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**Archaeological Monitoring Plan for the  
Kaipapa‘u Stream Bridge Replacement Project  
Kaipapa‘u Ahupua‘a, Ko‘olauloa District, O‘ahu  
TMK: [1] 5-4-011 and [1] 5-4-018**

**Prepared for  
R. M. Towill Corporation**

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(Job Code: KAIPAPAU 1)**

**January 2010**

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## Management Summary

<b>Reference</b>	Archaeological Monitoring Plan for the Kaipapa'u Stream Bridge Replacement Project Kaipapa'u Ahupua'a, Ko'olauloa District, O'ahu TMK: [1] 5-4-011 and [1] 5-4-018 (Hammatt and Shideler 2010)
<b>Date</b>	January 2010
<b>Project Number (s)</b>	Cultural Surveys Hawai'i Inc. (CSH) Job Code: KAIPAPAU 1
<b>Investigation Permit Number</b>	Cultural Survey Hawaii presently operates under archaeological permit number 09-20, issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
<b>Project Location</b>	The project area is located at the Kamehameha Highway Kaipapa'u Stream bridge crossing midway between the coastal communities of Hau'ula to the south and Lā'ie to the north on O'ahu's north windward coast, Hawai'i.
<b>Land Jurisdiction</b>	State of Hawaii and Private lands
<b>Agencies</b>	State Historic Preservation Division (SHPD), Department of Land and Natural Resources (DLNR)
<b>Project Description</b>	The project involves the proposed re-construction of the Kamehameha Hwy. Kaipapa'u Bridge including demolition of the existing north abutment, construction of new concrete abutments, construction of a new concrete stream wall adjacent to the northwest and southeast of the north side of the bridge, demolition of an existing dwelling just east of the bridge and creation of a staging area to the southwest of the south side of the bridge. Minimally, land disturbing activities would include grubbing and grading, excavations for foundations, and associated infrastructure improvements.
<b>Project Acreage</b>	Approximately 1-acre
<b>Area of Potential Effect (APE) and Survey Acreage</b>	For the purposes of this archaeological monitoring plan, the Area of Potential Effect (APE) is considered to be the entire 1.0-acre project area.
<b>Historic Preservation Regulatory Context and Document Purpose</b>	This archaeological monitoring program is to be implemented to facilitate the identification and treatment of any burials that might be discovered during subsurface disturbance and to alleviate the project's effect on any non-burial archaeological deposits that might be uncovered during project construction. At the request of R. M. Towill Corporation CSH has prepared this archaeological monitoring plan. In consultation with SHPD, this monitoring plan is designed to fulfill the state requirements for monitoring plans [HAR Chapter 13-279-4]. This document was prepared to support the proposed project's historic preservation review under Hawai'i Revised Statutes (HRS) Chapter 6E-8 and HAR Chapter 13-275.
<b>Recommendations</b>	On-site archaeological monitoring is recommended.

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## Section 1 Introduction

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### 1.1 Project Background

At the request of R. M. Towill Corporation, Cultural Surveys Hawai'i, Inc. (CSH) prepared this archaeological monitoring plan for the proposed Kaipapa'u Stream Bridge Replacement Project Kaipapa'u Ahupua'a, Ko'olauloa District, O'ahu TMK: [1] 5-4-011 and [1] 5-4-018. The project area is located at the Kamehameha Highway Kaipapa'u Stream bridge crossing midway between the coastal communities of Hau'ula to the south and Lā'ie to the north on O'ahu's north windward coast, Hawai'i. This area is depicted on the U.S. Geological Survey 7.5-Minute Series Topographic Map, Hau'ula Quadrangle (1998) (Figure 1) on Tax Map Key (TMK) plat [1] 5-4-018 (Figure 2 and on an aerial photograph (Figure 3).

For the purposes of this Archaeological Monitoring Plan, the area of potential effect (APE) is considered to be the entire approximately 1.0-acre study area. The proposed project involves demolition of the existing Kaipapa'u Bridge north abutment, construction of new concrete abutments, construction of a new concrete stream wall adjacent to the northwest and southeast of the north side of the bridge, demolition of an existing dwelling just east of the bridge and creation of a staging area to the southwest of the south side of the bridge (Figure 4 and Figure 5). Minimally, land disturbing activities would include grubbing and grading, excavations for foundations, and associated infrastructure improvements.

The proposed project is subject to Hawai'i State environmental and historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 343 and HRS 6E-8/Hawai'i Administrative Rules (HAR) Chapter 13-275, respectively]. This monitoring plan is designed to fulfill the state requirements for monitoring plans [HAR Chapter 13-279-4].



Figure 1. Portion of U.S. Geological Survey 7.5 Minute Series Topographic Map, Hau'ula Quadrangle (1998), showing the location of the project area

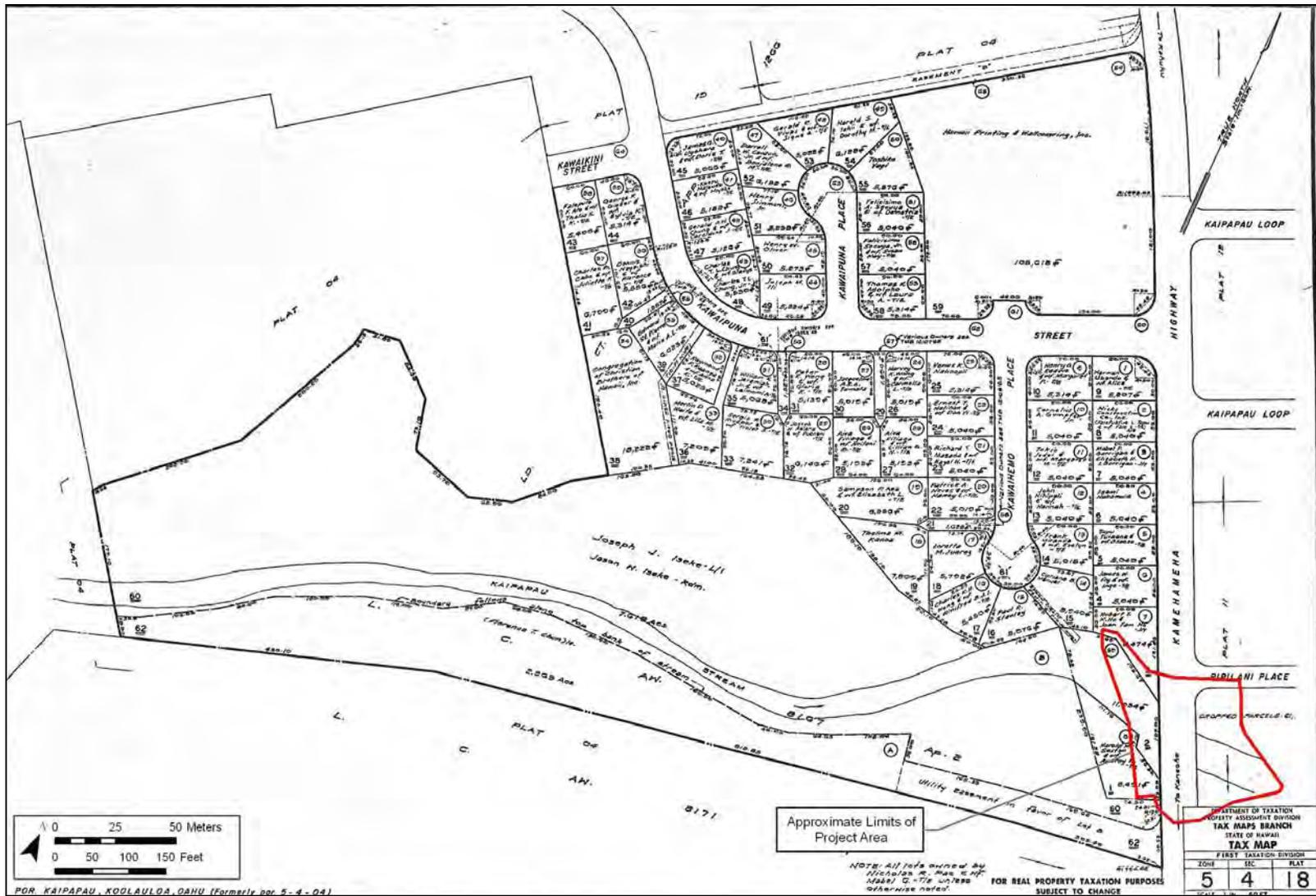


Figure 2. TMK [1] 5-4-18 showing location of project area

Archaeological Monitoring Plan for the Kaipapa'u Stream Bridge Replacement Project, Ko'olauloa, O'ahu

