

# **FINAL—Archaeological Monitoring Report for Safety Improvements to Kamehameha Highway, Waikāne, Hakipu‘u, and Kualoa 1 and 2 Ahupua‘a, Ko‘olaupoko District, and Ka‘a‘awa Ahupua‘a, Ko‘olaupoko District, Island of O‘ahu, Hawai‘i**

**Portions of TMK: (1) 4-8-003 through -005; 4-9-001 through -009; 5-1-001, -003, -006, -008, -009, and -013**



## **Prepared For:**

Road and Highway Builders  
1050 Queen St. Suite 302  
Honolulu, HI 96814



November 2016

# Keala Pono

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and Kualoa 1 and 2 Ahupua‘a, Ko‘olaupoko District, and  
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## **MANAGEMENT SUMMARY**

Archaeological monitoring was conducted for ground disturbing activity associated with improvements to Kamehameha Highway in Waikāne, Hakipu‘u, and Kualoa 1 and 2 Ahupua‘a in Ko‘olaupoko District, and Ka‘a‘awa Ahupua‘a in Ko‘olaupoko District, on the island of O‘ahu, Hawai‘i. The project route covered 7.9 km (4.9 mi.), crossing through portions of TMK: (1) 4-8-003, -004, -005; 4-9-001, -002, -003, -004, -005, -006, -007, -008, -009; 5-1-001, -003, -006, -008, -009, and -013. Excavation was only conducted in two locations, both in Waikāne. No archaeological resources were encountered during monitoring at these locations.



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## INTRODUCTION

At the request of Road and Highway Builders, Keala Pono Archaeological Consulting conducted archaeological monitoring in support of the State of Hawai'i Department of Transportation Highway Division's safety improvements to Kamehameha Highway, in Waikāne, Hakipu'u, and Kualoa 1 and 2 Ahupua'a, Ko'olaupoko District, and Ka'a'awa Ahupua'a, Ko'olauloa District, on the island of O'ahu, Hawai'i. The primary focus of the monitoring was on the identification and appropriate treatment of historic properties that might be affected by construction.

Archaeological monitoring was conducted in accordance with an Archaeological Monitoring Plan (McElroy and Duhaylonsod 2015) reviewed and accepted by the Hawai'i State Historic Preservation Division (SHPD). This report meets the requirements and standards of both federal and state historic preservation law. These include Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, Chapter 6E of the Hawai'i Revised Statutes, and SHPD's *Rules Governing Standards for Archaeological Monitoring Studies and Reports* (§13–279).

The report begins with a description of the project area and an historical overview of land use and archaeology in the area. The next section presents methods used in the fieldwork, followed by the results of the archaeological monitoring. Project results are summarized and recommendations are made in the final section. Hawaiian words and technical terms are defined in a glossary at the end of the document.

### Project Location and Description of the Undertaking

The project area consists of a segment of Kamehameha Highway that runs through portions of TMK: (1) 4-8-003, -004, -005; 4-9-001, -002, -003, -004, -005, -006, -007, -008, -009; 5-1-001, -003, -006, -008, -009, and -013 (Figures 1 and 2). All work took place in the existing rights-of-way for Kamehameha Highway.

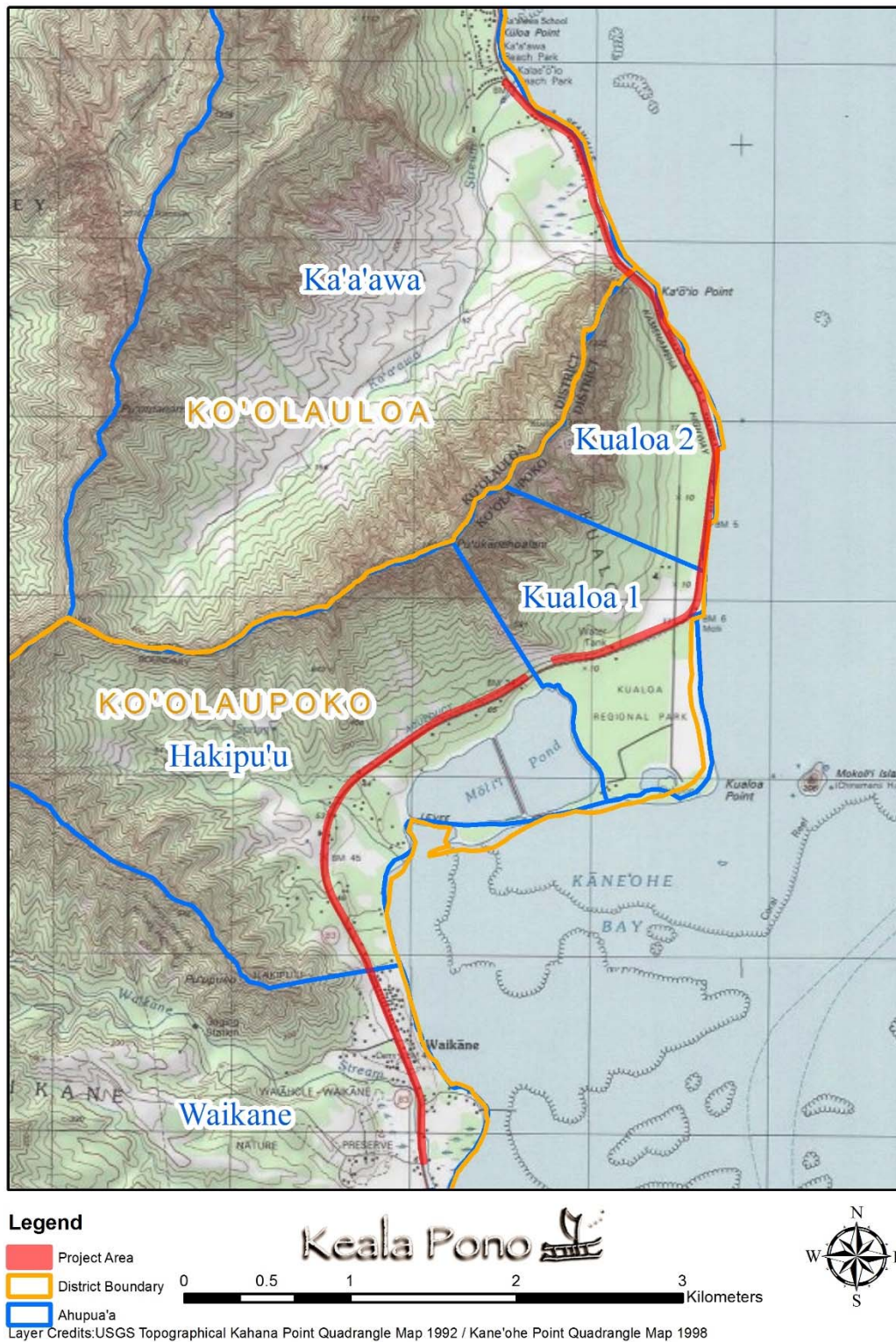
The project corridor crosses five *ahupua'a* and two districts: Waikāne, Hakipu'u, and Kualoa 1 and 2 Ahupua'a in Ko'olaupoko District, and Ka'a'awa Ahupua'a in Ko'olauloa District. The corridor stretches for 7.9 km (4.9 mi.) from the Kamehameha Highway/Waikāne Valley Road intersection on the south to Ka'a'awa Bridge on the north. Within this segment, there is an approximately 200 m (700 ft.) exception zone at the Hakipu'u/Kualoa 1 Ahupua'a boundary, where there was no construction (see Figures 1 and 2).

The undertaking was initiated by the State of Hawai'i Department of Transportation Highways Division under Federal Aid Project No. HSIP-083-1(069). SHPD concurred with the FHWA's project determination of no adverse effect with agreed-upon archaeological monitoring, and requested an archaeological monitoring plan be prepared for this undertaking (July 23, 2014; Log No. 2014.03031, Doc. No. 1407NN15). SHPD's NHPA Section 106 letters appears in Appendix A.

The undertaking includes the installation of milled centerline and shoulder rumble strips, pavement markings, signage, guardrail and end treatments, and drainage improvements. Two storm drain drop inlets were removed and replaced, consisting of the only excavation that took place along the project route. These improvements were needed to bring the roadway up to current safety standards and improve safety and drainage deficiencies that are present.

### Physical Environment

Within the project area, Kamehameha Highway is generally 500 m (1,640 ft.) or less from the coast, except where it passes Kualoa Regional Park, where the distance from the coast is a few hundred



**Figure 1. Project location (in red) on a 1992 7.5 minute USGS Kaaawa quadrangle map with ahupua'a and district overlays.**

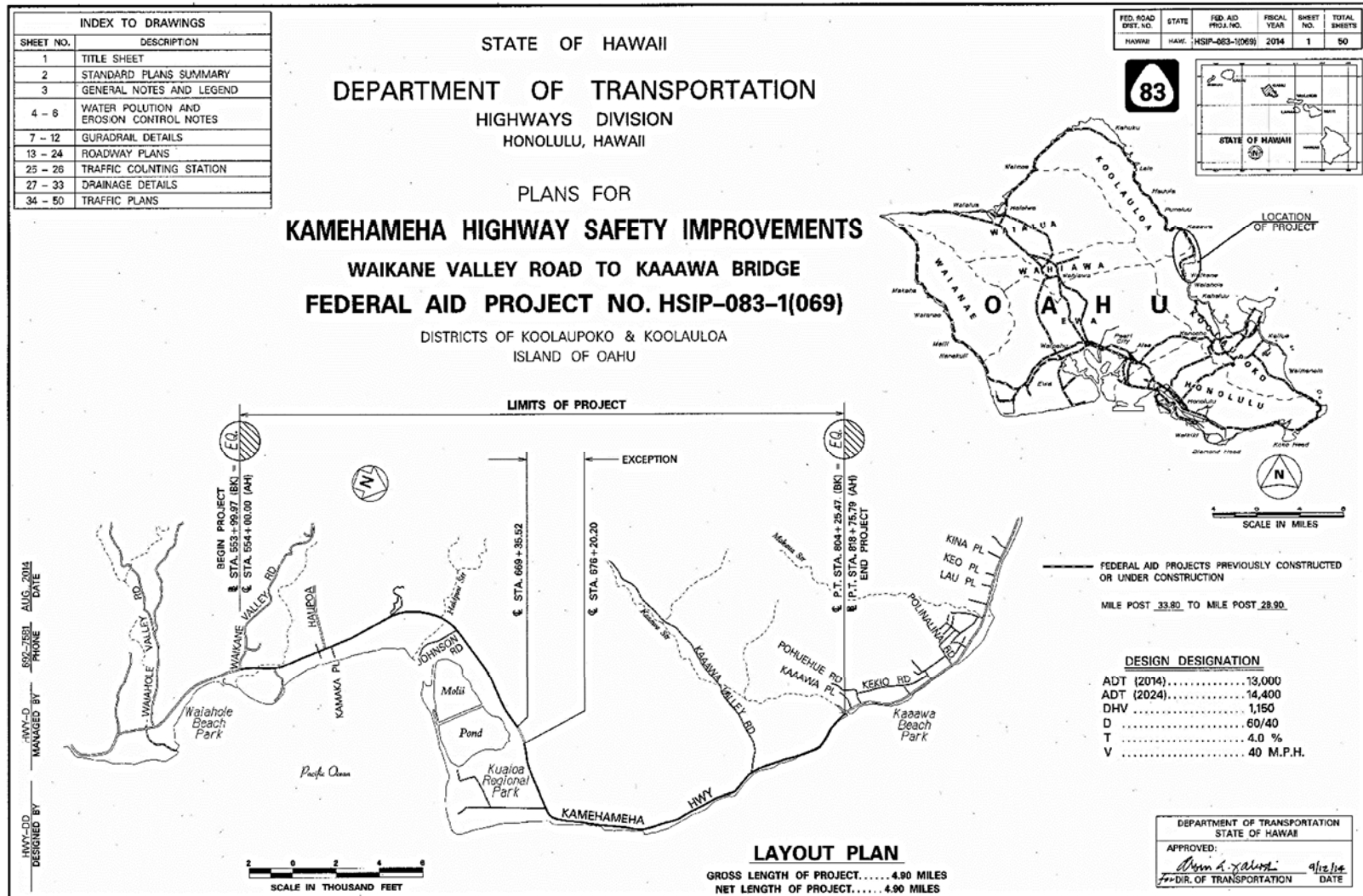


Figure 2. Construction plans showing limits of project and exception zone.

meters more. The majority of the project corridor lies below 6 m (20 ft.) above mean sea level. For much of the route past Kualoa Point, the highway is adjacent to the coastline, and the construction of sea walls has caused widespread erosion of the beaches in this area. In other parts of the project route, the highway curves inland, with houses, marsh lands, fishponds, and parks on the *makai* side of the highway.

The project area receives a good amount of rainfall, approximately 150–200 cm (60–80 in.) annually (Juvik and Juvik 1998). Several major watercourses cross the project route, including Waikāne Stream, Hakipu‘u Stream, and Ka‘a‘awa Stream, all perennial waterways. Vegetation before human settlement of the area is thought to have been lowland dry and mesic forests, woodlands, and scrublands (Juvik and Juvik 1998). Today however, the project route is dominated by introduced plants, such as grasses, weeds, and large trees.

