the mill and then transporting bags of sugar to the steamship landing at Waimea. In this timeframe the plantation employed approximately 1,000 people. In 1938 a *Honolulu Advertiser* article stated that Kekaha Sugar Co. was the most valuable single piece of property in the Territory.

1900s – Contemporary Land Use

In the 1900s, Kekaha Sugar Company employed about 1,000 people, of which approximately 300 families lived in plantation houses. The Kekaha Sugar Company saw expansion after 1907 when the construction of the plantation's major irrigation ditch was completed. The engineering feat brought water to the area from 8 miles up the Waimea River via a series of ditches, flumes, tunnels, and siphons (Thrum 1908:158–159).

In 1922, Kekaha Sugar Company began to drain the Mānā swamps to produce more sugarcane land (Hawaiian Sugar Planters' Association 2004: unpaginated). The project took 60 years to complete. In 1950, the Kekaha Sugar Company rebuilt their factory (Hibbard and Wichman 2008:13). The Kekaha Sugar Company also continued to use some of their land for cattle grazing. In 1951, they had a herd of 1,427 head on 10,816 acres of pasture. In 1969, the company again expanded, leasing the lands of the newly closed Waimea Sugar Mill Company. In 1987, the company had a record crop of 56,618 tons of sugar, but in 1988 the Kekaha Sugar Company was sold to JMB Realty as part of the buyout of Amfac Hawaii (Wilcox 1996:97). Also of interest is the restoration of the adjacent Chinese ad Japanese cemeteries , SIHP #50-30-05-00613 and #50-30-05-00612 (that appears on a 1950 aerial photograph, which took place in the same year.

The Kīkīaola Small Boat Harbor, located southeast from the current project area, was developed by the State of Hawai'i in 1959. The current project area prior to the harbor development is shown in an aerial photograph from 1950 with the new harbor depicted in a 1963 USGS map and the 1975 aerial photograph. By 1992, residential housing was well established on the *mauka* side of the Kaumualii Highway and from the current project area. The area east of the current project remains undeveloped.

In 1992, the company officially became part of Amfac Sugar Kaua'i West, and in 1955, the last sugarcane was harvested by this company on their Waimea lands. In 2000, Amfac Hawaii closed its last sugar operations at the Kekaha mill (Sommer 2001: unpaginated).

ARCHAEOLOGICAL BACKGROUND

The five closest and most germane studies to the project area are summarized below.

Hammatt and Chiogioji 1996
CSH (Hammatt and Chiogioji 1996) carried out an archaeological and historical assessment and field inspection of Kikiaola lands with the project area including the Kīkīaola Small Boat Harbor and extensive lands just back from the coast to the west and east. Historic properties discussed include the Chinese Cemetery (SIHP # 50-30-05-613 [SIHP #s for the cemeteries not given in report]) and Japanese Cemetery (50-30-05-612) just north of the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area, burial sites SIHP #s 50-30-05-1853 and 50-30-05- 1854 by the Waimea plantation cottages, the Catholic Church and Cemetery, and the Waimea Sugar Mill building.

Hammatt 2004
CSH (Hammatt 2004) prepared a letter report summarizing the inadvertent discovery of human skeletal remains at the Aloha Kaua'i Villas (4491 Kikiaola Place) at Kikiaola close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. A minimum of three human burials were encountered during pool excavation and were designated SIHP # 50-30-05-3911 Features A–C. A description of the stratigraphy within the pool excavation and skeletal inventories are presented.

Cordy et al. 2005
CSH (Cordy et al. 2005) carried out an archaeological assessment with subsurface testing for an 8.2-acre parcel at Kīkīaola close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. The fieldwork consisted of the excavation of 52 backhoe trenches and documentation of the sediment profiles. No sites were identified. Although artifacts, particularly bottles, dating to the early and mid-twentieth century were identified there was no discrete horizontal or vertical aggregation of artifacts such as to warrant site designation.

Stein and Hammatt 2006
CSH (Stein and Hammatt 2006) reported on archaeological monitoring and inadvertent burial recovery for an approximately 0.23-acre parcel within the Kekaha House Lots (TMK: [4] 1-3- 05:45) quite close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. During excavations for a septic system with leaching bed the crew discovered human remains. Two human burials were designated SIHP # 50-30-05-3941. Due to the lack of historical artifacts or coffins associated with the remains and also because both burials were found in either a flexed or semi-flexed position these burials were regarded as likely pre-Contact interments. Dog bones were also observed.

Powell et al. 2009

Scientific Consultant Services (Powell et al. 2009) produced a historical summary of the former fishpond location and evaluation of the potential for human skeletal remains at TMK: [4] 1-3- 005:053 located immediately west of the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. Information gathered suggests that Kekaha Sugar Company established a fishpond in 1957 in an existing pond area on Parcel 53 to raise tilapia to feed on the vegetation clogging irrigation ditches. SCS interviewed 74-year-old Willy Martin, a former employee of Kekaha Sugar Company, who was born and raised in Kekaha. Sometime in 1959 or 1960 Mr. Martin was instructed by the plantation to fill in the fishponds on Parcel 53. The "fill" material was to come from a sand dune on the western side of Parcel 40. Parcel 53 is immediately adjacent to the eastern boundary of Parcel 40. Both parcels were owned by the Knudsen family. "There were a lot of bones" collected in burlap bags and interred in the pond as it was filled (Powell et al. 2009:10.)

McMahon 2023

Recently (reports in progress McMahon, EAL 2023) an archaeological inventory survey was conducted in the 2.29 acres (two parcels). Twelve (six on each parcel) backhoe trenches were placed in the project area where the impacts would be (house footing, shed footings, septic tanks and leachfields). The excavations were 2 meters in depth. Negative findings. A 100% surface survey was also conducted on both parcels. Modern trash was found on the surface.

NATIVE HAWAIIAN CULTURAL CONSULTATION

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert developers and decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343 and promotes responsible decision making. Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires an assessment of cultural resources, in determining the significance of a proposed project.

One of the most important parts of conducting a cultural assessment and study is to hold consultation with Native Hawaiian kūpuna or elders, Hawaiian cultural organizations, cultural practitioners, and individuals from the community who potentially have knowledge of traditional Hawaiian sites, resources and cultural practices that are related to the project area as well as to the adjacent and extended land areas of the Kekaha area, *'ili* of "Kīkīaola and Waimea ahupua`a.

Ultimately, the goal as preparers of this Ka Pa`akai Analysis is to produce a document that can be used to protect and preserve the valuable knowledge and traditional practices of nā `ōiwi kānaka, the Native Hawaiian people of these places.

EAL's goal was to meet with and interview a cross-section of indigenous Hawaiian people from the community; first and foremost, with kūpuna or elders that have memories and personal experiences of the project area and the surrounding lands in Kekaha ahupua`a. In addition, EAL was hopeful to receive their `ike or insight and knowledge about customary practices and traditional places associated with or relating to the project area.

EAL also aimed to seek out and speak with those of the mākua or parent generation who had potential knowledge, ties and experiences linked to the project area. In this endeavor to "interview" Native Hawaiians, EAL chose to do so in a Hawaiian manner of kukākukā or through "talk-story". In speaking with interviewees without being nīele or as a prying meddler by being annoyingly inquisitive was the approach. While there are specific points of interest for questions that lead the discussions, it is important that each person engage in a manner that is respectful and without imposing pressure. To the Native Hawaiian, a nīele person will never get anywhere by being bold, blunt, and direct. However, he or she can be successful by leading up to a subject through indirection and a more `olu`olu or gracious approach. Every attempt to avoid being maha`oi or presumptuous, brazen and insensitively forward was used. In the traditional Hawaiian household that was led by kūpuna and mākua who were adamant that the values of aloha (love), ha`aha`a (humility), ahonui (patience) and hō`ihi (respect) apply to the way that one behaves and interact with others. This is especially so when talking and meeting with kūpuna, for with the slightest tone of pejorative stance or speech, they will cease to share their valuable insight and experiences. It helps tremendously to have some sort of association with individuals as well, for more is shared when there is a level of comfort, trust, and familiarity.

The interviewees that EAL engaged with for this Ka Pa`akai analysis are:

1.	Kunane Ipoalani	Kekaha Resident
2.	Vida Mossman	Kekaha Resident
3.	Roslyn Cummings	Naumu/Malama from Waimea/Kekaha
4.	Doreen Naumu Tamura	Naumu family
5.	Chris Faye	Waimea/Kokee Resident family from Waimea/Kekaha
6.	Chad Kudo	Waimea fisherman
7.	Lani Swain	Hanpepe fisherman
8.	Tadashi Muratake	Kehaka fisherman

9.	Claire Seaver	Kehaka owned one of the original boat companies
10.	Liko Hookano	Kekaha retired commercial boater
11.	Harold Vidinha	Kehaka fisherman
12.	Clint Ice Apo	Kekaha Boating Club VP
13.	Eric Erdz Erdman	Kekaha Boating Club Pres.

All interviews were conducted by EAL in late 2022-2023. Subsequently, EAL found that just about most of the interviewees were interested in learning about the project itself, but none had concerns. Most of those interviewed were fisherman and other residents of the surrounding area.

As such, the priority topics needed to conduct this Ka Pa`akai analysis of cultural resources and impacts. EAL spent time attempting to provide an overview of the project. Most were aware of the project and very supportive.

Mahalo a nui loa iā `oukou for their generous support to contribute and collaborate to this success of this Ka Pa`akai analysis.

