

## **APPENDIX A**

### Archaeological Literature Review and Field Inspection Report

**Archaeological Literature Review and Field Inspection  
Report for the Nāwiliwili-Ahukini Bike Path Project  
Nāwiliwili, Kalapaki and Hanamā'ulu Ahupua'a  
Līhu'e District, Kaua'i Island**

**TMK: (4) 3-2-004; 3-5-001, 002 & 3-6-002, 019, 020, and  
various rights-of-way between various plats**

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**Management Summary**

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| Reference                                | Archaeological Literature Review and Field Inspection Report for the Nāwiliwili-Ahukini Bike Path Project, Nāwiliwili, Kalapaki and Hanamā'ulu Ahupua'a, Līhu'e District, Kaua'i Island, TMK: (4) 3-2-004; 3-5-001, 002 & 3-6-002, 019, 020, and various rights-of-way between various plats  |
| Date                                     | May 2008  |
| Project Number                           | Cultural Surveys Hawai'i (CSH) Job Code NAWILWILI 1   |
| Investigation Permit Number              | The field inspection was conducted under archaeological permit number 08-14 issued by the Hawai'i State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.  |
| Project Location                         | The project area is located in coastal and near-coastal portions of three ahupua'a in Līhu'e District, Island of Kaua'i: Hanamā'ulu, Kalapaki and Nāwiliwili. The proposed bike- and pedestrian-path route alignments are located near and adjacent to the Ahukini Landing, Nimani Point Lighthouse, Līhu'e Airport, Kaua'i Lagoons and Marriott Resort, Līhu'e Civic Center and residential areas <i>mekei</i> (seaward) of the civic center, Nāwiliwili Park and Harbor, and Ni'mauhi Park. This area is depicted on portions of the 1996 Līhu'e and 1996 Kapa'a USGS 7.5-minute topographic quadrangle maps (see Figure 1) |
| Land Jurisdiction                        | Public and private land   |
| Agencies                                 | SHPD  |
| Project Description                      | The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path. The subject project links Nāwiliwili, Ahukini Landing, and the Līhu'e Civic Center (see Figures 1 and 2).  |
| Size of the Project Area                 | Approximately 8 miles (12.9 km) of bike- and pedestrian-path routes are included in the current alignment options for the subject phase of the project, design and widths of the various alignment options vary.  |
| Area of Potential Effect (APE)           | The Area of Potential Effect (APE) consists of all the alignment-option corridors between Nāwiliwili, Ahukini Landing and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders.  |
| Historic Preservation Regulatory Context | The Area of Potential Effect (APE) consists of all the alignment-option corridors between Nāwiliwili, Ahukini Landing, and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders.   |
| Fieldwork Effort                         | CSH archaeologists Gerald K. Iida, B.A. and Missy Kannal, and principal investigator Hallett H. Hammatt, Ph.D., conducted the fieldwork on May 15 and 16, 2008.   |

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| <p><b>Results</b></p> | <ol style="list-style-type: none"> <li>1. Seven historic properties—all in the coastal portion—have been previously identified in or immediately adjacent to the project area: three pre-Contact sites (a cultural layer at the shoreline, SHIP No. 50-30-11-424, an oval-shaped stone alignment or terrace, SHIP No. 50-30-11-421, and a 400-foot long stone wall considered to be a possible extension of Niinu Heiau, SHIP No. 50-30-11-100) and four historic-era sites (two stone wall remnants, SHIP Nos. 50-30-11-422 &amp; 423, the ruins of a plantation camp near Ahukini Landing, SHIP 50-30-08-9000, and a plantation-era pigsty, SHIP No. 50-30-08-3958). SHIP Nos. -100, -422 and -423 may be impacted by the proposed project; the other historic properties should not be affected by the proposed project.</li> <li>2. A historic cemetery designated B004 (cf. Kikuchi and Remoaldo 1992) located near Nāwiliwili Park may be impacted by the proposed project.</li> <li>3. Two historic bridges are located within existing rights-of-way / proposed alignments: an old railroad bridge previously modified as a pedestrian walkway spans the Nāwiliwili Stream, and an old one-lane bridge in disrepair spans the Pu'aili Stream in Niimahu.</li> <li>4. There are three areas of dense vegetation that have not been developed with roads or trails: two alignments near the center of the project area may contain sugar cane-era sites on the ground surface. The other alignment area, near Niinu Point Lighthouse, may contain older stone ruins and / or plantation-era sites or features.</li> <li>5. Several coastal areas may contain historically-significant subsurface archaeological deposits, especially from Niinu Point to the previous location of the long-destroyed Ahakini Heiau (located at Ahukini Point, about halfway up the coast from Niinu to Ahukini Landing). The old Hawaiian village of Kalapaki was once located in this area. The coastal area near Niimahu Park may also contain historically-significant subsurface archaeological deposits.</li> <li>6. The remaining portions of the project area have been previously under commercial sugar cane cultivation and/or have been modified by modern development; it is therefore unlikely that additional historic properties (either on the surface or in subsurface deposits) are present throughout most of the project area.</li> </ol> |
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| <p><b>Recommendations</b></p> | <ol style="list-style-type: none"> <li>1. Archaeological Inventory Survey (AIS) satisfying the Hawaii's Administrative Rules (HAR) Chapter 13-276 is recommended for limited portions of the project area, including: (a) the three areas in which the proposed alignments traverse densely-vegetated lands without roads, trails or pathways; (b) the coastal alignment corridor between Niinu Point and Ahukini Landing, especially the southern half of this coast, from Ahakini Point to Niinu Point. Where drainage improvements or other improvements requiring significant ground disturbance are planned, subsurface testing (excavation) within the footprint of the proposed improvements is recommended, given the likelihood of encountering historically-significant cultural materials in this area.</li> <li>2. An Archaeological Monitoring program satisfying HAR Chapter 13-279 should be developed and implemented consisting of a combination of on-site and on-call monitoring. Monitoring specifications will depend upon results of the AIS. Monitoring should also include the alignment in Niimahu Park. Monitoring is probably not necessary in any of the <i>māhele</i> (inland) areas away from the coast, since these have all been severely modified by prior historic and modern disturbances.</li> <li>3. The two bridges located within existing rights-of-way of proposed alignments should be documented and formally assessed for historic significance by a qualified Architectural Historian.</li> <li>4. The historic cemetery designated B004 by Kikuchi and Remoaldo (1992) is located near the Nāwiliwili Park portion of the proposed bike- and pedestrian-path alignment. Archaeological Monitoring should accompany any ground disturbance along the alignment in the vicinity of Nāwiliwili Park given the potential for inadvertent finds.</li> <li>5. No further historic-preservation work is recommended for the majority of the project area (i.e., all those lands not specifically mentioned above)</li> </ol> |
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## Section 1 Introduction

### 1.1 Project Background

At the request of R.M. Towill Corporation, Cultural Surveys Hawai'i, Inc. (CSH) prepared this Archaeological Literature Review and Field Inspection for the Nāwiliwili-Ahukini Bike Path Project, which is located in coastal and near-coastal portions of three *ohiopia*'a in Līhu'e District, Kaua'i: Hananā'ulu, Kalapaki and Nāwiliwili. The proposed alignments are located adjacent to Ahukini Landing, Ninini Point Lighthouse, Līhu'e Airport, Kaua'i Lagoons, Marriott Resort, Līhu'e Civic Center and residential areas *maka'i* (seaward) of the civic center, Nāwiliwili Park and Harbor, and Niʻumalu Park. This area is depicted on portions of the 1996 Līhu'e and 1996 Kapa'a USGS 7.5-minute topographic map (Figures 1 and 2).

The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path, a distance of some 17 miles (27.4 km) of coastline along windward Kaua'i. The subject project (Phase VI of the overall project) links three main sub-areas at the southern end of the overall project corridor: Nāwiliwili, Ahukini Landing, and the Līhu'e Civic Center. Preliminary planning includes several main alignment options (see Figures 1 and 2), all of which were inspected for this study.

Approximately 8 miles (12.9 km) of bike- and pedestrian-path routes are included in the current alignment options for Phase VI. Design specifications and widths of the different alignment options vary. The Area of Potential Effect (APE) consists of the entire approximately 8 miles of alignment-option corridors between Nāwiliwili, Ahukini Landing and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders.

### 1.2 Scope of Work

The subject document is not intended to satisfy the Hawai'i Administrative Rule (HAR) governing Archaeological Inventory Survey (HAR Chapter 13-276). This study was designed to identify known archaeological sites, and to provide recommendations relevant to the State of Hawai'i's historic-preservation review process. The scope of work was as follows:

1. Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or adjacent to the subject property.
2. Limited field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation or mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research and the limited fieldwork with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate. It will also provide

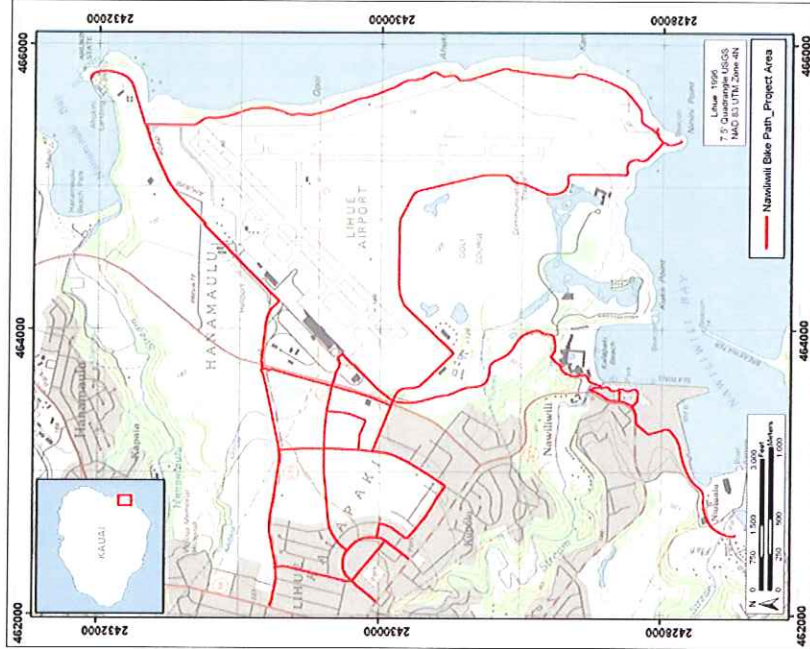


Figure 1. Project area location shown on portions of the USGS 1996 Līhu'e and 1996 Kapa'a quadrangles. 7.5-minute topographic map, red line depicts all proposed alignments



Figure 2. Project area location shown on aerial image (source: Orthoimagery 2005); red line depicts all proposed alignments

mitigation recommendations if there are archaeologically sensitive areas that need to be taken into consideration.

### 1.3 Environmental Setting

#### 1.3.1 Natural Environment

The project area extends from the coastline, between Ahukini Landing in the north to Ninini Point in the south, inland approximately 2.7 kilometers (1.7 miles), rising from sea level to approximately 220 feet above mean annual sea level in Lihue Town. The area's topography is gently sloping up to the west; there are several shallow, intermittent, unnamed drainages between Lihue Town and the coast (Juvik and Juvik 1998).

Located on the southeast coast of Kauai, the project area is exposed to the prevailing northeast trade winds, and receives 40 to 50 inches of rainfall annually along the coast and up to 100 inches annually inland (western portion of the project area). The annual average temperature ranges from 75-80° F at the airport (Giambelluca et al. 1986; Juvik and Juvik 1998).

Soils in and around project area consist primarily of Lihue silt clay (LHB and LHC) and Lihue gravelly silt clay (LIB) (Foote et al. 1972) (Figure 3). Lihue soils have a surface layer of dusky-red to dark reddish-brown firm silt clay. The substratum is soft, weathered basic igneous rock. Sugar cane has been the main commercial crop in this area in historic times.

Given the relatively large area covered by the proposed bike- and pedestrian-path route alignments, and given the presence of developed areas, road ways, resorts and other facilities (e.g., parks, harbors and the airport), vegetation in and around the project area is quite variable. Areas around the airport, for example, consist of landscaped lawns and introduced ornamental and exotic plants. Tall invasive grasses cover much of the project area that was once utilized for commercial sugar cane. The coastal strip is covered in dense vegetation with both native and introduced species, including *Naupaka* (*Scaevola serricea*), *Ilima* (*Sida fallax*), *Koa* (*Acacia leucoccephala*), *Christmasberry* (*Schinus terebinthifolius*), Ironwood (*Casuarina* spp.) and tall grasses.

#### 1.3.2 Built Environment

Background research indicates that nearly the entire project area was, prior to the construction of the Lihue Airport, under commercial sugar cane agriculture. This agricultural use of most of the project area resulted in the grading and repeated plowing of the project area. With the construction of the airport, residential areas to the west in Lihue Town, the resorts between Ninini Point Lighthouse and Nawiliwili, and other facilities and infrastructure (e.g., roadways and utilities), most of the project area was further modified by modern land uses. The coastal strip area has been less affected by modern land use, but still shows clear evidence of modifications, such as dirt trails and tracks and illegal dumping of refuse materials.

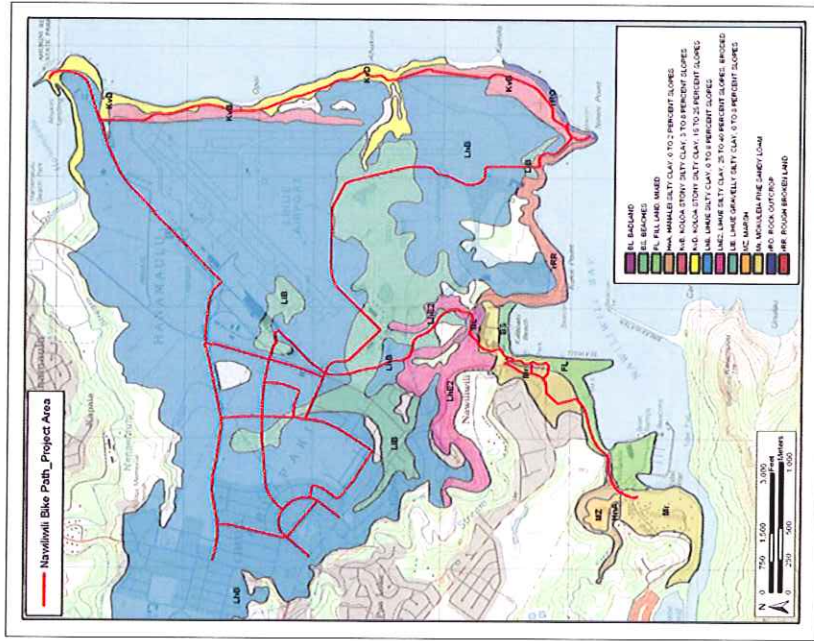


Figure 3. Soil types in and around the project area (data from Foote et al. 1972)

## Section 2 Methods

### 2.1 Field Methods

The scope of work called for an archaeological field inspection of the project area to identify any surface archaeological features; to investigate and assess the potential for impact to such sites; and to identify any sensitive areas that may require further investigation or mitigation prior to proposed project. The field inspection was not intended to satisfy current standards for Archaeological Inventory Surveys in Hawai'i; rather, the primary objective of this report is to serve as a planning document to facilitate the environmental review process for the proposed project.