Geology of the project area centers around the Ko‘olau Mountain Range, the massive shield volcano that serves as a backdrop for the windward O‘ahu coast. Formed roughly 1.8–2.6 million years ago, the Ko‘olau mountains produced tholeiitic and olivine basalts with trace amounts of oceanite (MacDonald et al. 1983). Below the Ko‘olau Mountains is the sandy coastal plain that was formed during a time when the sea level was higher. Mokoli‘i Island, off the coast of Kualoa, is an example of a sea stack, which is defined as rock “left by the collapse of an arch or simply isolated from the main shoreline by erosion” (MacDonald et al. 1983:269).

Soils along the project corridor are mostly of the Kaena-Waialua association, with a portion of Hakipu‘u consisting of the Lolekaa-Waikane association (Foote et al. 1972). The former are poorly to excessively drained soils with fine to coarse textured subsoils, while the latter are well-drained soils with mostly fine textured subsoil. A variety of specific soil types occur along the project route, as depicted in Figures 3 and 4 (data from Foote et al. 1972):

#### **Waikāne**

- Marsh (MZ)
- Waikane silty clay, 3–8% slopes (WpB)
- Waikane silty clay, 8–15% slopes (WpC)
- Hanalei stony silty clay, 2–6% slopes (HoB)

#### **Hakipu‘u**

- Hanalei stony silty clay, 2–6% slopes (HoB)
- Waikane silty clay, 25–40% slopes (WpE)
- Hanalei silty clay, 0–2% slopes (HnA)
- Lolekaa silty clay, 3–8% slopes (LoB)
- Waikane stony clay, 15–30% slopes (WpaE)

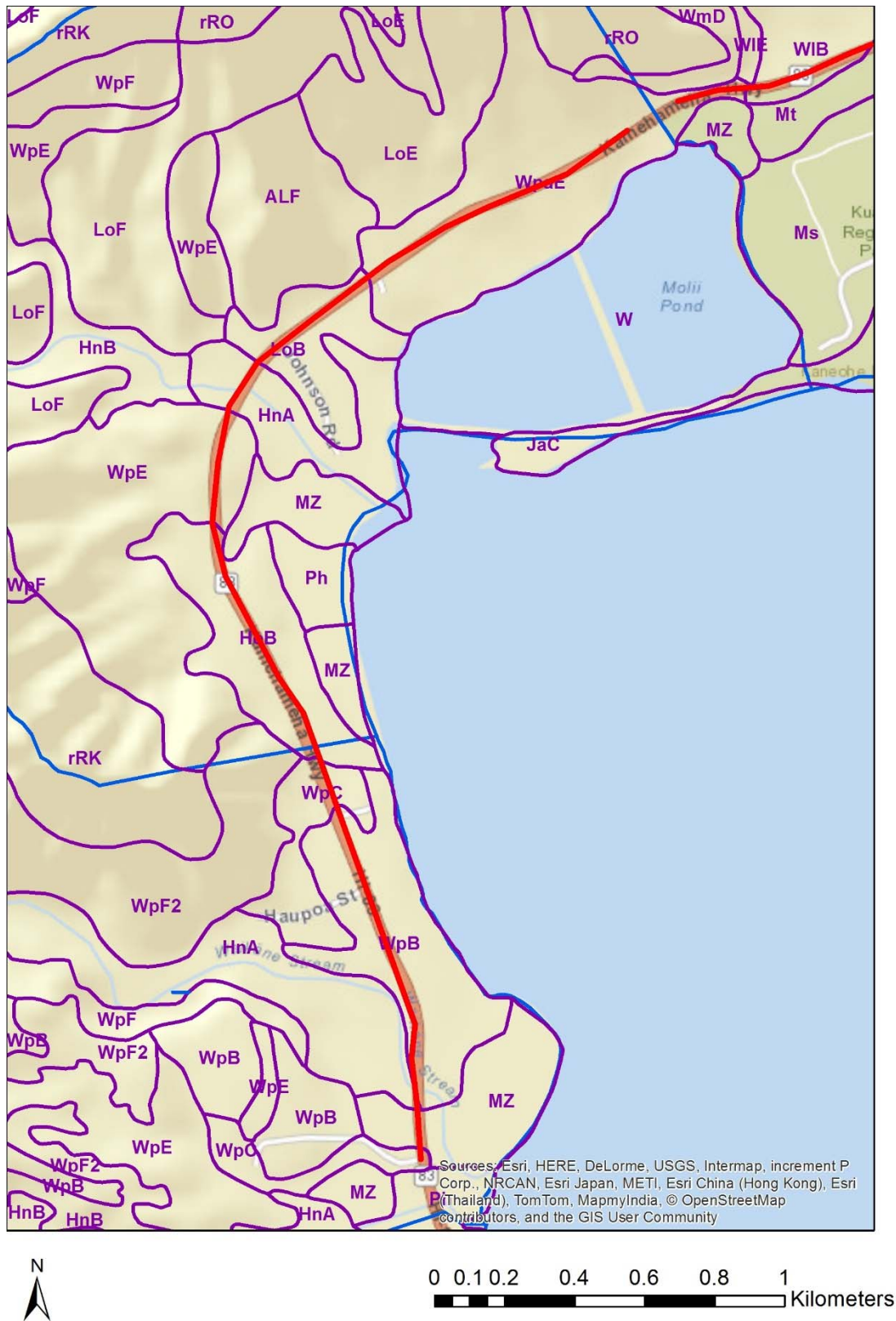
#### **Kualoa**

- Waialua stony silty clay, 3–8% slopes (WIB)
- Mokuleia clay loam (Mt)
- Mokuleia loam (Ms)
- Jaucas sand, 0–15% slopes (JaC)

#### **Ka‘a‘awa**

- Waialua stony silty clay, 12–30% slopes (WIE)
- Jaucas sand, 0–15% slopes (JaC)
- Mokuleia loam (Ms)
- Marsh (MZ)





**Figure 3. Soils in the southern portion of the project area. The project area is shown in red and *ahupua'a* boundaries are marked in blue.**



## BACKGROUND

This chapter presents traditional and historic background information for the project region, including place names, Hawaiian proverbs and *mo‘olelo*, land use, Māhele land tenure data, historic maps, and a summary of previous archaeological research.

### ***Inoa ‘Āina: Place Names***

Place names often shed light on traditional views of an area and can provide important contextual information. Most of the *ahupua‘a* names in the project area are associated with natural attributes of the place. Waikāne translates to “Kāne’s water,” and an old name was Wai-a-Kāne (Pukui et al. 1974:223). Hakipu‘u literally means “broken hill” (Pukui et al. 1974:35). Kualoa translates to “long back” (Pukui et al. 1974:119), and Ka‘a‘awa means “the wrasse fish” (Pukui et al. 1974:59). Palikū is an ancient name for Kualoa and is also the name of the ridge between Ko‘olaupoko and Ko‘olaupoko. It literally means “vertical cliff” (Pukui et al. 1974:177).

Other important places are Mokoli‘i, Koholālele, Moli‘i, Kānehoalani, and ‘Āpua. Mokoli‘i is the islet off of Kualoa that is sometimes called Chinaman’s Hat. Mokoli‘i translates to “little *mo‘o*” (Pukui et al. 1974:154), for it is said that the islet is the form of a slayed dragon (see *Mo‘olelo* Section). Koholālele is a fishpond nearby whose name means “leaping whale” (Pukui et al. 1974:115). Moli‘i is another fishpond in the area. Its name means “small section” (Pukui et al. 1974:156). Kānehoalani is the mountain ridge behind Kualoa. Translating to “Kāne royal companion,” it was named for an ancestor of Pele (Pukui et al. 1974:84). ‘Āpua refers to the flats of Kualoa as well as a fishpond there. It literally means “fish basket” (Pukui et al. 1974:13), probably referring to the abundance of fish at that location.

### ***‘Ōlelo No‘eau and Mo‘olelo***

*‘Ōlelo no‘eau* and *mo‘olelo* offer insight into what life may have been like in the project area in ancient Hawai‘i. They also share topics of interest of the time that were meant to be passed down from one generation to the next.

### ***‘Ōlelo No‘eau***

*‘Ōlelo no‘eau*, or Hawaiian proverbs and poetical sayings, provide further insight to traditional beliefs and practices of the area. One *‘ōlelo no‘eau* was found for Hakipu‘u, two each for Kualoa and Ka‘a‘awa, and no *‘ōlelo no‘eau* could be found for Waikāne.

E aha ‘ia ana o Hakipu‘u i ka palaoa lāwalu ‘ono a Ka‘ehu?

*What is happening to Hakipu‘u, with dough cooked in ti leaves, of which Ka‘ehu is so fond?*

This is a line of a chant composed by Ka‘ehu, a poet and *hula* instructor from Kaua‘i. It refers to a part-white woman with whom he flirted. Used in humor when referring to Hakipu‘u, a place on the windward side of O‘ahu. (Pukui 1983:31)

Ho‘olalau ka helena i Kualoa, pi‘i ana i ka pali o Kānehoalani.

*In wandering about Kualoa, he ascends the cliff of Kānehoalani.*

He goes off his course and thereby gets nothing. On the cliff of Kānehoalani stands a phallic stone, a symbol of bad luck when seen in a dream. (Pukui 1983:117)

Ka limu lana o Kawahine.

*The floating seaweed of Kawahine.*

A term applied to the *kauwā* who were drowned at Kualoa, O‘ahu, before serving as sacrifices. (Pukui 1983:156)

He kai 'a'ai ko Ka'a'awa  
*Ka'a'awa has a sea that wears away the land.* (Pukui 1983:73)

He moe kai no Ka'a'awa  
*A sleeper in the sea of Ka'a'awa.*

Applied to a lawbreaker who was to be put to death. When Kualii was ruler of O'ahu, he punished lawbreakers by drowning them in the sea of Ka'a'awa. (Pukui 1983:90)

### ***Mo'olelo***

The region of study was renowned in *mo'olelo*, with Kualoa being so sacred that canoes had to lower their sails when passing by (Fornander 1969 [1880]:278). Kualoa was formerly known as Palikū and was the home of Wākea and his wife Haumea, progenitors of the human race. It is said that there was an epic storm, tsunami, and flood in Hakipu'u during the time of Wākea and at this time the first *heiau* was constructed (Handy et al. 1991:343). The story was chronicled in a chant summarized as follows:

Kanehoalani is the great ridge and promontory which juts out into the sea, marking the northwest boundary of lowlying Hakipu'u. Kanehoalani was the father of Pele, Haumea was her mother. Lono, generally described as Pele's uncle, was Kanehoalani's brother (or cousin). Wakea, the ancestor of the Hawaiian race, was swept up by "the swelling sea, rising sea" of Lono. A *kahuna* (priest) told him to form a Lono shrine by cupping his upright hands together, with fingertips touching each other. Wakea so formed the shrine. Then, instructed by the *kahuna*, he presented an offering to Lono by placing a box fish (*humuhumu-nukunuku-a-pua'a*) in his shrine (his cupped hands). This fish, which has a snout like a hog, is one of the forms of Kamapua'a (=Lono), the lord of wind and rain. After the offering was made, the storm subsided and Wakea found himself on dry land. (Handy et al. 1991:343)

An important saga involving the project lands is that of Hi'iaka's journey across the islands to save Lohiau, the lover of her sister, Pele. Handy et al. (1991:446–447) provide a review of the events that took place on the windward side of O'ahu, culminating in the slaying of the dragon Mokoli'i, which created the islet of that name:

Passing the shores of Waikane (the original name was Wai-a-Kane, Water-of-Kane), [Hi'iaka] explained to her companion, Wahine-oma'o, that here Kane first dug for water at a place called Poliuli (Dark breast), creating the Wai'ola-li which was male and the Wai'ola-la, which was female...These waters were also named in the Kumulipo creation chant as the progenitors of many subsequent generations...It was in the waters of Hakipu'u, in fact but a short distance from the Moli'i Fishpond, that Hi'iaka encountered and slew her first, formidable adversary on Oahu, the reptile Mokoli'i...It is the stumpy tail of this evil creature that to this day protrudes from the waters as the rocky islet Mokoli'i (Little Reptile)...As their canoe sailed on past the land of Kualoa at Kanehoalani's feet, "Hi'iaka said to Wahine-o-mao... 'this is the sacred land of Haloa'" (*Hoku o Hawaii*, January 1, 1926) the first man, and progenitor of the human race.

As the saga continues, the distinctive cliffs of Ka'a'awa were formed (Emerson 1978). The *kupua* named Kauhi was one of Pele's followers that came from Kahiki. He was stationed on the cliffs of Ka'a'awa and could not leave. When Hi'iaka arrived he longed to travel with her and when she politely refused, he attempted to rise. Kauhi could only get to a crouching position however, and there he became fixed, forming the cliff that is shaped like a crouching man.

A famous cave is said to be located on the cliff between Kualoa and Ka'a'awa (Kamakau 1991:38–39). The cave was on the cliffside at Kanehoalani and it was named Pohukaina. A second entrance was at the spring, Ka'ahula. The cave extended through the Ko'olau Mountains where other openings were at Moanalua, Kalihi, Puiwa, Waipahu, and Kahuku. There were many watercourses within the cave, along with man-made decorations.