CONSULTATION METHODOLOGY & RESULTS

As with the composition of the Ka Pa`akai analysis document, EAL employed interview methods consistent with indigenous Hawaiian values. Specific values and methods applied to the interview process included:

Kukākukā, also known among locals as "talking story", is a quintessentially Hawaiian approach to sharing information intended to avoid being seen as *nīele* (i.e., nosy or meddling) and instead being perceived as *'olu'olu*—gracious—in conduct. By approaching the specific interview topics in an indirect manner, EAL interviewers communicated a level of sincerity and respect for the interviewee and subject matter and so avoided their curiosity being interpreted as *maha'oi*, i.e., brazen and forward.

Aloha, or love and abiding regard for the Hawaiian landscape and culture formed the basis for the interview process, communicating deep affection for the subject matter and individuals involved.

Ha'aha'a, or a sense of humility, particularly when speaking with *kūpuna*, where a single pejorative act or statement could create a sense of offense in the interview subject which would lead them to withhold their insight and experience.

Ahonui, or patience, and a measured tempo to the contact and interview

process which allows for a sense of comfort, familiarity, and trust to emerge.

Hō'ihi, respect, both for the interviewee and for the subject matter were kept at the very heart of the interview process and shaped the methods employed by EAL.

To these ends, the use of recording devices and a standardized questionnaire were not employed unless requested to do so. Interviews were conducted in individual and small-group settings in homes and back yards. Conversations could flow toward, and at times away from, the specific subject of the project as the interview subjects deemed appropriate.

SELECTION OF INTERVIEW SUBJECTS

An assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by land use decisions. In the preparation of this Ka Pa`akai analysis, representatives of EAL identified certain criteria which guided the process of identifying individual's familiar with cultural practices and features in, or near, Waimea ahupua'a. Was the candidate a *mākua*, or member of the parent generation, with potential knowledge, ties, or experiences of the project area, *'ili* of "Kīkīaola region?

- Was the candidate familiar with, or possessing insight into, the customary practices and traditional places in or near to the project area?

In the timeframe available for the preparation of the Ka Pa`akai analysis, representatives of EAL spoke with 13 community members all with personal ties to *the 'ili* of Kīkīaola and possessed unique knowledge relevant to the assessment.

ETHNOGRAPHIC-ORAL HISTORY METHODOLOGY HISTORICAL & ARCHIVAL RESEARCH

Primary research references used in this study include, but are not limited to—land use records, including those obtained from an extensive review of Hawaiian Land Commission Awards (LCA) records from the 1848 Great Māhele, territorial land patent grants, oral history interviews preserved in the Bishop Museum Archive, and an extensive review of historical texts authored or compiled by D. Malo (1951), M.K. Pukui (1972), and Handy and Handy with Pukui (1972). Other sources examined and incorporated include regional planning documents, modern English language newspapers, and travel writers 'familiar with the *'ili* of "Kīkīaola and important testimony of elder kama'āina of the lands of the Waimea/Kekaha region.

Researchers also took full advantage of historical and archival resources from the collections of the Bishop Museum, Kaua`i Museum, and Kaua`i Historical Society. Research of published and unpublished written literature, as well as Hawaiian language documents, maps and photographs found in public and private collections for references and other relevant information were explored. Additionally, the examination of indigenous Hawaiian chants and interviews conducted with kūpuna or Native Hawaiian elders were extraordinarily revealing and valuable to producing this cultural study.

CULTURAL RESOURCES & PRACTICES IDENTIFIED

Neither the literature sources consulted, nor the interviews conducted identified any ongoing native Hawaiian cultural resources or practices located on the project. As indicated by background research and many of the interviewees, the broad Kekaha region has a rich history replete with *mo`olelo* (legends) and *wahi pana* (traditional place names and their stories) however none of these have any significant direct or indirect connection to the project site. In addition, the long history of cultivation in this area has likely destroyed all cultural materials and since the land has been overgrown and privately owned prevented in cultural practices which might have been present in the past.

Most of the informants could not remember anything except the two cemeteries. Most informants thought that the area was scrub dune lands. Most of the cane cultivation was on the other side of the highway to the foothills. Maybe there could have been some pasturing going on in the scrub dunes.

Many agreed that the sandy soils could possibly have Hawaiian burials there since the plantation made the cemeteries, it seemed plausible that Hawaiian too buried there. Since the construction of the small boat harbor no one really fished offshore there.

ANALYSIS OF IMPACTS

The Kekaha/Waimea region, which includes the area proposed for pre-school use, is a place of prehistoric and historic significance in the Hawaiian civilization. Oral histories and written records tell of the continuing traditions, beliefs, and cultural practices of the region. However, none of the background research, nor interviews conducted in the preparation of this Ka Pa`akai analysis indicates that the cultural practices, resources, or beliefs are tied to the proposed project site. The absence of cultural properties and resources in a region may be due to rapid change that sugar cultivation brought to *'ili* of "Kīkīaola and the dry environment of the area.

Traditional Hawaiian uses of the lands in the Kekaha ahupua'a are known from prehistoric times. Such uses, including habitation, agriculture, and gathering continues throughout the region, but none is known to exist within the project area. Access to sensitive *wahi pana*, streams, the shoreline, or the mountains will not be compromised by this project.

Native Hawaiian beliefs and traditions associated with the *'ili* of "Kīkīaola persist but these are general associations not specific to the project site. No *kūpuna* (elders) or *mākua* (parents) could be located that had knowledge of traditional beliefs or practices specific to the project site.

There are no known cultural resources or practices with the potential to be negatively impacted because of the proposed project.

CLOSING

Cultural impacts upon Native Hawaiian people, customary practices and religious beliefs have infiltrated the history of Hawai`i Nei for more than 200 years since the arrival of Captain James Cook in 1778. Within a period of 40 short years, the Kapu system was abolished by Kamehameha II - Alexander Liholiho and the Queen Regent, Ka`ahumanu bringing an end to the strength of the closely-knit Hawaiian religion and political system of Hawai`i. With the arrival of Calvinist missionaries in 1820 came a new god and religion which leveraged the beginnings of severing the native Hawaiians' veneration of the natural world.

By the 1890s, subsistence lifestyles, agriculture and rural communalism had entirely been replaced by commercialism, urbanization and individualism as key features of life in the Hawaiian Islands. Foreign sugar plantation moguls usurped control of Hawai`i's prime agricultural lands and fresh water sources to sustain their crops. Miles and miles of irrigation ditches were engineered to redirect the natural flow of water out of the ahupua`a; forever changing the balance of environments and lifestyles of generations of native Hawaiian families.

By and large, the issues of cultural impacts in Hawai`i are rooted in the loss of access and use of Hawai`i's land and natural resources as formerly practiced in pre-contact Hawai`i. It is a deep-seated dilemma caused by the intrusion of forced principles brought on by Westernization and the rise of a monetary economy.

However, the lasting affects upon native Hawaiian people that have resulted in their disconnect to traditional practices, beliefs and knowledge of place goes back further to the introduction of Christian tenets that prohibits veneration and expression of nature or ancestor worship in any way, shape, or form. There is great

anxiety amongst contemporary Hawaiians to embrace the values and ideologies of their ancient ancestors out of fear instilled by the doctrines of the dominant western religion which most have adopted. This alone, largely contributed to the depreciation of interest to learn and maintain family genealogies, enroll to formal training in cultural practices that engage in ceremony and spiritual processes, etc.

All forms of traditional Hawaiian cultural practice included religious and spiritual processes of protocols, ceremonies, prayers and prescribed tabus and restrictions. The removal of this crucial part of Hawaiian cultural expression separated and dissolved the sacred and profound of the practice itself. It also eliminates the individual's conscious connection to the environment which is also considered as a sacred and profound aspect of the practice itself.

This analysis does not foresee potential impacts of the proposed single-family residences and boatsheds on Native Hawaiian or other ethnic groups' cultural practices customarily and traditionally exercised for subsistence, cultural or religious purposes.

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EXHIBIT "F-3"

EXPLORATION ASSOCIATES LTD
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ARCHAEOLOGICAL ASSESSMENT OF A 1.188 ACRE PROJECT AREA FOR COUNTY OF KAUA`I, SMA APPLICATION FOR HALE WA`A Waimea Ahupua`a, *'ili* of "Kīkīaola, Moku o Kona, Kaua`i Island at TMK (4) 1-2-013:040 (lot 65)

Prepared for
Nathan Fisher
Na Pali Experience LLC

By Nancy McMahon, MA, MEd, MS
Exploration Associates Ltd.

April 2023

Management Summary

Exploration Associates Ltd. completed the fieldwork component of the archaeological assessment under Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR) permit number 23-30 per Hawai'i Administrative Rules (HAR) §13-282. This archaeological inventory survey was conducted 1.11 acre of property in Waimea Ahupua`a, *'ili* of "Kīkīaola, Kona District on Kaua`i Island, Hawai'i at TMK (4) 1-2-013:040 (lots 65) for a SMA Application for a single-family residence which will be subject to review under Hawai'i Revised Statues (HRS) §6E-42, subject to HAR§13-284 issued by the County of Kaua'i Planning Department. Na Pali Experience LLC mowed the overgrown project so that a surface subsurface survey could be conducted on the 1.188-acre project area. A 100% pedestrian surface survey was conducted on the parcel. No surface historic properties were found. Test excavations consisted of 4 mechanically dug trenches during this archaeological research. The excavation results were negative. No historic properties were found. No cultural materials were found. Based on the negative findings of this report and others work in the area no further archaeological work is recommended.