Fieldwork was conducted on May 15 and 16, 2008, by CSH archaeologists Gerald K. Ida, B.A., and Nancine "Missy" Kamae, and principal investigator Hallett H. Hammett Ph.D. With the exception of one or two heavily-vegetated areas, the entire proposed bike-path route was inspected. Most of the inspection area was covered by vehicle, with frequent stops for documentation, which consisted of digital photography and hand-written field notes. Pedestrian inspection occurred at and around the Marriott Hotel where portions of the bike-path route follow existing pedestrian paths.

### 2.2 Laboratory Methods

Given the scope of work for this project, which included only limited field inspection of surface sites, no materials were collected or recovered, and no laboratory work was undertaken.

### 2.3 Document Review

Numerous published and unpublished accounts, surveys, maps and photographs found in public and private collections pertaining to the project area were investigated by CSH. Historical documents, maps and existing archaeological information pertaining to sites in the vicinity of this project were researched at the SHPD library, CSH library and the University of Hawai'i's Hamilton Library.

### 2.4 Consultation

Community consultation was undertaken for a companion Cultural Impact Evaluation (CIE) for this project (CSH Job Code NAWLWILL2). No formal consultation was undertaken for the subject Archaeological Literature Review and Field Inspection.



### Section 3 Traditional Background

#### 3.1 Overview

This section focuses on the traditional background of coastal and near-coastal portions of three *ahupua'a* in the *moku* (traditional district) of Puna: Hanamā'ulu, Kalapaki and Nāwiliwili (Figure 4). The subject project area is located between the two main bays and streams of Nāwiliwili (to the south) and Hanamā'ulu (to the north). These two meandering streams, which drain the slopes of Kīlohana Crater (1143 feet elevation), were once home to thousands of native Hawaiians living a traditional subsistence lifestyle.

Handy (1940:67) describes these two valleys in his chapter on the main *kalo* (taro) growing locations in Puna Moku:

[Nāwiliwili] For 3 miles inland from the sea the Nāwiliwili River twists (*wiliwili*) through a flat valley bottom which was formerly all in terraces. Inland, just above the bay, three Hawaiian taro planters cultivate wet taro in a few small terraces. Most of the land is [now] in pasture.

Hanamā'ulu River, rising below Kīlohana Crater, winds its zigzag way to the sea through a relatively broad gulch, which had many small terraces commencing at a point about 2.5 miles up from the sea and continuing down to the delta of the river which begins about a mile inland. The small terraces inland from the highway are unused. The delta region is a continuous area of flatland now mostly under sugar cane and house sites. Formerly this [delta] must have been planted in taro.

A fishing village called Kalapaki was located between these two major stream valleys, near the seashore, before the historic period. This general area between the streams and *mokai* of the present town of Līhū'e, *manuka* of the village house sites, had several fishponds and small drainages. The village was located east and north (around and up the coast) from Kalapaki Beach. There are some unique aspects of traditional land use and settlement in the subject project area, as discussed below (Section 3.4 Subsistence and Settlement).

Kalapaki, famous for its wind, appears to have had closer ties with Nāwiliwili than with Hanamā'ulu. Kalapaki is well-known in a traditional sense for its several *heiau*. Hanamā'ulu is probably best known as the birth place of Kawelo, the famous hero and Mō'ī (king) of Kaua'i in the late 17<sup>th</sup> to early 18<sup>th</sup> century. Nāwiliwili is well-known for its *heiau* at Kubiani, reportedly at least four acres in size, and its associated *pōhaku* (rock) called Paukini located in the bay.

#### 3.2 Place Names

Translations presented without attribution in this subsection are from Pukui et al. (1974), unless indicated otherwise.

Pukui et al. (1974) list but do not translate Kalapaki, defined simply as a "beach" in Līhū'e district. Pukui and Elbert (1986) define the word kalapaki (with a small "k") as "double-yolked egg-*Kana'i*". Aside from its beach and landing, Kalapaki is probably best known in a traditional sense for its *heiau* of Aluhiki and Nihami (and possibly another at Kukū'i). Aluhiki has been

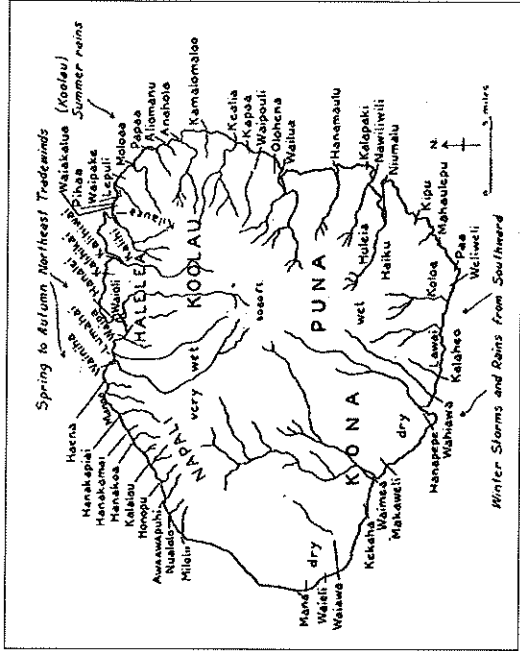


Figure 4. *Moku* (traditional districts) and *ahupua'a* of Kaua'i; note the location of "Hanamā'ulu," "Kalapaki," and "Nāwiliwili" (Handy 1940)

translated as "altar [for] many [blessings]" (brackets inserted by Pukui et al. 1974), and this was also the name for a *heiau* in Kane'ōhe. Nihami has been translated as "pour," as in *nihini wai* (to pour water).

Most sources suggest Nāwiliwili takes its name from the *wiliwili* tree (*ia* is the plural article, as in "the *wiliwili* trees" or "place of the *wiliwili* trees"). According to Pukui and Elbert (1986), the *wiliwili* (*Erythrina sandwicensis*) is a native leguminous tree whose flowers and pods are used for *lei*, and whose light wood was once used for surfboards, outriggers, and net floats. Handy (1940:67) suggests a *kaona* (hidden meaning) for the name Nāwiliwili based on a reduplication of the word *wili*, which means "twisted," as in the meandering Nāwiliwili Stream.

Hanamā'ulu has been translated as "tired (as from walking) bay," which may be related to *mo olelo* (oral history) and *ōlelo mo tau* (poetical sayings) about the "stung" people of this place (see below).

Līhu'e (literally translated as "cold chill") became the modern political name for the traditional *moku* (district) of Puna. It is clear that Līhu'e is a traditional place name, but less certain that the subject project area was specifically called this name prior to the historic era. (It is also well known that Līhu'e was a traditional settlement area near the current Schofield Barracks on O'ahu.) Historical documents suggest the name Līhu'e was first applied to this area of Kaula'i by Kaikoerava (Governor of Kaula'i) in the 1850s, perhaps after Kaivooewa's upcountry residence on the island. On the other hand, Nathaniel Emerson's translation of the famous *oli* (chant) cycle of Hī'iaka and Pele (see below) mentions Līhu'e with the other main places names of this area.

Kilohana, source of the water of the Nāwiliwili and Hanamā'ulu Streams, has several possible meanings: Pukui et al. (1974) list three: "lookout point," "outer tap," or "best, superior."

### 3.3 Mo'olelo Associated with Specific Place Names

There are many *mo'olelo* associated with the project area environs. For example, one of the oldest and most famous legendary accounts in Hawaiian oral tradition describes the travels and exploits of Pele, the Hawaiian volcano goddess, and one of her sisters, Hī'iaka-kapi'olepe (more commonly known simply as Hī'iaka). Pele, in her lengthy *oli* (chant) of literally hundreds of named winds of Kaula'i, lists those of Nāwiliwili, Kalapaki, Ahukini, Līhu'e, Kapāia, and Hanamā'ulu (Nogelmeier 2006):

*He 'one ka makani o Nāwiliwili*  
*He Wāma ka makani o Kalapaki*  
*He 'Ehuka ka makani o Ahukini*  
*He Pūhala ke kū ho o kī makani lele kula o Līhu'e*  
*He Kūi 'āhu ka makani o Kapāia*  
*He Ho 'ōluakaināhe ka makani o Hanamā'ulu*  
 The wind of Nāwiliwili is a Hu'one  
 The wind of Kalapaki is a Wāma  
 The wind of Ahukini is an 'Ehuka  
 A Pūhala wind is the scout that fetches the winds sweeping the Līhu'e plains  
 The wind of Kapāia is a Kūi'āhu  
 The wind of Hanamā'ulu is a Ho'ōluako'inehe

A full description of the numerous oral-historical associations with the subject project area is beyond the scope of this document. The Cultural Impact Evaluation (CIE) for the subject project area (CSH Job Code NAWILWILI 2) contains an extensive oral-historical presentation, including specific *mo'olelo* about Kalapaki, Nāwiliwili, Hanamā'ulu, Ahukini and Nīnini, Kūhian Heiau and its *pūhala* Paukini, and Kilohana.

### 3.4 Subsistence and Settlement

The *ahupua'a* of Hanamā'ulu, Kalapaki and Nāwiliwili were permanently inhabited and intensively used in pre-Contact times, based on a large amount of archaeological, historical, and oral-historical documentation. The coastal areas were the locus of permanent house sites and temporary shelters, *heiau*, including *ko'a* and *kū'ūia* (both types of relatively small shrines

dedicated to fishing gods), and numerous trails. There were fishponds at Kalapaki and Nāwiliwili. Further from the current project area, there were numerous house sites and intensive cultivation areas within the valley bottoms of Nāwiliwili and Hanamā'ulu Streams.

Before the historic era, there was a village at Kalapaki (probably between Kalapaki Beach and Ahukini), and another, likely larger, at Nāwiliwili to the southwest. Another village was located near the mouth of the Hanamā'ulu Stream.

The upland areas of these *ahupua'a* contained native forests and were cultivated with crops of *waka* (paper mulberry, *Broussonetia papyrifera*), *uata* (sweet potatoes, *Pomoea batatas*), and *ipu* (bottle gourd). Legends and historic documentation (especially Land Commission records) elaborate on many of these important natural resources.

The archaeological record of the Līhu'e District indicates a date range of circa A.D. 1100 to 1650 for pre-Contact Hawaiian habitations (Walker et al. 1991). A radiocarbon date of A.D. 1170-1400 was obtained from excavated sediments near the mouth of Hanamā'ulu Stream.

Land Commission documents (described in more detail below) indicate a land use pattern that may be unique to this part of the island, or to Kaula'i, in general, in which *lo'i* (irrigated terraced gardens) and *kūla* lands in same *āpana* (portion of land), with houselots in a separate portion. In most places, *kūla* lands are defined as drier landscapes and they do not typically occur next to, and among, wetter *lo'i* lands.

### 3.5 Streams

Nāwiliwili and Hanamā'ulu Streams have their *maka* (source) on the slopes of Kilohana Crater, four-and-one-half miles to the west. Kilohana is associated with *mo'olelo* about a giant, bird hunters who lure him to his death, and *koa* (warriors) that come to avenge the giant's murder only to be thrown to their deaths by the young bird hunter Lahi. It is important to point out that the water in these two streams running by the subject project area, literally defining its northern and southern margins, would have been closely associated with Kilohana in the parlance and expressions of native Hawaiians living a traditional lifestyle in and around the project area.

Two smaller streams, Koona'awa nui and Koona'awa iki, are identified in Land Commission documents, although neither of these is named on any extant maps. Given the gently-sloping character of the natural lay of the land from Līhu'e to the coast, it is possible that there were once a few other smaller drainages traversing what is now the airport, resort and golf course area, and that native Hawaiian planters made use of this water (Figure 5).

### 3.6 Heiau

There are several historic map sources showing multiple *heiau* along the seashore and stream mouths in and around the general footprint area of the proposed project (Figures 6 and 7). For the most part, all physical evidence of these *heiau* has been obliterated by historic activities and more recent development. Despite this, however, many people still appreciate the sacred nature of the landscape areas in and around these *heiau* (e.g., the rocky points at Nīnini, Ahukini, and Kūki'i). These differences between western and indigenous ideas about value and significance are rarely mentioned in archaeological studies, but they are fundamental to the understanding traditional resources of this area.

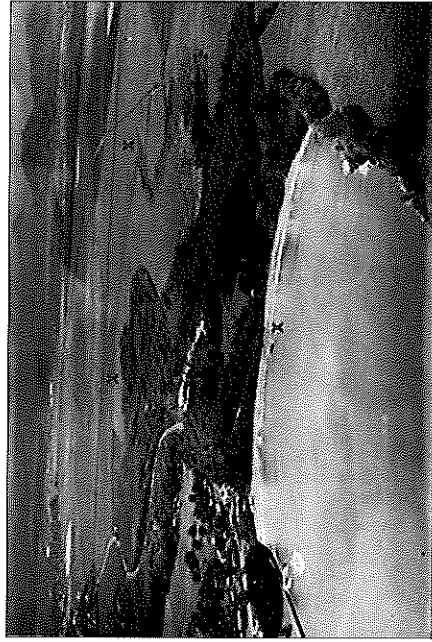


Figure 5. Kalapaki Bay, showing location of two streams and their outlets (red Xs) to Kalapaki Bay; Koera awa stream is on the left (undated photograph in Kama'i Museum files, see <http://www.hawaii.edu/cenvironment.aunakunuwai.htm>)

Lt. George G. Jackson's 1881 map of Nāwiliwili Harbor shows there were major *heiau* on both sides of the mouth of Nāwiliwili Stream (see Figure 6). On the east side, in Kalapaki Ahupua'a, Jackson's map depicts "remnants of ancient heiau" near Kūki'i Point. On the west side of the bay, in Nāwiliwili Ahupua'a, there is an area labeled "Kuhiau" near the court house; this was the previous location of Kuhiau Heiau.

In addition to the *heiau* at Kūki'i and Kuhiau, Damon's (1931) map shows two additional sites located in coastal Kalapaki Ahupua'a: Niini Heiau at the point of the same name, located east of Kūki'i; and Ahukini Heiau, located about halfway to Hanama'uli Ahupua'a (see Figure 7).