Kualoa also marks the boundary of Ko‘olaupoko and Ko‘olaupoko Districts. It was here that tribute from each *ahupua‘a* was amassed at the end of the *makahiki* circuit (Kamakau 1991:20–21). Tribute collected included items such as food animals, *poi*, *kapa*, fishing nets, feathers, woven mats, pearls, ivory, and adzes (Kamakau 1991:21). If the tribute from a given *ahupua‘a* was deemed unworthy, that *ahupua‘a* would be plundered (Kamakau 1991:21).

Kualoa and Waikāne were also designated as *pu‘uhonua*, or places of refuge:

The *pu‘uhonua* in ancient times was an *ahupua‘a* portion of a district (*ahupua‘a ‘okana*), like Kailua and Waikane for Ko‘olaupoko district on Oahu, and also Kualoa, which was a very sacred land and a true *pu‘uhonua*, where persons marked for death were saved if they entered it. (Kamakau 1991:18)

Hakipu‘u was one of the lands that were given to *kahuna* in very ancient times (Kamakau 1867 in Sterling and Summers 1978:184). It was also the place where Kahai first planted ‘ulu trees, the seeds of which he brought back from a voyage that took him as far as Samoa (Raphaelson 1929 in Sterling and Summers 1978:186).

### Land Use and Subsistence

The project lands were rich in natural resources such as fresh water, prime agricultural areas, and bountiful fishing grounds. They likely supported large populations.

Waikāne has a large stream but it is not as well suited to irrigated agriculture as other comparable areas on the windward side of O‘ahu (Handy et al. 1991:442). Handy et al. elaborate on the land usage in Waikāne:

Nevertheless, Waikane was a major source of Ko‘olau taro, especially in the broad area between the highway and the sea, and as much as half a mile inland there was extensive *lo‘i* cultivation. The northern (and larger) section, extending *mauka* for two or more miles, used to have cultivated *lo‘i* and home sites all along its Waikane Stream. The southern section of the valley, divided off by a low ridge, comprises a gulch where there were old terraces watered by Waikē‘eke‘e Stream, no longer cultivated in taro. (1991:442)

Hakipu‘u is a shorter valley than Waikāne but its large stream and swamp also supported *lo‘i* agriculture. Moli‘i Fishpond is a prominent feature of the *ahupua‘a* and produced a great supply of fish. The area is described in more detail as follows:

Old *lo‘i* areas once covered the swampy flats *makai* (to seaward) of the present Kamehameha Highway, and here as late as 1935 about a dozen *lo‘i* were still cultivated along the Hakipu‘u Stream, with about the same number *mauka* (toward the mountains). This area was quite extensive originally, running for something more than a half mile southward from Moli‘i Fishpond, and throughout the level land up along the stream. An interesting series of abandoned *lo‘i* was noted filling a small valley bottom in an S curve from Moli‘i Fishpond to a point up beyond the highway. This was formerly watered from Kailua Spring on the hillside above the fishpond. In 1935, a marshland patch just below the road to the southwest was being cultivated by an energetic Hawaiian using the old mounding method. It was the only swampy plantation of this type found on Oahu in the area survey of that year. (Handy et al. 1991:443)

Kualoa has no streams and is generally not suited for the cultivation of wetland taro. Nevertheless, Koholālele Pond in ‘Āpua may have been made from an abandoned *lo‘i* (Handy et al. 1991:444), although some say that the pond was built by *menehune*, while others assert that the pond was excavated in the historic period (McAllister 1933; Morgan 1964 in Sterling and Summers 1978:180–181). Agriculturally, Kualoa was known for the cultivation of *wauke* to make *kapa* (Handy et al. 1991:444). Kualoa was rich in coastal resources, enhanced by man-made fishponds:

...This land had been very rich in the olden days and even to the present, because of running schools of mullet from Kaihuopalaai, the awa fish and mullets that had been kept and fattened in ponds. These good things of the land are long past. (Apuakehau 1919 in Sterling and Summers 1978:117)

Ka'a'awa relied heavily on the ocean for its resources and once supported a fishing village. at least one *ko'a* is known for the area (now destroyed), attesting to the importance of fishing (McAllister 1933). The valley's stream created two passages in the reef, however, that make the beach not well protected. Ka'a'awa was not a good location for wetland taro, although there were some agricultural terraces on either side of the stream and in areas that have turned into swamplands (Handy et al. 1991:444). Handy et al. remark on the productivity of the region:

Ka'a'awa and Makaua must have been good only for sweet potatoes and no doubt there were coconut trees along the shore. There is hardly any beach, but a high shore and a well-protected lagoon make this a good fishing locality. (Handy et al. 1991:445)

### **The Region in the Historic Period**

Taro, rice, pineapple, and sugarcane cultivation were practiced in the historic period (post-1778) in the project lands, and military and ranching interests also made large scale changes to the landscape.

Rice cultivation began as early as the 1860s in Ko'olaupoko and was undertaken mostly by Chinese immigrant farmers. The traditional taro *lo'i* were easy to transform into rice fields, and Waikāne Stream was one of the streams that provided water for the venture. By the 1880s there were at least three plantations in Waikāne and a decade later, 200 acres were planted in rice (Bowser in Devaney et al. 1982:51; Coulter and Chun in Miyagi 1963:108). By the early 1900s, there were 250 acres in rice cultivation, with much of that under the control of Sing Tai Wai, and a rice mill was operating under Wing Wo Tai (Young 1975). The rice fields in Waikāne extended to the present route of Kamehameha Highway.

Pineapple agriculture first became profitable in Hawai'i in 1903 (Bartholomew et al. 2012) and its cultivation soon spread to Waikāne and neighboring Waiāhole. Produce was hauled to Waikāne landing via rail where it was shipped by boat to the Libby Cannery (Miyagi 1963). The railroad was also used to transport materials used in construction of the ditch system that spanned from Waiāhole to the sugarcane fields on the opposite side of the Ko'olau Mountains, but the railroad was removed in 1916 once the ditch system was built (Condé and Best 1973).

In Kualoa, sugarcane was grown as early as the 1860s by C.H. Judd and his son-in-law S.G. Wilder (Gunness 1993:53). The two also constructed a sugar mill on the *mauka* side of the highway in Kualoa, the remains of which are still visible today. By 1871, the operation was shut down and the area was turned into a ranch. At Kualoa Regional Park, an airfield was built during World War II, with a 6,000 x 150 foot strip bulldozed, graded, and filled for this endeavor (Gunness 1986:9). The park road was later constructed atop the airfield. Other military efforts in the vicinity of the project route include construction of cement bunkers and pillboxes, particularly along the cliffs above Kamehameha Highway from Kualoa to Ka'a'awa.

Another historic modification was the creation of Swanzy Beach Park on the *makai* side of the highway in Ka'a'awa. The 5 acre park was made possible by Mrs. F.M. (Julie Judd) Swanzy, who donated the property for the park in 1921 (Pukui et al. 1974:212).

### **Māhele Land Tenure and Historic Land Use**

The change in the traditional land tenure system in Hawai'i began with the appointment of the Board of Commissioners to Quiet Land Titles by Kamehameha III in 1845. The Great Māhele took place during the first few months of 1848 when Kamehameha III and more than 240 of his chiefs worked out their interests in the lands of the Kingdom. This division of land was recorded in the Māhele Book. The King retained roughly a million acres as his own as Crown Lands, while approximately a million and a half acres were designated as

Government Lands. The Konohiki Awards amounted to about a million and a half acres, however title was not awarded until the *konohiki* presented the claim before the Land Commission.

In the fall of 1850 legislation was passed allowing citizens to present claims before the Land Commission for parcels that they were cultivating within the Crown, Government, or Konohiki lands. By 1855 the Land Commission had made visits to all of the islands and had received testimony for about 12,000 land claims. This testimony is recorded in 50 volumes that have since been rendered on microfilm. Ultimately between 9,000 and 11,000 *kuleana* land claims were awarded to *kama'āina* totaling only about 30,000 acres and recorded in ten large volumes.

The Land Commission Awards (LCAs) that are in the immediate vicinity of the project area (adjacent to Kamehameha Highway) are shown in Figure 5. Data for these can be found in Table 1. For Waikāne 7 LCAs were found; there were 14 in Hakipu'u, 30 in Kualoa, and 8 in Ka'a'awa. All of the awards mention *lo'i*, *kula*, and/or house lots, indicating that people were living and cultivating parcels along the project route in the mid-19<sup>th</sup> century. Other resources noted were coffee, oranges, breadfruit, melons, *wauke*, beans, wooded uplands, ponds, fisheries, and *kai*. Clearly, a diverse array of subsistence practices was taking place in the region.

### Historic Maps

Historic maps help in visualizing what the project area was like in times past and illustrate the changes that have taken place in the region over the years. A few maps from the late 1800s to the early 1900s are presented below.

An early map of Waikāne appears to be labeled “Wakani, Koolau, Oahu,” although there is no date given (Figure 6). The coastal road is shown (likely the same route as the current Kamehameha Highway), and it is labeled “Alanui.” Near the Waikāne boundary with Waiāhole, the place where the Waikāne Stream enters the ocean is depicted as the “Muliwai o Waikane.” Around the *muliwai* and straddling a good-sized portion on both sides of the road is the “Aina kalo,” or taro lands. Further down the road, there is a rectangular area on the *makai* side which is labeled as a “kahua,” or open place or field, but the writing is too blurry to clarify what kind of field it is. Then near the Waikāne border with Hakipu'u, a parcel of land *makai* of the road is clearly labeled “Aina hale pule,” or church grounds. The coastal road crosses only a little ways into Hakipu'u Ahupua'a. On the Hakipu'u side of the Waikāne-Hakipu'u boundary, the *makai* side of the road is labeled “Aina kaakai,” which might be a misspelling of *'Āina kahakai*, meaning beach lands. On the *mauka* side of the road and going upland, it is labeled “Pahalona,” which is probably a family name.

The next map is a Hawaii Territory Survey titled “Hakipuu, Koolau, Oahu,” dated February 1880 (Figure 7). The map notes read, “The total area of the AHUPUAA is 1165.5 acres, of which area there remains to the KANAINA ESTATE 924.5 acres, comprising 10 acres of RICE LAND, the FISHPOND of 124.5 acres and 790 acres of GRAZING and MOUNTAIN LAND.” Yet in contrast to this text, the map shows two separate land grant parcels belonging to A.S. Cooke; another fairly large land grant labeled “Pahalona”; and a smaller parcel labeled “Nohonanahopu” which has a schoolhouse on it. There is one parcel of 56 acres which is labeled as the “Kanaina Estate,” and there is a very small piece of property, wedged between some *kuleana* lands and the 124-acre fishpond, which is labeled as the remnant estate of Kanaina. All of the land grants and Kanaina's estate are along the coast within Hakipu'u Ahupua'a, and most of them straddle the coastal road which is labeled as the “Gov't Road.” A “Loko” (pond) and a lone coconut tree are illustrated in Kualoa, and not much is depicted in Waikāne Ahupua'a.

A map from October 1897 is titled “Waikane, Koolau Poko, Oahu” (Figure 8). Many names are written, and they appear to be the traditional place names within Waikāne Ahupua'a: Kamoa, Kahalaa, Kumuniu, Kaiki, Kaaipuaa, Kiilau, Kahaiao, Kokowaleole, and Kaapoko. There is a coastal road that is labeled as the “Government Road,” and the lands along that road are depicted as rice lands or taro lands. Throughout the vicinity is a stream which comes from the uplands and *'auwai* which help to distribute water. A good amount of



Figure 5. Location of LCA awards along the project route. The project corridor is shown in red and *ahupua'a* boundaries are in blue.