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Introduction

The project area lies in a relatively undeveloped stretch of land between the urban/suburban centers of Waimea (approximately 700 m to the southeast) and Kekaha to the north and northwest. Kaumualii Highway, the major vehicular artery to west Kaua'i, lies along the north end of the project area. The Kīkīaola Small Boat Harbor, located just southeast of the project area, was originally developed by the State of Hawai'i in 1959 and is named after the land area (*'ili*) of "Kīkīaola." Kīkīaola is best known as the name of a historic irrigation ditch (*'auwai)* also known as "Menehune Ditch" or "Pe'ekaua'i Ditch," SIHP # 50-30-09-00026, that is traditionally believed to have been built by the Menehune (legendary small people); the ditch was added to the National Register of Historic Places on 16 November 1984.

The lands were previously under Kīkīaola Land Company Ltd. before it was subdivided into 4 residential lots.

At the request of Nathan Fisher of Na Pali Experience, LLC, Exploration Associates (EAL) conducted archaeological inventory survey of parcel (TMK (4) 1-2-013:040 (lots 65)) which is in the Waimea Ahupua`a, *'ili* of "Kīkīaola, Kona District on Kaua`i Island (Figures 1 - 4). Hereinafter referred to as "*project area and/or the subject property*". The subject property is located makai of Kaumualii Hwy past the Chinese Cemetery. To the northwest and north are residential properties. To the southeast is an undeveloped parcel and two County cemeteries (Chinese and Japanese cemeteries , SIHP #50-30-05-00613 and #50-30-05-00612). Kīkīaola Small Boat Harbor and the ocean are to the south. The property is vacant and undeveloped with a cul-de-sac with existing utilities outlets for all the lots at the corners of the parcels.

The proposed plan is to develop the parcel for a single-family residence (1000 sq. ft. per house) and boatshed (2,160 sq. ft. per boatshed). The County Zoning is Open and in the special management area (SMA). The parcel is intermittently vegetated with kiawe (Prosopis padilla), koa haole (Leucaena leucocephala), and various grasses, such as bristly foxtail (Setaria verticillata), bermudagrass (Cynodon dactylon), a fingergrass (Chloris sp.). The following archaeological inventory survey work (which has become an archaeological assessment (AA) due to negative findings) was designed to satisfy the State Historic Preservation Division's review for archaeological inventory surveys (AIS) under HRS, §6E-42 and per HAR §13-276 and HAR §13-284.

The purpose of this archaeological survey is to document all historic properties within the subject parcel. Given the size and location of the parcel, it was determined that subsurface testing with a backhoe was needed for the study. Backhoe testing focused on attempting to locate subsurface deposits, such as buried cultural layers, *iwi*--human burials, and/or deposits with significant paleoenvironmental data, which can not be located by surface pedestrian survey.

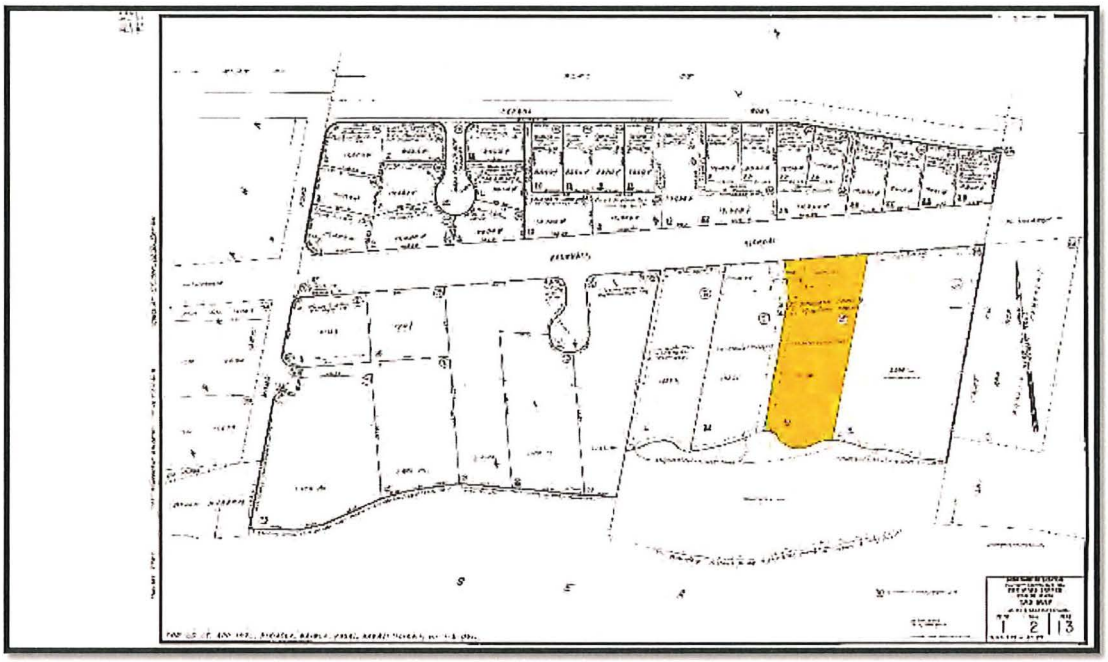

Figure 1. Tax Map Key (4) 1-2-013:040 (lots 65)).

Figure 2. Pictometry aerial showing Project Location in Blue.

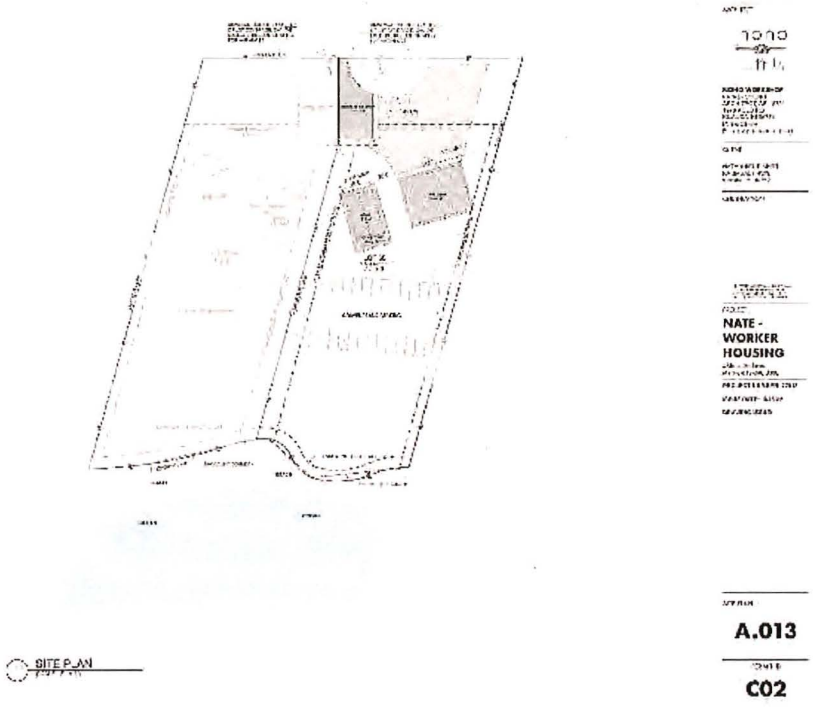

Figure 3. Proposed Plot Plan.