TMK: [1] 5-4-011 and [1] 5-4-018

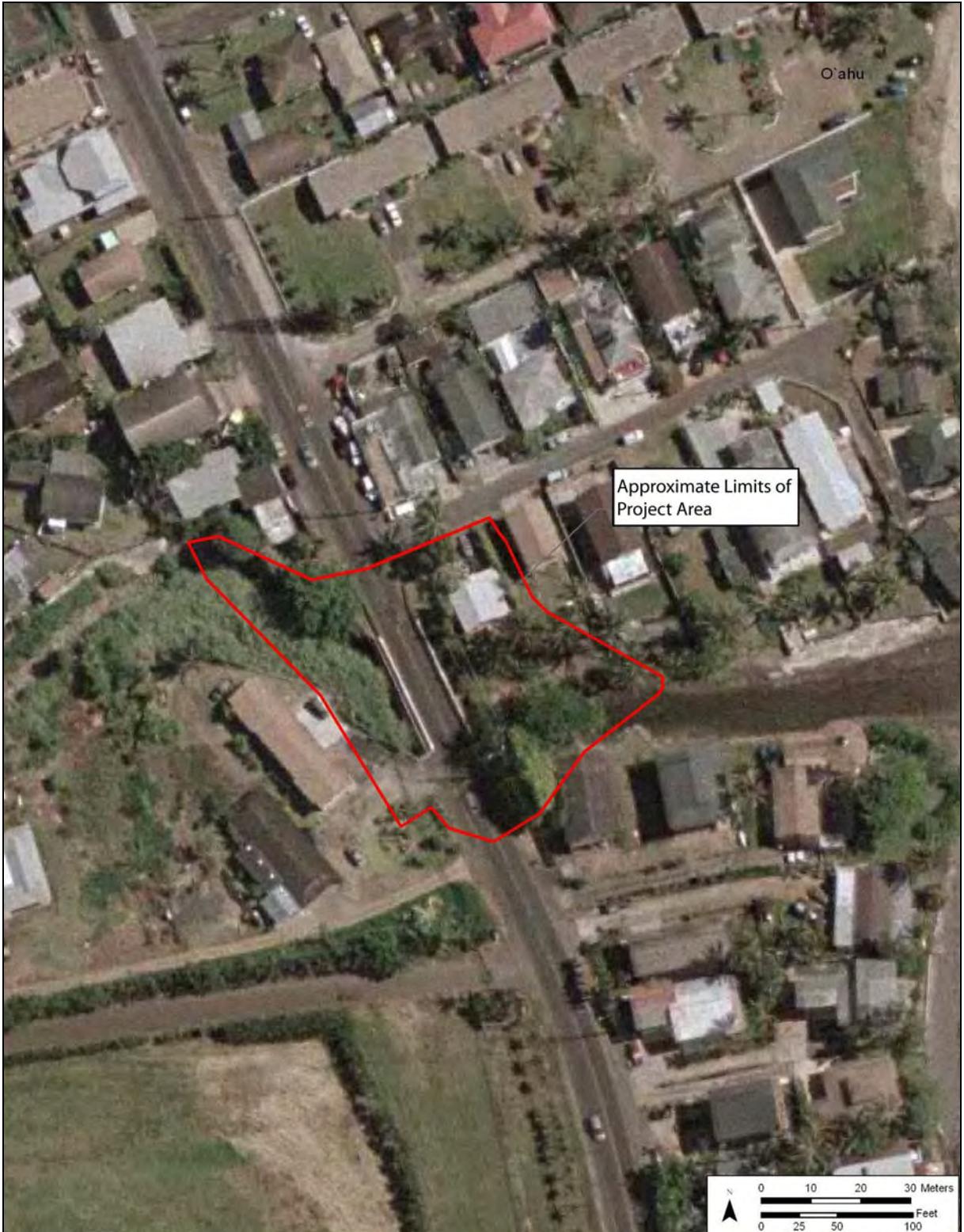


Figure 3. Aerial photograph showing the project area (source: U.S. Geological Survey Orthoimagery 2005)

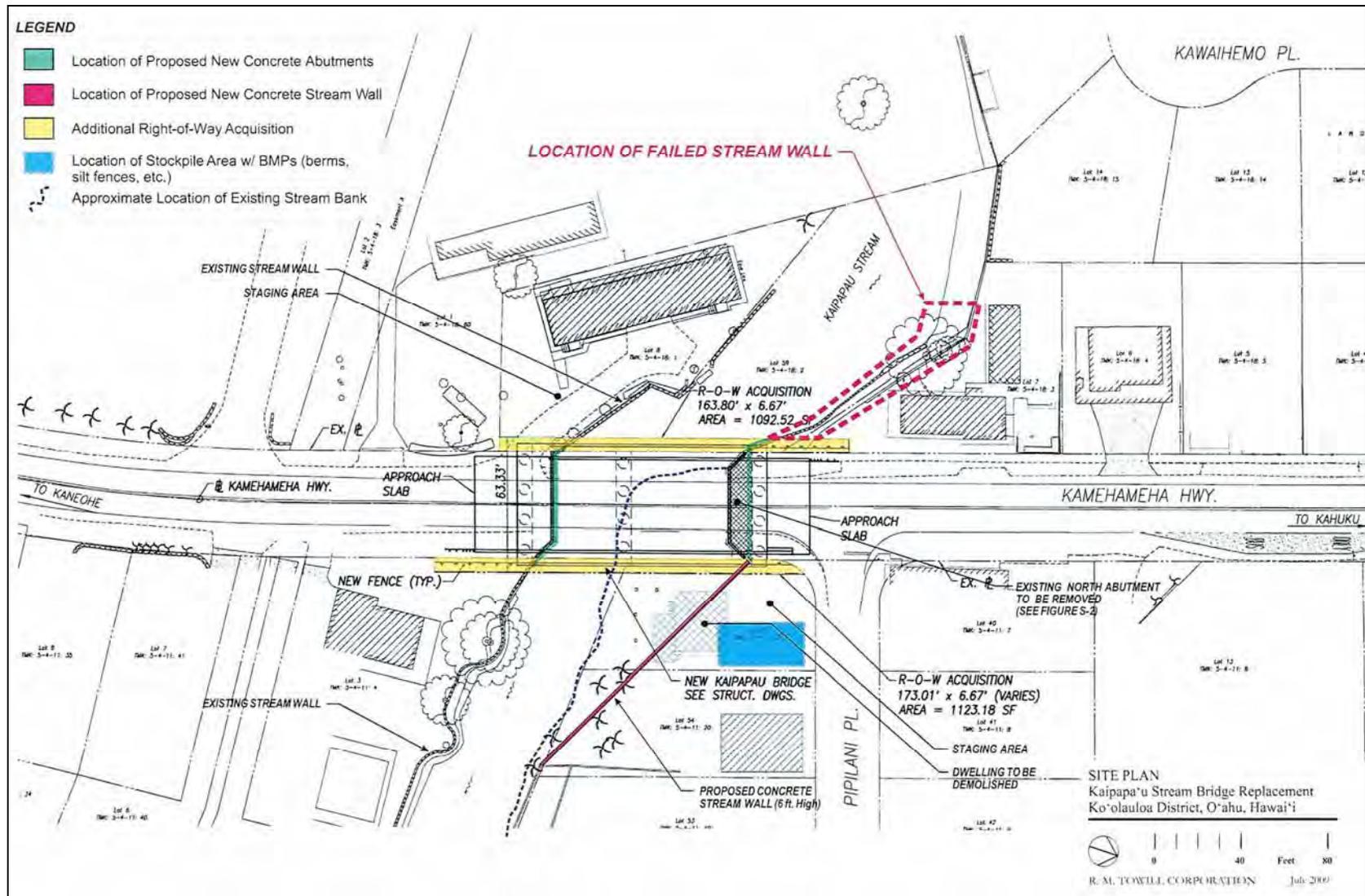


Figure 4. Kaipapa'u Stream Bridge Replacement Site Plan



Figure 5. Panorama view upstream of Kaipapa‘u Stream Bridge showing location of failed stream wall (at right)

## 1.2 Environmental Setting

### 1.2.1 Natural Environment

The project area vicinity is relatively flat (averaging approximately six feet above mean sea level; AMSL) but the stream is fairly steeply incised into the surrounding clayey floodplain. The natural shoreline is approximately 60-meters to the east.

Rainfall averages 59-inches per year (Giambelluca et al. 1986). The temperature ranges from 60 to 85 degrees Fahrenheit (Armstrong 1973:58). Vegetation in the immediate vicinity of the project area consists mostly of grasses and landscaping.

Kaipapa'u Ahupua'a is characterized by backshore dune deposits along its coastline and further inland by a series of ridges and gulches. Many gulches have intermittent streams. The project area is located near the mouth of Kaipapa'u Stream.

The USDA Soil Survey (Foote et al. 1972) classifies the project area's sediments as predominantly Kawaihapai clay loam (KIB) (0 to 2 % slopes and 2 to 6% slopes) and Kawaihapai stony clay loam (KlaB, 2 to 6 % slopes) particularly in the eastern portion of the project area (Figure 6).

Kawaihapai clay loam (KIB) is described as:

“Permeability is moderate. Runoff is slow, and erosion hazard is no more than slight. The available water capacity is about 1.8 inches per foot in the surface layer and about 1.6 inches per foot in the subsoil. In places roots penetrate to a depth of 5 feet or more. In some places the soil is subject to flooding...This soil is used for sugarcane, truck crops, pasture, and orchids.” (Foote et al. 1972: 64)

Kawaihapai stony clay loam is similar in characteristics.

On the west side of the project area are Lolekaa silty clay (LoB) (3 to 8% slopes and 15 to 25 % slopes).

Lolekaa silty clay (LoB) is described as:

“...on terraces and fans. Included in mapping were small areas of Kaneohe soils on uplands and Hanalei soils in narrow drainageways...In a representative profile the surface layer is dark-brown silty clay about 10 inches thick. The subsoil is 46 to more than 70 inches thick ...The substratum is strongly weathered gravel...Permeability is moderately rapid. Runoff is slow, and the erosion hazard is slight. The available water capacity is about 1.3 inches per foot of soil. Soft, weathered gravel is common in the subsoil but does not affect use and management of the soil for farming. In places roots penetrate to a depth of 5 feet or more...This soil is used for pasture, homesites, truck crops, bananas, and papayas.” (Foote et al. 1972:83-84)

### 1.2.2 Built Environment

The project area is located on and along Kamehameha Highway in a residentially developed area of Kaipapa'u, surrounded on all sides by modern suburban housing developments, including streets and utility infrastructure (see Figure 3 and Figure 5).

The *Historic Bridge Inventory, Island of Oahu* (Thompson 1983:VII-33) gives the following description of this reinforced concrete deck girder bridge:

The Kaipapa'u bridge located on Kamehameha Highway .014 of a mile southeast of the intersection with Pipilani Place was built in 1932. The contractor was L.L. McCandless, a prominent Honolulu businessman and prolific builder. He was awarded a contract of \$190,117.51 for the construction of five miles of road and seven bridges, from Hau'ula to Kahuku.

The bridge is a two span reinforced concrete deck girder structure, 82' in total length, 28.4' wide, and 12' in height. It has a design load capacity of H-15. The abutments and parapets are constructed of reinforced concrete. There is a wooden railing and walkway on the right. The design integrity is not intact.

The bridge is an important transportation link for Windward communities and it is associated with one of Honolulu's prominent builders.

There is no good vantage point and the view is poor.

The aesthetics are poor.

The bridge appears to have been evaluated as not particularly special.