**Table 1. LCAs Along the Project Corridor**

<b>LCA</b>	<b>Claimant</b>	<b>Ahupua'a</b>	<b>'Ili</b>	<b>Land Use</b>
5615	Kamai	Waikāne	Kumunui, Kokowaleole	<i>lo 'i</i> , house lot
5658	Kaheana, John Mes	Waikāne	Kaaipuaa, Puuweuweu, Kauaula, Paa, Mamane	<i>lo 'i</i> , coffee, oranges, breadfruit, melons, house lot
5712	Kuluahi	Waikāne	Kahaiao, Kaapoko	<i>lo 'i</i> house lot
5919	Pahuhulu, H.	Waikāne	Kaaipuaa, Kupulonihoawa	<i>lo 'i</i> , <i>kula</i> , house lot
6051	Wahilua	Waikāne	Kumunui	<i>lo 'i</i> , <i>kula</i> , house lot
10880	Puaa	Waikāne	Kamoa, Opulua	<i>lo 'i</i> , <i>kula</i> , <i>wauke</i> , oranges
10880B	Makanui	Waikāne	Kokowaleole, Kumuniu, Uaua, Kaapoko	<i>lo 'i</i> , house lot
3013	Mana	Hakipu'u		<i>lo 'i</i> , house lot, <i>wauke</i>
3054	Kupau	Hakipu'u	Puukaluha	<i>lo 'i</i> , house lot
3059	Kauai	Hakipu'u	Kaohewai	<i>lo 'i</i>
3062	Kauhiliki, wahine	Hakipu'u	Kaohewai	<i>lo 'i</i>
3065	Kiloha	Hakipu'u		<i>lo 'i</i> , house lot
3068	Kioea	Hakipu'u		<i>lo 'i</i> , <i>kula</i> , house lot
4452	Kalama, Hazaleleponi	Multiple	Multiple	house lot
5655	Keaka	Hakipu'u	Kahewai	<i>lo 'i</i> , house lot
5718	Kuahilani	Hakipu'u		<i>lo 'i</i>
5722	Kaio	Hakipu'u		<i>lo 'i</i> , house lot
5939B	Puhi 2	Hakipu'u		<i>lo 'i</i> , coffee
5945	Papaleka	Hakipu'u		<i>lo 'i</i> , <i>kula</i> , house lot
5979	Maopo	Hakipu'u		<i>lo 'i</i> , <i>kula</i> , house lot
6148	Nakaieha	Hakipu'u		<i>lo 'i</i> , house lot
2786	Maalea	Kualoa	Puhalahala	<i>lo 'i</i> , <i>kula</i> , sweet potatoes, <i>wauke</i> , house lot
2987	Laumania	Kualoa		<i>lo 'i</i> , sweet potatoes, house lot
2996	Nawahinekaunu	Kualoa	Kahea, Kaihikapu	<i>lo 'i</i> , <i>kula</i> , <i>hala</i> , sweet potatoes, melons, <i>wauke</i> , house lot
3011	Mahiole	Kualoa		<i>lo 'i</i> , <i>kula</i> , potatoes, house lot, pond
3044	Kamakai	Kualoa		sweet potatoes, <i>wauke</i> , house lot
3045	Keliikahonua	Kualoa		<i>lo 'i</i> , house lot
3047	Kauaiwahine	Kualoa		<i>kula</i> , house lot
3048	Kekihe	Kualoa		<i>kula</i> , potatoes, beans, <i>wauke</i> , house lot
3051	Keliikuhiau	Kualoa		<i>kula</i> , house lot
3056	Kailihewa	Kualoa		<i>kula</i> , house lot
3056B	Konaaihue	Kualoa		<i>kula</i> , house lot
3058	Kuewa	Kualoa		<i>lo 'i</i> , house lot

**Table 1. (Cont.)**

<b>LCA</b>	<b>Claimant</b>	<b>Ahupua'a</b>	<b>'Ili</b>	<b>Land Use</b>
3066	Kae	Kualoa		<i>lo'i, kula, wauke</i> , house lot
3067	Kukolo	Kualoa		<i>lo'i, kula</i> , potatoes, house lot
3115	Namakaohao	Kualoa		<i>lo'i</i> , house lot
3118	Haole	Kualoa		<i>lo'i, kula</i> , house lot
5597	Keanu	Kualoa		<i>lo'i, kula</i> , house lot
5598	Kanakanui	Kualoa		<i>lo'i, kula</i> , house lot
5599	Kualoa	Kualoa		<i>lo'i, kula</i> , potatoes, house lot
5600	Konohili	Kualoa		<i>lo'i, kula</i> , potatoes, <i>wauke</i> , house lot
5601	Kauaiwahine	Kualoa		<i>lo'i, kula</i> , house lot
5614	Kepaa	Kualoa		<i>lo'i, kula</i> , sweet potatoes, house lot, pond
5916	Pupuka	Kualoa		<i>lo'i, kula</i> , sweet potatoes, house lot
5917	Poohiwi	Kualoa		<i>lo'i, kula</i> , sweet potatoes, <i>wauke</i> , house lot
5961	Mahoe	Kualoa		<i>kula</i> , house lot
5962	Maliu	Kualoa		<i>lo'i, kula</i> , house lot
6037	Aweau	Kualoa		sweet potatoes, house lot
6095	Ululani	Kualoa		sweet potatoes, house lot
8007	Aihulu	Kualoa		<i>lo'i</i> , sweet potatoes, <i>wauke</i> , house lot
10388	Nalino	Kualoa		<i>lo'i, kula</i> , potatoes, house lot
3885	Pohue	Ka'a'awa	Nohomalu, Kaiaka	<i>lo'i, kula</i> , potatoes, wooded upland, house lot
3953	Niho	Ka'a'awa	Kaiaka, Kapuaiki, Kaaiki, Helumoa	<i>lo'i, kula</i> , potatoes, bananas, wooded upland, house lot, fishery
4402	Kauiki	Ka'a'awa	Nohomalu, Kuahu	<i>lo'i, kula</i> , potatoes, wooded upland, house lot, <i>kai</i>
4410	Kapu	Ka'a'awa	Kaiaia	<i>lo'i, kula</i> , potatoes, wooded upland, house lot, fishery
4443	Kuheleloa 1	Ka'a'awa	Nohomalu, Hapau, Manawanuiinui, Manawanuiik, Kumamahana, Kumuhahane, Kapuaiki	<i>lo'i, kula</i> , sweet potatoes, melons, wooded upland, house lot, <i>kai, wauke</i>
4469B	Hulue	Ka'a'awa		<i>lo'i, kula</i> , potatoes, house lot
8188	Heana	Ka'a'awa	Nohomalu	<i>lo'i, kula</i> , potatoes, melons, tobacco, wooded upland, house lot
10240	Makaokalai	Ka'a'awa	Nohomalu	<i>lo'i, kula</i> , potatoes, wooded upland, house lot





Figure 6. Portion of a Hawaiian Government Survey map of Waikāne with the project area shown in red (Kalama n.d.).

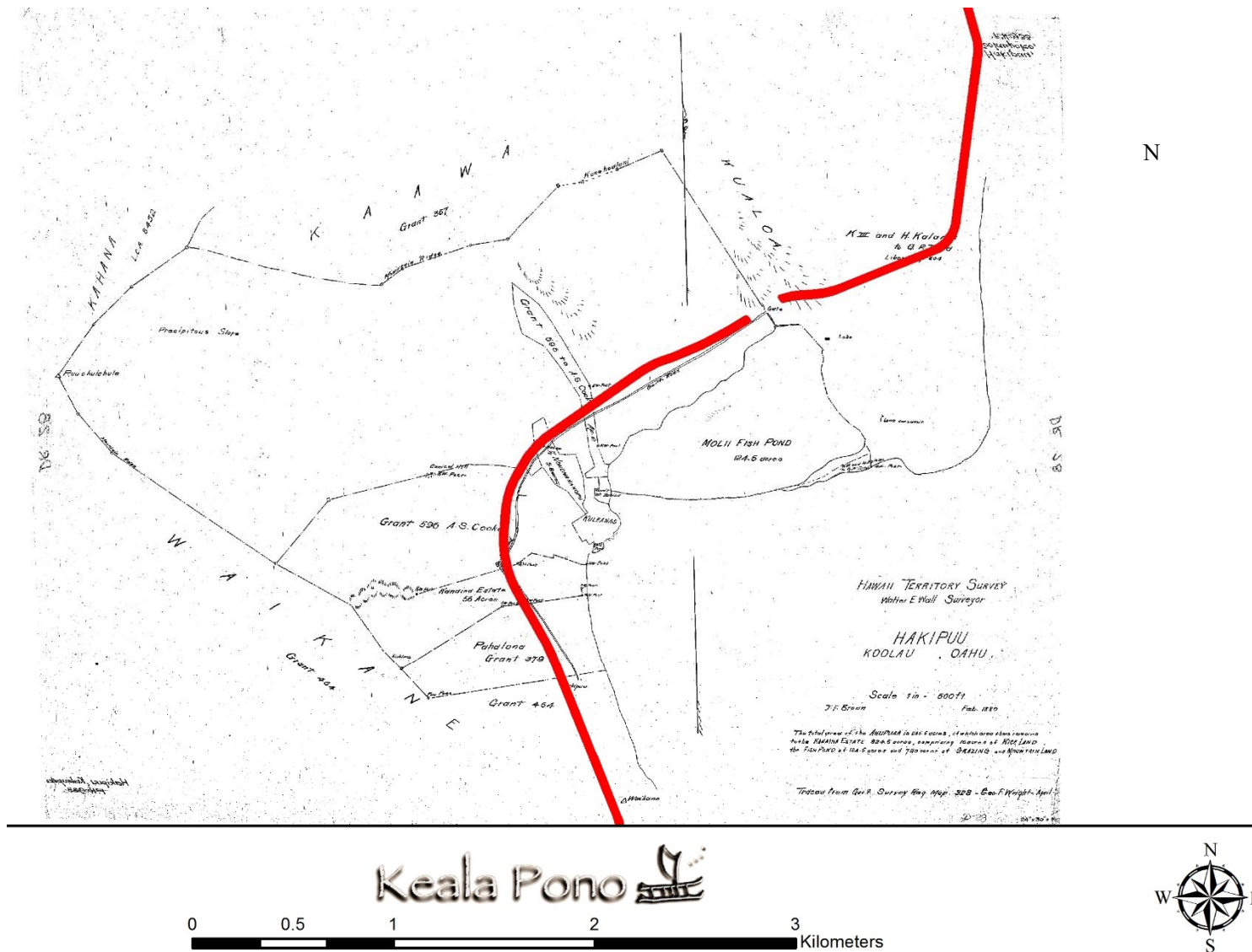


Figure 7. Portion of a Hawaii Territory Survey map of Hakipuu with the project area shown in red (Wall 1880).



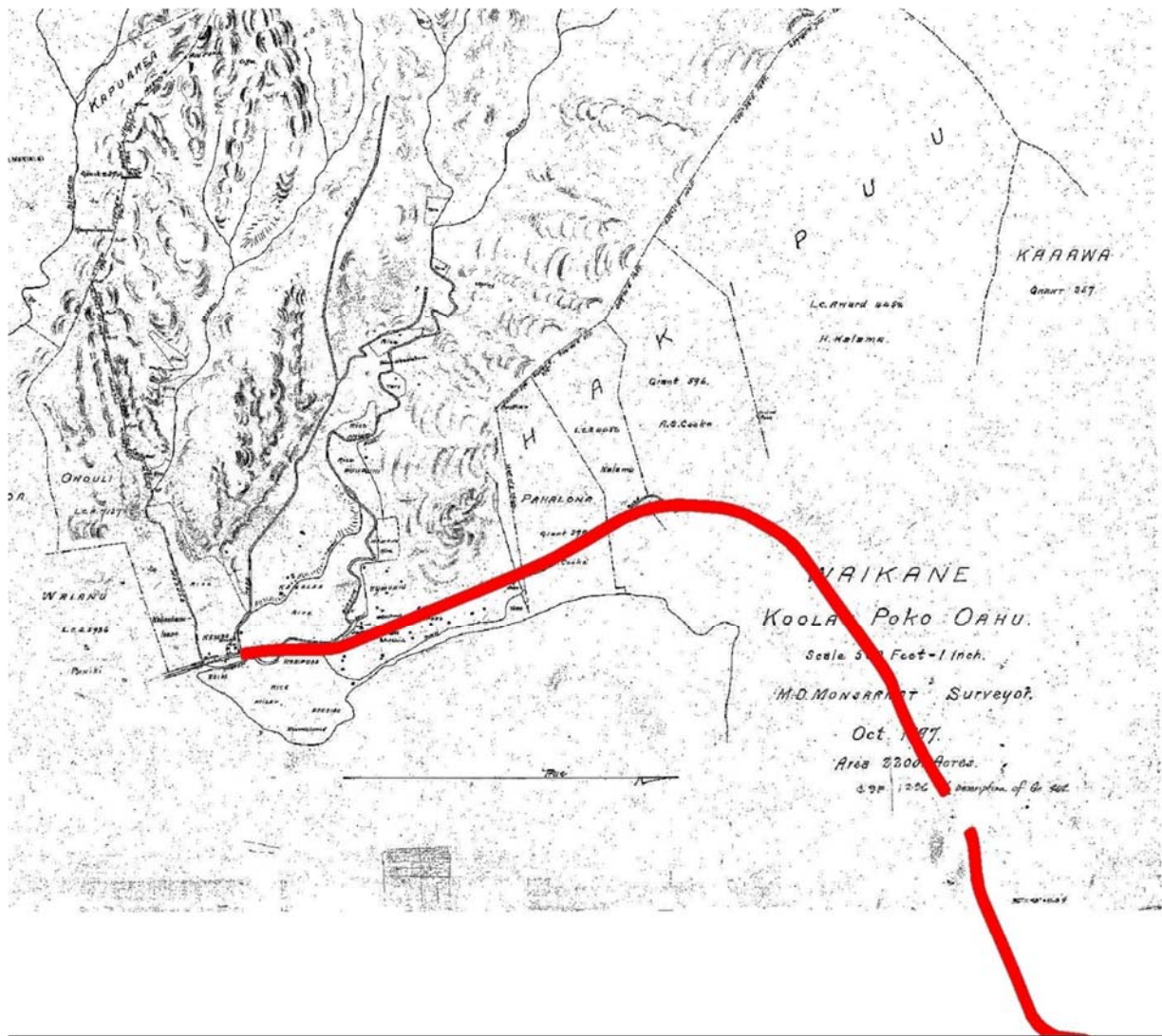


Figure 8. Portion of a map of Waikāne (Monsarrat 1897a).

structures are also on both sides of the road. Two of these appear to be the homes of a person named Jones and a person named Maka. Other structures include a rice mill, a Protestant church, and a Roman Catholic church.