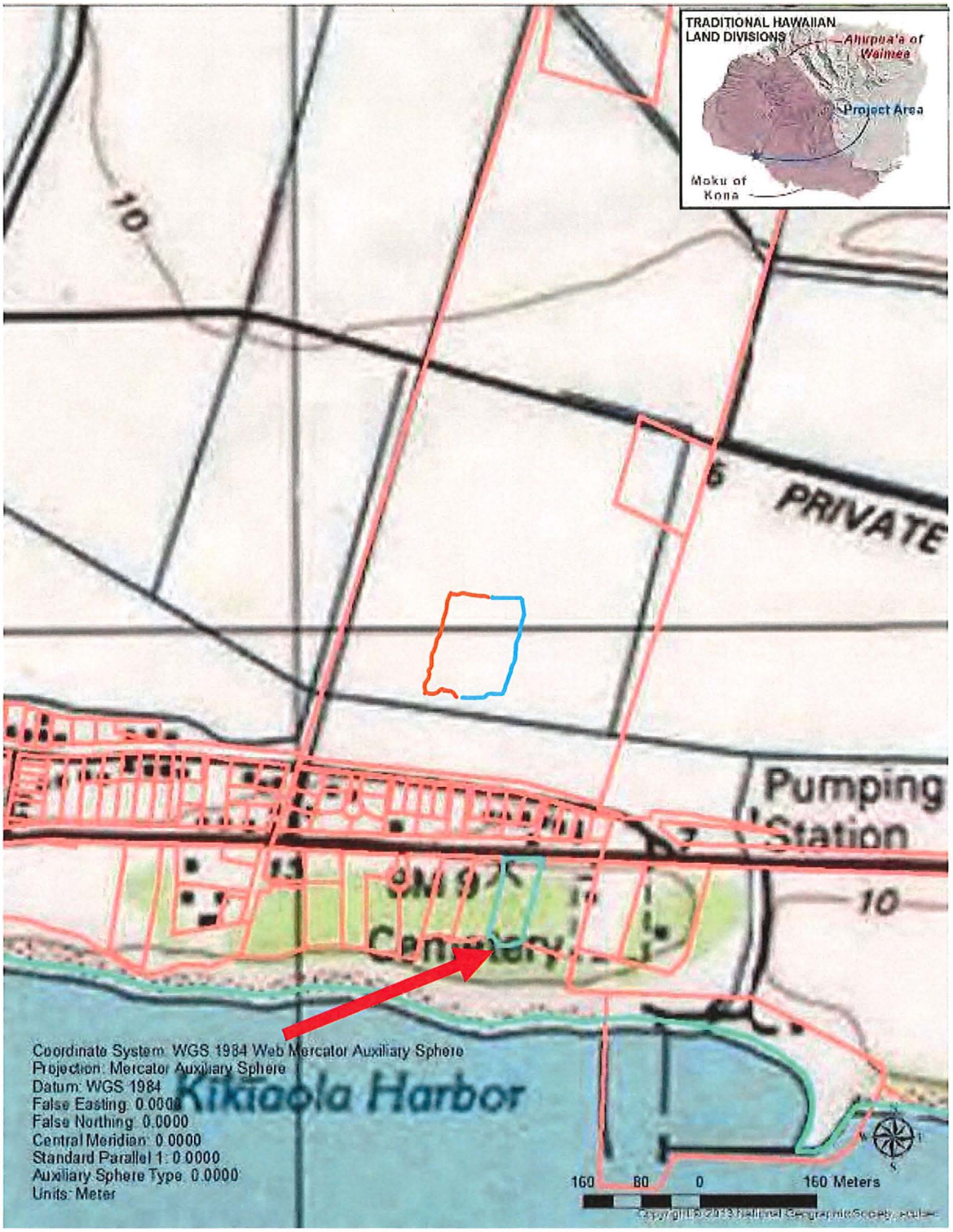

Figure 3 USGS Kekaha Quad (1984) showing project area in Blue.

Figure 4. Showing The Proposed Conceptual Plans

Natural Setting

Kaua'i is the oldest of the Hawaiian Islands. Geologically, the original volcano, located in the middle of the island, went through a period of weathering and erosion. There were voluminous rejuvenated stage lavas which represent the later eruptive stages of the volcano. The primary basaltic rocks from the original volcano are the Waimea Canyon series. The innumerable lava flows are divided into three major geologic formations: the Napali formation, the Olokele formation, and the Makaweli formation. The Napali formation of the Waimea Canyon series is the most permeable of the three.

After the original flows, the Kōloa volcanic series covered most of the eastern part of the island. The Kōloa series are less permeable than the Napali formation lavas. The Kōloa series of flows were deposited in relatively flat layers compared to the Napali flows. The Olokele and Makaweli formations are also relatively flat but more permeable than the Kōloa series.

Rainfall and Vegetation

Located on the drier leeward coast of Kaua´i, annual rainfall at the project area averages 512.5 millimeters (mm) (20.18 in) per year, with most rain falling in the months between October and March. Giambelluca et al. 2013). The project area is situated makai of the Kuamualii Highway.

Vegetation along this arid coast is sparse. With 20 inches or less of rain annually, only the hardiest plants adapted to the coastal environments can thrive in this zone. The vegetation is typical of dry seashore environments in Hawai'i and is dominated by alien species. The parcel is intermittently vegetated with *kiawe* (*Prosopis padilla*), *koa haole* (*Leucaena leucocephala*), and various grasses, such as bristly foxtail (*Setaria verticillata*), bermudagrass (*Cynodon dactylon*), a fingergrass (*Chloris* sp.).

Temperatures in the southwest and west sides of Kaua'i average between approximately 60 and 90 degrees, with prevailing northeast trade winds (Armstrong 1983:64–65).

Waimea Ahupua'a is composed of several regions that are very different in climate and terrain. These differences essentially dictated the kinds of resources that were available, and hence had much to do with the way the *ahupua'a* was settled by prehistoric Hawaiians. The well-watered valley and delta of the Waimea River were ingeniously developed and engineered for wetland agriculture and represent the epitome of the typical Hawaiian and Kaua'i-type valley settlement (Handy and Handy 1972:393–397).

In contrast, Kekaha and other settlements on the Mānā plain suffered from a definite lack of fresh surface water. The *mauka* gulches had only intermittent stream flows, and water sources were primarily springs along the base of the cliffs. For this reason, this portion of the report will focus mainly on the specific area of Kekaha and not attempt to cover the entire *ahupua'a* of Waimea.

Soils

The project area is situated at 2.0–4.0 m above mean sea level (AMSL). According to the USDA Web Soil Survey, the soils in the project area are classified as Jaucas loamy fine sand, dark variant, with 0 to 8 percent slopes (JkB), as shown in Figure 6. The Jaucas series are found on vegetated beach areas along the shore. This soil is formed in calcareous sand deposits. They are very deep, excessively drained, and have very rapid permeability (Soil Survey Staff 2017). Areas containing these soils are typically used for recreation and as marine wildlife refuges. Inland, all soils in the project area are classified as Jaucas loamy fine sand, dark variant, 0 to 8 percent slopes (JkB). They developed in wind and water deposited sand from coral and seashells" Unlike other soils of the Jaucas series, in the JkB dark variety, "sand and coral sand are mixed throughout the profile. The basaltic sand gives this soil a dark-brown to black color" (Foote et al. 1972).

Soils along the coast are listed as Beaches (BS) for an approximately 10 m wide stretch adjacent to the ocean. Beaches are described as follows: Beaches (BS) occur as sandy, gravelly, or cobbly areas on all the islands in the survey area. They are washed and rewashed by ocean waves. The beaches consist mainly of light-colored sands derived from coral and seashells. A few of the beaches, however, are dark colored because their sands are from basalt and andesite. Beaches have no value for farming. Where accessible and free of cobblestones and stones, they are highly suitable for recreational uses and resort development [Foote et al. 1972:28].

From a historic preservation perspective, Jaucas sand deposits are associated with the presence of traditional Hawaiian burials and subsurface cultural deposits.

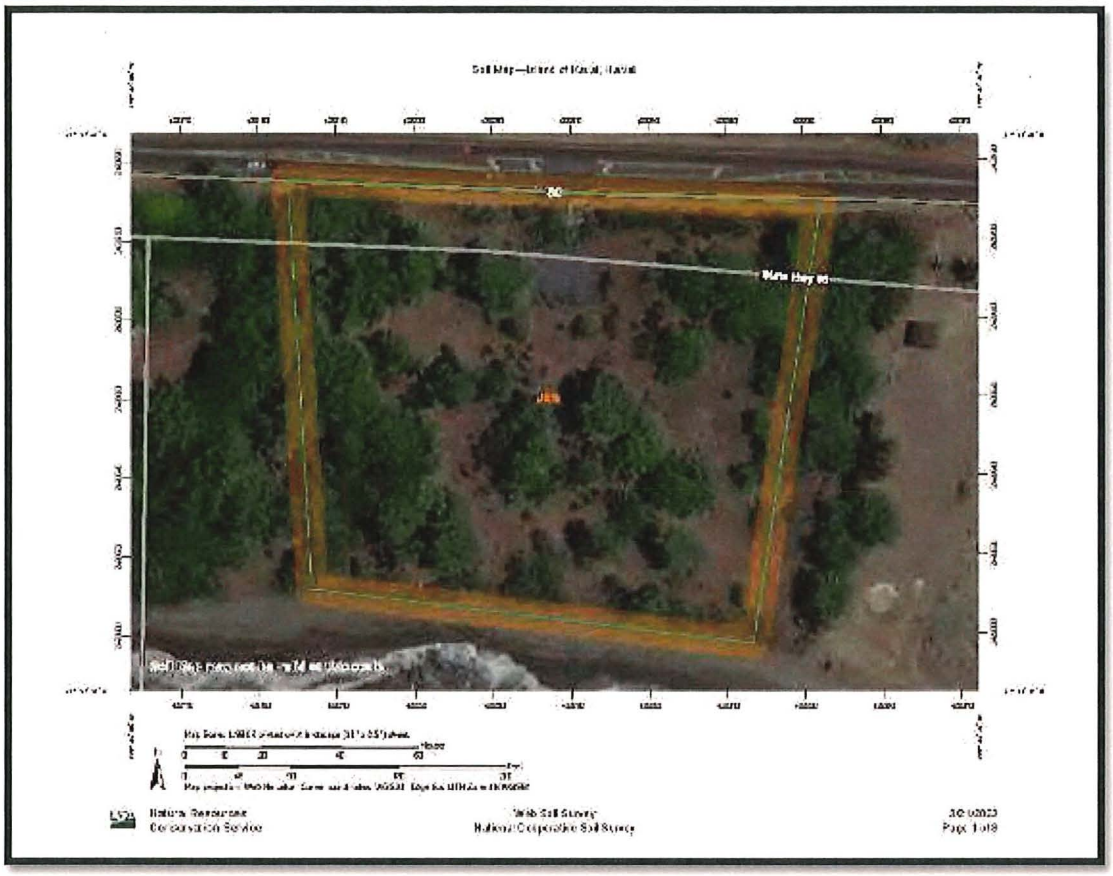

Figure 5. NRCS WebSoil Survey of the project area.

Background History

Although the Boundary Commission officially surveyed and set the bounds of the *ahupua'a* of Waimea in 1875, as generally described previously, there are a few sources which contradict this, maintaining that Kekaha was a separate *ahupua'a.* Kīkīaola was a smaller land division *('ili*) sometimes regarded as a subset of Kekaha and/or Waimea. Our earliest (1885) identified detailed map of the project area vicinity indicates that a 565.56-acre coastal portion of the 1,123- acre Kīkīaola 'Ili was awarded as Grant 532 to George B. Rowell. Significant habitation activity is indicated approximately 500 m to the east of the project area (toward Waimea Town), but no development is shown in the immediate vicinity of the project area. Testimony in the mid-1800s that supports the native land claim of R. Naumu refers to "Kekaha ahupua'a" in describing the properties (Native Testimony, n.d.:11:15).