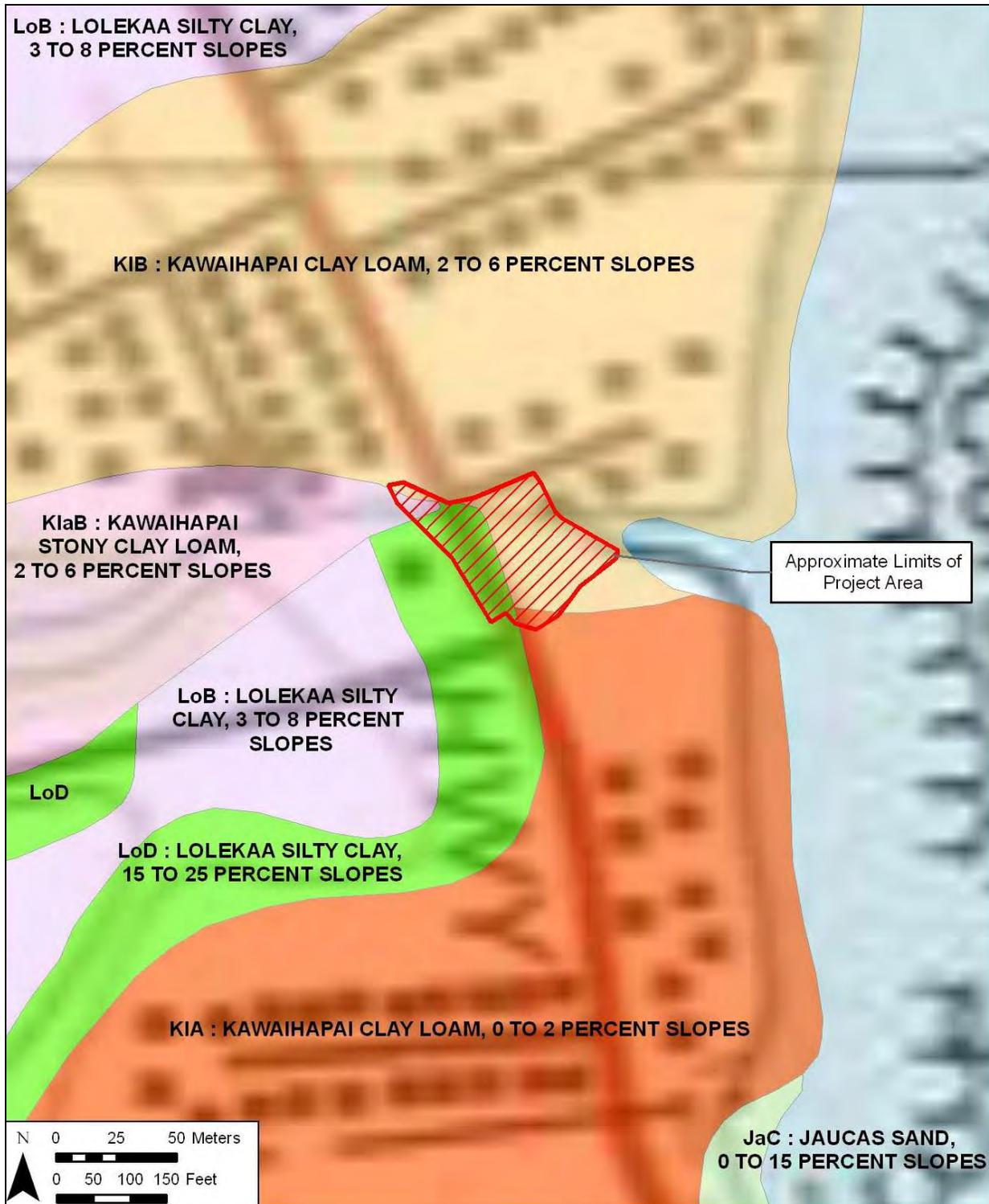


Figure 6. Overlay of Soil Survey of the State of Hawai'i (Foote et al. 1972), indicating sediment types within and surrounding the project area. Source: Soils Survey Geographic Database (SSUGRO) 2001, U.S. Department of Agriculture

## Section 2 Background Research

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### 2.1 Traditional and Historical Background

Kaipapa‘u Ahupua‘a is located in the Ko‘olauloa District, bound on its north side by Lā‘ie Malo‘o Ahupua‘a, on its east side by the Pacific Ocean at Kaipapa‘u Point, on its south side by Hau‘ula Ahupua‘a, and on its west side by Kawaihoa Ahupua‘a. Kaipapa‘u literally translates to “shallow sea” (Pukui, Elbert and Mookini 1974: 70) or “ocean of shoals” (Bordner 1992).

#### 2.1.1 Mythological and Traditional Accounts

There are few written accounts associated with the *ahupua‘a* of Kaipapa‘u in the district of Ko‘olauloa. These accounts describe the development and naming of landmarks, the origin and presence of marine resources, and the presence of Kamapua‘a, the pig-child demi-god, much associated with Windward O‘ahu. One legend was cited in Westervelt’s *Hawaiian Legends of Old Honolulu* (1963:145-146) as follows:

Another legend...is told by the natives of Hau‘ula. There is a valley near this village called Kaipapa‘u (the valley of the shallow sea). Here lived an old kahuna, or priest, who always worshipped the two great gods Kane and Kanaloa. These gods had their home in the place where the old man continually worshipped them, but they loved to go away from time to time for a trip around the island. Once the gods came to their sister’s home and received from her dried fish for food. This they carried to the sea and threw into the waters, where it became alive again and swam along the coast while the gods journeyed inland. By and by they came to the little river on which the old man had his home. The gods went inland along the bank of the river and the fish turned also, forcing their way over the sand-bank which marked the mouth of the little stream. Then they went up the river to a pool before the place where the gods had stopped. Ever since, when high water has made the river accessible, these fish, named ulua, have come to the place where the gods were worshipped by the kahuna and where they rested and drank awa with him (page 160).

There are also accounts of priests associated with Kaipapa‘u In Abraham Fornander’s (1919: Volume VI 158-159) discussion of some famous priests (“*Kekahi Mau Kahuna Kaulana*”). A priest named Kapukaihaoa who lived in Kaipapa‘u “could discern mysteries and secrets and forthcoming events” (“*ua hiki ia ia ke ‘ike i nā mea pohihihi a me nā mea huna, a me nā mea e hiki mai ana mahope*”). Bordner (1992:5) cites a second priest associated with Kaipapa‘u named Makuakaumana:

...it is from here [Hauula] that according to legend, the kahuna Makuakaumana was taken back to Kahiki by a whale when his chief, Paa, had no room for him in his canoe. There is still a spring in the uplands of Kaipapau, the adjacent district, named for the famous seer who dwelt in the vicinity, Puna-a-Makuakaumana.

Handy (1971) discusses native accounts of past taro cultivation practices while comparing what was once there to what was there during his account in *Hawaiian Planter*: “The level land opening out below the valley, now in cane was presumably all in terraces. Hauula natives say that there are old taro flats along [Kaipapa‘u] stream up in the valley, which is very narrow and steep.”

*Lo‘i* cultivation in Kaipapa‘u Ahupua‘a was also discussed in Handy and Handy’s (1972) *Native Planters in Old Hawaii*:

Progressing northward along the Ko‘olau coast we find conditions comparatively less and less suitable for wet-taro culture than in our Type Area which includes the great valleys of Kahana and Punalu‘u. In Kaipapa‘u (shallow sea) the ahupua‘a adjacent to Hau‘ula, the upper stream valley is steep and narrow, yet natives of the district say that making the most of small opportunity, a few lo‘i used to be worked there. The level land to seaward may once have supported a moderate amount of terracing, but as this was all under cane when the area was studied in 1953, the extent could not be determined.

Traditional fishing practices and other marine resource production was an important form of traditional subsistence lifestyles that took place in this coastal region of Kaipapa‘u Ahupua‘a, which was once called Kakaihalala; and fronting Kakaihalala, Papapiapia, Papaakea, and Kao were the popular fishing grounds (Clark 1977). There was also a legendary reference describing a natural phenomenon regarding the traveling and spawning patterns of the ‘*anaeholo* fish. There was a saying: “*Ka ia hali a ka makani*” or “the fish fetched by the wind” (Pukui 1983:145). Pukui relates to this saying when she wrote: “The ‘*anaeholo*, a fish that travels from Honouliuli, where it breeds, to Kaipapa‘u on the windward side of O‘ahu. It then turns about and returns to its original home. It is driven closer to shore when the wind is strong” (Pukui 1983: 145)

### 2.1.2 Mid- to late-1800s

In 1845, the Board of Commissioners to Quiet Land Titles, also called the Land Commission, was established “for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property” (Chinen 1958:8). This led to the *Māhele*, the division of lands between the king of Hawaii, the *ali‘i* (chiefs), and the common people, which introduced the concept of private property into the Hawaiian society. In 1848, Kamehameha III divided the land into four divisions: certain lands to be reserved for himself and the royal house were known as Crown Lands; lands set aside to generate revenue for the government were known as Government Lands; lands claimed by *ali‘i* and their *konohiki* (supervisors) were called Konohiki Lands; and habitation and agricultural plots claimed by the common people were called *kuleana* (Chinen 1958:8-15).

Only two Land Commission Awards (LCAs), LCA 8167 and LCA 8171, were recorded for the *ahupua‘a* of Kaipapa‘u. The *kuleana* were located just *mauka* (inland, west) of Kamehameha Highway, adjacent to Kaipapa‘u Stream, along its southern bank (see Figure 2). Both LCAs were located immediately south of the current project area.

LCA 8167, composed of two parcels (8.75-acres), was awarded to Hikiau. According to the *Native Register* (496v.5) for this claim states “Keaweiki has the *mo‘o*, I only have a *kula*. It is bounded on the north by Kanihooi’s *mo‘o*, on the east, Hoopalaha’s *mo‘o*. I have a claim for

cultivation in the upland, and the forest, and a fishing claim, and a house lot claim.” *Foreign Testimony* (10v8) notes that “potatoes, melons, etc.” were being cultivated on Hikiau’s land.

LCA 8171, consisting of one parcel (22-acres), was awarded to Hoopalahee:

...The *mo‘o* is Kihapai, in this *mo‘o* I have 4 *lo‘i*, bounded on north by a house claim, on the east by Kawainui’s *mo‘o*. I have a *kula* claim in this *mo‘o* adjoining on the east of Hikiau’s *mo‘o kula*. I cultivate in the *kula* of Kanihooi, and in the *kula* of Kawahine, and in the *kula* of Maiahe.

I have a claim of cultivation in the upland and in the forest. I farm in the *ahupua‘a* of Hauula. The *mo‘o* is Kalaipahoa, I have 2 *lo‘i* in it and a small *kula* also adjoining on the north of the *lo‘is* in the *mo‘o*...I also have a house claim. (*Native Register* 49v.5)

*Foreign testimony* also attests to how this LCA was once used, and indicates that the *kalo* land is fenced in, and that “stones are prepared for building a wall” around a house lot.

According to these accounts of past land use, it is clear that during the mid-1800s, this land was used for cultivation of various introduced, as well as traditional crops, and that the fishing and farming that took place on these parcels sustained a small population of inhabitants.

### 2.1.3 1900s

Major developments in Ko‘olauloa during the twentieth century include the growth of railroads in conjunction with the sugar industry, the construction of Kamehameha Highway, the construction of several hiking trails and a ranger cabin in the Ko‘olau mountains, and the expansion of Mormon enterprises.

#### 2.1.3.1 Railroad Companies

The three railroad companies in operation in Ko‘olauloa during the early 1900s were the Kahuku Plantation Company, the Koolau Railway Company, and the Waiahole Water Company. The operations of these companies improved the logistics of the sugar industry and provided a cultural and social connection for the various peoples inhabiting windward O‘ahu.