Bennett's (1931) archaeological survey of the late 1920s documented three *heiau* within the general footprint area of the proposed project (see Section 5 Previous Archaeological Research for Bennett's map). Kuhiau Heiau, State Inventory of Historic Properties (SIHP) No. 99, was located at Nāwiliwili near the site of the old courthouse. By Thuram's time, approximately two decades before Bennett's work, this *heiau* was already described as "long since destroyed" (Bennett 1931:124). Thuram described it as:

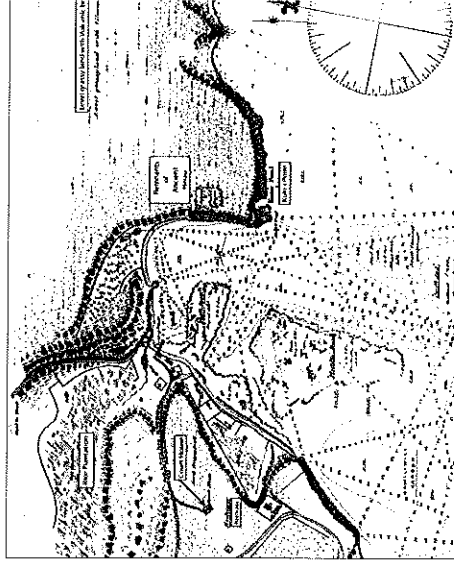


Figure 6. Detail of 1881 map of Nāwiliwili Harbor by Lt. George G. Jackson, showing remnant of ancient heiau also note the area called "Kuhiau" near the court house (left-hand side), previous location of Kuhiau Heiau

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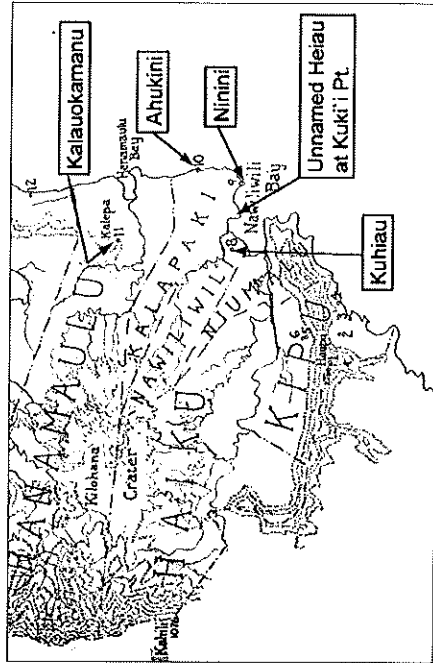


Figure 7. Damon's (1931) map showing heiau along the coast sections of Hanama'ulu, Kalapaki, and Nāwiliwili, Alupua'a

[a] large paved heiau, whose enclosure covered an area of about four acres... The rock Paupani, now separated from but formerly connected with the shore, was where the kahuna lived. This is said to have been the largest and most famous on Kauai in its day. (Bennett 1931:124)

Ninini Heiau (SHP No. 100) and Ahukini Heiau (SHP No. 101) were both described by Bennett as totally destroyed. According to Thurun (Bennett 1931:125), Ahukini was "[a] heiau of medium size; foundations only now remain." Thurun's (1907) island-wide listing of heiau on Kauai includes another "destroyed" heiau called Pohakoelele.

## Section 4 Historical Background

This section is based on prior works by Damon (1931), Hammatt and Creed (1993), and Creed et al. (1999). Damon's *Koamali* (a history of the Rice Family) contains excerpts from a large number of 19<sup>th</sup> century primary sources, including first-hand observations of life and times in and around Lihū'e / Nāwiliwili. Creed's work, in particular, contains extensive documentation and interpretation of Land Commission documents. Dorrance and Morgan (2000), Dorrance (2001), Wilcox (1996) and Condé and Best (1973) all document historical aspects of commercial sugar cane, railroads, irrigation, plantations, and other 19<sup>th</sup> and 20<sup>th</sup> century changes.

### 4.1 Early Historic Period

The first written accounts of Kauai are from travelers, missionaries, and surveying expeditions. Missionary accounts of first half of the nineteenth century provide the majority of the early written records for this particular part of Kauai (Figure 8).

Damon (1931:401) wrote about Hiram Bingham's 1824 observations from his memoir, *A Residence of Twenty-One Years in the Sandwich Islands*, published in 1847:

In 1824, when walking around the island from Waimea to counsel the people after the wreck of *The Cleopatra's Barge*, Rev. Hiram Bingham crossed from Hanapepe, as has been seen, over the old upland trail back of Kīlohua, and wrote of it as 'a country of good land, mostly open, unoccupied and covered with grass, sprinkled with trees, and watered with lively streams that descend from the forest-covered mountains and wind their way along ravines to the sea, - a much finer country than the western part of the island.'

In the 1830s, another missionary, Rev. Peter Gulick, was living on Kauai at Waimea and Kōloa. He made the following observation about the kind of provisions one could find in Hanama'ulu at the time:

...The governor [Kaikioewa] reached Hanamaulu in his canoe just as we entered on horse back... This is the governor's custom, when he travels. A man is sent before to give notice that provision may be made, at the different stopping places, for him and his train; which frequently amounts to two hundred [people]... I with a few natives had a comfortable house at Hanamaulu. The inhabitants brought us fish fresh from the ocean, fowls, taro, potatoes, and a pig, all except the fish roasted or baked in the ground... A youth who went with me for the purpose prepared my food. My bed, which was made with mats, was covered with ten tapus; these were the bed clothes which according to custom were presented to the guest for whom they were spread. (Damon 1931:360)

At this same time, in the 1830s, the Governor (Kaikioewa) founded a village at Nāwiliwili that eventually developed into Lihū'e. According to Hammatt and Creed (1993), the name Lihū'e was not consistently used until the establishment of commercial sugar cane agriculture in the middle 19<sup>th</sup> century; and from the 1830s to the *Māhele*, the names Nāwiliwili and Lihū'e

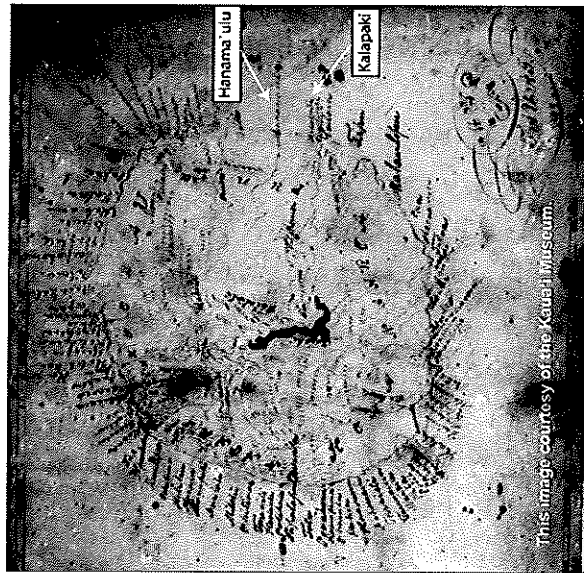


Figure 8. 1824 map of Kaula'i showing Hanama ulu and Kalapak'i (source: Kaula'i Museum)

were used interchangeably to some extent to refer to a settlement along Nawiliwili Bay. Some sources attribute the decision to call this area Lihue (literally translated as "cold chill") to Kaikioewa, who apparently named it after his nearby upcountry home. Waimea and Koloa were preferred anchorages compared with Nawiliwili, which opens directly east to the trade winds. Gales were known to blow ships onto the rocks. During the whaling era, Koloa, which was home to the earliest major commercial operations in the Hawaiian Islands, was the preferred anchorage because of the ready supply of nearby food stuffs for resupply of the ships.

By 1830, the sandalwood trade had waned and the whaling industry was just beginning. At the same time, commercial agriculture was being established on Kaula'i. When the first crop of sugar cane was harvested at Koloa, the king himself commanded that portions of his private land be planted in cane. The Governor of Kaula'i Kaikio'ewa in 1839 began farming the slopes of

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Nawiliwili Bay where there was more rain than at Koloa (Dorrance and Morgan 2000). He also built a house and church in Nawiliwili Ahupua'a.

Donohugh (2001:94) describes Governor Kaikio'ewa's attempt to establish the first commercial sugar mill and plantation in Lihue in 1839:

During the early decades of Koloa Plantation, other sugar plantations had started up on the island. One was to result in the ascendancy of Lihue to the principal town and seat of government on Kaula'i, replacing Waimea. When Kaikio'ewa was appointed governor, he located his home in what is now the Lihue District. He planned to grow sugar cane but died in 1839 before his plans could be realized. Kaikio'ewa was responsible for the name [Lihue], which means "cold chill," the name of his previous home at a higher and chillier altitude on O'ahu.

Donohugh (2001:94) describes observations by James Jarves, who passed through Lihue in 1838:

... [He] found only a church built by Kaikio'ewa and a few grass houses. He commented the governor had selected Hanama'ulu Bay as the harbor, "entirely overlooking the fact that it opened directly to the windward."

Kaikio'ewa died in 1839 soon after the start of the sugar plantation, which lasted only one year and closed down in 1840 (Dorrance and Morgan 2000).

Around this time, perhaps as late as 1842, the first missionaries settled in the Lihue area led by Dr. and Mrs. Thomas Lafon, and assisted by Rev. and Mrs. Peier Galick from Koloa. Schools were opened, and some missionaries attempted to grow cotton as the first intensive cash crop, but were unsuccessful (Damon 1931).

An account of the United States Exploring Expedition, which passed through Lihue in 1840, talks about the area, but also mentions the forced removal of *kama'aina* from the coastal areas:

At noon they reached Lihue, a settlement lately undertaken by the Rev. Mr. Lafon, for the purpose of inducing the natives to remove from the sea-coast, thus abandoning their poor lands to cultivate the rich plains above. Mr. Lafon has the charge of the mission district lying between those of Koloa and Waoli. This district [Lihue] was a short time ago formed out of the other two.

The principal village is Nawiliwili, ten miles east of Koloa. This district contains about forty square miles, being twenty miles long by two broad. The soil is rich; it produces sugar-cane, taro, sweet-potatoes, beans, etc. The only market is that of Koloa. The cane suffers somewhat from the high winds on the plains.

The temperature of Lihue has much the same range as that of Koloa, and the climate is pleasant; the trade-winds sweep over it uninterrupted, and sufficient rain falls to keep the vegetation green throughout the year. No cattle are to be seen, although the pasture is good. (Wilkes 1845:67-68)

With the death of Kaikio'ewa, governorship of Kaula'i was transferred for a brief period to his widow, Keawe'namahi. Then followed the brief tenure of Chiefess Kekau'ohi and her husband Keali'iahonui (son of King Kaunamahi'i) after which the governorship passed to Paulo Kameo in

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1848. Kanoa had two houses overlooking Nāwiliwili Bay: one on the bluff south of Nāwiliwili Stream (the present site of Kanoa High School) and another at Papalimaha, north of the bay (Damon 1931).

William DeWitt Alexander, son of Waioli missionary William P. Alexander, traveling from Kōloa to the north shore of Kauaʻi in 1849 recorded some descriptive notes of Hanamāʻūlu:

A few miles further on we crossed the picturesque valley of Hanamāʻūlu. This valley is pretty bordered by groves of Kukui, koa, & hala trees, and is well cultivated with taro. A fine stream flows through the midst of it, which makes a remarkable bend at this place like a horse shoe. We then traveled along the seashore at the foot of a range of hills through groves of hau, & among hills of sand. It was now after dark, but the moon shone brightly, and there was no difficulty in finding our way. About eight o'clock we arrived at the banks of the Waihua river. (Kauai Historical Society 1991:121)

One of the last vestiges of the pre-cash crop landscape is depicted in the diary entry for the Rice family's arrival on Kauaʻi in 1854. During the second half of the nineteenth century, western settlers and entrepreneurs set their sights on southeast Kauaʻi. Damon describes the Lihū'e landscape at the time of the family's arrival at Nāwiliwili Bay:

From the dock of their river craft in 1854 Mrs. Rice and the children could plainly see above the rocky shore and ruins of Kūhānā, the old heiau, or temple, and nearby on the bluff the flaming blossoms of a great wilt-wilt tree among koa trees which ten grew almost down to the water's edge. (Damon 1931:17-18)

#### 4.2 Middle to Late 19<sup>th</sup> Century

The middle 19<sup>th</sup> century brought great changes to Lihū'e, including private and public land ownership laws known as the *Māhele* (literally, 'to divide' or 'to section'), and commercial sugar cane agriculture, which firmly established Lihū'e's place in state and global economic markets. Coulter's (1931) population density estimates for 1853 (Figure 9) show a relatively large settlement around Nāwiliwili Bay.

##### 4.2.1 The Māhele

In the middle 19<sup>th</sup> century, during the time of Kamehameha III, a series of legal and legislative changes were brought about in the name of 'land reform' (see the works of Jon Chinen 1938, 1971 for a thorough and well-written explanation). Previous to the *Māhele* (all land belonged to the *ākea* (gods), held in trust for them by the paramount chief, and managed by subordinate chiefs. Following the enactment of a series of new laws from the middle 1840s to middle 1850s, all land in the Hawaiian Kingdom was divided into three main types: government (or Crown) land; *aliʻi* (chiefly) lands; and commoner lands, which *makeʻāina* could in principle obtain in fee simple, following passage of the Kuleana Act in 1850. This act allowed *makeʻāina* (in principle) to own land parcels at which they were currently and actively cultivating and/or residing. In theory, this 'set aside' of hundreds of thousands of acres as

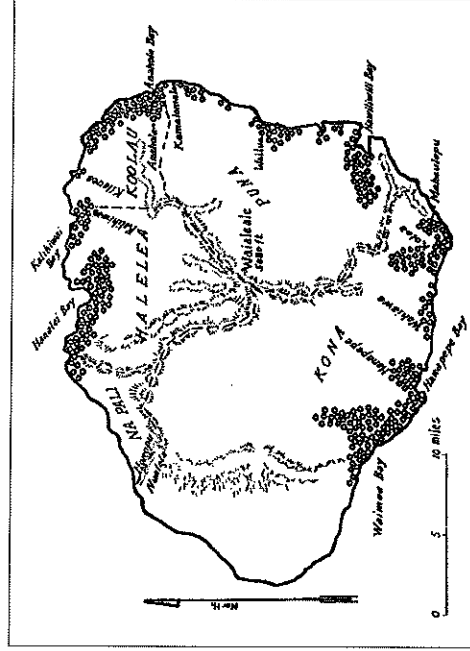


Figure 9. Population estimates for Kauaʻi generated by Coulter (1931), each symbol represents 50 people; note densely scribbled area at Nāwiliwili Bay, with a modest population (150 people) are the coastal boundary between Hanamāʻūlu and Kalapaki

potential *kuileana* parcels ultimately led to about 10,000 claimants obtaining approximately 30,000 acres, while 252 chiefs, for example, divided up about a million acres. Many or most Hawaiians were simply disenfranchised by these acts.