Valdemar Knudsen, an early haole (non-native) settler in the area, also refers to the "ahupua'a of Ketaha [sic]" in a letter to John Dominis, Commissioner of Crown Lands (Knudsen 1866:3). A late nineteenth century map (Imlay 1891) shows a pie-shaped land

section labeled "Kekaha," indicated by a dotted line boundary that encompasses the area from the top of Waiaka ridge to the shoreline.

Handy and Handy (1972:427) imply that Kekaha, as well as Polihale and Mānā, were individual ahupua'a of Waimea, though the reasoning for this is not given. However, the native land claim of Elia Lihau for the land of Wai'awa, just west of Kekaha, concedes that this area was indeed part of the ahupua'a of Waimea (Native Register 1848:9:244).

Admittedly, it is unusual for a single ahupua'a to occupy such a large percentage of the land area of a major Hawaiian island. It could easily be argued that the comparatively low agricultural productivity of the Mānā plain, due to the scarcity of water, is the basis for its inclusion in Waimea. However, the same cannot be said for the well-watered valleys of Nu'alolo and Miloli'i, both of which could easily support typical and self-contained valley settlements of perhaps small but stable populations.

It could also be speculated that Waimea, being one of the two areas of the island that traditionally was the domain of the high chiefs (the other being Wailua), commanded the resources of the large upland region of Kōke'e and Alaka'i, among them the large *koa* trees out of which the hulls of canoes were hewn, and forest birds which supplied the feathers for cloaks, capes, and other items associated with the *ali'i* (chiefly class). It is quite possible that at one time Waimea was divided into several smaller *ahupua'a*, perhaps before the Māhele, or even during the pre- Contact period.

Pukui et al. (1974:106) give the literal translation of Kekaha as "the place." However, Handy and Handy's (1972:54) definition gives more insight into the description of the place name: "Kaha was a special term applied to areas facing the shore but not favorable for planting. Kekaha in Kona, Hawaii, was one so named, and Kekaha on Kauai another."

Kelly (1971:2) describes Kekaha on the island of Hawai'i as *'āina malo'o* or "dry land," and indeed the same could be said of Kekaha, Kaua'i, if one considered the area's low annual rainfall and lack of permanent streams. Kekaha, however, was neither void of water nor of a pre-Contact population that made use of the local resources.

Kekaha *Ahupua'ā*, according to the Ulukau database (www.ulukau.com), is "One of 9 Crown la ds, formerly an *ah* the *'okana* of Waimea. Not named in Mahele Book" (Pukui et. al. 1974, Kelly (1971:2).

The name, "Kekaha," can be interpreted to mean "dry land" or an area near the shore that is not favorable for planting. The Kekaha region of Kaua`i has low annual rainfall and no permanent streams. Despite the low rainfall, early visitors from Oahu in the late 1700s indicate that the Kekaha area was well-populated. Inhabitants manufactured cloth from *wauke* (Mulberry) and grew taro and sugarcane in the swampy ground. In the mid-1800s, Land Commission Awards (LCA) requests show that there was both dry land and irrigated agriculture occurring in the region along with salt beds and at least one fishery. Valdemar Knudsen settled in Wai'awa in 1854. His agricultural and pastoral lands covered much of

the region and eventually he had control over the entire district. Knudsen made use of local labor by requiring residents to work for him three days each month as rental payment.

A Chinese immigrant, Leong Pah On, began growing rice commercially in the 1860s in the drained swamplands of the area, eventually cultivating 600 acres throughout Mānā, Kekaha, and Waimea for rice production. Pah On imported laborers from China to work the rice fields, presumably creating a significant Chinese population in the area. Rice cultivation continued until 1922 when the Kekaha Sugar Co. assumed ownership of the lands. The Kekaha Sugar mill closed in 2000 and the DLNR managed these lands until ADC was awarded them by the state in 2003.

According to Ms. Christina Faye, Kekaha did not exist prior to the plantation which was established prior to the *mahele* (Pers. Comm.). As stated above, Pukui et al. (1974:106) provides the literal translation of Kekaha (Ke-kaha) as "the place" and, according to Ms. Faye, "the place" refers to the location of the sugar mill. According to Faye, the name Kekaha was used for the region because it was "the place" where the plantation was located. All mention of a village at Kekaha dates to after the establishment of the plantation, except for the village of "A-Tappa" in the 1798 Beresford account.

Traditional Cultural History

The Hawaiian cultural landscape can be described through *mo'ōlelo* and *wahi pana* (significant Hawaiian place names). Mo'ōlelo may be myths, legends, proverbs, and event surrounding well-known individuals in Hawaiian history (Pukui and Elbert 1986:254). The reader is referred to O'Hare et al. (2015) and EAL (2023) for a broader background of the *ahupua'a* of Waimea.

Land Commission Awards

Traditional land divisions of the fifteenth and sixteenth centuries persisted until 1848 Māhele (Kamakau 1991:54). In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established "for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property" (Chinen 1958:8). In the mid-1800s, Kamehameha III decreed a division of lands called the Māhele, which divided lands and introduced private land ownership into Hawaiian society (Chinen 1958). In 1848, Kamehameha III divided the land into four groupings: Crown Lands reserved for himself and the royal house; Government Lands set aside to generate revenue for the government; Konohiki Lands claimed by *ali'i* and their *konohiki* (supervisors); and *kuleana,* habitation and agricultural plots claimed by the common people (Chinen 1958:8–15).During the Māhele, the Land Commission required the Hawaiian chiefs and *konohiki* (land agent for the *ali'i*) to present their claims to the Land Commission. In return they were granted awards for the land quit-claimed to them by Kamehameha III. The remaining unclaimed land was then sold publicly, "subject to the rights of the native tenants" (Chinen 1958:29). The new western system of ownership resulted in many losing their land. Often claims would be made for

discontiguous cultivated plots with varying crops, but only one parcel would be awarded. However, foreigners were not allowed to have land.

The Kuleana Act was legislated in 1850, allowing *maka'āinana* (commoners) to own land parcels they were currently and actively cultivating and/or residing. In theory, this "set aside" hundreds of thousands of acres as potential *kuleana* parcels; about 10,000 claimants obtained approximately 30,000 acres. The *konohiki*, 252 chiefs, divided up about a million acres. Many Hawaiians were disenfranchised by these acts (Cordy et al. 1991).

The Alien Lad Ownership Act was enacted on July 10, 1850, a statue that allowed foreigners (aliens) to obtain and sell fee simple estate in lands. The first foreigners filing applications to purchase land were the missionaries, soon thereafter were individuals who became engaged in the sugar industry. As early as 1852, natives petitioned those in power to sell the lands to natives first or to stop raising the price of lands so natives could afford to purchase them (Chinen 2002:135-140)

Native claims for land made to the Board of Commissioners to Quiet Land titles in 1848 also shed some light as to settlement and land use in the area during the early historic period. In Waimea Ahupua'a, more than 150 *kuleana* awards were granted (Kamai et al. 2015a:27). Fifteen claims were awarded in Kīkīaola 'Ili, on the west side of Kana'ana Ridge. Over 50 claims were awarded in the *'ili* of Pe'ekaua'i, on the east and west sides of Kana'ana and Poki'i Ridge. The land east and west of the Kana'ana Ridge was mainly Crown and Government Land, some of which had already been given or sold to individuals and associations. The current project area is situated within and adjacent to Crown Land and several LCAs, which were primarily house lots, or *pahale*. Those nearest to the project area are listed in Table 1, which are not very close at all. Maps from the early twentieth century, (Figures 7), illustrate the location of LCA parcels in relation to the project area. Missionaries began arriving in Waimea in the early nineteenth century. In 1926, there was both flooding and an influenza epidemic in Waimea (Joerger and Streck 1979:10; Kamakau 1992:274). The flood caused extensive damage to both the *lo'i* and the newly constructed western structures built by the missionaries. Over the next few decades, the population in the Waimea area declined dramatically until the 1870s (Schmitt 1977:13). Only three claims were made in and nearby. Elia Lihau (No. 6698) claimed all the land of Wai'awa (just west of Pōki'i), most of which was unused *kula*, but included a restricted fishery. This claim was never awarded (Board of Commissioners 1929: Native Testimony, Vol 11:155).

The only one to claim land in Kekaha was B. Naumu (No. 5386). Mentioned in this claim are *lo'i*, a house lot, a salt bed (*aliapa'akai*) and a *muliwai* (a pool near the mouth of a stream or an estuary) called Kapenu. Naumu developed the *lo'i* in 1844, stating that it was previously overgrown land (Board of Commissioners 1929: Native Testimony, Vol 11:146).

Table 1. Land Commission Awards near the Project Area.