The creation of the Koolau Railway Company in 1905 by the Hawaiian Development Company, Ltd. (a conglomeration of businesses), under the impetus of James B. Castle, resulted not only in the improvement of agricultural transport but the unification of the windward community (Conde and Best 1973). The railway functioned in cooperation with the Koolau Agricultural Company, both of which were owned by the Zion Securities Corporation. This railway was envisioned as the connecting link between Kahuku (the Oahu Railway), Kāneohe, and Honolulu. However, its construction culminated with the initial section from Kahuku to Kahana, running past Hau‘ula along the Kamehameha Highway alignment, which was completed by the end of 1907. This rail line was located immediately inland of the Kamehameha Hwy. alignment and can be clearly seen on the 1919 (Figure 7) 1929 (Figure 8), 1933 (Figure 9), 1943 (Figure 10) and 1953 (Figure 11) maps. In 1931, the Koolau Railway Company was purchased by the Kahuku Plantation Company which operated portions of the line until its dissolution in 1955 (Conde and Best 1973:298,300) but the portion abutting the current project area appears to have been abandoned prior to 1953 (Figure 11).

Although the Koolau Railway Company's line did not reach its ultimate destination of Honolulu, its presence on the windward side proved to be, if only for a limited time, a beneficial stimulus to the agricultural and ethnic community. As noted in a January 1908 issue of the *Pacific Commercial Advertiser*:

From here [Kahuku] two trains run daily, connecting with the noon train from Honolulu and one reaching Kahuku in the late afternoon. Passengers and freight are carried as far as Kahana and the traffic so far developed has been such as to encourage the promoters. The trip over the line is interesting and the fare is five cents a mile. Running rights over the line between Kahuku Mill and Lā'ie Plantation are given the Kahuku Plantation for the transportation of the Lā'ie cane crop...This, during the grinding season, makes the end of the line a busy one. The crop at Lā'ie this season is a good one too and the Mormon Settlement is a prosperous and busy one [Conde and Best 1973:308].

Conde and Best (1973) also make reference to a locomotive named "Kaipapau" that operated for the Kahuku Plantation sugar company (297).

The use of the railway by passengers is further related in an article in Thrum's 1911 *Hawaiian Annual* (128-133) which describes a leisurely train ride from Hale'iwa to Kahana, including a brief stop in Hau'ula, "a station of growing importance." Passengers on this excursion represented several nationalities including Chinese, "*haole*" (caucasian), and Hawaiian (who were the most numerous). In their study of rural Chinese of O'ahu, Char and Char (1988:114) indicate that the completion of the Kahana to Kahuku route, through improved transportation and produce exchange, strengthened ties between these district communities. The tracks are generally no longer extant in the project area vicinity. The location of the Hau'ula station could not be found, however it is likely that the train stopped at "Helu-moa", fronting the congregational church, before the tracks turned inland.

### 2.1.3.2 Kamehameha Highway

The construction of Kamehameha Highway in 1932 by the Department of Public Works, City and County of Honolulu reflected a major shift in transportation and resulted in the restructuring of the local community. By providing easier access to all parts of the island, the highway increased mobility and fostered urbanization. Following the end of WWII, the agricultural industry's switch from railway to truck transport rendered train hauling obsolete and the introduction of automobiles to Hawai'i marked an increase in individualized mobility, all of which furthered the development of an upgraded roadway.

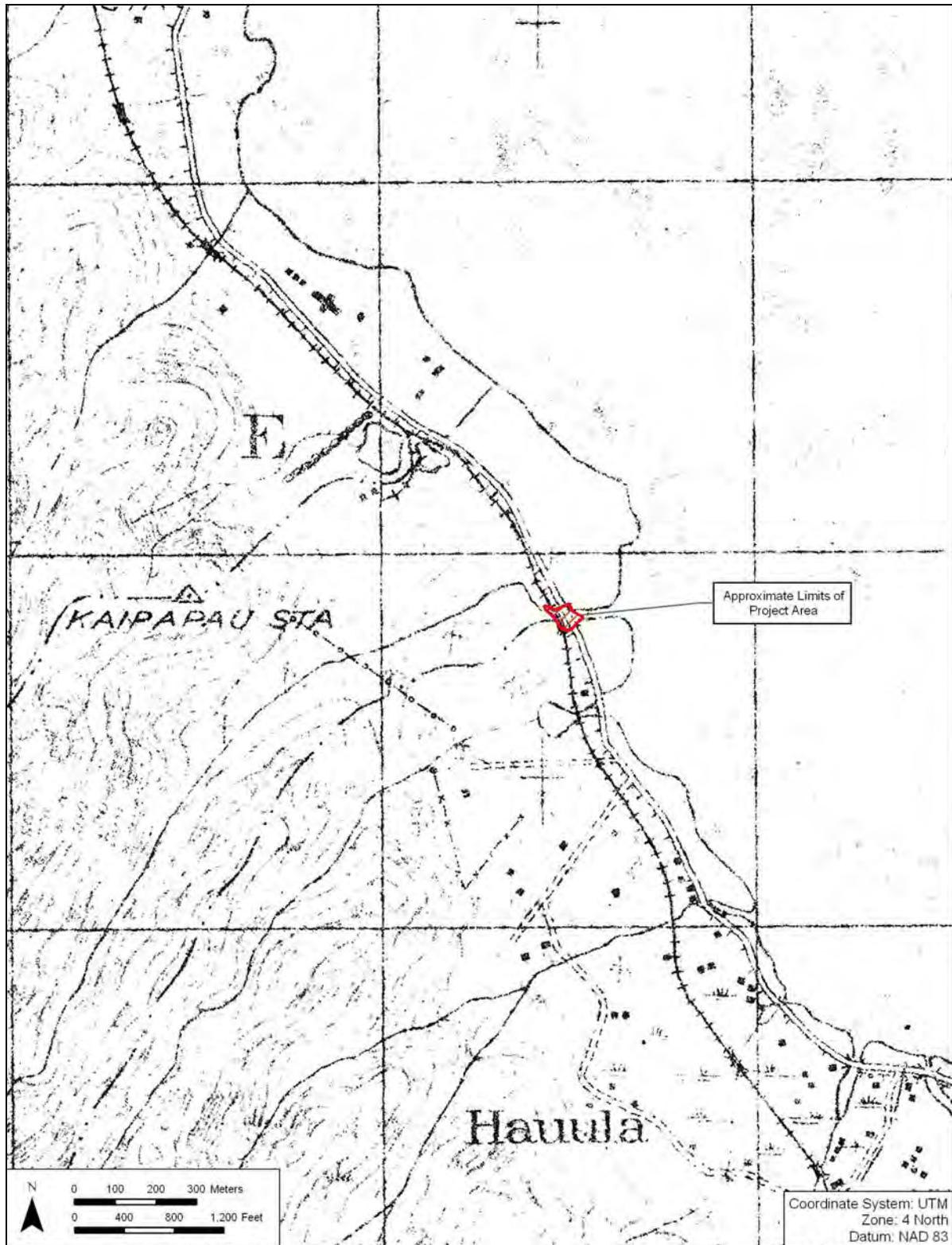


Figure 7. U. S. Geological Survey 1919 Kaipapau Quad map, showing railroad in relation to Kamehameha Highway alignment