Another map, dated October 1897 is titled “Portion of Waikane, Koolaupoko, Oahu” (Figure 9). Unlike the previous map, it shows no information for the neighboring *ahupua‘a* of Waiāhole and Hakipu‘u. However, it does show all the same details within Waikāne and more. Like the previous map, the different place names within Waikāne are labeled; the road, streams, and *‘auwai* are shown; and the various structures are depicted throughout. In addition, there is now a store on the *makai* side of the road around the halfway point as one drives through Waikāne. Furthermore, the many awardees of land parcels are named on this map along with the outline of their properties and their property numbers as written in the government record books.

The final map is titled “Oahu, Hawaiian Islands” and is dated 1902 (Figure 10). The map illustrates the *moku*, *ahupua‘a*, and smaller land districts and features across the entire island of O‘ahu. A close-up of the region from Waikāne to Ka‘a‘awa shows the registered numbers of several land grants and LCAs. Interestingly, the map specifies only two land owners in this area by name: A.S. Cooke in Hakipu‘u; and Judd, who appears to have received former Crown Lands in Kualoa. Also, the Moli‘i Fishpond is illustrated near the Hakipu‘u-Kualoa boundary, and a rice mill is depicted in Waikāne near its border with Waiāhole.

### **Previous Archaeology**

Many archaeological projects have been carried out in the vicinity of the project area. The following paragraphs summarize relevant reports found in the SHPD Kapolei library. Project locations are illustrated in Figure 11. The sites mentioned below are listed in the State Inventory of Historic Places (SIHP). SIHP numbers for McAllister’s sites are provided in brackets.

#### **Waikāne**

Very little archaeological work has been done along Kamehameha Highway in Waikāne (Table 2). An early island-wide archaeological survey identified two *heiau*, Kukuianiani Heiau [SIHP 317] and Ka‘awakoa Heiau [SIHP 318], in the vicinity of the highway (McAllister 1933). Site 317 was described as a small, overgrown two-terrace structure against the mountainside at the foot of Pu‘u Pueo. There is a large stone at the base of the structure that exhibits two cavities which may have been formed by pounding or grinding activity. Site 318 was once located “a few hundred feet south of Kukuianiani (Site 317)” but has since been destroyed (McAllister 1933:170).

Many decades later, an archaeological reconnaissance survey at the Waikane Golf Course identified an agricultural site on the *mauka* side of Kamehameha Highway (Shapiro et al. 1988). The site consists of an extensive pondfield complex of earthen berms situated along Waikāne Stream. The complex was utilized for rice agriculture in the early 1900s but may have originated earlier as a traditional *lo‘i*. It was designated as SIHP 50-80-10-4013.

An archaeological assessment was conducted for coastal areas in Waiāhole and Waikāne (Walsh et al. 1995). In the Waikāne area, several historic resources were reported, including the Waikane Store likely built in 1897, and a wooden pier that may date to 1913.

#### **Hakipu‘u**

Several studies have been conducted in Hakipu‘u in the vicinity of Kamehameha Highway (Table 3). McAllister’s (1933) island-wide survey identified two sites near the highway. These Puakea Heiau [SIHP 315] and a human burial that was exposed just *mauka* of the highway [SIHP 316]. The *heiau* was described as a large structure with three terraces located “above the road at the foot of a ridge” (McAllister 1933:168).

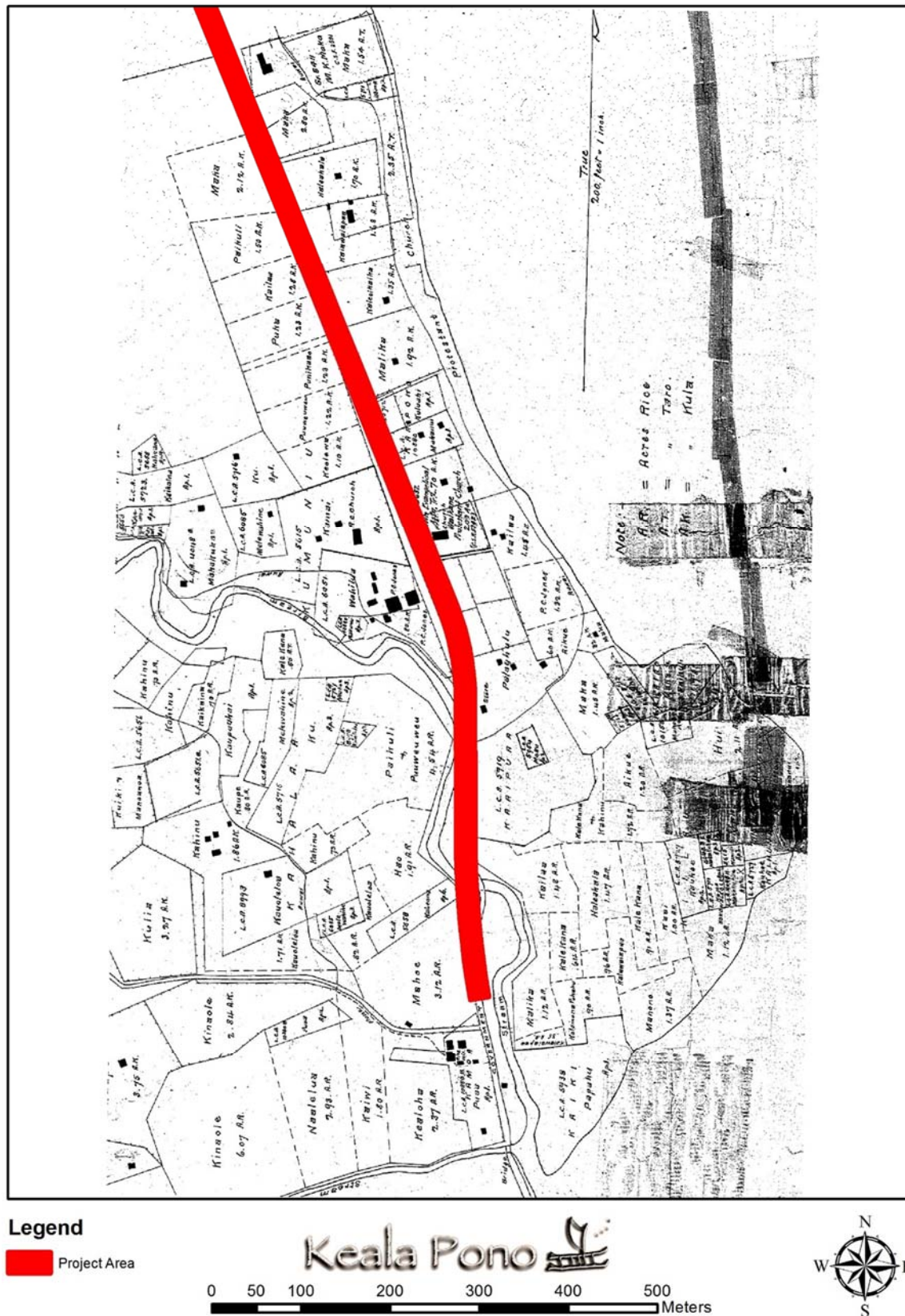


Figure 9. Portion of a map of Waikāne (Monsarrat 1897b).



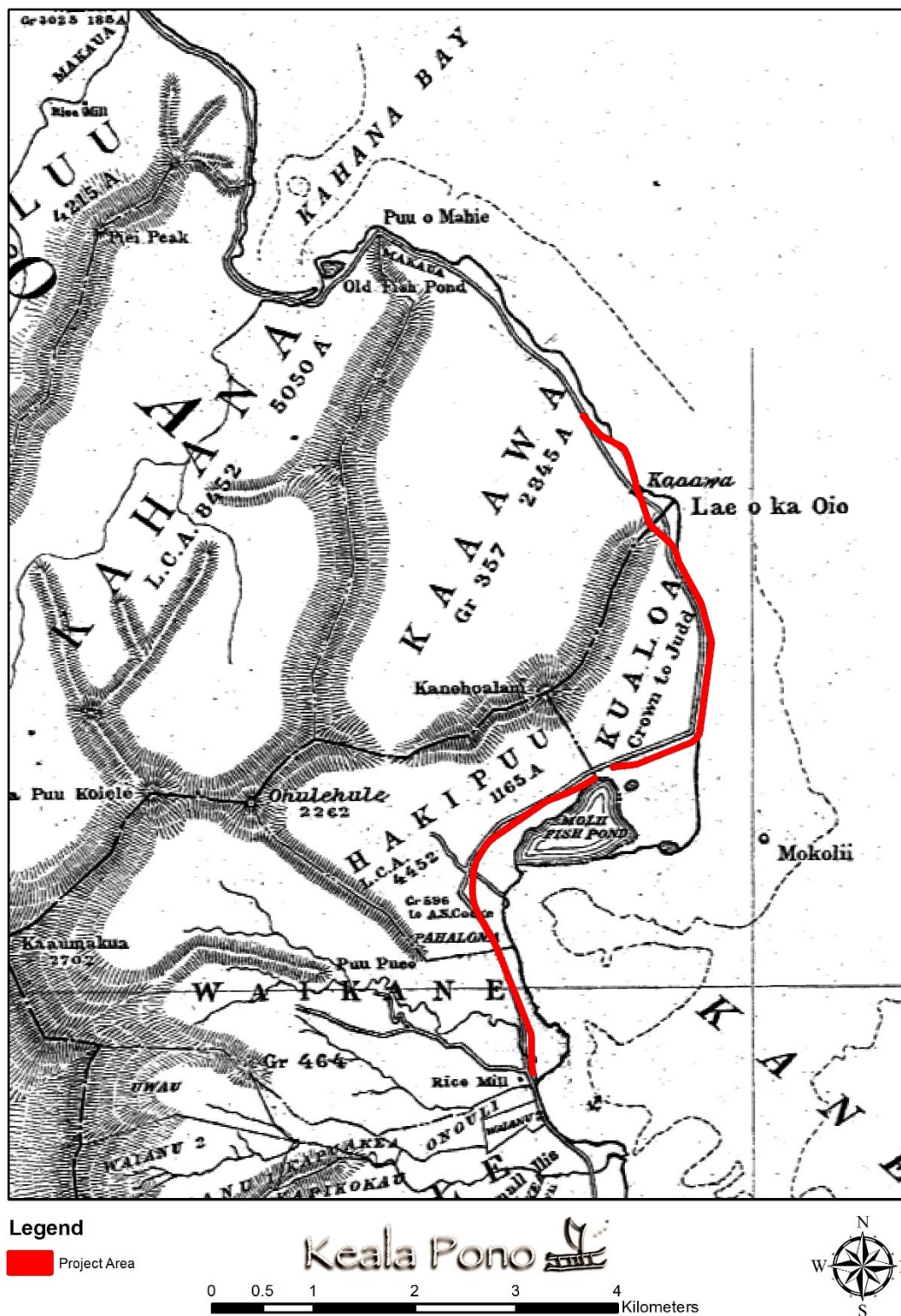


Figure 10. Portion of a Hawaii Territory Survey O'ahu map (Wall 1902).