##### 4.2.1.1 Hanamāʻūlu

Land Commission documents for Hanamāʻūlu describe *loʻi*, *kūia*, and house sites along both sides of the Hanamāʻūlu River, extending from the shore up to the village of Kapāia. Kūia and *loʻi* lands are often included together in one *ʻāina* (portion of a claim), with house sites belonging to separate *ʻāina*, slightly removed from the floodplain. There are four claims in the back bay area of Hanamāʻūlu and two claims for house lots (LCA 3650 and 3653) near the beach, south of Kapule Highway. Most of the *kuileana* claims for Hanamāʻūlu are located in lands that have been under sugar cane cultivation for much of the 20<sup>th</sup> century; occasionally, traditional artifacts can still be found in the cane fields.

#### 4.2.1.2 Kalapaki

In Kalapaki Ahupua'a, *kalo* (taro) *lo'i* claims were on the north side of Nāwiliwili River (the *wauke* land in Claim 3907 on the south side of the river being the sole exception) and along the smaller drainages of Kalapaki and Koena'awa, where there were also reportedly springs. Two streams, Koena'awa-nui and Koena'awa-ki, were also identified in the claims, but neither is named on current maps. These two streams, however, can be seen an undated photograph on file at the Kaula'i Museum (see Figure 5, above).

Most Kalapaki claimants lived at the shore in the *kulana kauhale*, or village, of Kalapaki, located near Nāwiliwili Bay. Several claimants describe their village house lots in relation to the fishponds of Koena'awa (Koena'awa-nui and Koena'awa-ki). There is also a description of the *muliwai*, or estuary, of Koena'awa-nui.

Claim 3640 mentions a footpath for the *'ili* of Limawela near the shore at the boundary between Hanamā'u and Kalapaki. These documents therefore indicate a north/south path along the shoreline, and other paths going inland from the shore, which is a traditional transit pattern for Kaula'i ahupua'a.

Paulo Kamea, Governor of Kaula'i at the time of the Māhale, claimed both the ahupua'a of Hanamā'u and Kalapaki but was awarded neither. Instead, Victoria Kamāmā'u was awarded both ahupua'a under LCA (Land Commission Award) No. 7713.2. A portion of this award (7713.2 part 7) includes land within the present project area. Following the death of Victoria Kamāmā'u in 1866, Princess Ruth Ke'elikōlani inherited her lands. In 1870, Ke'elikōlani sold large portions of her Kalapaki and Lihue lands to William Hyde Rice of Lihue Plantation. In addition, in 1870, Paul Isenberg purchased the ahupua'a of Hanamā'u from J.O. Dotman, which includes the land of the present airport area. William Hyde Rice made subsequent land purchases from Princess Ruth in 1879.

William Hyde Rice, who already had his own home on the hill east of the mill, bought a large makai section of the ahupua'a of Kalapaki from Princess Ruth in 1879 and there conducted the Lihue Ranch. In later years he sold most of this land to the plantation. (Damon 1931:747)

The large tracts of inland areas (*kūloa*), not in the river valleys or at the shore, are not described in the claims but were probably in use. This *kūloa* land at the time of the Māhale belonged to Victoria Kamāmā'u. Land use is not elaborated in her claims for Hanamā'u or Kalapaki. Traditional *kūloa* resources for all claimants would have been medicines, herbs, construction materials such as *pili*, grass and trees for building houses, canoes, and perhaps lithic materials for tools. Sweet potatoes and other dryland crops, such as *wauke*, probably were cultivated in patches throughout the area at one time or another.

#### 4.2.1.3 Nāwiliwili

Victoria Kamāmā'u was awarded over two thousand acres of Nāwiliwili Ahupua'a (LCA 7713), along with much of Niunū, Ha'iki and Kipō, as well as Kalapaki and Hanamā'u. In addition to Kamāmā'u's large award at Nāwiliwili, there were many smaller *kūloana* awards. According to Hanu'at and Creed (1993):

Within the valley floor and adjacent to the alluvial plain [in Nāwiliwili] ... are 14 land Commission Awards for which there are testimonies available in the Land Commission records ... The awards vary in size between one to two acres and are generally around one acre. The majority of land recorded is for *lo'i* (wetland agriculture) but *kūloa* (dryland plots) are present as are a few houselots.

In all there are 54 *lo'i* recorded. Each award is generally two to three *lo'i* plots. The largest award comprised eight *lo'i*; a single award consisted of one *lo'i*. All awards contained *lo'i* and nine of the fifteen total awards had *kūloa* lots. Without exception, the nine awards containing *kūloa* mention only one *kūloa* per award. This is of interest because it shows that the alluvial plain was not entirely dedicated to wetland planting and that a small *kūloa* lot was essential for subsistence agriculture.

Some awards at Nāwiliwili mention houselots along the shoreline.

#### 4.2.2 Commercial Sugar Cane Agriculture

As a direct result of the availability of large tracts of land for sale during the Māhale, in 1849, Lihue Plantation "was established on the site Kihiko'ewa had chosen, and the cluster of homes and stores around it was the start of the town of Lihue." (Donohugh 2001:94). The plantation was started by Henry A. Pierce, Judge Wm. Little Lee, chairman of the Land Commission, and Charles Reed Bishop, doing business as Henry A. Pierce and Company (Damon 1931). The first 3,000 acres were purchased in Nāwiliwili and an additional 300 acres were purchased in Alahiki in 1866. The Lihue Plantation became the most modern plantation at that time in all Hawai'i. It featured a steam-powered mill built in 1853, the first use of steam power on a Hawaiian sugar plantation, and the ten-mile-long Hanamā'u Ditch built in 1856 by plantation manager William H. Rice, the first large-scale irrigation project for any of the sugar plantations (Moffatt and Fitzpatrick 1995:103). Dorrance and Morgan (2000:28) provide a slightly different list of achievements for Lihue Plantation: "The first irrigation ditch in Hawai'i was dug in 1857 [at Lihue], and in 1859 the first steam engine in a Hawai'i mill was installed at Lihue Plantation."

The residential and administrative heart of Lihue Plantation was located in the western portion of the subject project area, now downtown Lihue. Kaula'i's political center and most developed area. There are many documentary resources about the history of commercial sugar cane in Lihue (see, e.g., the Kaula'i Museum's website, <http://www.kaulaimuseum.org>). Dorrance and Morgan (2000) have summarize highlights of the history of both the Lihue and Hanamā'u Plantations (see pp. 28-29), and there are other, more detailed histories of these operations (e.g., Conde and Best 1973; Wilcox 1996; Donohugh 2001).

The success of the Lihue Plantation allowed it to continue to expand. When the owner of Hanamā'u Ahupua'a, Victoria Kamāmā'u, died in 1870, all 9,177 acres in the ahupua'a were purchased by Paul Isenberg, the manager of Lihue Plantation from 1862-1878 (Damon 1931:742-747). By 1870, the plantation owned 17,000 acres in Hanamā'u. A total of 30,000 leased acres in Waialua were later added in 1878. Lihue Plantation built a second mill in 1877, north and west of the present airport, recorded in an 1885 map of Hanamā'u Bay by Lt. George G. Jackson. This mill operated until 1920, when it was converted into housing for laborers.

#### 4.2.3 Changing District Names

The traditional districts, or *moku*, of Kana'i were replaced in the middle to latter part of the 19<sup>th</sup> century by modern political-district names (Figure 10). Given its economic importance to the island, Lihue became the modern district name, as described by Rice:

The name, Lihue, applied in a larger sense, included the districts of what are now Kawaihau and Lihue, reaching from Anahola to the Gap, being made so by law in about the year 1861, according to early court records, but some years later divided into the present two districts. The large district was also known as the Puna district, and is found on early maps as such. It was August thirteenth, 1880, that the district was divided into two, by act of Legislature with King Kalākaua's signature. . . . Lihue, in a focal sense, and from which the name of the district was derived meant only that little portion of land upon which the present village, as consisting of bank, post office and store, now stands. (Rice 1914:46)

#### 4.2.4 Later 19<sup>th</sup> century

Māhele records indicate that taro continued to be cultivated in Nāwiliwili Valley through the middle 19<sup>th</sup> century. However, later in that century, much of the taro lands in Nāwiliwili, as in other wetland regions of the Hawaiian Islands, were converted to rice cultivation. This shift was dictated by changes in the ethnic make-up of the islands' population and economic demands. Little is known of the rice industry in Nāwiliwili; however, an 1881 map of Nāwiliwili Bay shows the entire *maka* portion of Nāwiliwili Valley under rice cultivation. Early 20<sup>th</sup> century photographs in the Bishop Museum Archives show large rice terraces within the valley. Rice was also grown in the Highlands *maka* of the *pali* (cliff) of Kūhāua.

According to Dorrance and Morgan (2000:24-25), there were at least four different major sugar cane operations (i.e., mills and / or plantations) in the near vicinity of the subject project area during the later 19<sup>th</sup> century, including the Lihue and Hanamaulu Plantations (founded 1870, closed 1898) as well as the Hanamaulu Mill Company (founded 1870, closed 1880) and Charles L. L'Orange (founded 1882, closed 1888).

In 1870, the Lihue Plantation Company bought up approximately 17,000 acres of undeveloped land in Hanamaulu, which were then used to grow sugar cane and to capture and deliver water to both plantations. Later, in 1870, George N. Wilcox started the first sugar cane plantation in Hanamaulu, the Hanamaulu Plantation (Dorrance and Morgan 2000). In 1898, Hanamaulu Plantation was merged into Lihue Plantation.

Historic maps show most of the subject project area, especially the current airport, was not yet in commercial sugar cane agriculture by the late 19<sup>th</sup> century (Figure 11), but this would change by the early 20<sup>th</sup> century when nearly the entire subject project area was plowed under for cane.

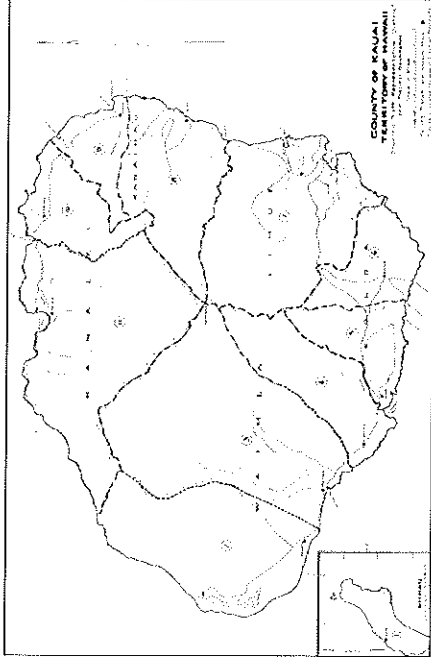


Figure 10. 1936 map of the political districts of the County of Kauai, Territory of Hawaii



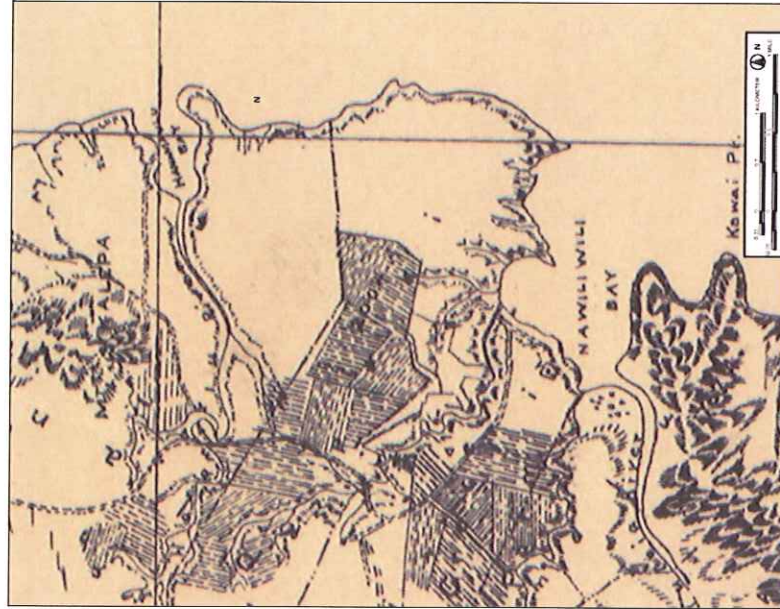


Figure 11. Detail of late 19<sup>th</sup> century Hawaiian Government Survey map clearly showing the general footprint area of the proposed project not yet under cultivation of sugar cane

### 4.3 Twentieth Century

This subsection outlines important aspects of the 20<sup>th</sup> century history of the subject project area. A full description of relevant oral-historical accounts is beyond the scope of this document. The CIE for the subject project area (CSH Job Code NAWILWILL1 2) contains an extensive oral-historical presentation, including previously gathered interviews with *kama'āina* and other residents of Kāua'i, and ongoing practices and uses of the landscape.

#### 4.3.1 Lihue Plantation

Commercial sugar cane agriculture continued in Lihue until 2000, when it and the Kekaha Sugar Co. finally shut down and terminated approximately 400 workers. The nearby Kipu Plantation, founded in 1907, operated until 1942 (Dorrance and Morgan 2000).

Lihue Plantation remained a vibrant and successful commercial operation throughout most of the 20<sup>th</sup> century, in part, because of a continued interest in technological innovation (Figure 12). For example, in 1912, Lihue Plantation installed two 240-kilowatt generators above the cane fields on the slopes of Kīlohana Crater, becoming one of the first hydroelectric power producers (along with Kekaha, Kāua'i) in the Hawaiian Islands (Dorrance and Morgan 2000).

There are many first-hand recollections about life in the early 20<sup>th</sup> century plantation days of Lihue, including extensive documentary archives maintained by the historical museum at Grove Farm Homestead (refer to the companion CIE for details).

#### 4.3.2 Ahukini Port and Village

There are many remembrances about the nearly-forgotten port village of Ahukini, located at the northern end of the proposed bike-path route, but also referring more generally to the coastal area of Hanamā'u (Figure 13). According to Donohugh (2001), a dock for large ships was initially built at Ahukini in 1921 because Hanamā'u Bay, totally exposed to the trade winds, was so treacherous. In 1950, Ahukini was abandoned as a commercial dock in favor of Nawiliwili Bay.