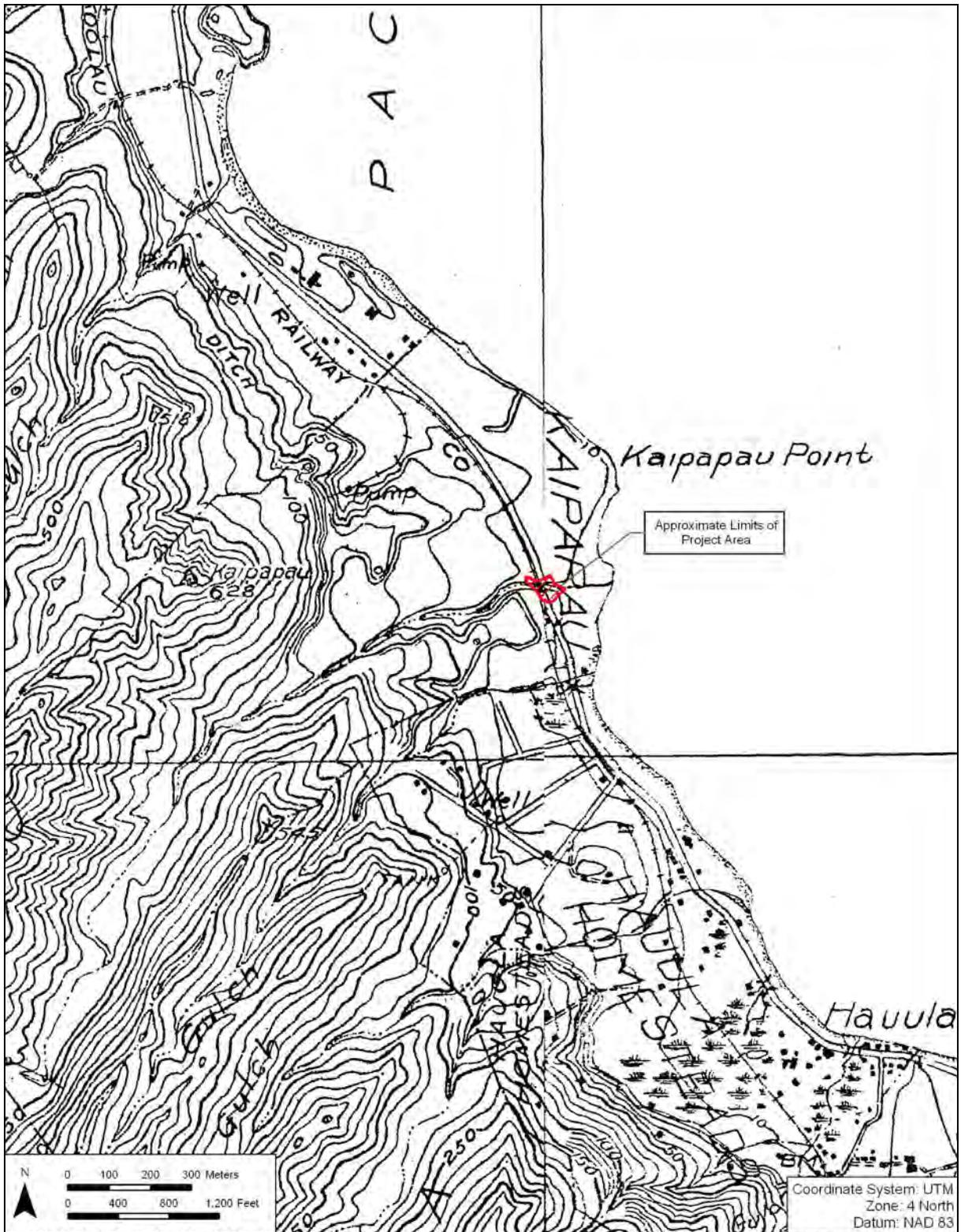


Figure 8. 1929 U.S. Geological Survey map

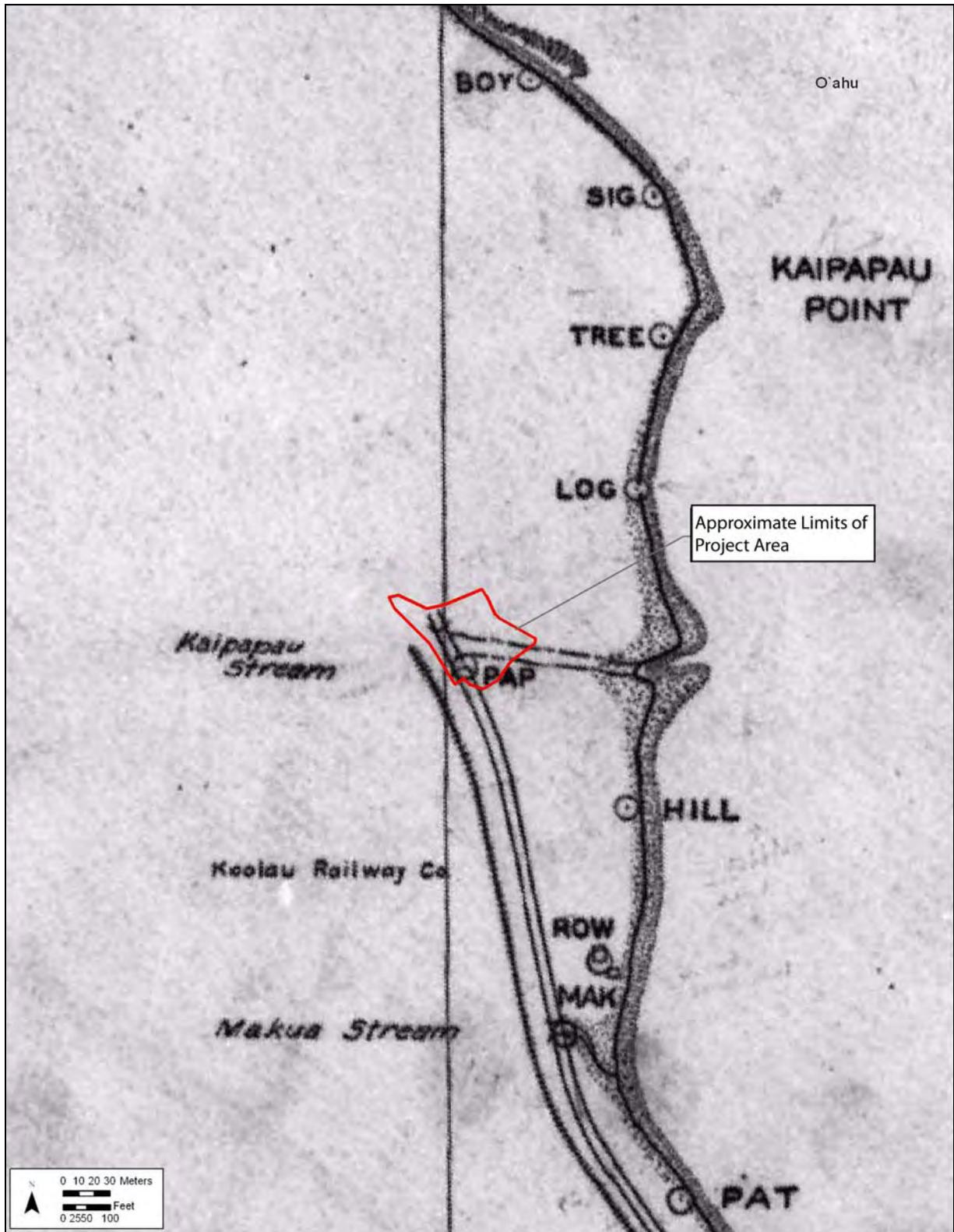


Figure 9. 1933 Coastal Survey map

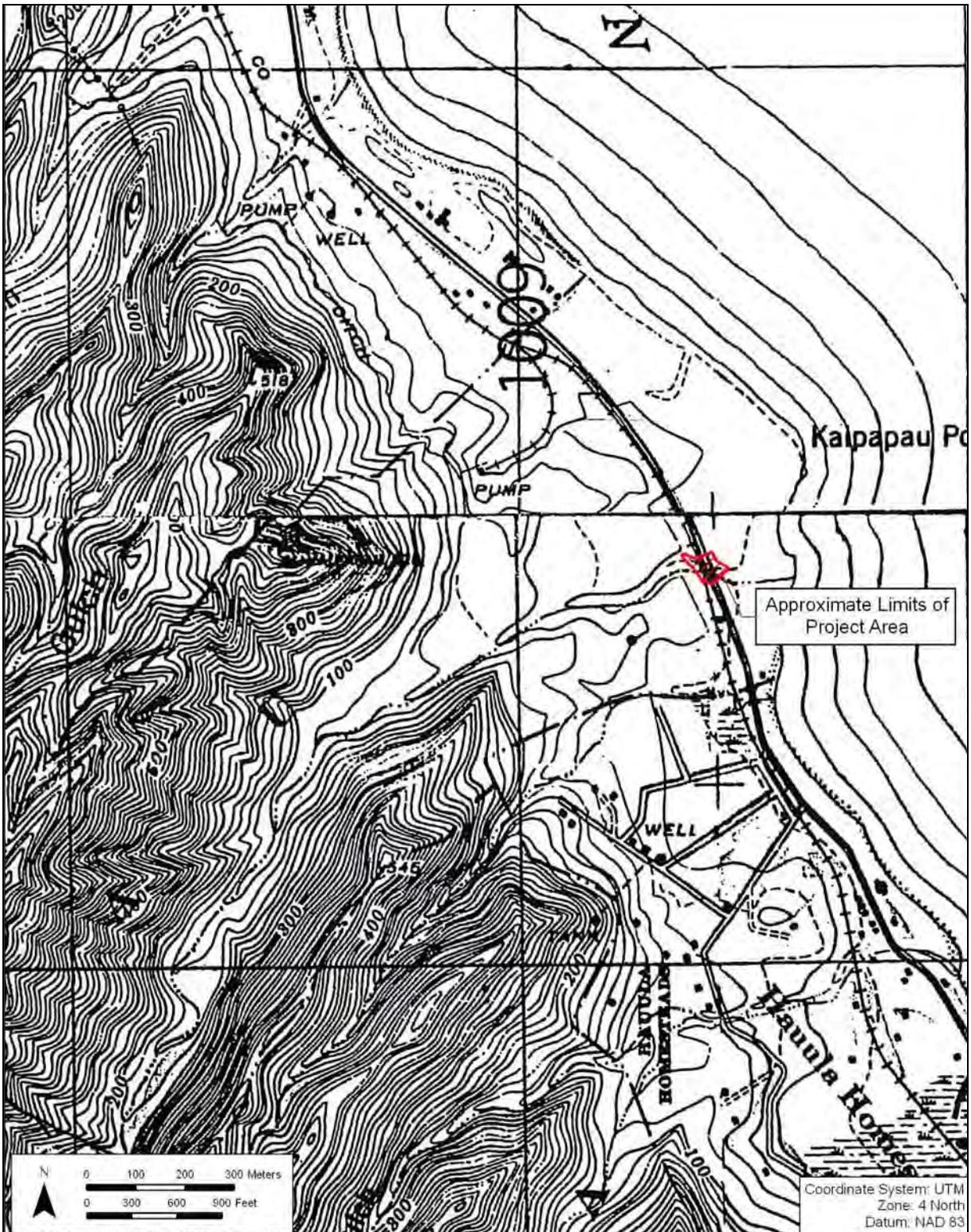


Figure 10. 1943 War Department topographic map, Hau'ula Quadrangle, showing the location of the project area in relation to the abandoned railroad

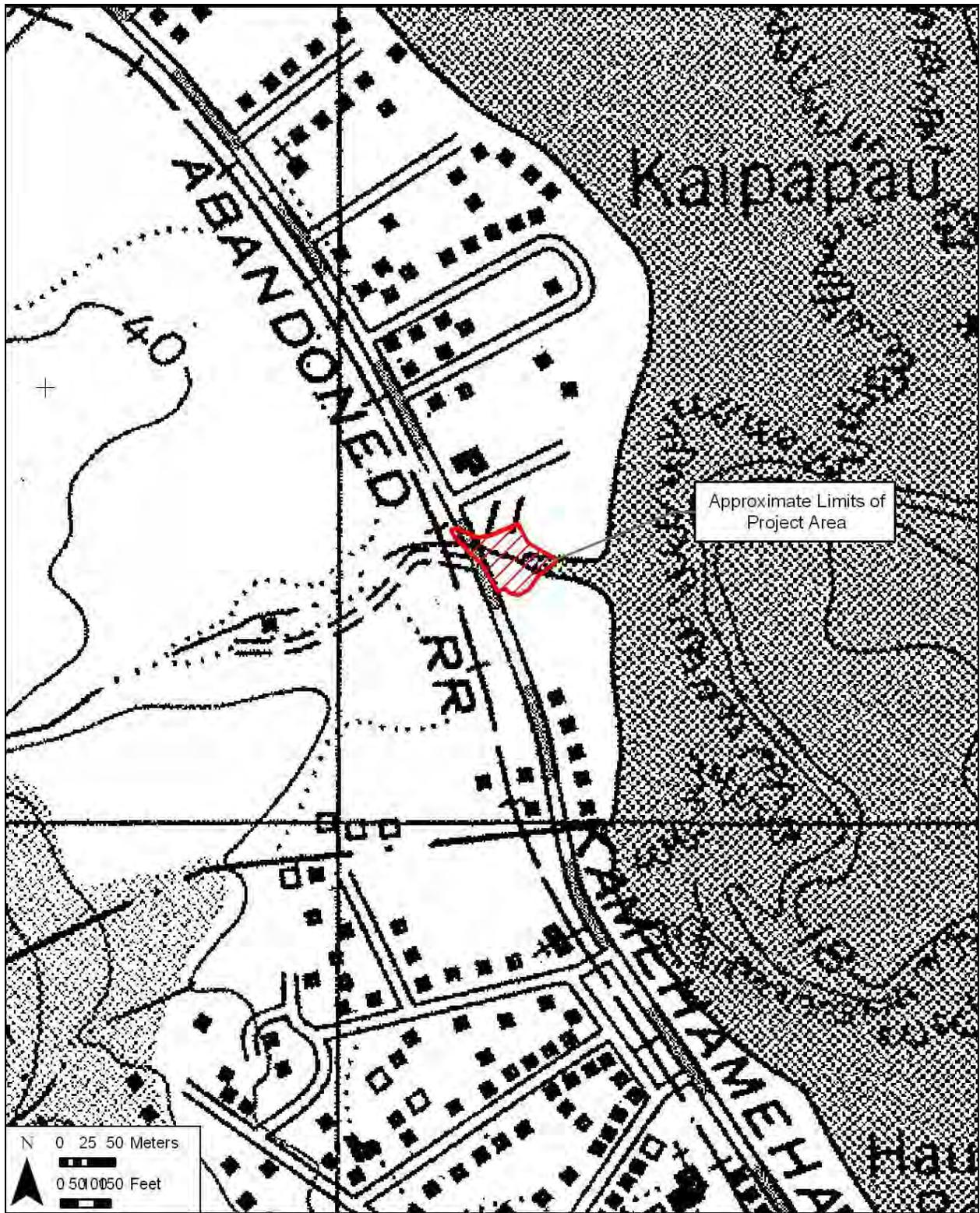


Figure 11. 1953 Army Map Service quad map

### 2.1.3.3 Trails and Kaipapa'u Cabin

Several trails are present within Hau'ula Ahupua'a. Some of these trails, as well as the Kaipapau Cabin, were constructed in the early 1900s. In the 1930s, the Civilian Conservation Corps developed the majority of the Ko'olau Ridge Trail Complex which consists of a twenty mile summit trail with numerous links to the surrounding valleys and ridges, including the Lā'ie trail (State of Hawaii, DLNR 1991:IV21). Other major trails present within these *ahupua'a* include the Hau'ula Loop trail, the Ma'akua Gulch trail, and the Ma'akua Ridge Trail. Each of these three trails begins off of Ma'akua Homestead Road (just south of the project area) and heads *mauka* into the ridges and valleys of the Ko'olau range.