LCA	Awardee	Description
387:2	American Sandwich Island Mission	House lot with pastureland
5362:1, 3	Naumu	Lo'i, house, lot, salt bed and muliwai
7713:42	V. Kamamalu	Kīkīaola 'Ili

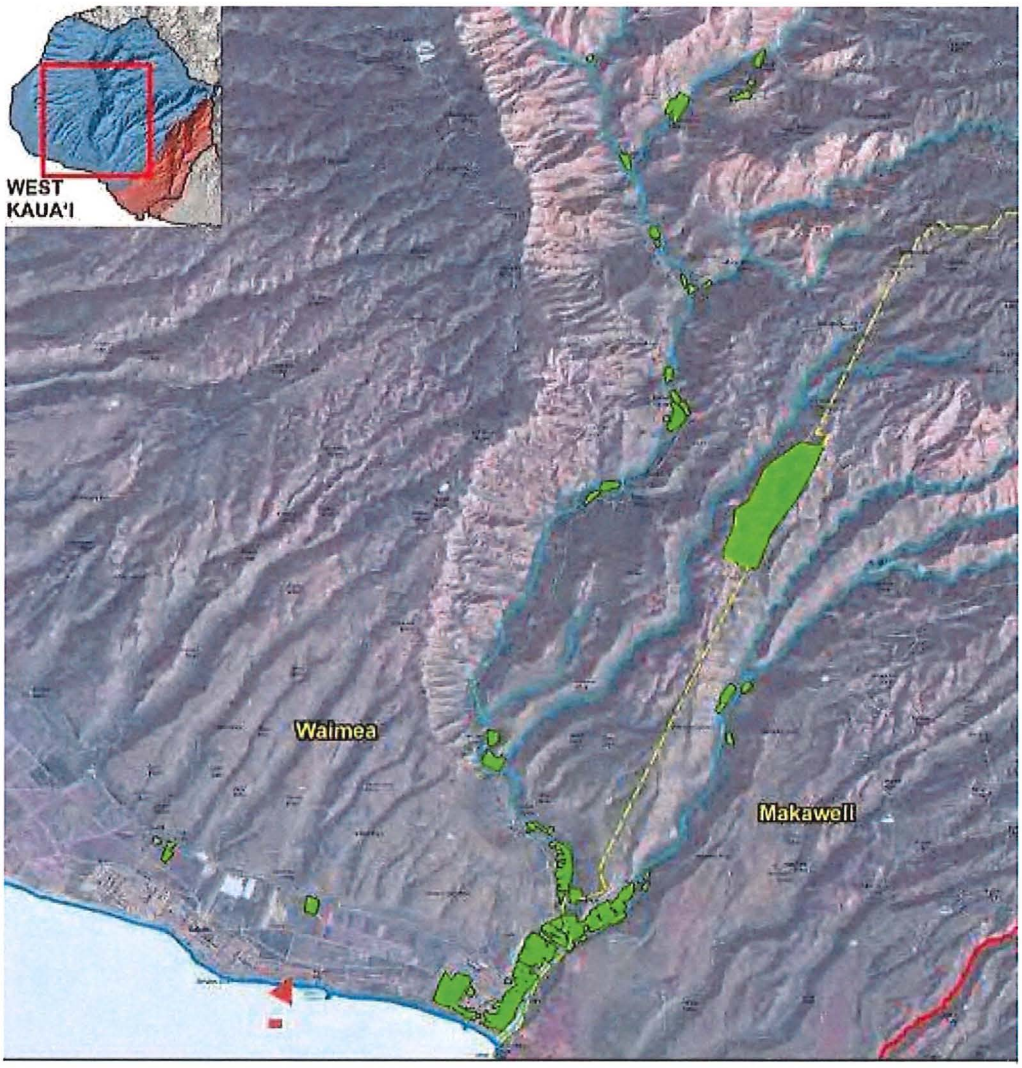

Figure 6. In green are the locations of the 150 LCA awards in Waimea. The red arrow is the project area.

Previous Archaeological Work

The closest and most germane studies to the project area are summarized below. Table 2 lists the historic properties near the project area and their associated studies.

Kikuchi and Remoaldo 1992
Kikuchi and Remoaldo (1992) conducted a survey and inventory of cemeteries on the island of Kaua'i. The Chinese Cemetery (SIHP # -00613, B005) and the Japanese Cemetery (SIHP # -00612, B004) are located west the current project area (see Figure 18). It was noted that the Chinese cemetery was surveyed but not sketched, however, the Japanese cemetery was only plotted on a map (Kikuchi and Remoaldo 1992:194).

Sinoto 1993
Sinoto (1993) conducted archaeological monitoring, a surface survey, and subsurface testing in three separate areas in Kīkīaola Land Company, Ltd. property. No significant findings occurred but, in a plan map, the identification of burials was noted on the property near the administration/restaurant building. SIHP # 50-30-05-01853 is noted as "graves" and "6+' deep," and SIHP # 50-30-05-01854 is a "grave" and "2' deep" (Sinoto 1993:3).

Hammatt and Chiogioji 1996
CSH (Hammatt and Chiogioji 1996) carried out an archaeological and historical assessment and field inspection of Kīkīaola lands with the project area including the Kīkīaola Small Boat Harbor and extensive lands just back from the coast to the west and east. Historic properties discussed include the Chinese Cemetery (SIHP # 50-30- 05-613 [SIHP #s for the cemeteries not given in report]) and Japanese Cemetery (50- 30-05-612) just north of the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area, burial sites SIHP #s 50-30-05-1853 and 50-30-05- 1854 by the Waimea plantation cottages, the Catholic Church and Cemetery, and the Waimea Sugar Mill building.

Masterson et. al. 1994
In 1994, Masterson et. al. (1994a) conducted an inventory survey with subsurface testing west of the current project area. No surface sites were located. Extensive subsurface testing throughout the project area revealed two areas containing buried cultural layers (50-30-05-700, - 703) and two human burials (50-30-05-701, -702). It was suggested that additional human burials may be present due to the close proximity between the two discovered burials.

Hammatt 2001
In 2001, CSH conducted an archaeological inventory survey (no finds recorded as an archaeological assessment) within an approximately 82-km (51-mile) road corridor for a proposed fiberoptic cable project between Kekaha and Moloa'a. The objective for the survey was to identify areas within the corridors that have potential for subsurface historic properties including human burials and cultural deposits (Hammatt 2001:1). The study was evaluated according to a scale representing four levels of potential for yielding subsurface archaeological resources. The four levels are low, moderate, high, and very high (Hammatt 2001:12). The current project area is in Section 1, Kekaha to Waimea Athletic Field and has high potential for yielding subsurface archaeological findings (Hammatt 2001:12–13).

Hammatt 2004
CSH (Hammatt 2004) prepared a letter report summarizing the inadvertent discovery of human skeletal remains at the Aloha Kaua'i Villas (4491 Kikiaola Place) at Kikiaola close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. A minimum of three human burials were encountered during pool excavation and were designated SIHP # 50-30-05-3911 Features A–C. A description of the stratigraphy within the pool excavation and skeletal inventories are presented.

Cordy et al. 2005
CSH (Cordy et al. 2005) carried out an archaeological assessment with subsurface testing for an 8.2-acre parcel at Kīkīaola close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. The fieldwork consisted of the excavation of 52 backhoe trenches and documentation of the sediment profiles. No sites were identified. Although artifacts, particularly bottles, dating to the early and mid- twentieth century were identified there was no discrete horizontal or vertical aggregation of artifacts such as to warrant site designation. This report was not fully scanned and there were missing pages as to trench location and trench profiles.

Stein and Hammatt 2006
CSH (Stein and Hammatt 2006) reported on archaeological monitoring and inadvertent burial recovery for an approximately 0.23-acre parcel within the Kekaha House Lots (TMK: [4] 1-3-05:45) quite close to the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. During excavations for a septic system with a leaching bed the crew discovered human remains. Two human burials were designated SIHP # 50-30-05-3941. Due to the lack of historical artifacts or coffins associated with the remains and because both burials were found in either a flexed or semi-flexed position these burials were regarded as likely pre-Contact interments. Dog bones were also observed.

Shefcheck and Dega 2006
In 2006, Scientific Consultant Services (SCS) conducted an archaeological assessment for a 4,400-sq-ft residential lot in Kekaha, TMK: (4) 1-3-005:044 (Shefcheck and Dega 2006:1). Five test trenches were excavated in the house footprint prior to construction. There were no significant findings, however, archaeological monitoring was recommended due to inadvertent findings in the neighboring lot (Shefcheck and Dega 2006:6).

Powell et al. 2009
Scientific Consultant Services (Powell et al. 2009) produced a historical summary of the former fishpond location and evaluation of the potential for human skeletal remains at TMK: [4] 1-3-005:053 located immediately west of the west end of the Kīkīaola Small Boat Harbor Sand Bypass project area. Information gathered suggests that Kekaha Sugar Company established a fishpond in 1957 in an existing pond area on Parcel 53 to raise tilapia to feed on the vegetation clogging irrigation ditches. SCS interviewed 74-year-old Willy Martin, a former employee of Kekaha Sugar Company, who was born and raised in Kekaha. Sometime in 1959 or 1960 Mr. Martin was instructed by the plantation to fill in the fishponds on Parcel 53. The "fill" material was to come

from a sand dune on the western side of Parcel 40. Parcel 53 is immediately adjacent to the eastern boundary of Parcel 40. Both parcels were owned by the Knudsen family. "There were a lot of bones" collected in burlap bags and interred in the pond as it was filled (Powell et al. 2009:10.)

Pestana et al. 2009
In 2009, SCS conducted archaeological monitoring for a 10,864-sq-ft parcel in Kekaha, TMK: (4) 1-3-005:052 LOT 1 for a septic water system installation project following the discovery of inadvertent findings or human remains. The disarticulated inadvertent findings represented a minimum of two individuals and was designated SIHP # 50-30-05-05030.