A series of newspaper articles (Baptist 1993a, b) documented the impacts of the 1946 tidal wave on Ahukini, which had been transformed by the 1930s and 1940s into a relatively prosperous little port village. Robert Yosuda talked fondly about these days, and the effects of the big wave:

...Coconut groves, fish, We used to fish all the time. We caught little fish with our little bamboo poles. We'd stand around and cribs crawling on our feet ... Since the tidal wave in 1946, the path of the Hanamā'u river has changed. It changed the bottom of the ocean, too ... Fish were in the trees all over. (Baptist 1993b:1)

#### 4.3.3 The Development of Nawiliwili Harbor

The Federal River and Harbor Act of March 2, 1919 authorized the construction of a modern harbor at Nawiliwili. Some aspects of the construction phases of this bay can be gleaned from historic maps and aerial photographs (Figures 14–16).

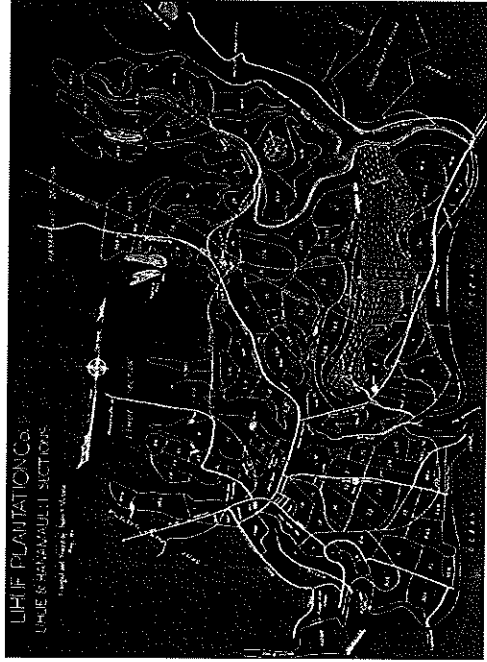


Figure 12. Lihue Plantation Co. in 1941, with subject project area in lower left-hand portion of the image (source: Conde and Best 1973:168)

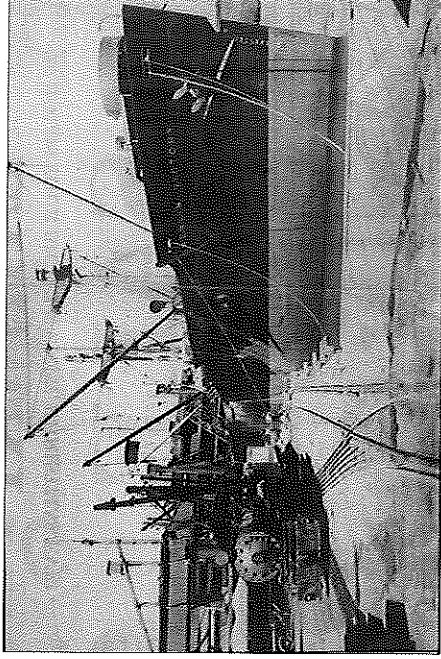


Figure 13. Ahukini port in 1946 (from Baptiste 1993a)

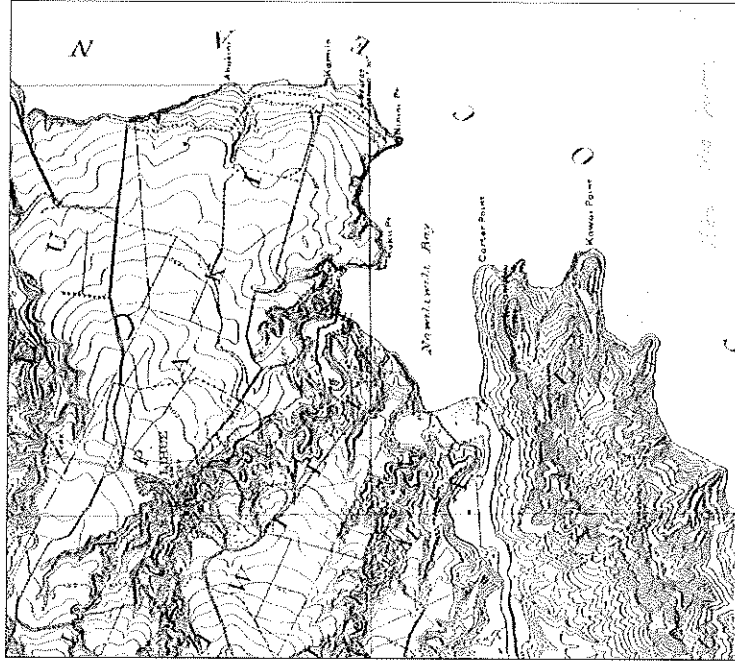


Figure 14. Portion of 1910 US Geological Survey map of Niihau and the subject parcel to its immediate north

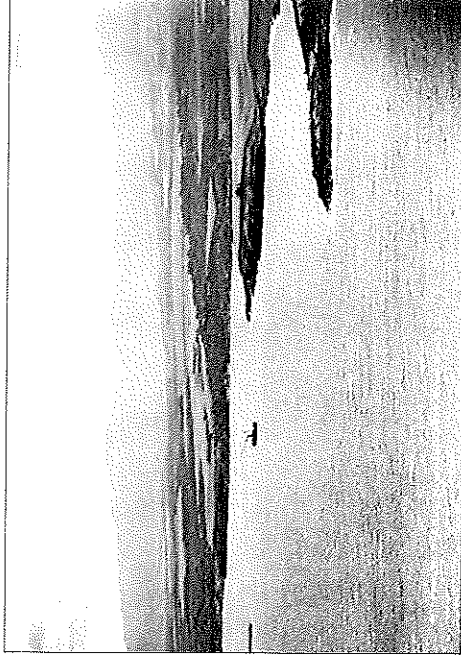


Figure 15. 1924 photograph showing Niihau Bay before construction of the harbor facility on the north side of the bay (Bishop Museum Archives)



Figure 16. Circa 1930 photograph showing Nawiliwili Harbor under construction (Bishop Museum Archives)

The selection of Nawiliwili as the harbor of the future on Kaua'i was preceded by a year's worth of debate between advocates of Hanalei and Nawiliwili. The specifications for the harbor included support from local government and business interests:

Upon completion of a rubble-mound breakwater 2,450 feet long along the reef dividing the inner and outer harbors, the entrance channel would be dredged to a depth of 35 feet, a minimum width of 400 feet, and a length of 2,400 feet. Also included in the estimated cost of \$1,086,000 was a harbor basin 35 feet deep, 1,025 feet wide, and averaging 2,000 feet in length. The same act provided an initial appropriation of \$250,000 for construction of the harbor. Local interests were to assure eventual railroad connections between Nawiliwili and the southern part of the island 'in reasonable time,' while the Territory of Hawaii or the County of Kauai was to give the Secretary of War \$200,000 toward the project. (van Hoflen 1970: 12)

The dredged material would be used as fill for the proposed wharf areas. Construction of the breakwater, the initial phase of the harbor project, began in October 1921.

By 1924, a total of 1,454 feet of breakwater had been set in place. However, dredging within the now semi-protected bay could not begin until the Territorial Legislature appropriated the \$200,000 promised to the project. Action by the legislature was delayed when the sugar companies on west Kaua'i – continuing to press for Port Allen at Hanalei as the island's major harbor facility – threatened to boycott the Nawiliwili harbor after its completion. The Legislature finally approved its share of the funding in 1925, and the breakwater was completed in March 1926. Development of the harbor continued apace as:

...the Territory took over the Federal camp and equipment and began construction of a concrete wharf. As soon as the Government dredge A. Mackenzie finished [dredge work] at Hilo she began work at Nawiliwili in fiscal year 1929, and dredging was completed in July 1930. The official opening of the \$1.3 million harbor on 12 July inaugurated an entrance channel 600 feet wide, 2,400 feet long, and 35 feet deep, a harbor basin 1,100 feet wide, 2,000 feet long, and 35 feet deep, and a rubblemound breakwater 2,150 feet long. (van Hoflen 1970:18–19)

Construction of the wharf facilities continued throughout the 1930s.

Historic maps and photographs document Nawiliwili Bay before and after the construction of the harbor. A USGS map of 1910 shows the original configuration of the shoreline at Nawiliwili Bay before the construction of the harbor (see Figure 14). The early stages of the breakwater construction are evident in an aerial photograph taken on July 4, 1924 (see Figure 15), in which the end of the newly constructed breakwater is visible in the left-central portion of the photograph. Construction of the harbor facility on the north side of the bay had not yet begun by this time.

Another aerial photograph from c. 1930 shows the continued development of the harbor (see Figure 16). By this time, the filling-in for the harbor had not been completed; the area of the current pier facility is still open water, the land behind the constructed jetty was built up by imported fill. More recent maps of the harbor, compared with the 1910 map, reveal that the modern pier area is located entirely upon a 20th century landfill.

## Section 5 Previous Archaeological Research

### 5.1 Overview

This section focuses on the most relevant archaeological research in and directly around the general footprint area of the proposed project. Results from previous studies of coastal and near-coastal areas of Hanamā'ulu, Kalapaki, and Nāwiliwili are briefly summarized. This is followed by a detailed treatment of prior research and results from the shoreline at Kalapaki and Hanamā'ulu (south of the Hanamā'ulu Stream), immediately east (*makai*) of the airport. Collectively, these observations provide some expectations regarding the types of cultural and historic resources that may be located in the subject project area.

The shoreline at Kalapaki and Hanamā'ulu is the most sensitive archaeological area, most of the rest of the general footprint area has been substantially modified by commercial sugar cane operations, the development of Lihū'c Town, Nāwiliwili Harbor, Ahukini Point, and the airport, which runs from Ahukini Landing (i.e., south-side of Hanamā'ulu Bay) to Ninini Point (north side of Nāwiliwili Bay), the proposed bike-path route mostly travels along existing rights-of-way whose subsurface sediments have already been substantially disturbed. There are no extant *heiau* or reconstructions of *heiau* in the general footprint area of the proposed footprint, despite the fact that at least three large shrines were once located along the coast from Ahukini to Kūki'i.

This archaeological review is based on a prior CSH report documenting the results of an archaeological inventory survey of the proposed impacts of improvements to Lihū'c Airport (Bell et al. 2006), and other original source materials from archaeological studies of the specific coastal area of concern (Hamnett 1988, 1990; Creed et al. 1999).

Figure 17 shows prior archaeological investigations in the general footprint area of the proposed project. Figure 18 shows historic properties that have been documented in this area as a result of these studies. Tables 1 and 2 summarize previous archaeological studies and results in and around the project area. These data show there are at least 33 known cultural and historic sites of interest in this area; 26 of these are historic properties listed on the State Inventory of Historic Properties (SIHP); the other seven sites of interest are censeretes not listed on the SIHP.

### 5.2 Early Documentation of Heiau

Thomas G. Thurum (1907), publisher of the *Hawaiian Almanac*, gathered lists of *heiau* on all the islands, and reported five from the *ahupua'a* of Hanamā'ulu, Kalapaki and Nāwiliwili:

1. Ninini, Kalapaki, near site of Nāwiliwili light house; described as destroyed (SIHP No. 100)
2. Ahukini, Kalapaki; described as a *heiau* of medium size, with some foundation stones in evidence at the time of Thurum's work (SIHP No. 101)
3. Pohakoolele, Kalapaki; described as a medium-sized *heiau*, destroyed by the time of Thurum's survey (no site number)

4. Kalaukamano, Hanamā'ulu; described as a large walled *heiau* that stood above the present mifi; destroyed around 1855--of *po'okamaka* (sacrificial) class (SIHP No. 102)
5. Kubiau, Nāwiliwili, near site of court house - a large paved *heiau*, whose enclosure covered an area of about four acres; long since destroyed (SIHP No. 99). The rock Prūkemi, now separate from but formerly connected with the shore, was where the *kahuna* (priests) lived

The first comprehensive archaeological survey of Kana'i was undertaken by Wendell Bennett in the late 1920s and published by the Bishop Museum in 1931. Bennett used Thurum's list for reference and documented many additional (mostly non-*heiau*) sites. Bennett listed two *heiau* for Hanamā'ulu Ahupua'a and one for Kalapaki (both described as "destroyed"). He also noted sand-dune burials (SIHP No. 103) towards the Waialua River (Figure 19). Bennett repeats the descriptions provided by Thurum for the "destroyed" Sites 100-102, and adds the following:

Site 103. Dune burials. In the sand dunes that run along the shore halfway between Hanamā'ulu and Waialua River are many burials. (Bennett 1931:125)  
 Paukini Rock, a *heiau* or priest's house now under water in Nāwiliwili harbor [this site is now designated SIHP No. 50-30-11-1999] (Bennett 1931:48)

In addition to SIHP No. 103, which is located outside (north) of the general footprint area of the proposed project, several other sand-dune burials or grave sites have been noted in Hanamā'ulu; for example, at Kālepa (SIHP Nos. 50-30-08-746 and -1827), documented by Rosendahl (1990) and CSH archaeologist Kaipo Akana during a field survey of damage after Hurricane 'Imki by the Kana'i/Ni'ihau Island Burial Council in 1992.

Hamnett's (1990:11) archaeological reconnaissance of the Kana'i Lagoons Resort identified a "...high well-constructed wall running 400' north of Ninini Lighthouse [as a] possible prehistoric wall and possibly related to the former Ninini Heiau (SIHP No. 100)." A dune midden scatter (SIHP No. 421), two probable earthen walls (SIHP Nos. 422 and 423), and an oval terrace alignment (SIHP No. 424) were also recorded.

Bennett places Ahukini heiau (SIHP No. 101) "in Kalapaki, near Ahukini Point on the bluff overlooking the sea. This is now entirely destroyed" (Bennett 1931:125).

Bennett (1931:52) lists Pohakoolele Heiau in Kalapaki under "Kana'i sites not located." Damon probably would have mentioned its location if she had known about it. There do not seem to be other references to Pohakoolele Heiau in Kalapaki, and it is unknown if Damon used Thurum for her source, or if she knew the information from persons on Kana'i. Although Bennett could not verify its existence, and its location is speculative, it is included as a non-located site of pre-Contact Kalapaki, passed down in local memory. There was a *heiau* in the neighborhood (north) *ahupua'a* of Waialua called Pōhaku'ele'ele, said to have been located just *makai* of the junction of Ōpaeka'a Stream and the Waialua River (Dickey 1917:29). It is possible that these two *heiau* are the same, and Thurum was confused on the location. It is also possible that this was the name of an unnamed *heiau* on Kūki'i Point. Neither Thurum nor Bennett mention a *heiau* noted by Lt. George G. Jackson, Navy surveyor for the Hawaii Government Survey Office in 1881 (see Figure 6) at Kūki'i Point. The Kana'i Community College newsletter, *Archaeology on Kana'i* (1973:4), notes that the "remains of ancient heiau" noted by Jackson are "where the cottages of the Kana'i Surf now stand."