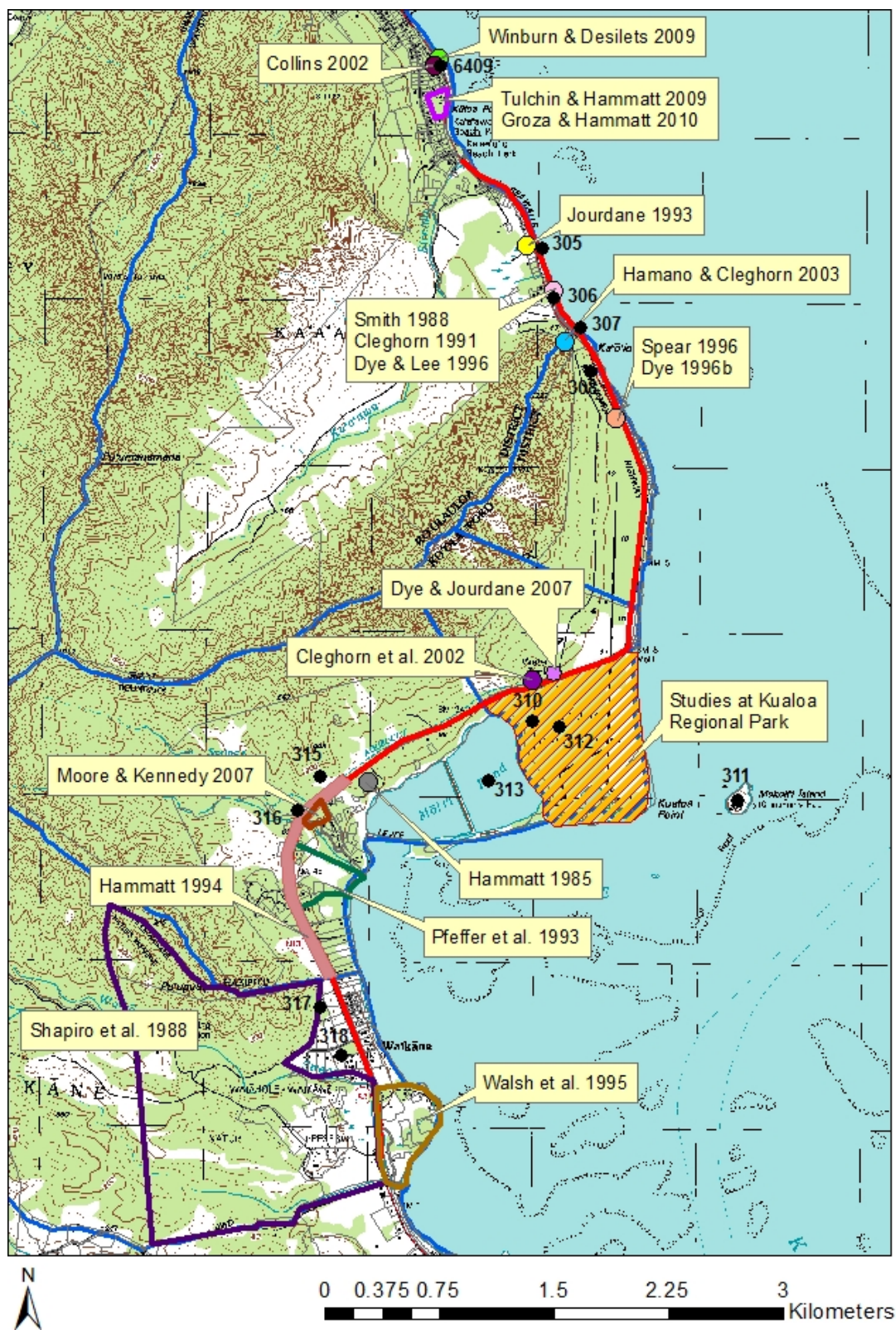


Figure 11. Previous archaeological projects. The project area is marked in red, *ahupua'a* boundaries are in blue, and approximate locations for McAllister's (1933) sites are shown as black dots.

**Table 2. Previous Archaeological Projects in the Vicinity of the Study Area, Waikāne Ahupua‘a**

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified two sites in the vicinity of the highway: Site 317 Kukuianiani Heiau and Site 318 Ka‘awakoa Heiau. The latter <i>heiau</i> was reported as destroyed.
Shapiro et al. 1988	Waikane Golf Course	Reconnaissance	Recorded Site 4013, an extensive pondfield complex along Waikāne Stream, <i>mauka</i> of the highway.
Walsh et al. 1995	Coastal Waikāne	Assessment	Recorded historic sites such as the Waikane Store and a wooden pier.

**Table 3. Previous Archaeological Projects in the Vicinity of the Study Area, Hakipu‘u Ahupua‘a**

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Recorded two sites: 315, Puakea Heiau; and 316, a human burial.
Pfeffer et al. 1993	Hakipu‘u	Inventory Survey	Identified Site 4492, the remains of a concrete basement.
Hammatt 1994	Kamehameha Hwy. at Hakipu‘u	Archaeological Survey	Identified the disturbed remains of a historic mortuary house.
Moore & Kennedy 2007	Hakipu‘u	Archaeological Survey	None.

An archaeological inventory survey was completed for a proposed mariculture pond expansion on 26 acres *makai* of the highway (Pfeffer et al. 1993). The survey identified SIHP 50-80-06-4492, the remains of a concrete basement, just *makai* of the highway.

An archaeological survey was done for a waterline route on the *makai* side of Kamehameha Highway (Hammatt 1994). The disturbed remains of a 20<sup>th</sup> century mortuary house were located in the vicinity; no site number was assigned. Extensive modification for the highway roadbed was noted. The results were reported in an archaeological assessment.

An archaeological survey was carried out on the *makai* side of the highway (Moore and Kennedy 2007). No surface or subsurface historic properties were encountered. The results were reported in an archaeological assessment.

### Kualoa

The entire *ahupua‘a* of Kualoa was placed on the National Register of Historic Places (NRHP) in 1973 for its mythological, legendary, and political importance. It was designated as SIHP 50-80-06-528. Moli‘i Fishpond is also listed on the NRHP because of its excellent state of preservation and interpretive potential. It was designated as SIHP 50-80-06-313. McAllister’s early island-wide survey identified five sites: a terrace at Lae o ka Oio; Niuolaa Heiau; Mokoli‘i Island; Koholālele Pond; and Moli‘i Pond [SIHP 308 and 310–313] (McAllister 1933). Site 310 is closest to the highway but McAllister (1933:167) reported that “nothing remains of the site.”

**Table 4. Previous Archaeological Projects in the Vicinity of the Study Area, Kualoa Ahupua'a**

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified five sites near the highway in Kualoa: a terrace at Lae o ka Oio; Niuolaa Heiau (reported destroyed); Mokoli'i Island; Koholālele Pond; and Moli'i Fishpond [SIHP 308 and 310–313].
Barrera 1974	Kualoa Regional Park, East Beach	Subsurface Testing	Cultural deposit with pits, postholes, traditional and nontraditional artifacts, midden, and a human burial.
Clark & Connoly 1975	Kualoa Regional Park, East Beach	Survey, Subsurface Testing	Buried fishpond wall; traditional artifacts on the reef.
Clark & Connoly 1978	Kualoa Regional Park	Archaeological Recommendations	Proposed recommendations for interpretive programs.
Gunness 1978	Kualoa Regional Park	Reconnaissance	None.
Ahlo 1980	Kualoa Regional Park, East Beach	Subsurface Testing	Most of the project area previously disturbed, but remnants of cultural deposits were found below the surface.
Gunness 1984	Kualoa Regional Park, South Beach	Subsurface Testing	Recorded 98 subsurface features and roughly 3,500 traditional artifacts near the South Beach access road. Features included pits, post holes, a human burial, and a dog burial. A stone bath house, whole pig offering, and fishpond wall were recorded in other areas.
Gunness 1985a, 1985b	Kualoa Regional Park	Subsurface Testing, Archaeological Assessment	Recorded an <i>imu</i> surrounded by post holes and a large assemblage of traditional artifacts.
Hammatt 1985	Kualoa Ranch	Reconnaissance	None.
Rutkowski 1988	Kualoa Regional Park	Burial Report	A skull and “several other bones” found near second bathroom (included with SIHP 528).
Omori 1989	Kualoa Regional Park	Burial Report	Two individuals identified, one of which was a young Hawaiian female (included with SIHP 528).
Pietruszewsky & Douglas 1989	Kualoa Regional Park	Burial Report	Analyzed 42 sets of remains, 41 of which were traditional Hawaiian and one post-contact.
Douglas 1990; Kawachi & Johnson 1990	Kualoa Regional Park	Burial Report	Identified one adult female, two adult males, one child, and two unassociated bone fragments (included with SIHP 528).
Douglas 1991	Kualoa Regional Park	Burial Report	One adult male recovered from the south side of East Beach (included with SIHP 528).
Goodman & Cleghorn 1991	Kualoa Regional Park, East & South Beaches	Monitoring & Salvage Excavations	Two human burials, a historic rock wall, a row of infilled post holes, and a small artifact assemblage were documented.
Meeker 1991	Kualoa Regional Park	Monitoring	Identified a disturbed midden deposit, two pits, and two infilled post holes.
Somer 1991	Kualoa Regional Park	Burial Report	One adult male recovered from a pit feature (included with SIHP 528).

**Table 4. (Cont.)**

<b>Author &amp; Year</b>	<b>Location</b>	<b>Work Completed</b>	<b>Findings</b>
Cleghorn 1994	Kualoa Regional Park, East Beach	Burial Report	One individual identified at East Beach (included with SIHP 528).
Lee 1994	Kualoa Regional Park	Artifact Report	Reported on an adze exposed by erosion.
Colin, Borthwick, & Hammatt 1995	Kualoa Regional Park	Burial Report	Removed one individual.
Colin, Heidel et al. 1995	Kualoa Regional Park	Data Recovery	Documented fire features and post holes and collected basalt flakes and midden.
Dye 1995	Kualoa Regional Park, East Beach	Burial Report	One coffin burial recorded.
Dye 1996a	Kualoa Regional Park	Burial Report	One individual, SIHP 5371, recovered from the south side of East Beach.
Spear 1996; Dye 1996b	Kamehameha Hwy. outside Kualoa Ranch	Monitoring; Burial Report	Identified SIHP 5376, a human burial and cultural layer.
Bush & Hammatt 1998	Kualoa Maintenance Yard	Monitoring	None.
Borthwick et al. 1999	Kualoa Regional Park	Monitoring	None.
Hammatt & Shideler 1999	Kualoa Regional Park	Assessment	Literature review completed, archaeological monitoring recommended.
Hammatt & Shideler 2000	Kualoa Regional Park, East Beach	Investigation of Bulldozing	Three midden deposits and a trash pit.
Perzinski et al. 2000	Kualoa Regional Park	Monitoring	Documented a cultural layer with midden.
Hammatt & Shideler 2001	Kualoa Regional Park	Monitoring	Midden and a ceramic sherd collected.
Cleghorn et al. 2002	Kualoa Ranch	Assessment	None.
Hamano & Cleghorn 2003	Kualoa Ranch	Monitoring	Identified SIHP 6515, a human burial and two charcoal concentrations.
Rohrer 2005	Kualoa Regional Park	Monitoring	None.
Carson & Athens 2006	Kualoa Regional Park	Monitoring and Data Recovery	Provided further documentation for the subsurface cultural deposit known for the area (part of SIHP 528).
Dye & Jourdan 2007	Kualoa Ranch	Historic Properties Assessment	None.
Colin & Hammatt 2008	Kualoa Regional Park, East Beach and Kualoa Point	Assessment and Subsurface Testing	Testing at East Beach uncovered a cultural layer with scattered bone fragments, some of them human.
Tulchin 2013	Kualoa Regional Park	Archaeological Inventory Survey	Identified SIHP 7397, a subsurface cultural layer.
Morriss & Hammatt 2015	Kualoa Regional Park	Data Recovery	Encountered SIHP 7397, a previously identified cultural layer, and SIHP 7752, a newly identified cultural layer.



Many studies have been conducted at Kualoa Regional Park (Table 4). Among the earliest work was a preliminary investigation that focused on subsurface testing (Barrera 1974). A total of 51 1x1 m test pits were excavated throughout the East Beach area of the park. A subsurface cultural deposit was identified in the north end, thought to be associated with Site 50-Oa-G1-22 which had been recorded by the Bishop Museum. In all, 35 distinct archaeological features were identified, including pits, infilled post holes, and a human burial. A wide range of artifacts were recovered, such as fishing gear, adzes and other tools, basalt and volcanic glass flakes, midden, and historic items.

Subsequent work aimed to “determine the nature and extent of archaeological remains” recorded by Barrera (1974) and to “enhance the cultural and environmental significance of the park through archaeological research and interpretive inputs” (Clark and Connolly 1975:i). Excavations at the South Beach of the park uncovered a fishpond wall thought to be associated with ‘Āpua Pond. Pre-contact artifacts were also recovered from reef areas. A later report proposed recommendations for interpretive programs (Clark and Connolly 1978). Sites with high interpretive value included East Beach, Mokolī‘i Island, ‘Āpua Fishpond, Moli‘i Fishpond, Koholālele Pond, a submerged fishpond wall, a stone house and pig burial area, and a stone platform in the northwest corner of the park that may be Niuolaa Heiau.

An archaeological reconnaissance survey was conducted for proposed beach replenishment between East and South Beach (Gunness 1978). A literature review, pedestrian survey, and test trenching did not identify historic properties, as the area had been extensively disturbed.

Subsurface testing was conducted at the East Beach of Kualoa Regional Park (Ahlo 1980). Most of the project area was found to be previously disturbed, however remnants of cultural deposits were identified below the surface in several locations.

Additional work was conducted at South Beach (Gunness 1984). Excavations at a stone bath house revealed a variety of traditional artifacts, infilled post holes, and a whole pig skeleton. As the pig was not eaten, it is thought to have been placed as an offering at the *ahupua‘a* boundary. Dates obtained from volcanic glass in this area suggested an age of the mid-15<sup>th</sup> century AD, although the method of dating volcanic glass has since been deemed unreliable (e.g., Graves and Ladefoged 1991). An area near the South Beach access road had been bulldozed without an archaeologist present, and a cultural layer with a large number of artifacts was disturbed. A total of 98 features were identified within seven test pits. They consisted of pits, infilled post holes, a human burial, a dog burial, and roughly 3,500 artifacts, including worked bone and pearl shell, a *niho palaoa*, coral abraders, a range of basalt tools, 589 pieces of volcanic glass, and more than 1,500 basalt flakes. A fishpond wall was also found, although only 20<sup>th</sup> century historic material was recovered from that area.

Subsurface testing was conducted prior to road improvements throughout the park (Gunness 1985a, 1985b). Heavy disturbance was noted in most areas, although an intact *imu* surrounded by infilled post holes was found. Thousands of basalt flakes and a variety of other traditional artifacts were associated with the feature. Items collected include adzes, awls, hammerstones, an *‘ulu maika*, coral abraders, and a *poi* pounder.