Kaipapa'u cabin was built as a shelter for rangers and pig hunters whose eradication efforts were encouraged by the government to protect native vegetation growth and, as a result, water resources from destructive pig activity (Judd 1933:1). The cabin was completed on December 23, 1932 by Territorial Forrester C.S. Judd with the transportational help of the U.S. Army (Judd 1933:5). The 10.0-foot by 10.0-foot structure was constructed at the head of Kaipapa'u Gulch, midway between two cabins which were already present in the Ko'olau summit area, one being located "at the head of Malaekahana" and the other seven miles away "along the Marsh trail near the head of the Poamoho and opposite Punalu'u Valley (Judd 1933:2).

## 2.2 Previous Archaeological Research

To build a comprehensive archaeological context for the current project area, references have been drawn not only from previous archaeological studies within Kaipapa'u Ahupua'a but also to areas in adjoining portions of the two neighboring *ahupua'a*, Lā'iemalo'o and Hau'ula, and even to Māka'o Ahupua'a (Table 1, Figure 12 and Figure 13).

Previous archaeological research shows a continuous occupation in the immediate vicinity of the project area since pre-contact times. In 1930, J. Gilbert McAllister conducted an island-wide archaeological survey of O'ahu, recording prominent sites, mainly *heiau* and other large structures near the coast. In the *ahupua'a* of Māka'o, he recorded traces of old taro terraces (44, site 288): "on the low level land below the sites [enclosures inland from Hau'ula town on the land known as Māka'o, at the mouth of Kapoho Valley] are traces of old taro patches that are being plowed for cane" (McAllister 1933:159).

McAllister (1933) recorded Kaunihokahi Heiau in Hau'ula, site -286; the lower terraces of the *heiau* had been modified into cattle pens for a dairy located at the site. A second *heiau*, site -287, called Maunawila was recorded in Hau'ula near the courthouse (Figure 12). Within Māka'o, McAllister recorded a series of enclosures that may be the remains of Kapoho Heiau. Also mentioned is Luaali'i Heiau in Māka'o, but this site had been destroyed before McAllister's survey. More recent archaeological surveys completed at select parcels within Hau'ula Ahupua'a include Connolly (1980), Barrera (1981), Riford (1984), Walker and Rosendahl (1988), Bordner (1992), Wolforth (1997), Masterson et al. (1997), Masterson et al. (1998), and Elmore and Kennedy (1999).

Robert Connolly III conducted a reconnaissance survey for the Hau'ula playground, *mauka* of the Beach Park previously thought to be an area of taro *lo'i* (Connolly III, 1980). However, no surface sites were observed or recorded. The present project area is located approximately 1-kilometer to the northwest.

Chiniago, Inc. completed a survey and subsurface testing at a property immediately *makai* of the Hau'ula Kai Shopping Center (Barrera, 1981). Although no surface sites were present, a coral concentration, historic and indigenous artifacts were recovered during testing which revealed an extensive cultural deposit. A human burial was documented eroding from the storm berm along the *makai* perimeter of the property. The subsurface feature and human burial were assigned State site 50-80-05-1430 (Figure 13).

During December, 1983 and January, 1984, Chiniago, Inc. conducted a reconnaissance survey of a large area inland of the current project area. Because of lack of access to parts of the properties, this report (Barrera 1984) recommends that further surveying and study was needed for the area prior to further development.

Bishop Museum completed a reconnaissance survey of the 7-11 property in Hau'ula, situated immediately *mauka* of Hau'ula Beach Park (Riford, 1984). Riford reported an absence of surface sites due to previous grading of the property by bulldozer. The current project area is located approximately 600 m northwest of that study area (Figure 13).

Just northeast of the current project area, an archaeological investigation was conducted at the apex of Kaipapa'u Point in association with a relief drain project that included three test units.

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Reference	Location of Study	Type of Study	Results of Study
McAllister 1933	Island-wide	Archaeological Reconnaissance	Identified 4 sites in vicinity: -286 Kaunihokahi Heiau, -287 Maunawila Heiau, -288 Inclosures & -289 Luaali'i Heiau
Connolly 1980	Lā'ie Beach Park	Subsurface Reconnaissance Survey	Ten test pits and auguring; emphasizes transitory short-term occupation
Connolly III 1980	Hau'ula Playground just W. of school	Archaeological Reconnaissance	No surface remains
Barrera 1981	<i>Makai</i> of Kam. Hwy. N. Kaipapa'u	Archaeological Reconnaissance	Extensive subsurface site, no site # given
Barrera 1984	Kaipapa'u Valley	Archaeological Reconnaissance	Viewed project area from ridge to south
Riford 1984	The 7-11 property in Hau'ula, situated <i>mauka</i> of Hau'ula Beach Park	Archaeological Reconnaissance	No significant finds
Smith 1987	Kaipapa'u Loop, Kaipapa'u Point	Archaeological Testing	No significant finds
McMahon 1988	Back of central Hau'ula Town	Field check	Identified Kaunihokahi Heiau
Walker & Rosendahl 1988a	Back of central Hau'ula Town	Archaeological Test Excavation	Report historic glass and branch coral in double enclosure Site -3394
Walker & Rosendahl 1988b	Kaipapa'u Exploratory Well, Kaipapa'u Valley	Archaeological Reconnaissance	Identified a wall and a ditch associated with Site -1056
Hammatt 1989	Point South of Lā'ie	Reconnaissance Survey	Cave with burial & cultural material - Site -4705
Kennedy 1990	TMK: 5-5-01:2	Inventory Survey	One midden deposit (site -4308) and 1 burial (site -4309)
Kennedy and Berlin 1991	Kokololio (Kakela) Beach Park	Data Recovery and Subsurface Testing	n/a

Reference	Location of Study	Type of Study	Results of Study
Shun and Dies 1991	Mouth of Ma'akua Gulch	Archaeological Monitoring	Monitoring was to avoid impact to Site - 3394. They identified Site-4227 further <i>mauka</i>
Bordner 1992	N. side Kaipapa'u Stream	Archaeological Inventory Survey	Historic boundary walls and clearings noted. No sites designated.
Dunn and Rosendahl 1992	TMK 1-5-5-005:, 1-5-5-006:, 1-5-5-007	Interim Report	Background, summary of findings
Kennedy 1992	TMK 5-5-001:054	Data Recovery	3 additional fire pits
Kennedy, Denham & Moore 1992a	Kokololio Beach Park	Inventory Survey and Subsurface Testing	Identifies 3 human burials - sites 4476, -4477, -4478 and 12 fire pits, sites -4479, -4480, -4481, -4482
Kennedy, Moore & Reintsema 1992b	Kokololio Beach Park	Data Recovery Report	Reports 4 burials, Sites -3744, -4476, -4477 & -4478 and 2 subsurface sites -4479 & -4480
Landrum 1992	Mouth of Ma'akua Gulch	Archaeological Site Evaluation	Evaluates and recommends preservation measures for Sites -3394 and -4227
Kennedy 1993	TMK 5-5-001:002	Monitoring Report	Reports no significant finds
Moore & Kennedy 1994	Kokololio Beach Park	Monitoring Report	7 burials recorded: Sites -4830 through -4836
Halpern and Rosendahl 1995	TMK 1-5-5-005: 1-5-5-006	Archaeological Inventory Survey	Addendum for Lā'ie Master Plan project
Sarvak et al. 1996	Kokololio Beach Park	Monitoring Report	Reports a burial, sling stones, 'ulu maika at Site -5369

<b>Reference</b>	<b>Location of Study</b>	<b>Type of Study</b>	<b>Results of Study</b>
Wolforth 1997	Kukuna Road Central Hau'ula Town	Description of Sites	Briefly describes five sites: -5449 (historic cemetery), -5450 (habitation site), -5451 (historic habitation), -5452 (taro pond field) and -5453 (wall).
Masterson et al. 1997	Kamehameha Highway from Kapaka to Lā'ie	Monitoring Report	Sixty-three features, including 19 human burials
Masterson et al. 1998	Hau'ula Beach Park	Archaeological Inventory Survey	Minimal findings
Elmore & Kennedy 1999	Hau'ula Elementary School	Burial Recovery	Burial (1) Site -5765 and probable cultural layer
Moore et al. 2001	Hau'ula Elementary School	Archaeological Monitoring Report	Burial (1) Site -5917
Bush & Hammatt 2002	Hau'ula Beach Park Improvements	Archaeological Monitoring Report	Burial (1) Site -5801
Perzinski & Hammatt 2004	Hau'ula Community Park	Memorandum on Inadvertent Discovery	Burial (1) Site- 6541
Hunkin et al. 2008	Proposed Hau'ula Fire Station Project, Kaipapa'u, TMK: [1] 5-4-018:064 & 065	Archaeological Literature Review and Field Inspection Report	No surface historic properties were observed but background research notes two human burials and a subsurface cultural layer (SIHP -4795 & -4796) were reported in close proximity (IN Masterson et al. 1997)