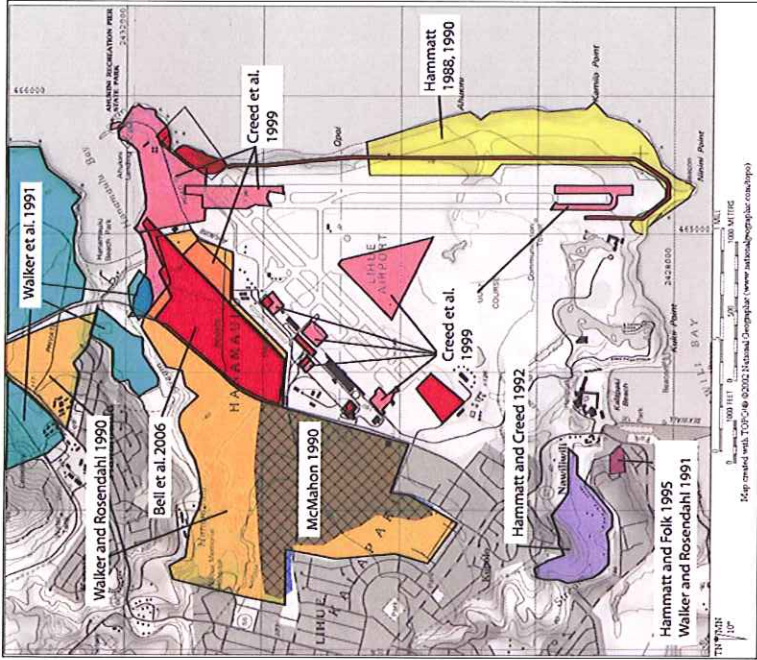


Figure 17. Map of the Lihue area showing the location of previous archaeological projects

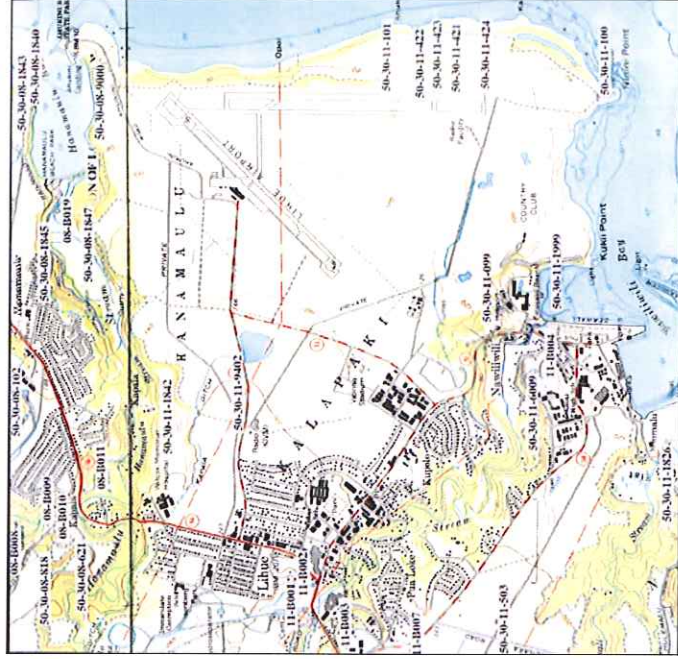


Figure 18. Historical and cultural sites of interest within and near the subject project area (projected on portions of Lihue and Kapa'a USGS 7.5-minute topographic quadrangle maps)

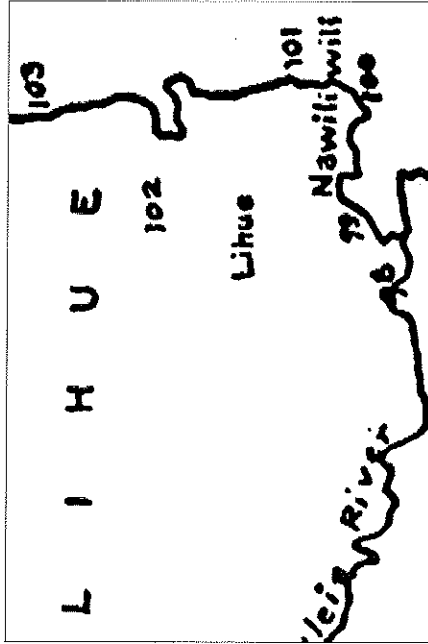


Figure 19. Detail of Bennett's (1931) map of Kona showing location of archaeological sites

Table 1. Previous Archaeological Studies in and around the Project Area

| Source                                    | Location                                      | Nature of Study                              | Findings   |
|---|---|--|--|
| Tatum 1937                                | Island-wide                                   | Azimuth of Kona's                            | Listing of 15 <i>tepa</i> in the area  |
| Bennett 1931                              | Island-wide                                   | Archaeology of Kona's                        | Site 103. Dune burials. In the sand dunes that run along the shore halfway between Hanamā'ulu and Waialeale River                              |
| Haney 1940                                | Island-wide                                   | Reconnaissance of agricultural lands         | Several sites identified   |
| Hamnett 1988                              | Kālapa'i                                      | Archaeological Reconnaissance                | Wall alignments, a terrace, and a midden scatter.  |
| McMalton 1990                             | Lihue   | Archaeological Fieldbook                     | 3 previously-identified historic residential sites (50-30-9990, -9401, -9402)  |
| Rosendahl 1990                            | Kālepa Ridge                                  | Archaeological Field Inspection              | SIHP No. 50-30-11-1827. Burial platform (2+ individuals)   |
| Walker & Rosendahl 1990                   | East of Kōhō Hwy, NW of Hanamā'ulu Bay        | Archaeological Inventory Survey              | No significant findings  |
| Folk & Hamnett 1991                       | Nihoa   | Archaeological Survey and Subsurface Testing | 2 previously recorded, independent and 1 newly discovered, <i>tepa</i>   |
| Walker et al. 1991                        | A study of 8 parcels most near Hanamā'ulu Bay | Archaeological Inventory Survey              | Identifies 10 sites; 3 pre-Contact, 7 historic. A subsurface cultural layer was located adjacent to the project area (SIHP No. 50-30-084 1838) |
| Walker & Rosendahl 1990                   | Hanama'ulu                                    | Archaeological Inventory Survey              | Isolated coral fragments   |
| Walker & Rosendahl 1991                   | Nawiliwili                                    | Archaeological Inventory Survey              | 34 inter historic burials and several historic headstones at Nawiliwili Cemetery (SIHP No. 50-30-11-6008)                                      |
| Hamnett and Creed 1993                    | Nawiliwili                                    | Archaeological Inventory Survey              | 3 <i>tepa</i> (SIHP No. 50-30-11-001, -092, -493) and a single rock (50-30-11-494) thought to be a <i>tepa</i>                                 |
| Franklin & Walker 1994                    | 7 parcels in Hanamā'ulu                       | Archaeological Inventory Survey              | Survey of Walker & Rosendahl 1990 and Walker et al. 1991 (same project area)   |
| Kaui's Recon and Development 1994 (Akona) | Kālepa Ridge                                  | Monitoring Report                            | Revelation for Bunnā S16-746; additional bone fragments recovered  |
| Hamnett et al. 1994                       | Hanama'ulu                                    | Archaeological Document Review               | Various archaeological features of the area, emphasizing the Waialeale Holua Complex (SIHP No. 50-30-08-502)                                   |
| Hamnett & Folk 1995                       | Kālapa'i                                      | Archaeological and Osteological Study        | 69 historic burials at Nawiliwili Cemetery (SIHP No. 50-30-11-6008)  |
| Creed et al. 1999                         | Hanama'ulu and Kālapa'i                       | Archaeological Assessment                    | Historic remnants of Ahimāi Landing (SIHP No. 50-30-08-9000)   |
| Hamnett et al. 2002                       | Kōhō Highway                                  | Archaeological Study                         | Various archaeological features of the area, emphasizing the Waialeale Holua Complex (SIHP No. 50-30-08-502)                                   |
| Hamnett & Shideler 2003                   | Kōhō Highway                                  | Archaeological Assessment                    | Various archaeological features of the area, emphasizing the Waialeale Holua Complex (SIHP No. 50-30-08-502)                                   |

Table 2. Previously Recorded Sites in and around the Project Area

| SHIP No.      | Site Type  | Approximate Location and Reference                          |
|---------------|--|---|
| 50-30-11-099  | Kuhia Heiau (A large paved heiau, whose enclosure covered an area of about four acres; long since destroyed)   | Nawiliwili<br>Thruway IN Bennett 1931:124                   |
| 50-30-11-100  | Nirani Heiau (near site of Nirani Point lighthouse, double-ended wall remains)   | Kalapa'ae<br>Bennett 1931:124                               |
| 50-30-11-101  | Ahohini Heiau (A heiau of medium size; foundations only now remain)  | Hanama'ulu<br>Thruway IN Bennett 1931:125                   |
| 50-30-11-102  | Kalanikoumahu Heiau (A large walled heiau that once housed the present mill; destroyed about 1835-37; <i>ka'aua'aua</i> [human sacrifice <i>ka'aua</i> ] class.) | Hanama'ulu<br>Thruway IN Bennett 1931:125                   |
| 50-30-11-421  | Midway Steamer or marine shells  | Hanama'ulu on shoreline;<br>Hammatt 1990                    |
| 50-30-11-422  | Remnant/probable enticel wall  | Hanama'ulu on shoreline;<br>Hammatt 1990                    |
| 50-30-11-423  | Remnant/probable enticel wall  | Hanama'ulu on shoreline;<br>Hammatt 1990                    |
| 50-30-11-424  | Oval Terrace Alignment   | Hanama'ulu on shoreline;<br>Hammatt 1990                    |
| 50-30-11-503  | Fudaijaka Japanese Cemetery  | Kikuchi & Remauldo 1992                                     |
| 50-30-08-621  | Kapua Chinese Cemetery   | Kikuchi & Remauldo 1992                                     |
| 50-30-08-746  | Kālepa Road Burial   | Hanama'ulu, on Kālepa Hill;<br>Rosenbuhl 1990               |
| 50-30-11-818  | Plantation Wall  | West of Kapua in Hanama'ulu;<br>Kikuchi 1992                |
| 50-30-11-1826 | Halemana Graves  | Hanama'ulu; on Kālepa Hill; Pers. comm. N. McMahon 1999     |
| 50-30-08-1827 | Kālepa Burial Platform   | Hanama'ulu, on Kālepa Ridge; Pers. comm. N. McMahon 1999    |
| 50-30-08-1838 | Pre-contact habitation deposit   | Hanama'ulu coast, north of bay                              |
| 50-30-08-1839 | Pre-contact agricultural wall and terrace  | Hanama'ulu coast, north of bay                              |
| 50-30-11-1840 | Historic Kōhaiming Wall  | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1840 | Historic Remaining Wall  | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1841 | Historic Road  | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1842 | Boundary/Agricultural Wall   | South side of Hanama'ulu Valley;<br>Franklin & Walker 1984  |
| 50-30-11-1843 | Historic Concrete Foundation, Road and Concrete Wall   | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1844 | Historic Cemetery  | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1845 | Historic Railroad Bridge   | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1846 | Two concrete bridges   | Hanama'ulu coast;<br>Walker et al., 1991                    |
| 50-30-11-1847 | Hanama'ulu Valley  | Hanama'ulu; Walker et al., 1991                             |
| 50-30-11-1999 | Paukimi Rock (in the ocean)  | Kalapa'ae, near Nawiliwili Bay; Pers. comm. N. McMahon 1999 |
| 50-30-11-6009 | Nawiliwili Cemetery  | Kalapa'ae, near high school;<br>Hammatt & Peck 1995         |
| 50-30-08-9000 | Ahukim Landing   | Hanama'ulu Bay;<br>Pers. comm. N. McMahon 1999              |

| SHIP No.      | Site Type   | Approximate Location and Reference                                      |
|---------------|---|---|
| 50-30-08-9402 | Historic Building Remnant at Site of Radio Station K1VM       | Off Radio Road near Ahukim Hwy-<br>McMahon 1980; Franklin & Walker 1984 |
| 08-8008       | Kaua'i Memorial Gardens                                       | Kikuchi & Remauldo 1992   |
| 08-8009       | Hanama'ulu Immaculate Conception Church                       | Kikuchi & Remauldo 1992   |
| 08-8011       | Immaculate Conception Church Cemetery, Kapua                  | Kikuchi & Remauldo 1992   |
| 08-8019       | Family cemetery, not fenced, possibly connected to LCA 3653.2 | Kikuchi & Remauldo 1992   |
| 11-8001       | Lina e Lulinian Church Cemetery                               | Kikuchi & Remauldo 1992   |
| 11-8002       | Japanese Cemetery, purported to have been moved               | Kikuchi & Remauldo 1992   |
| 11-8003       | Lina e Lulinian Church Cemetery/Lina e Pulite Cemetery        | Kikuchi & Remauldo 1992   |
| 11-8004       | Historic Cemetery near Nawiliwili Park                        | Kikuchi & Remauldo 1992   |

Ethel Damon (1931) mentions Kuhia Heiau in Nawiliwili, placing it near the location of the Court House (see Figure 7). She mentions Pohako-eh-ele, location unknown, and Paukimi Rock (SHIP No. 1999), located at Kalapa'ae Beach, Nawiliwili Bay.

An additional area of four acres was during this same year, 1851, sold to the government for harbor and road near Nawiliwili Bay. The first sighting point in this deed was the north corner of Kuhia heiau. (Damon 1931:415)

From the deck of their rivercraft in 1854 Mrs. Rice and the children could plainly see above the rocky shore the ruins of Kuhia, the old heiau, or temple, and nearby on the bluff the flaming blossoms of a great willi-wili tree among koa trees which then grew almost down to the water's edge. (Damon 1931:17)

On the bluff overlooking the bay of Nawiliwili, where the public High School now stands, was once the large paved heiau called Kuhia, extending over about four acres of ground. It was in its day the largest and most far-famed temple on the island. Below it, in the bay, is still the rock called Paukimi, which was said to be its companion or sister heiau, and was probably also the home of the kahuna, or priest, of Kuhia. In ancient times this rock was connected with the shore near the site of the former boat landing. All the dredging and filling in for the modern wharves have not yet touched this old rock of Paukimi, the sole remnant of the famous heiaus of Nawiliwili Bay. For almost no traces, even of the great Kuhia temple, are now [in 1931] to be found; and of the three small heiaus in the neighboring ahupua'a of Kalapa'ae, those of Nimini, Ahukim and Pohako-eh-ele, little more than the names survive. (Damon 1931:397-398)

In a collection of Kaua'i Place names (Kelsey n.d.), the heiau of Kuhia is also mentioned: *Nawiliwili, oia ke waia kumaka. Aia heiau ka heiau of Kuhia. Kalapa'ae, oia oia makao o Nawiliwili.*

Nawiliwili is the harbor. The temple of Kuhia is there. Kalapa'ae is on the shoreline of Nawiliwili.