Archaeological monitoring and salvage excavations were carried out on the East and South Beaches of the park for tree removal and replanting (Goodman and Cleghorn 1991). Two human burials were excavated. One was located on East Beach and the other in the tree nursery near the maintenance building. A historic rock wall and a row of infilled post holes were also identified in the tree nursery. A small selection of traditional and historic artifacts was also recovered.

Archaeological monitoring was conducted for sand replenishment and tree removal and replanting activities at the park (Meeker 1991). Midden, charcoal flecks, basalt debitage, and fire cracked rock were observed along the edge of an old farm road near Moli‘i Pond. The area was found to be heavily disturbed. Four subsurface features were noted within tree removal holes, consisting of two pits and two infilled post holes. A few years

later, an adze was found eroding out of the sand at Kualoa Regional park (Lee 1994). The adze and an associated cultural layer were exposed during high tide.

Data recovery excavations were carried out at five subsurface features in the park (Colin, Heidel, et al. 1995). The features consisted of fire pits and infilled post holes, and basalt flakes and midden were collected. The area was heavily disturbed by historic and modern activity. A set of human remains was also disinterred (Colin, Borthwick, and Hammatt 1995).

Archaeological monitoring was completed for the removal of contaminated soil at the maintenance yard in the park (Bush and Hammatt 1998). No cultural material or deposits were encountered. A year later, a literature review was completed for reconstruction of the wastewater system at the park (Hammatt and Shideler 1999). Archaeological monitoring was recommended. Monitoring was conducted for percolation test pits associated with the wastewater reconstruction (Borthwick et al. 1999). There were no findings.

Several areas of bulldozing within Kualoa Regional Park were inspected (Hammatt and Shideler 2000). Surface collection and sampling was conducted for three midden scatters and a trash pit. A range of traditional and historic artifacts were documented, the latter consisting of material dating from ca. 1815 to the early 1900s.

Archaeological monitoring was conducted for Americans with Disability Act (ADA) improvements to the park (Perzinski et al. 2000). Two midden concentrations and a cultural layer were identified. Among the cultural material collected were 350 g of midden, a 1920s–1930s era glass bottle, and a few basalt artifacts.

Archaeological monitoring was completed for soil testing at the proposed multipurpose building in the park (Hammatt and Shideler 2001). Marine shell midden and a single ceramic sherd were the only materials recorded. A few years later, archaeological monitoring was carried out for a water line break at the second bathroom at the park (Rohrer 2005). No findings were reported.

Archaeological monitoring and data recovery were completed during road realignment and landscaping (Carson and Athens 2006). A previously recorded cultural layer was further documented. A variety of traditional artifacts and midden were recovered, and infilled post holes, fire pits, and stone pavings were recorded. Radiocarbon dating from the base of the cultural layer placed the earliest occupation at ca. AD 1040–1280. A canal that linked Koholālele Pond to the sea was also found.

A literature review and subsurface testing were conducted for an erosion control project (Colin and Hammatt 2008). Two test units excavated at East Beach revealed a subsurface cultural layer that contained scattered bone fragments, some of them human.

Recent work at the park included archaeological inventory survey (Tulchin 2013) that identified SIHP 50-80-06-7397 and data recovery (Morriess and Hammatt 2015) at SIHP 50-80-06-7397 and 50-80-06-7752, two subsurface cultural layers. Site 7393 was previously recorded during the archaeological inventory survey and included a cranial fragment as well as traditional artifacts, but 13 new pits and a selection of midden and additional artifacts were identified during data recovery. Site 7752 included nine pits and fragmented human remains identified during data recovery.

Kualoa Regional Park has a long history of human remains being exposed by erosion, and a number of burial reports have been filed. Those reports found in the SHPD library in Kapolei are summarized in the following paragraphs.

A skull and “several other bones” were found *makai* of the second bathroom in the park (Rutkowski 1998:1). They were taken to the police station and then transferred to the City and County Morgue. Remains were later found at an undisclosed location in the park and taken to the Honolulu Medical Examiner’s Facility in Honolulu (Omori 1989). At least two individuals were represented, one of which was a young Hawaiian female.

A large assemblage of human remains from Kualoa Regional Park were analyzed (Pietruszewsky and Douglas 1989). Of the 42 sets of remains, 41 were traditional Hawaiian and one was post-contact (dating to after 1778). Of these, roughly two-thirds were adults, and 14 were female and 11 male. All age groups were represented, from fetuses to older adults of 50+ years in age. Many of the males died as young adults. Skeletal modification was identified in the form of cranial deformation, defleshing cut marks, and burial vandalism.

Several sets of remains were found eroding out of the sand at SIHP 50-80-06-528 and examined at SHPD (Douglas 1990, Kawachi and Johnson 1990). One adult female, one adult male, and one child were identified in the first burial, an adult male was found in a second burial, and two unassociated bone fragments were also recovered. Another set of remains was documented on the south side of East Beach (Douglas 1991). They were identified as an adult male. Yet another set of remains was collected after being exposed by erosion (Somer 1991). The remains were excavated from a pit feature and identified as an adult male.

A single individual was found eroding out of the sand at East Beach (Cleghorn 1994). The individual was in a flexed position within a burial pit and was designated as part of SIHP 50-80-06-528. Dye (1995) reported that a coffin burial was found near the historic burial identified during earlier work by Gunness (1984). It was posited that the two burials are related and associated with the LCA parcel belonging to Kaneakalau (Dye 1995). Another burial was later identified eroding from the sand on the south side of East Beach (Dye 1996a). It consisted of one individual in a burial pit with no grave goods. The burial was designated as SIHP 50-80-06-5371.

A few studies have been conducted at Kualoa Ranch in the vicinity of Kamehameha Highway. The first was an archaeological reconnaissance between Moli'i Pond and the highway (Hammatt 1985). The project site was previously graded and no surface archaeological remains were observed. Subsequent archaeological monitoring for another project identified a human burial and cultural deposit at Kualoa Ranch along Kamehameha Highway (Spear 1996, Dye 1996b). The remains were left in place at "approximately 400 feet [on the] Ka'a'awa side of the old sugar mill" near telephone pole #179 (Spear 1996:1). The burial was designated as SIHP 50-80-06-5376. A basalt awl and fragmented human remains were encountered in other excavations. An archaeological survey was completed for a telecommunications facility just *mauka* of the highway across the street from Kualoa Regional Park (Cleghorn et al. 2002). The negative findings were reported as an archaeological assessment. Archaeological monitoring was conducted for a telecommunications facility at Kaoia Point, *mauka* of the highway (Hamano and Cleghorn 2003). SIHP 50-80-06-6515 was recorded, consisting of a human burial and two charcoal concentrations. The human remains were left in place. Finally, a historic properties assessment was completed for a proposed cell antenna at Kualoa Ranch, just *mauka* of the highway in the vicinity of the paintball field (Dye and Jourdane 2007). The project area was located in a previously disturbed area with no surface archaeological remains.

### **Ka'a'awa**

Several archaeological studies have been conducted in the vicinity of the project area in Ka'a'awa (Table 5). McAllister's island-wide survey identified three sites near Kamehameha Highway. These consist of a *ko'a* at Kalai o Kuonopuaa Point [SIHP 305]; a burial near Lae o ka Oio [SIHP 306], and a legendary cave [SIHP 307]. The cave is named Pohokaina, Pohukaina, or Pahukaina, and it is said to have many entrances, the most famous of which is at the boundary of Kualoa and Ka'a'awa.

A number of human burials have been found near Kamehameha Highway in Ka'a'awa. SIHP 50-80-06-3759 includes several burials and an associated cultural layer (Smith 1988, Cleghorn 1991, Dye and Lee 1996). SIHP 4728 is a single burial located on the *mauka* side of the highway (Jourdane 1993).

Human remains were found at TMK: (1) 5-1-002:064 in Ka'a'awa (Collins 2002). Collins identified a probable cultural layer and the burial pit where the remains were found. The remains consisted of at least three

**Table 5. Previous Archaeological Projects in the Vicinity of the Study Area, Ka‘a‘awa Ahupua‘a**

Author & Year	Location	Work Completed	Findings
McAllister 1933	Island-Wide	Survey	Identified 3 sites near the highway: 305, a <i>ko‘a</i> ; 306, a human burial; and 307 a cave.
Smith 1988, Cleghorn 1991, Dye & Lee 1996	Coastal Ka‘a‘awa	Burial Report	Recorded Site 3759, human burials.
Collins 2002	Coastal Ka‘a‘awa	Burial Report	Recorded Site 6409, human remains; at least three individuals.
Jourdane 1993	Coastal Ka‘a‘awa	Burial Report	Documented Site 4728, a human burial.
Tulchin & Hammatt 2009	Ka‘a‘awa Elementary School	Survey	None.
Winburn & Desilets 2009	TMK: (1) 5-1- 002:004	Survey	None.
Groza & Hammatt 2010	Ka‘a‘awa Elementary School	Monitoring	Recorded Site 7121, a human burial; and Site 7122, a cultural layer.

individuals, and were designated as SIHP 50-80-06-6409. Follow-up work was conducted by Lebo and Dockall of the Bishop Museum, but their report could not be located.

An archaeological survey was conducted for wastewater improvements to Ka‘a‘awa Elementary School (Tulchin and Hammatt 2009). There were no findings. Another archaeological survey of a private lot produced no findings (Winburn and Desilets 2009). Due to negative findings, both studies were reported as archaeological assessments. Later archaeological monitoring at Ka‘a‘awa Elementary School identified SIHP 50-80-06-7121, a human burial; and 50-80-06-7122, a cultural layer with pit features, dog remains, midden, and sparse traditional artifacts (Groza and Hammatt 2010).

### Summary of Background Research

The project lands were rich in natural resources such as fresh water, agricultural areas, and coastal resources. Because of this, the region likely supported a sizeable population. Wetland taro was grown mostly in Waikāne and Hakipu‘u, but Kualoa and Ka‘a‘awa had plentiful fishing grounds. Several fishponds in Kualoa and Hakipu‘u added to the abundance of the region.

The study area is steeped in tradition, particularly Kualoa, which was so sacred that canoes would have to lower their sails when passing by. Kualoa was also where tribute from each *ahupua‘a* was amassed at the end of the *makahiki* circuit. Hakipu‘u was the site of the first *heiau* and the first cultivation on ‘*ulu*. The region also figures prominently in the Hi‘iaka and Lohiau epic, with Mokolī‘i Islet formed when Hi‘iaka slew a dragon.

A large number of LCA claims were awarded for parcels in the vicinity of the project route. Data for these claims indicates that *lo‘i*, *kula*, and house lots were common, and diversified agriculture and fishing were practiced during the 19<sup>th</sup> century.

The historic period brought about widespread changes to the region, including rice, pineapple, and sugarcane agriculture and their associated infrastructure. Rice and pineapple cultivation were mostly

focused in Waikāne, and a rice mill, railroad, and pier were in operation there. Sugarcane agriculture was short lived in Kualoa, but the remains of a sugar mill along Kamehameha Highway are a silent testament to the endeavor. Military interests also affected the landscape with an airstrip constructed at Kualoa and various bunkers established along the cliffs.

Previous archaeological projects have identified a wide range of archaeological sites, features, and cultural material in the area of study. In Waikāne, two *heiau* (one reported as destroyed), an agricultural complex, the historic Waikane Store, and a historic pier have been recorded. In Hakipu‘u, a *heiau*, a human burial, and the remains of two historic structures were reported. The entire *ahupua‘a* of Kualoa is a NRHP site, and a wide variety of archaeological remains have been documented there. Most notable are cultural layers with fire pits, infilled post holes, and abundant traditional artifacts and midden; a large number of human burials; fishpond remains; and a whole pig burial. Radiocarbon dating from the base of one of the cultural layers placed the earliest occupation at ca. AD 1040–1280. Cultural material and human remains continue to be exposed by erosion at Kualoa Regional Park. Work along the highway in Ka‘a‘awa has identified a *ko‘a*, a legendary cave, a cultural layer, and several human burials.