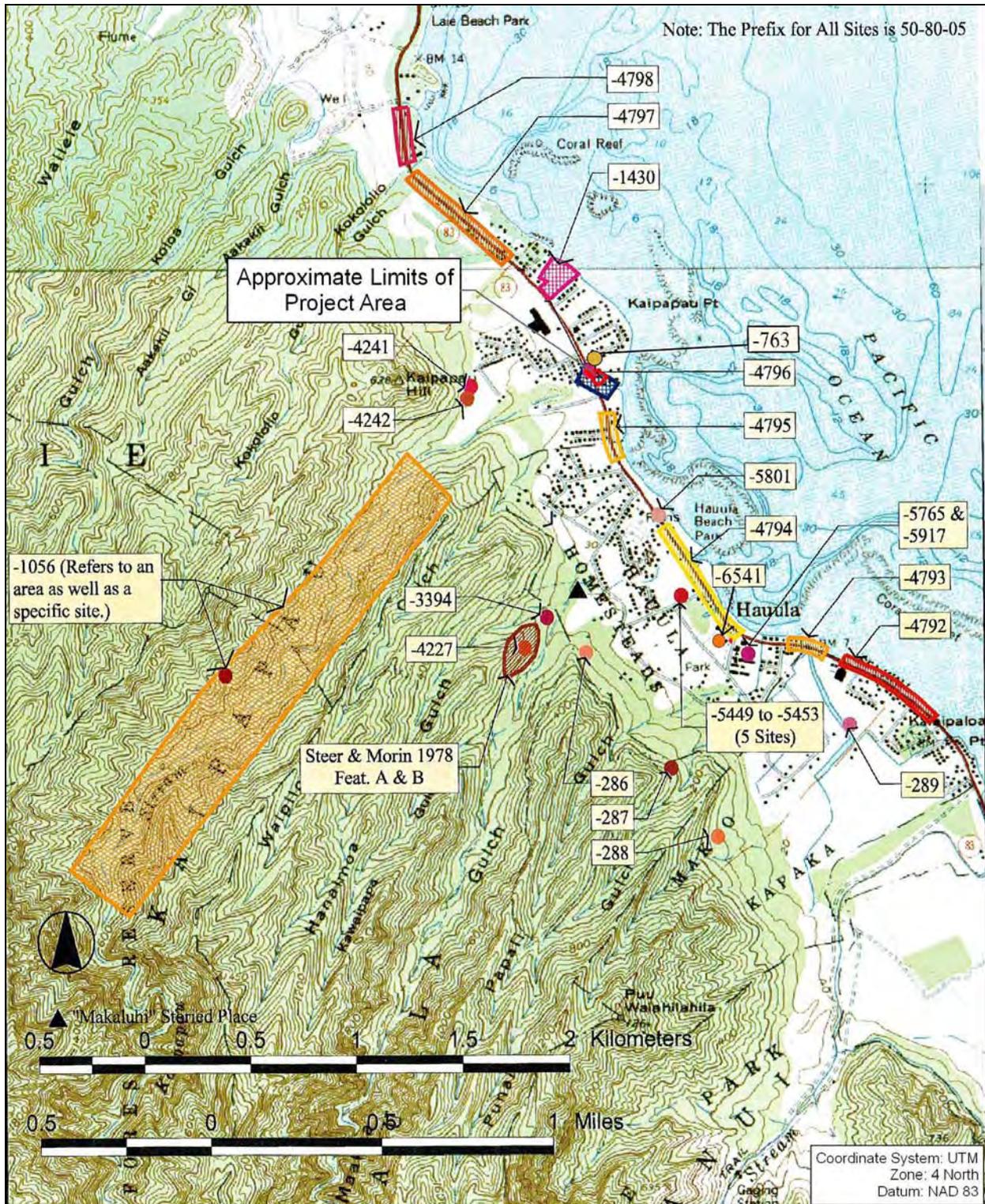


Figure 12. Map showing locations of previously identified sites in relation to location of the project area

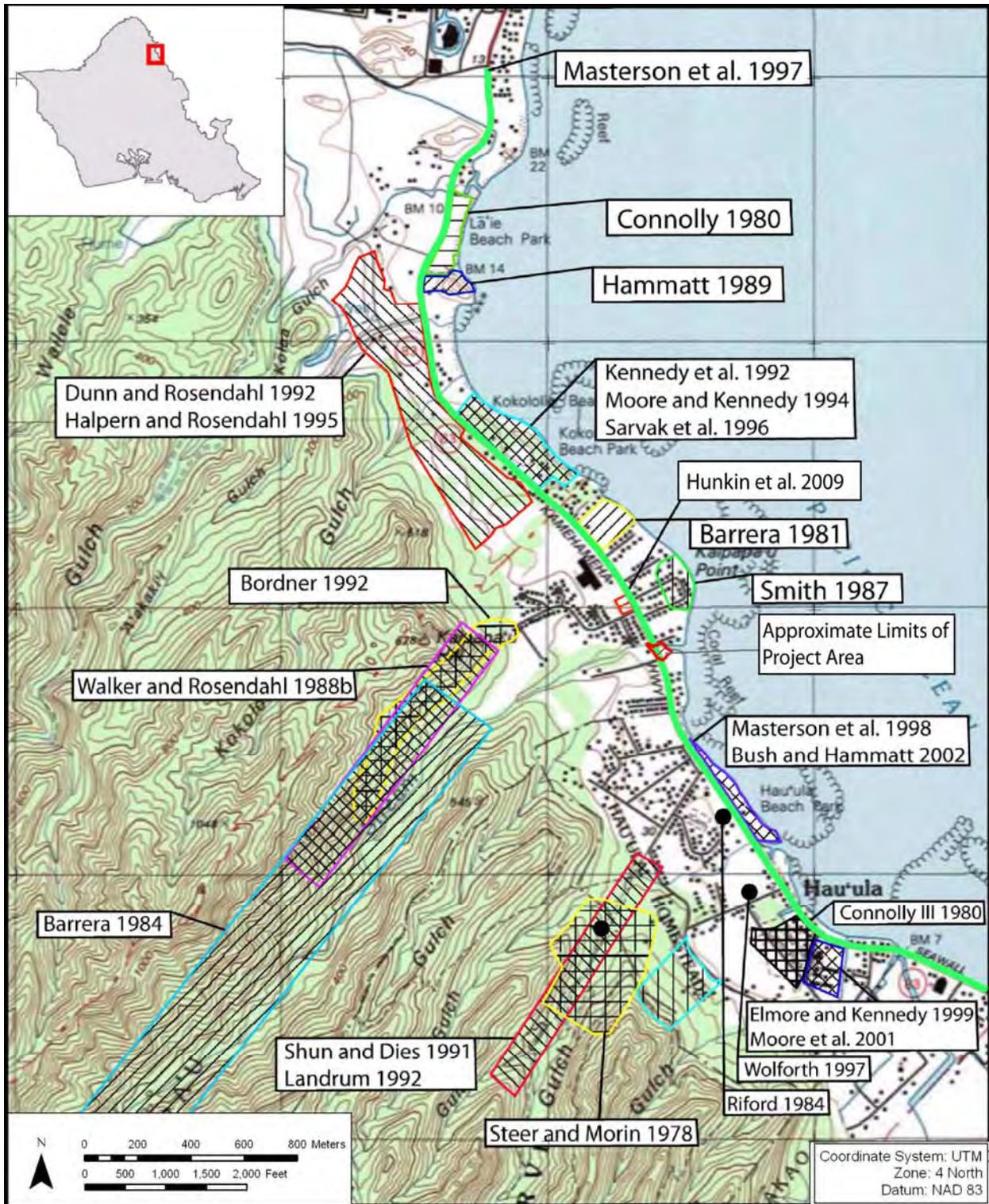


Figure 13. Portion of U.S. Geological Survey 7.5 Minute Series Topographic Map, Hau'ula Quadrangle (1998), showing the location of the project area in relation to previous archaeological studies in the vicinity

These test unit were excavated into recently deposited fill soils. No sites were identified in the course of this investigation (Smith 1987).

In 1988 Nancy McMahan completed an archaeological field check 1.4 kilometers south of the project area (McMahan 1988). The investigation identified Kaunihokahi Heiau (site -286), that had been previously recorded by McAllister in 1933.

PHRI conducted a reconnaissance survey for the Hau'ula Well Site, located considerably *mauka* of the present project area in Kaipapau Valley (Walker and Rosendahl, 1988). One site was recorded with two features. Site 50-80-06-4242, feature 1, is an L-shaped wall, feature 2 is a ditch ('*auwai*) (see Figure 12). Two subsequent surveys were completed on the same property with the addition of an access road corridor.

On the coast, approximately 1500 m to the northwest, subsurface testing (augering) was conducted within an open field area *mauka* of a sandstone bluff. Five (5) auger holes and three (3) shovel test pits were placed in the level, *mauka* area of the property but no cultural layers or archaeological features were observed. The most significant feature on the property was a cave. This cave measured 2 to 3 feet in diameters and 50-feet long. Only a few grams of fragmented remains of two (2) individual burials were discovered, and a test pit measuring 50-centimeters square revealed scattered cultural material amounting to three volcanic glass flakes and a single fish bone at a base depth of 30-centimeters. Cultural activity is indicated, but no occupation layer is present. The overhang of the cave was probably used for temporary shelter (Hammatt 1989).

Bordner (1992) recorded Site #50-80-06-1056 (previously recorded during the Statewide Inventory of Historic Places), which was not located due to heavy vegetation although it was thought to possibly be within the upper portion of the project area. In 1994 Engineering Design Inc. relocated the Rosendahl site, ascertained that Site 1056 is actually situated *mauka* of the proposed well facility, and recorded yet another site, Site 50-80-06-4241, an historic well and reservoir site located near the proposed well site. Site 50-80-06-4242 feature 1 was considered an historic boundary/cattle wall. Feature 2 was considered in the 1994 report to be remnants of bulldozer push (see Figure 12).

The work of Dunn and Rosendahl (1992) suggests that evidence supports the idea that a prehistoric agricultural complex was developed in an area 800 m to the northwest of the present study area. Substantial Hawaiian activity in the immediate vicinity in pre-contact times was indicated.

Archaeological Consultants of the Pacific, Inc. conducted archaeological inventory surveys and data recovery program at Kokololio (Kekaha) Beach Park (Kennedy 1990; Kennedy 1992; Kennedy 1993; Kennedy and Berlin 1991; Kennedy, Denham, and Moore 1992; Kennedy, Moore, and Reintsema 1992), along the shoreline area *makai* of Kamehameha Highway. Three previously-unrecorded sites, including burials and fire pits, were identified. Results from the data recovery program indicated that the sites were occupied as early as the thirteenth century. Moore and Kennedy (1994) reported seven human burials during archaeological monitoring at Kokololio Beach Park. The burials were designated State Sites 50-80-02-4830 through -4836 (Moore and Kennedy 2000). Sarvak et al. (1996) reported the inadvertent discovery of a human burial, sling stones, and an '*ulu maika* (game stone) during archaeological monitoring at Kokololio Beach Park. The site was designated State Site 50-80-02-5369.