Thum placed the location of Kuhina Heiau near the "Court House," which is labeled on a 1881 Jackson map (see Figure 6) in an area called "Kuhina." Jackson does not label any structure as the *heiau*, so it may have been destroyed sometime between 1854, when Mrs. Rice and her children saw it from the harbor, and 1881, when Jackson made his map. According to Dr. William Kikuchi (personal communication), the *heiau* was destroyed when people took the rocks to use for other purposes. Its general location was near the ironwood tree next to the Kauai High School flagpole (Kaldira and Wong-Smith 1991:B-5). Nancy McMahon (SHPD Archaeologist for Kauai) indicated that the Pankini Rock location in Kalapaki Bay was shown to her by Cheryl Lovell-Obatake in 1999, and subsequently added to the State Inventory of Historic Properties (SIHP No. 1999).

### 5.3 More Recent Archaeological Projects

The following archaeological projects studied lands located within the general footprint area of the proposed project. Most of these investigations yielded no significant historic or cultural sites, or relatively minimal finds:

- (1) McMahon (1990) conducted a brief walk-through field check of three parcels of land immediately west of the airport, and east of Lihue town center. Three previously identified historic residences (SIHP Nos. 50-30-9390, -9401 and -9402) were documented; no archaeological resources were identified.
- (2) Hamnett and Creed (1993) conducted an archaeological survey of 61 acres of land in Nāwiliwili. Historical evidence suggested this land was intensively used for agriculture in both pre- and post-Contact times. They documented three *zawai* (traditional irrigation ditches) (SIHP Nos. 50-30-11-491, -492 and -493); and a single rock (SIHP 50-30-11-494) interpreted as a burial marker.
- (3) Franklin and Walker's (1994) archaeological inventory survey of 552.3 acres including portions of the airport showed that nearly the entire area was previously disturbed and most sites obliterated. Two sites were documented: a stone wall (SIHP No. -1842) interpreted as a historic boundary marker (possibly marking off an old agricultural field), along the south side of Hanamā'ulu Valley near Kapāia; and a historic structure (SIHP No. -9402) associated with Radio Station K1VM located in the Kalapaki portion of the airport.
- (4) Hamnett and Folk (1995) conducted an archaeological and osteological study of Nāwiliwili Cemetery (SIHP No. 50-30-11-6009), located between Kauai High School and Kalapaki Bay. A total of 68 burials of historic age were documented, disinterred, and reburied nearby; the burials represent a wide variety of ethnicities and ages. Walker and Rosendahl (1991) surveyed this same general area and discovered 34 intact, historic burials with several associated headstones.
- (5) Creed et al.'s (1999) archaeological inventory survey of several discontinuous parcels within the airport area documented no evidence of prehistoric or early historic sites. However, extensive remains of Anukini Camp (part of Anukini Landing, SIHP 50-30-08-9006) were documented at Hanamā'ulu Bay. The remains consisted of 15 concrete slabs believed to have been associated with residential structures, concrete drainage systems

remnants, piles of historic trash, railroad tracks, loading dock and camp-related infrastructure. Additionally, a large wooden house (the Bertrand House) with attached garage/living area and an associated rock wall lie within the project area, adjacent to and south of Anukini Landing.

- (6) Bell et al.'s (2006) archaeological inventory survey of approximately 175 acres of discontinuous lands in Hanamā'ulu and Kalapaki Ahupua'a associated with proposed improvements to Lihue Airport identified one historic property (SIHP 50-30-08-3958), a piggery dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (see Figure 18).

Just north of the subject project area, Walker and Rosendahl (1990) excavated nine backhoe trenches in association with the Hanamā'ulu Affordable Housing Project from which only "several small isolated coral fragments" were found. No further archaeological work was recommended at this location (TMK: (4) 3-7-003; portion 020), which was determined to have been entirely disturbed to a significant depth below surface by historic sugar cane operations. Walker et al.'s (1991) archaeological inventory survey near the mouth of the Hanamā'ulu Stream identified 10 sites; three of these date from pre-Contact times: a subsurface cultural deposit associated with a traditional living site area (SIHP No. 1838 A & B), an artificial wall and terrace of unknown function (SIHP No. 1839 A & B), and a terraced river valley of some 50 acres (SIHP No. 1847). SIHP No. 1839 provided a radiocarbon date of 1170-1400 A.D. Other sites documented by Walker et al. (1991) north of the subject project area include plantation-era structures, and a historic cemetery (SIHP No. 1844 Japanese-Buddhist and Filipino-Catholic cemetery).

Just south of the subject project area, in Niimaha, Folk and Hamnett's (1991) archaeological inventory survey at the Kanoo Estate Lands documented two fishponds originally recorded by Ching et al. (1973). In addition, a previously unrecorded *zawai* was found connected to one of these fishponds, known as Kanoo's fishpond, to Hūle'ia Stream.

Kikuchi and Remondo's *Cemeteries of Kauai* (1992) notes eight cemeteries in Hanamā'ulu and Kalapaki. Descriptions do not exist for two of them (B019, B004). A pre-Contact burial platform on Kalepa Ridge was found by Kaipo Akemi in 1992 in an inspection of areas damaged by Hurricane Iniki. These burial sites are not located within the subject project area.

### 5.4 Coastal Portions of Hanamā'ulu and Kalapaki Ahupua'a

Four previous studies have looked at portions of the seashore at Kalapaki Ahupua'a and Hanamā'ulu Ahupua'a (south of the Hanamā'ulu Stream), which constitute the most sensitive archaeological portions of the general footprint area of the proposed project.

Hamnett's (1988, 1990) archaeological reconnaissance and survey of this coastal area documented five sites, including two dry-stacked stone walls (both incomplete remnants) dating from the historic era (SIHP Nos. 50-30-11-422 and 423, shown in Figure 20 as "Site 1" and "Site 2," respectively), a cultural layer (middle scatter) along the wave-cut shoreline (SIHP No. 50-30-11-424, shown in Figure 20 as "Site 3"), an oval-shaped dry-stacked stone alignment or terrace (SIHP No. 50-30-11-421, shown in Figure 20 as "Site 4"), and a 400-foot long stone wall considered to be a possible extension of Niinihi Heiau (SIHP No. 50-30-11-100, shown in Figure

20 as "Site 5" (Figure 20). Hammatt noted that much of the area had been heavily disturbed by prior activities, and that no definitive traces of Ahukini Heiau (SHP No. 101) could be found.

Creed et al.'s (1999) archaeological inventory survey of several discontinuous parcels within the airport area included portions of the coast at Hanamaʻūlu (south of the stream, but documented no evidence of prehistoric or early historic sites, but did find extensive ruins of the early 20<sup>th</sup> century port of Ahukini (see Figure 18).

As stated above, Bell et al. (2006) documented one historic property (SIHP 50-30-08-5958), a piggery dating from the plantation era. This site is located approximately 150 meters (490 feet) east of the proposed alignment (see Figure 18).

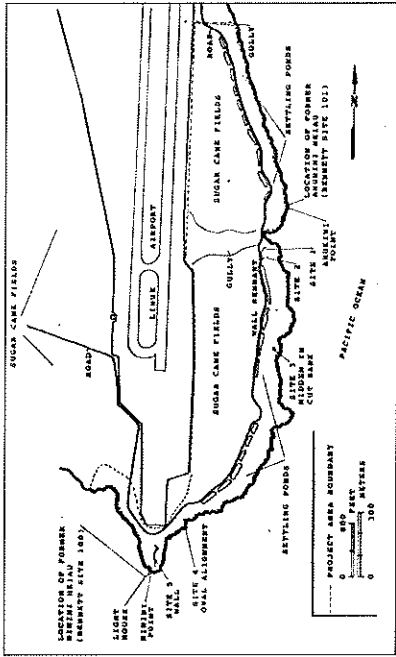


Figure 20. Archaeological sites along the coast at Kalapaki documented by Hammatt (1988, 1990)

## Section 6 Results of Fieldwork

Fieldwork was conducted on May 15 and 16, 2008, by CSH archaeologists Gerald K. Ida, B.A., and Nanette "Missy" Kamai, and principal investigator Hallett H. Hammatt Ph.D. Specific methods and documentation details have been described in Section 2 (Methods).

The scope of work called for a field inspection of the project area to identify any surface archaeological features; to investigate and assess the potential for impact to such sites; and to identify any sensitive areas that may require further investigation or mitigation prior to proposed project.

### 6.1 Currently Undeveloped Portions of the Project Area

The field inspection showed that most of the proposed bike-path route segments follow paved or unpaved roads, or pedestrian paths (as when it passes through the Marriott Hotel property). Only in three places are there no pre-existing developed roads or paths (Figure 21). These are the only places in which surface archaeological sites or features may be present. See Section 7.2 (below) for specific mitigation recommendations for the following three areas:

- 1) Kaʻana Street is not a continuous through way. On the east side, heading west from Kapuli Highway, the street ends next to the new Police Station. On the west side, it heads east from Hardy Street and ends at the edge of a residential subdivision. The area in between these two sections of Kaʻana Street is old, undeveloped cane land (see Figure 21). This area is heavily vegetated, and may contain sugar cane-era sites or features (e.g., flume sections, ditches).
- 2) There is a similar situation with Hoʻolalo Street. It is even more confusing because of a new road in the area of the new police station and judiciary building. The original Hoʻolalo Street started at Rice Street, headed generally north, then took a sharp right turn along the north side of Viñueta Stadium and ended at Kapuli Highway. The current Hoʻolalo Street follows the same route from Rice Street, but continues a little past the stadium where it makes a sharp right turn to the east, then a sharp left turn to the north where it runs between the new Judiciary Building and Police Station and ends at Kaʻana Street. The portion of the proposed bike-path route that extends to the north from Hoʻolalo until it hits Ahukini Road is not currently a road or path. It crosses old, unpaved cane land (see Figure 21). This area is heavily vegetated, and may contain sugar cane-era sites or features (e.g., flume sections, ditches). Current plans have eliminated this segment between Hoʻolalo and Ahukini Road.
- 3) There is a small portion of the proposed bike-path route that leaves Ninini Point Road, just a little northwest of the lighthouse (see Figure 21). The route apparently conforms to future plans to extend the perimeter fence around the south end of a runway at Lihue Airport. The route cuts through the present golf course then crosses a shallow gulch. Portions of this area are heavily vegetated, and may not have been included in previous archaeological work in this area (cf. Hammatt 1988, 1990).

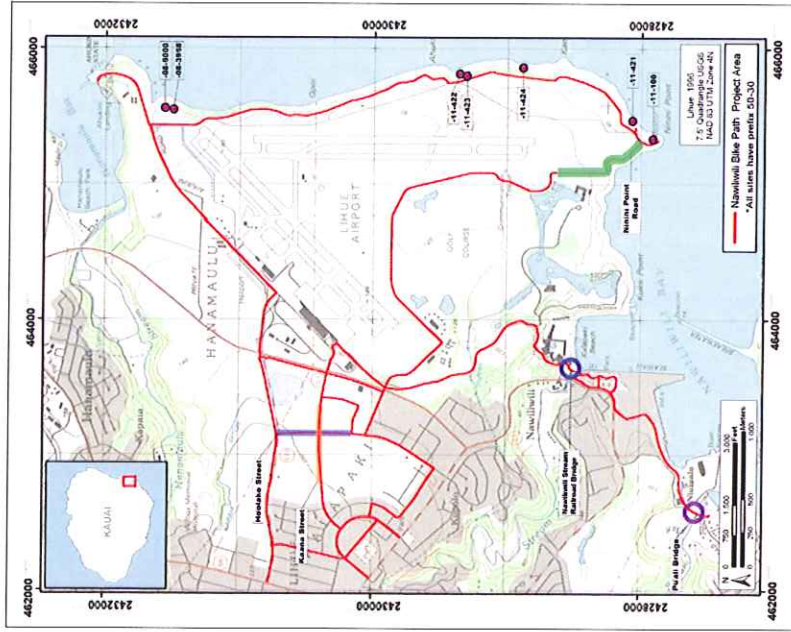


Figure 21. Project area map showing location of known historic properties, two historic bridges, and three areas in which surface sites may be present (see text for explanation)

## 6.2 Previously Developed Portions of the Project Area

Field inspection results from the rest of the project area, arranged by existing roads and rights-of-way, are listed below. See Section 7.2 for specific mitigation recommendations.

### 6.2.1 Niʻamalu Park to Nāwiliwili Park

Portions of Niʻamalu Park could be a concern with respect to subsurface archaeological deposits because it appears to consist of largely unmodified shoreline (Figure 22). There is also a one-lane bridge on the route in Niʻamalu that crosses Puʻail Stream (Figure 23). This bridge appears to be over 50 years old, and could be a concern (historical-architectural impacts) if it needs to be modified.

### 6.2.2 Nāwiliwili Park to the Marriott Hotel

Historical background research suggests that Nāwiliwili Park proper was constructed more or less entirely of introduced fill sediments; thus, there are no specific concerns with respect to subsurface archaeological deposits. There is an old railroad bridge which crosses Nāwiliwili Stream that is currently used as a pedestrian walkway and access to two restaurants on the grounds of the Marriott Hotel (Duke's and Café Portofino) from a parking lot adjacent to the Anchor Cove mall (Figures 24 and 25). The bridge, which appears to be over 50 years old, has already been modified to make it narrow pedestrian pathway. Further modification could be a concern with respect to historical-architectural impacts.

### 6.2.3 Līmo Road

Līmo Road, which is paved, crosses the Kanaʻi Lagoons golf course. Given prior subsurface disturbance from historic-era sugar cane operations and from the construction of the golf course, there are no historic-preservation concerns for this portion of the proposed bike-path route.

### 6.2.4 Road from Kapale Road to Ninini Point by way of Whaler's Brew Pub

Most of Ninini Point Road (i.e., the inland section) is already paved. The *maka* third of this road approaching the lighthouse is roughly paved or dirt. With one exception (see next paragraph), there are no historic-preservation concerns for subsurface archaeological deposits within this portion of the proposed bike-path route, given prior subsurface disturbance from historic-era sugar cane operations and from the construction of the golf course and the airport.

The single exception is a small portion of the bike-path route that leaves the road alignment, crossing part of the golf course which was former cane land, and crossing a small gulch (Figures 26 and 27). The gulch is unimproved, overgrown with *koa haole* and grasses, and likely never had sugar cane growing in it. The gulch may contain surface or subsurface archaeological sites.

### 6.2.5 Ninini Point to Ahukini Road

This portion of the proposed bike-path route is mostly a dirt road except near the north end of the airport runways (near Ahukini) where it is paved (Figures 28 and 29). CSH (Hammett 1988, 1990) conducted an archaeological survey of Ninini Point and the coastline to the north (to Ahukini Landing) for a proposed golf course that failed to materialize following Hurricane Iniki in 1992. As described above, five sites were identified (see Figure 20).