McMahon, 2015
In 2014, (McMahon 2015) monitored the dredging of Kīkīaola Small Boat Harbor for the Army Corp. of Engineers and the staging for the dredged material on Kīkīaola Land Company Ltd. near the Harbor. There were negative findings.

Kamai et. al. 2023
Recently (report in progress) CSH monitored a property nearby (Harbor House) for a guess house and its septic system. There were negative findings.

Table 2. Previously identified historic sites near the project area.

SIHP #	Site Type	Reference
50-30-05-00612 (B004)	Japanese Cemetery	Kikuchi and Remoaldo 1992
50-30-05-00613 (B005)	Chinese Cemetery	Kikuchi and Remoaldo 1992
50-30-05-02098	Burials	Powell et al. 2009
50-30-05-03881	Burials	Powell et al. 2009
50-30-05-03911	Burials	Hammatt 2004
50-30-05-03941	Burials	Stein and Hammatt 2006
50-30-05-05030	Burials	Pestana et al. 2009

Predicted Findings

Pre-contact burials will likely be located within pits and be associated with pre-contact habitation deposits. Post-contact burials will typically be located within extended pits with possible evidence of coffin material and/or grave goods associated with the post-contact period (metal jewelry or other Asian or European objects), which may be present. Habitation deposits will frequently be evident in the stratigraphy as dark-colored sand with features such as postholes and firepits, artifacts, and food remains (marine shell, bone, and kukui endocarps etc.). The post-contact deposits will contain ceramic, metal and glass. Agricultural features such as irrigation ditches, fishponds and irrigated fields, and the sand berms that were often built along the edges of ponds and fields may be found in trench profiles, but it is not likely in this area.

Methods

On November 25th, 2022, Field Archaeologist, Linz Armstrong, B.A. of EAL performed a 100% pedestrian survey of the project but the project area during the mowing, and ground visibility was great. Figure 8 shows the pedestrian survey sweeps. Pedestrian sweeps were made across the parcel in a north/south direction, approximately 5 – 8 meters apart. Figures 9 -11 show the modern trash found during the pedestrian survey.

On December 8th, 2022, Principal Investigator, Nancy McMahon, M.S., M.A., M.Ed. and Field Archaeologist, Linz Armstrong, B.A. returned to the project location to perform the subsurface survey. A backhoe (a Kobota U55 with a 2.5 " bucket) from the North Shore Land Management Company, (Billy was the operator) was used to conduct the test trenching. Four test trenches were placed across the property in location where proposed single-family residence, boatshed, septic tank and leachfield (Figure 12).

EAL used a Trimble RI mapping grade GPS unit with a real-time differential correction. This unit provided sub-meter horizontal accuracy in the field.

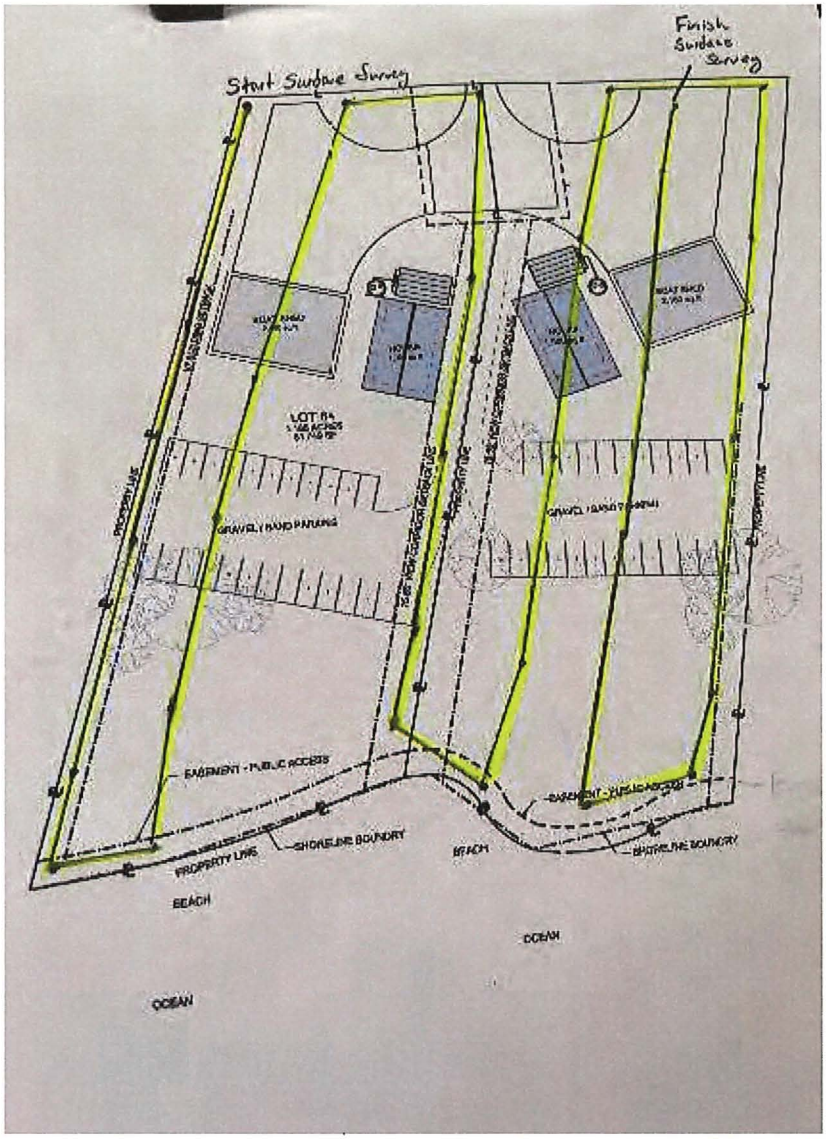

Figure 7. Pedestrian survey coverage on the two parcels: 39 and 40.

Figure 8. View project area during pedestrian survey looking south and northwest.

Figure 9. Modern trash found during surface survey.

Figure 10. Cement cylinder.

Subsurface Testing

Initially five test trenches were planned but the fifth trench was in the purposed parking lots which did not require much excavation other than filling and leveling. So, this trench was omitted from the testing strategy. The subsurface testing program involved four (4) backhoe trench excavations (T1 through T4) (Figure 12). In general, trenches measured approximately 6.1 meters (m) long by 1 M wide were excavated down to at least 1 M and 2 trenches to approximately 2 M within the project area.

A stratigraphic profile of each test excavation was drawn and photographed. The observed sediments were described using standard USDA soil description observations/terminology. Sediment descriptions included Munsell color; texture; consistence; structure; plasticity; cementation; origin of sediments; descriptions of any inclusions such as cultural material and/or roots; lower boundary distinctiveness and topography; and other general observations. Stratigraphic anomalies or potential cultural deposits were not found or exposed. A representative test excavation profile was made and presented for each test trench (Figures 13-16).

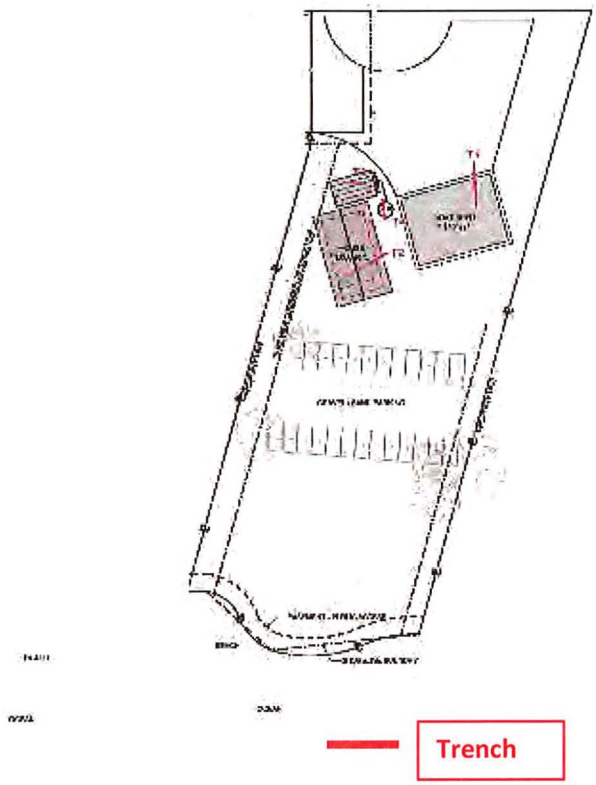

Figure 11. Trench locations.

Test Trench Properties

The stratigraphy within the project area was simple, consisting of three distinct strata. Each of these strata were based on color and composition changes (Table 3). Because stratigraphy proved to be regular throughout the test trenching, numbering of each stratum will be consistent and correlated between profiles.

The four (T1-4) trench dimensions were approximately 6.1 M length x 1 M wide x 1 – 2.0 M in depth. The trench locations orientation, length and depth varied. Excavation depth was determined by the estimate of the construction disturbance. Figure 12 shows the test trench locations. All trench (Table 4) locations had UTMs. Trenches' UTM position was taken from both ends of the trench, but Table 4 reports the UTM at the northern or eastern end of the trench.

Table 3. Soil Descriptions.