In 1997 a portion of the approximately 3.2-mile long Board of Water Supply new 16-inch water main was excavated on the *makai* shoulder of Kamehameha Highway in the vicinity of the present project area. A total of 19 human burials and numerous buried cultural deposits were recorded and grouped into nine site areas designated SIHP #50-80-06-4792 through -4798 (Masterson, et al., 1997). All excavations for the waterline were monitored by CSH following the inadvertent discovery of human remains in Māka'o within the first week of excavation.

Archaeological monitoring of the waterline construction activities documented two historic properties (50-80-06-4795 and -4796) in close proximity to the current project area (Figure 14) (Masterson et al. 1997). State Site 50-80-06-4795 was a buried cultural deposit with an associated human burial situated under Kamehameha Highway on both sides of Waipilopilo Stream on the boundary between Hau'ula and Kaipapa'u Ahupua'a. The deposit extends over 300 linear meters north/south along the *makai* side of Kamehameha Highway. Due to the nature of the project's excavation (trenching only 2-meters wide) the *mauka-makai* extent of the cultural deposit is unknown. Although the site is situated in an area designated as within the Kawaihapai Soil Series (Foote et al. 1972: 63-64), the cultural deposit and burial were discovered within a pocket of beach sand (Masterson et al. 1997). State Site -4796 is a human burial uncovered during excavations on the *makai* side of Kamehameha Highway just north of Kaipapa'u Stream in Kaipapa'u Ahupua'a. The burial was situated at a depth of 80 cmbs in a narrow layer of silty loam that was situated between two layers of compact clay loam. Although a burial was found in this unlikely sediment no other cultural material was associated with this site (Figure 14) (Masterson et al. 1997)

During excavation activities associated with Hau'ula Beach Park improvements, human remains were encountered (Site 50-80-06-5801). The remains appear to have been deposited in a pit after being previously disturbed. The original location of the burial could not be determined (Bush and Hammatt 2002).

A Cultural Surveys Hawai'i, Inc. archaeologist was contacted and made a site inspection at a worksite in Hau'ula, approximately 1.5-kilometers south of the current project area (Site -6541). During structural improvements at the Hau'ula Community Park basketball court human remains were encountered, then based on consultation with the SHPD/DLNR, the disturbed remains were reinterred at the origin with the remaining in situ remains (Perzinski and Hammatt 2004).

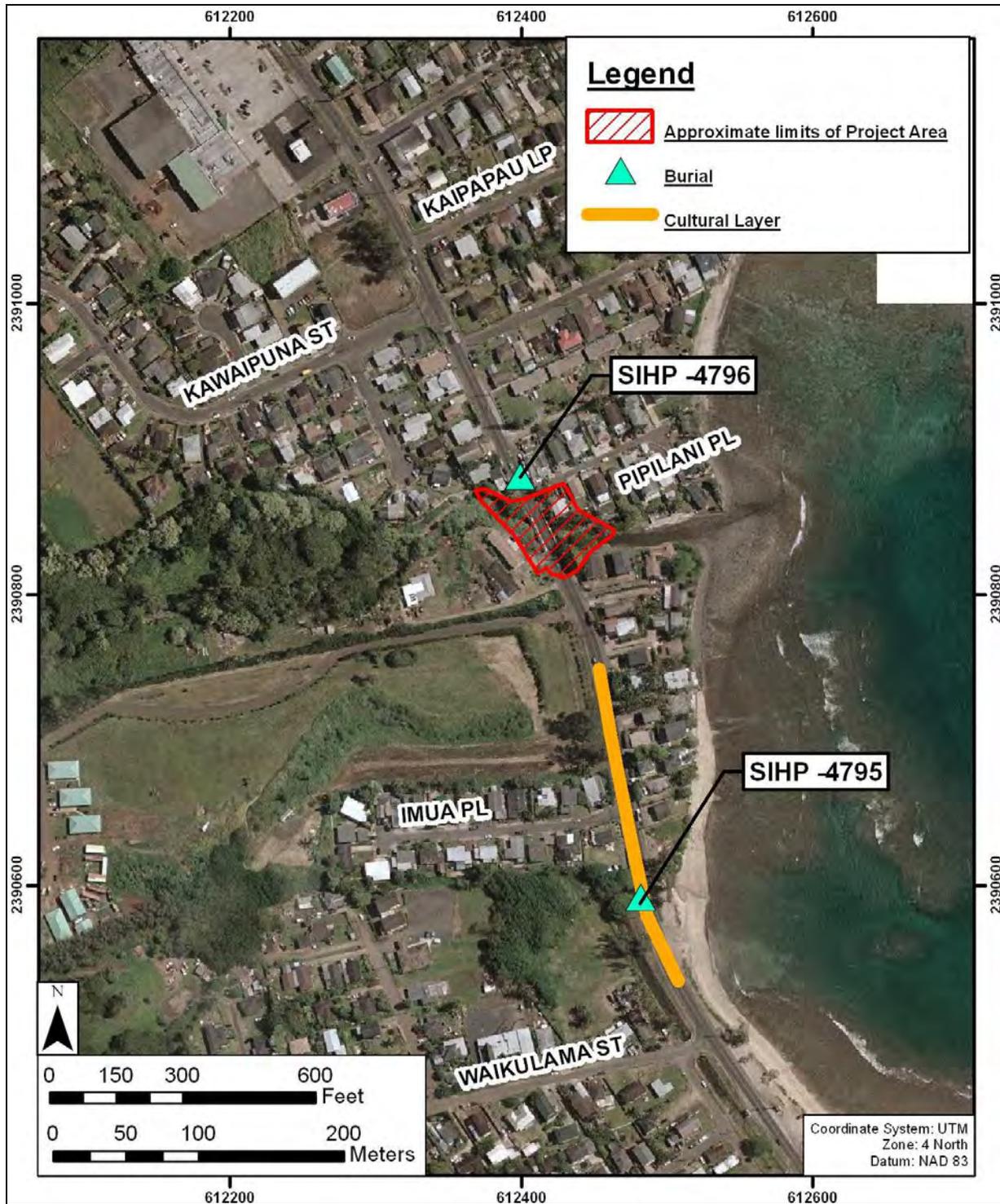


Figure 14. Aerial image showing locations of two human burials nearest current project area

## Section 3 Archaeological Monitoring Provisions

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In consultation with SHPD, it was determined that an archeological monitoring program was warranted as a historic preservation mitigation measure for the proposed project.

On-site archaeological monitoring is recommended for all ground-disturbance to facilitate the identification and treatment of any burials that might be discovered during project construction, and to mitigate the project's effect on non-burial archaeological deposits. Any departure from this will only follow consultation with and written concurrence from, DLNR/SHPD.

Under Hawai'i State historic preservation legislation, "Archaeological monitoring may be an identification, mitigation, or post-mitigation contingency measure. Monitoring shall entail the archaeological observation of, and possible intervention with, on-going activities which may adversely affect historic properties" (HAR Chapter 13-279-3). For this project, the proposed monitoring program will serve as a mitigation measure that insures proper documentation should historic properties be encountered during development work.

Hawai'i State historic preservation legislation governing archeological monitoring programs requires that each monitoring plan discuss eight specific items (HAR Chapter 13-279-4). The monitoring provisions below address those eight requirements in terms of the archaeological monitoring for the construction within the project area.

1. Anticipated Historic Properties:

Based on background research, historic properties (i.e. archaeological sites) in the form of pre- and post-contact subsurface cultural deposits may be encountered during archaeological monitoring of ground disturbance within the project area.

Evidence of indigenous Hawaiian land use could include subsurface cultural deposits containing midden, artifacts, and/or human burials. Evidence of post-contact land use could include subsurface cultural deposits in the form of trash pits, privies, building foundations, and/or human burials.

2. Locations of Historic Properties:

Historic properties may be encountered anywhere within the project area.

3. Fieldwork:

On-site archaeological monitoring is recommended for all ground-disturbance conducted within the project area. Any departure from this will only follow consultation with and written concurrence from, SHPD/DLNR.

The monitoring fieldwork may encompass the documentation of subsurface archaeological deposits (e.g, trash pits and structural remnants) and will employ current standard archaeological recording techniques. This will include drawing and recording the stratigraphy of excavation profiles where cultural features or artifacts are exposed as well as representative profiles. These exposures will be photographed, located on project area maps, and sampled. Photographs and representative profiles of excavations will be taken even if no historically-significant sites are documented. As appropriate, sampling will include the collection of representative artifacts, bulk

sediment samples, and/or the on-site screening of measured volumes of feature fill to determine feature contents.

If human remains are identified, no further work will take place, including no screening of back dirt, no cleaning and/or excavation of the burial area, and no exploratory work of any kind unless specifically requested by the SHPD. All human skeletal remains that are encountered during construction will be handled in compliance with HRS Chapter 6E-43 and HAR Chapter 13-300 and in consultation with SHPD/DLNR.

4. Archaeologist's Role:

The on-site archaeologist will have the authority to stop work immediately in the area of any findings so that documentation can proceed and appropriate treatment can be determined. In addition, the archaeologist will have the authority to slow and/or suspend construction activities in order to insure that the necessary archaeological sampling and recording can take place.

5. Coordination Meeting:

Before work commences on the project, the on-site archaeologist shall hold a coordination meeting to orient the construction crew to the requirements of the archaeological monitoring program. At this meeting the monitor will emphasize his or her authority to temporarily halt construction and that all historic finds, including objects such as bottles, are the property of the landowner and may not be removed from the construction site. At this time it will be made clear that the archaeologist must be on site during subsurface excavations, if warranted.

6. Laboratory work:

Laboratory analysis of non-burial related finds will include standard artifact and midden recording, as follows: Artifacts will be documented as to provenience, weight, length, width, type of material, and presumed function. Bone and shell midden materials will be sorted down to species, when possible, then tabulated by provenience, and presented in table form.

7. Report Preparation:

One of the primary objectives of the report will be to present a stratigraphic overview of the project area which will allow for predictive assessments of adjacent properties, which may be the subject of future development. The report will contain a section on stratigraphy, description of archaeological findings, monitoring methods, and results of laboratory analyses. The report will address the requirements of a monitoring report (HAR section 13-279-5). Photographs of excavations will be included in the monitoring report even if no historically-significant sites are documented. Should burial treatment be completed as part of the monitoring effort, a summary of this treatment will be included in the monitoring report. Should burials and/or human remains be identified, then other letters, memos, and/or reports may be requested by the Burial Sites Program.

8. Archiving Materials:

All burial materials will be addressed as directed by the SHPD/DLNR. Materials not associated with burials will be temporarily stored at the contracted archaeologist's facilities until an appropriate curation facility is selected, in consultation with the landowner and SHPD.

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