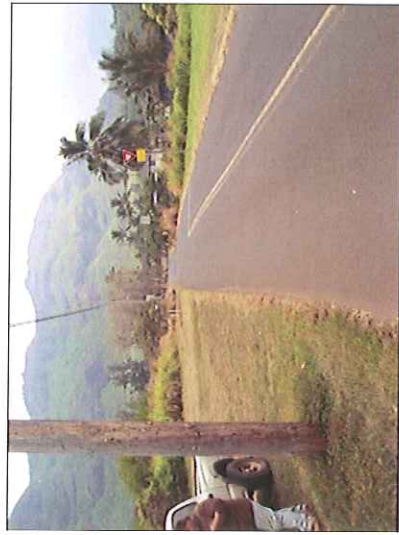


Figure 22. Wai'apu Road fronting Niunulu Park, facing south

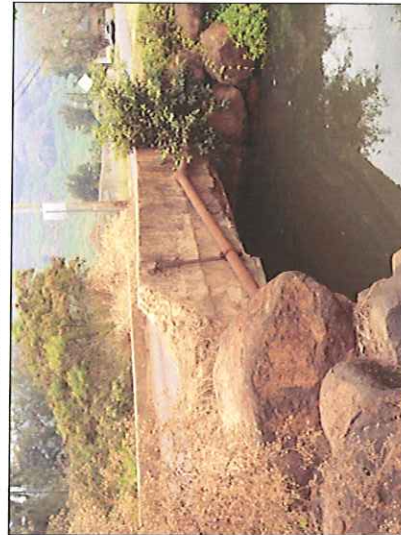


Figure 23. Old bridge spanning Pu'ali Stream, facing north

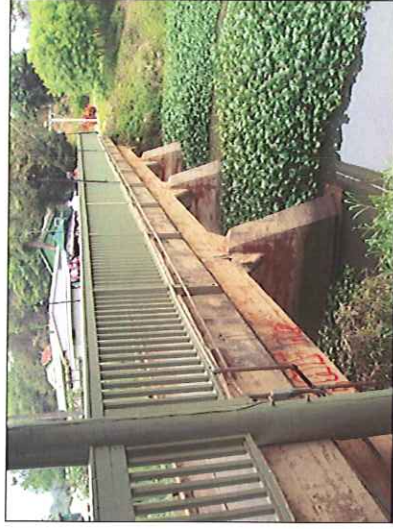


Figure 24. Old railroad bridge spanning Nawilwili Stream, facing north



Figure 25. Old railroad bridge spanning Nawilwili Stream, facing southeast

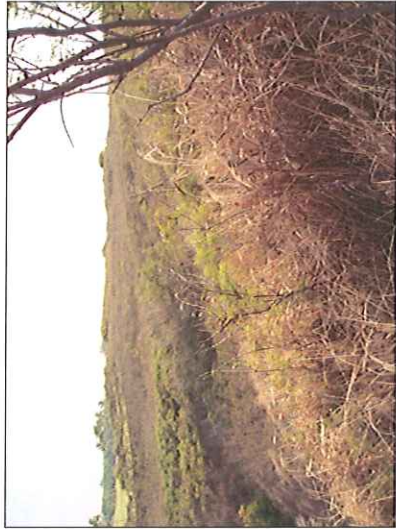


Figure 26. Southeast end of Ninimi Road near lighthouse, facing northeast



Figure 27. Southeast end of Ninimi Road near lighthouse, facing northwest



Figure 28. Coastal dirt road near Ninimi Lighthouse, facing southwest

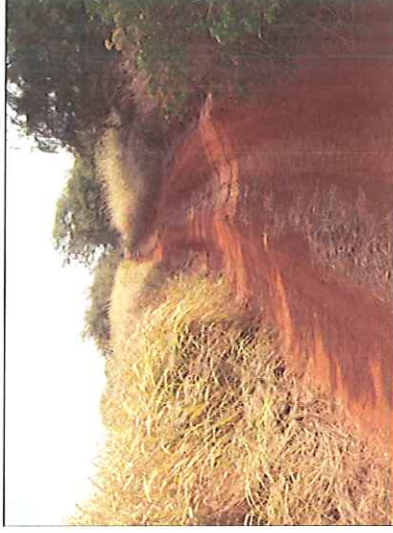


Figure 29. Coastal dirt road near Ahukani Landing, facing north



Two of these sites will not be affected: a cultural layer at the shoreline (SIHP No. 50-30-11-424), and an oval-shaped stone alignment or terrace (SIHP No. -421). Three sites identified by Hammit (1988, 1990) may be affected: two historic-era stone wall remnants (SIHP Nos. -422 and 423), and a 400-foot long stone wall considered to be a possible extension of Niini Heiau (SIHP No. -100). Portions of this coastal area may also contain as yet undiscovered subsurface archaeological deposits (see Section 7.2 for recommendations). Bell et al. (2006) also documented a plantation-era piggery (SIHP No. 50-30-08-3928) near the north end of this alignment, but the site is located approximately 150 meters (490 feet) east of the alignment.

#### 6.2.6 Ahukini Road

A plantation camp once existed *maka'i* of Ahukini Road, just east of the intersection with Niini Point Road. CSH (Creed et al. 1999) previously documented ruins of Ahukini Camp (part of Ahukini Landing, SIHP 50-30-08-9000), including concrete slabs, concrete drainage systems remnants, historic trash, railroad tracks, loading-dock and camp-related infrastructure; however, it appears none of these features will be affected by the proposed bike-path route (Figures 30 and 31). Given prior subsurface disturbances, there are no concerns for the rest of Ahukini Road.

#### 6.2.7 Umi Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously-disturbed residential subdivision on old sugar cane lands.

#### 6.2.8 Hardy Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously-disturbed commercial area on old sugar cane lands.

#### 6.2.9 Ka'ana Street

As stated above, the only portion of Ka'ana Street of concern is the part where the road has not yet been constructed (Figure 32). This is old sugar cane land and may have some surface archaeological sites dating to the plantation era (e.g., ditches and other water control devices).

#### 6.2.10 Mala'e Street and Pua'ole Street

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously-disturbed residential subdivision on old sugar cane lands.

#### 6.2.11 Ho'olako Street

As stated above, the only portion of Ho'olako Street of concern is the part where the road has not yet been constructed (Figure 33). This is old sugar cane land and may have some surface archaeological sites dating to the plantation era (e.g., ditches and other water control devices).

#### 6.2.12 Kapule Highway

There are no historic-preservation concerns for this portion of the proposed bike-path route, which passes through a previously-disturbed commercial area on old sugar cane lands.

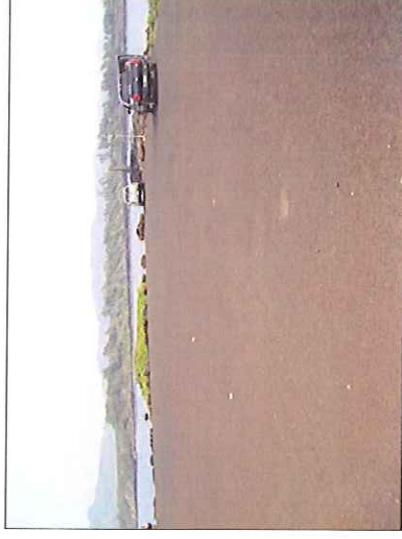


Figure 30. Ahukini Landing, facing north



Figure 31. Entrance to Ahukini Landing area, facing southeast



Figure 32. End of Ka'ana Street, next to Police Station, facing west



Figure 33. Ho'olako Street showing where route continues through brush, facing north

## Section 7 Summary and Recommendations

At the request of R.M. Towill Corporation, Cultural Surveys Hawaii's, Inc. (CSH) prepared this Archaeological Literature Review and Field Inspection for the Nāwiliwili-Ahukini Bike Path Project, which is located in coastal and near-coastal portions of three *āhupua'a* in Līhu'e District, Kauai': Hanama'ūlu, Kalapaki and Nāwiliwili (see Figures 1 and 2).

The subject project is one phase of a larger project to connect Nāwiliwili with Anahola by a bike and pedestrian path, a distance of some 17 miles (27.4 km) of coastline along windward Kauai'. The subject project (Phase VI of the overall project) links three main sub-areas at the southern end of the overall project corridor: Nāwiliwili, Ahukini Landing, and the Līhu'e Civic Center. Preliminary planning includes several main alignment options (see Figures 1 and 2), all of which were inspected for this study.

Approximately 8 miles (12.9 km) of bike- and pedestrian-path routes are included in the current alignment options for Phase VI. Design specifications and widths of the different alignment options vary. The Area of Potential Effect (APE) consists of the entire approximately 8 miles of alignment-option corridors between Nāwiliwili, Ahukini Landing and Līhu'e Civic Center, defined as the center line of the corridors and their immediately adjacent alignment shoulders.

This study was designed to identify known archaeological sites, and to provide recommendations relevant to the State of Hawaii's historic-preservation review process.

### 7.1 Results

The following are the main results of this study:

- a. A total of seven (7) historic properties have been previously identified in or immediately adjacent to the project area; all seven are located in the coastal portion of the project area (see Figures 18 and 20). At least three of these appear to be traditional pre-Contact Hawaiian sites: a cultural layer at the shoreline (SIHP No. 50-30-11-424), an oval-shaped stone alignment or terrace (SIHP No. 50-30-11-421), and a 400-foot long stone wall considered to be a possible extension of Ninini Heiau (SIHP No. 50-30-11-100). The latter stone wall may be impacted by the proposed project; the other two sites (SIHP Nos. 421 and 424) appear to be located well away from the proposed alignment along the shoreline. The other four sites date from historic (post-Contact) times: two stone wall remnants (SIHP Nos. 50-30-11-422 and 423), the ruins of a plantation camp that once existed *malae* of Ahukini Road, just east of the intersection with Ninini Point Road (part of Ahukini Landing, SIHP 50-30-08-9000), and a pigery (SIHP No. 50-30-08-5958). The plantation camp ruins and the pigery appear to be located well away from the proposed alignment near Ahukini Landing; the stone walls appear to be located within or very near the proposed alignment along the shoreline.
- b. Kikuchi and Remoaldo's (1992) "Cemeteries of Kauai" identify a historic cemetery designated B004 (see Figure 18) located near the Nāwiliwili Park portion of the



- proposed bike- and pedestrian-path alignment. Kikuchi and Remonido do not provide any additional specific information about this historic cemetery.
- c. Two bridges are located within existing rights-of-way / proposed alignments (see Figure 21): an old railroad bridge previously modified as a pedestrian walkway spans the Nāwiliwili Stream, and an old one-lane bridge in disrepair spans the Pu'ali Stream in Niūmahu. Both of these structures appear to be over 50 years old, and neither appears to have been formally assessed for historic significance.
  - d. There are three areas of dense vegetation that have not been developed with roads or trails; the two areas near the center of the project area may contain sugar cane-era sites on the ground surface. The other area, near Ninini Point Lighthouse, may contain older stone ruins and / or plantation-era sites or features.
  - e. Several areas along the coast may contain as yet undiscovered subsurface archaeological deposits dating to pre-Contact times, especially in the area from Ninini Point to the previous location of the long-destroyed Ahukini Heiau (located at Ahukini Point, about halfway up the coast from Ninini to Ahukini Landing). The old Hawaiian village of Kalapakā was once located in this area, and cultural deposits may be present. Likewise, the coastal area near Niūmahu Park may also contain as yet undiscovered subsurface archaeological deposits dating to pre-Contact times.
  - f. The remaining portions of the project area have been previously under commercial sugar cane cultivation and / or have been modified by modern development; it is therefore unlikely that additional historic properties (either on the surface or in subsurface deposits) are present throughout most of the project area.

## 7.2 Recommendations

Given the preliminary stages of the proposed project, it is unclear at this point how much deep excavation, grading, grubbing and other major ground disturbance will be necessary to install the bike and pedestrian pathways. In some places, it would seem that existing rights-of-way can be used with little additional ground disturbance. In other places, for example along the coast from Ninini Point to Ahukini Landing, the bike- and pedestrian-path alignment will be constructed makai of the existing public access dirt road in predominately unmodified coastal lands.

CSH generally recommends the State Historic Preservation Division be afforded the opportunity to review any aspects of this project that involve significant ground disturbance. In addition to this general recommendation, CSH also offers the following specific recommendations based on the aforementioned results:

1. Archaeological Inventory Survey (AIS) satisfying the Hawai'i Administrative Rules (HAR) Chapter 13-276 is recommended for limited portions of the project area, including:

- a. the three areas in which the proposed alignments traverse densely vegetated lands without roads, trails or pathways (see Figure 21); of these three areas, it is likely that subsurface testing (excavation) may only be necessary in the segment near Ninini Point Lighthouse, the other two being located within previously-disturbed sugar cane lands;
  - b. the coastal alignment corridor between Ninini Point and Ahukini Landing, especially the southern half of this coast, from Ahukini Point to Ninini Point. For drainage improvements or other improvements involving significant ground disturbing activities, subsurface testing (excavation) within the footprint of the proposed improvements is recommended, given the likelihood of encountering historically-significant cultural materials in this area.
2. An Archaeological Monitoring program satisfying HAR Chapter 13-279 should be developed and implemented consisting of a combination of on-site and on-call monitoring. Specifications of the monitoring program (e.g., precisely where on-site monitoring is required) will depend upon the results of the AIS. Monitoring should probably also include the alignment in the vicinity of Niūmahu Park. It seems unlikely that monitoring would be necessary in any of the *mauka* (inland) areas away from the coast, since these have all been severely modified by prior historic and modern disturbances.
  3. The two bridges located within existing rights-of-way / proposed alignments (see Figure 21), including an old railroad bridge previously modified as a pedestrian walkway spanning Nāwiliwili Stream, and an old one-lane bridge in disrepair spanning the Pu'ali Stream in Niūmahu, should be documented and formally assessed for historic significance by a qualified Architectural Historian.
  4. The historic cemetery designated B004 by Kikuchi and Remonido (1992) located near the Nāwiliwili Park portion of the proposed bike- and pedestrian-path alignment (see Figure 18) appears to be situated makai of the bikepath alignment. However, isolated finds of human remains and other cultural materials are possible anywhere in this area, given the clear evidence of considerable pre-contact and post-contact habitation. Archaeological Monitoring should be undertaken for any ground disturbance in the park area, given the common occurrence in Kaua'i and the State of Hawai'i of "extra" unmarked burials adjacent to historic-era cemeteries.
  5. No further historic-preservation work is recommended for the majority of the project area (i.e., all those lands not specifically mentioned above, and not indicated in Figure 21).

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