STRATUM	SOIL DECRIPTIONS
O-Horizon Level I 0-10 cmbs	10 YR 3/2 very dark grayish brown silty sand; inclusions of grass, modern trash, rocks, roots & rootlets; weak, very fine, single grain structure; dry loose consistence; non-sticky wet consistence; non-plastic; no cementation; clear and sometimes diffuse, smooth lower boundary
Level II 11-90/100.3 cmbs	2.5 Y 3/2 very dark grayish brown sand; inclusions of grains of 2.5 Y 4/3 (olive brown), weak, very fine, single grain structure; very friable moist consistence; non-sticky wet consistence; non-plastic; no cementation; abrupt smooth lower boundary
T4 Level III 100.4-200 cmbs	2.5 Y 3/3 very dark grayish brown sand; inclusions of lighter, olivine & brown, gray grains; weak, medium fine, single grain structure; very friable moist consistence; non-sticky wet consistence; non-plastic; no cementation, abrupt smooth lower boundary.

Table 4. Trench UTM, Length and Depth.

	Bearings		Length	Depth	
T1	**Easting:** 428240mE	**Northing:** 2428678mN	6.2 M	1.0 M	Boatshed
T2	**Easting:** 428252mE	**Northing:** 2428672mN	11.4 M	1.25 M	House
T3	**Easting:** 428252mE	**Northing:** 2428678mN	6.1 M	1.5 M	Leachfield
T4	**Easting:** 428254mE	**Northing:** 2428688mN	3.7 M	2.0 M	Tank

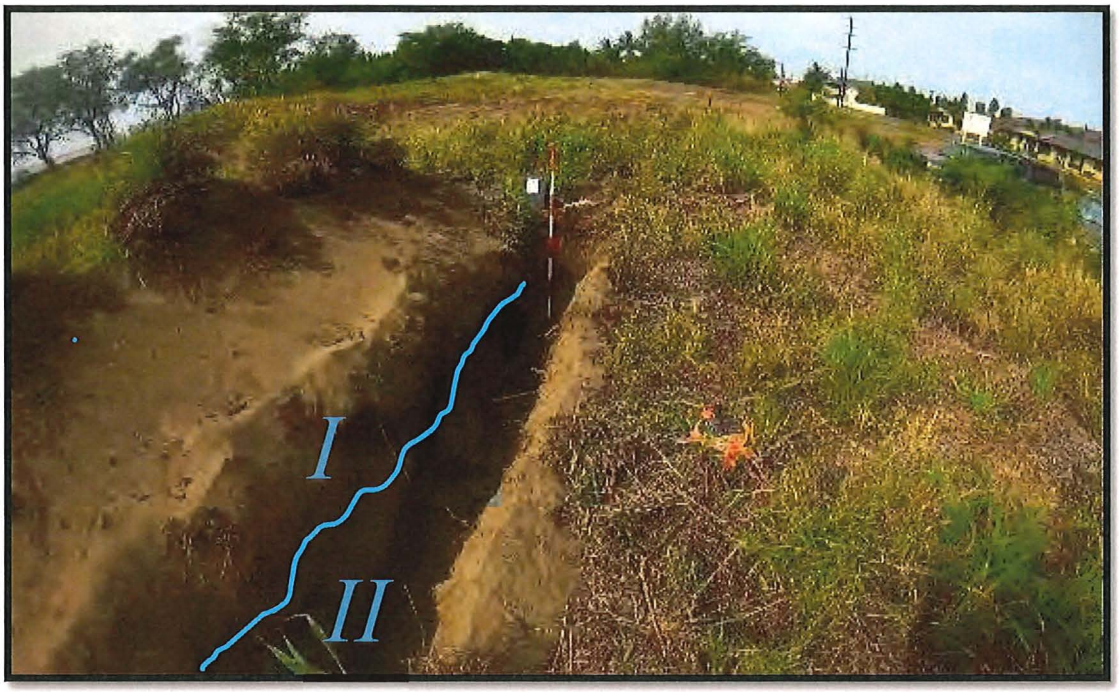

Figure 12. T-1 Looking west.

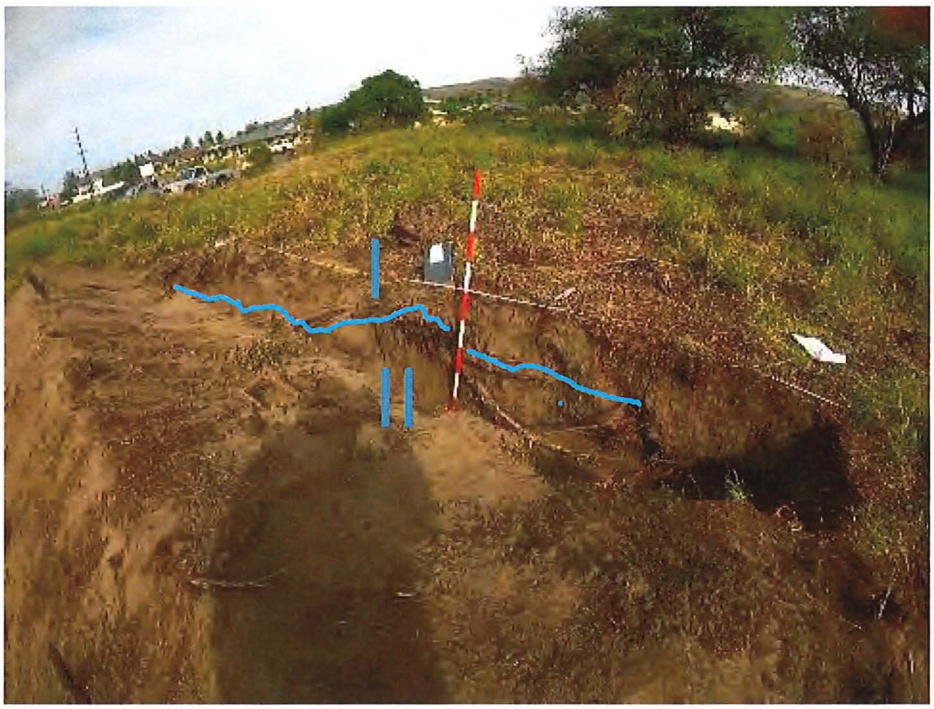

Figure 13. T-2, looking northwest.

Figure 14. T-3, looking southeast.

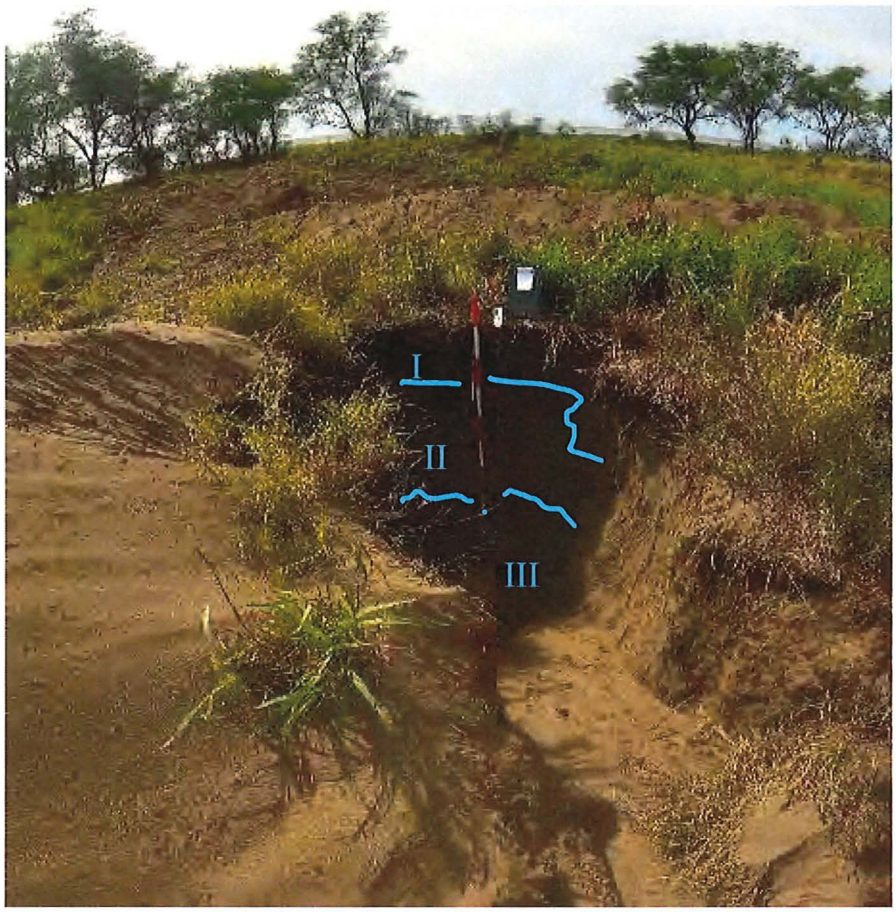

Figure 15. T-4, looking south.

Results

The pedestrian inspection identified no historic properties within the project area, most of which had already been disturbed by recent activity for pasture, cane and modern trash dumping grounds.

Subsurface testing conducted across the project area in locations that are to be developed yielded negative findings. As indicated through the previous archaeology research conducted within the vicinity of the project area also suggests no historic properties remain.

Recommendations

No historic properties were identified within the project area. The AIS results support a project determination of "no historic properties affected" for the current project. Because of these results the AIS becomes an Archaeological Assessment (AA). The AA fulfills the requirements of HAR

§13-276-5. No additional survey or data recovery is recommended for this project area, as no historic properties or human remains were encountered during testing.

This fact is surprising, considering the proximity of a historic cemetery, the environment, and prehistoric settlement pattern in the region, we still feel that the area is sensitive and recommend a combination of on-site and on-call monitoring for the deeper excavation work i.e septic system. After monitoring commences, if there continues to be no subsurface finds, that monitoring might then be amended from on-site to on-call, with agreement from an SHPD.

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