### **Archaeological Implications and Anticipated Finds**

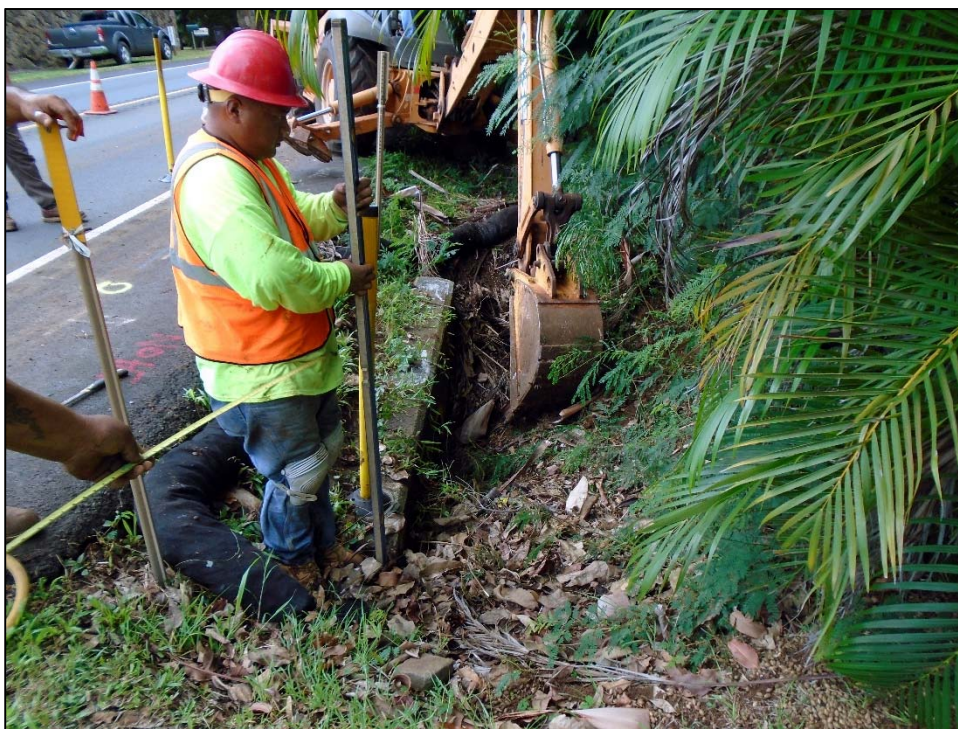
Background research indicates that a wide variety of archaeological remains may be encountered during monitoring along Kamehameha Highway from Waikāne to Ka‘a‘awa. As for traditional sites, agricultural remains are most likely to be found in Waikāne Ahupua‘a, while subsurface cultural layers, traditional artifacts, and human burials can be expected in Kualoa and Ka‘a‘awa. Post-contact sites may be present along the entire project route and may consist of agricultural, ranching, or military structural remains and cultural material.

## METHODS

Archaeological monitoring was carried out by Jeffrey Lapinad on September 22–24, 2015, for a total of three work days. The archaeological monitor was on site full time for all excavation. Windy McElroy, PhD served as Principal Investigator, overseeing all aspects of the project.

On the first day of work, the archaeological monitor spoke with the construction team to ensure that they understood the purpose of the monitoring and that the monitor has the authority to halt construction activity. Excavation was conducted with a backhoe with either bucket or hammer attachments (Figure 12).

Representative profiles were drawn and photographed. Profile locations were recorded with a 3 m-accurate Garmin 62st unit. Digital photos were taken of various stages of the work and also where profiles were drawn. Sediments were described using Munsell Soil Color Charts, a sediment texture flow chart (Thien 1979), and the U.S. Department of Agriculture soil manual. The scale in all field photographs is marked in 10 cm increments. The north arrow on all maps points to magnetic north. Throughout this report rock sizes follow the conventions outlined in *Field Book for Describing and Sampling Soils*: Gravel <7 cm; Cobble 7–25 cm; Stone 25–60 cm; Boulder >60 cm (Schoeneberger et al. 2002:2-35). No material was collected and no laboratory analyses were conducted.



**Figure 12. Excavation with a backhoe.**

## RESULTS

Archaeological monitoring was conducted between September 22 and 24, 2015 at two locations in Waikāne (Figure 13). Although the project route stretched from Waikāne to Ka‘a‘awa, the only excavations were in these two locations. A total of two profiles were drawn, one at each excavated area. Stratigraphy generally consisted of fill atop natural soil (Table 6). No cultural material or deposits were encountered.

### Stratigraphy

Profiles were recorded at the two excavations in Waikāne. These excavations were for the removal and replacement of storm drain drop inlets. No cultural resources were observed in either of the excavated areas.

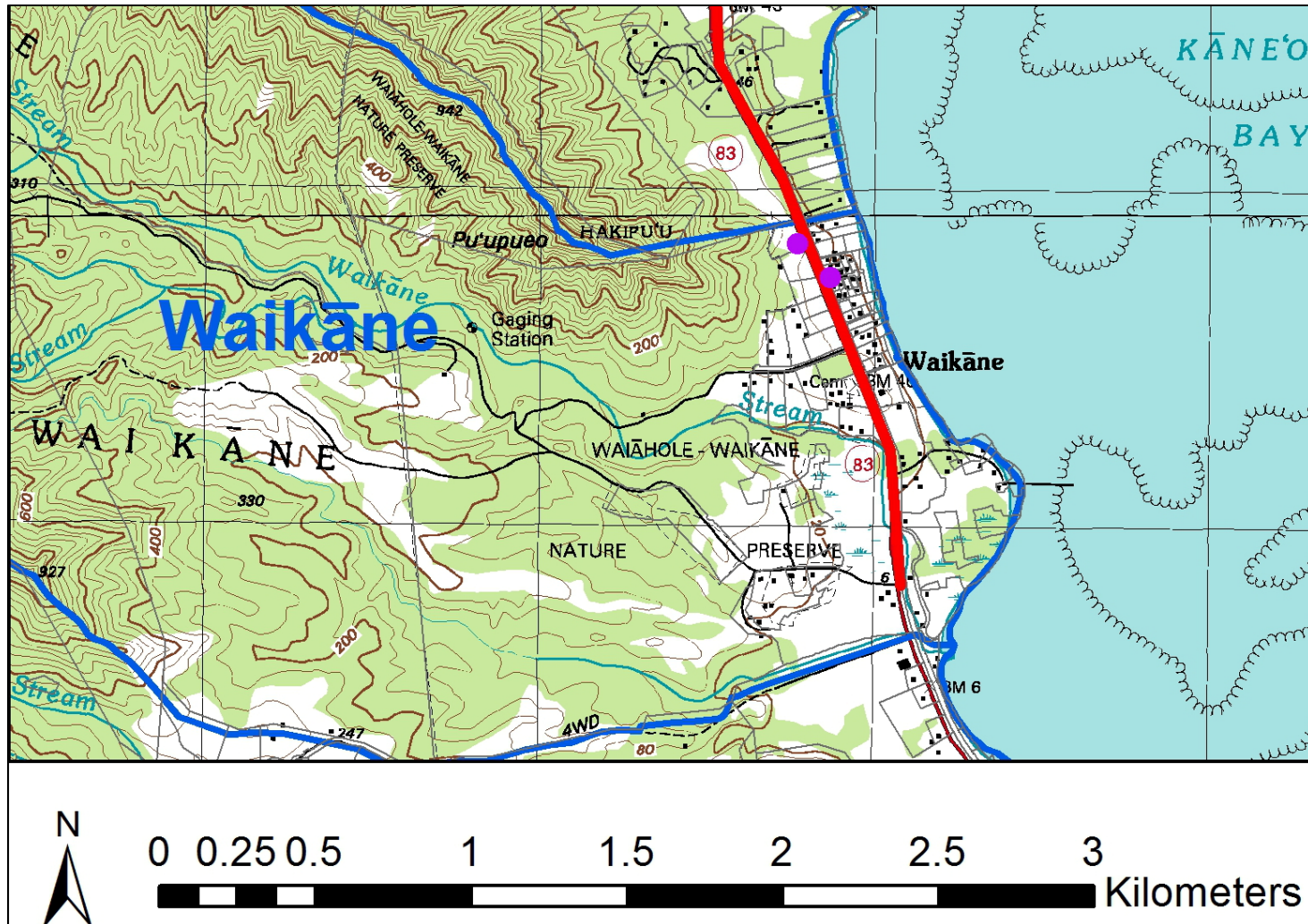
Profile 1 was recorded at the corner of Kamaka Place and Kamehameha Highway, on the *makai* (east) side of the highway (see Figure 13). The excavation was 2.6 m long, 2.1 m wide, and extended to 150 cmbs (cm below surface). Stratigraphy consisted of a layer of dark brown fill above dark yellowish brown natural sediment (Figure 14). Both layers were sandy clay.

Profile 2 was drawn on the opposite side of the highway, 300 m to the north (see Figure 13). The excavation was 3.7 m long, 1.9 m wide and extended to 150 cmbs. Two layers were encountered, consisting of a dark reddish brown fill deposit above the dark red natural soil (Figure 15). Both layers were clay loam.

### Summary of Results

In sum, two excavations in Waikāne were monitored. Stratigraphy consisted of fill above natural sediment. No cultural material or deposits were found.

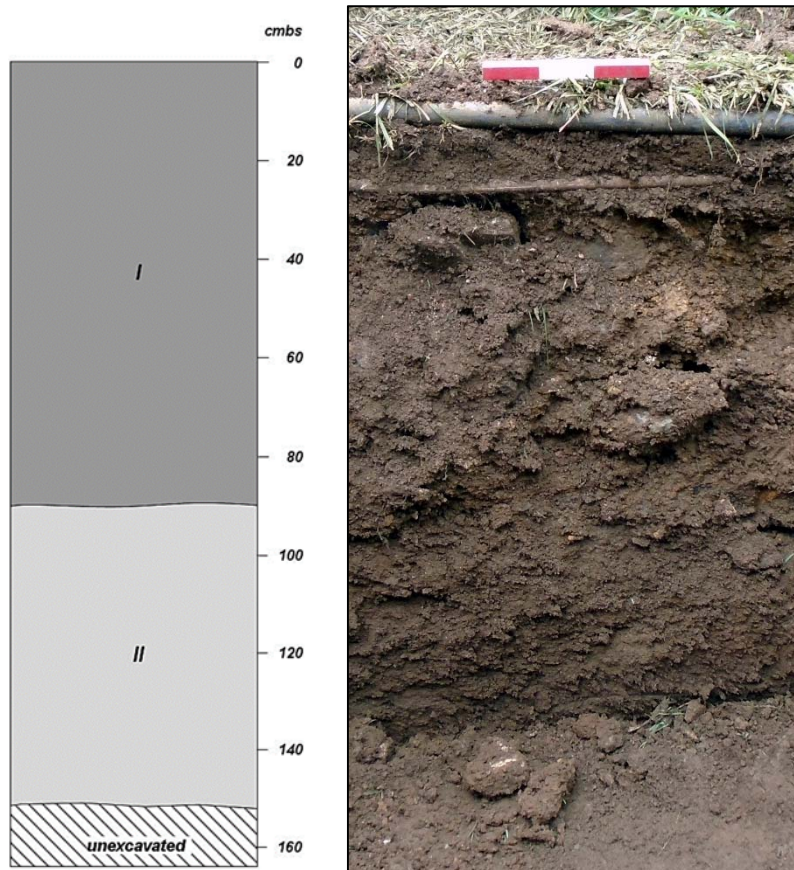




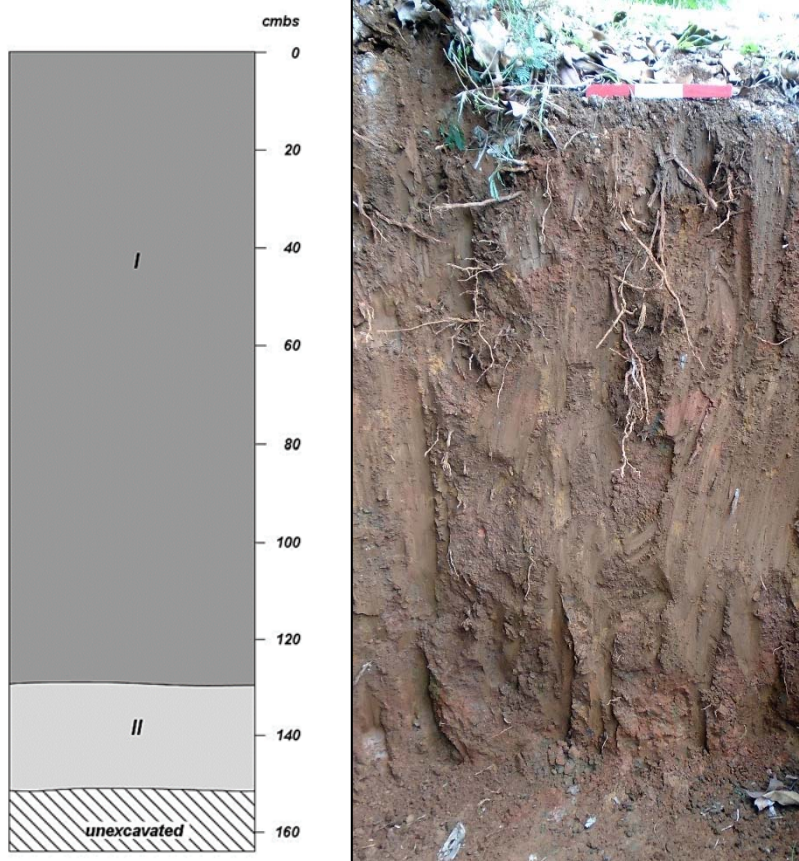


**Table 6. Sediment Descriptions**

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
1	I	0-90	10YR 3/3	Sandy clay; 15% basalt cobbles and gravel.; smooth, very abrupt boundary.	Fill
	II	90-150	10YR 3/4	Sandy clay; 10% basalt cobbles and gravel; base of excavation.	Natural
2	I	0-130	5YR 3/4	Clay loam; 25% basalt cobbles and gravel; smooth, very abrupt boundary.	Fill
	II	130-150	2.5YR 3/6	Clay loam; 25% basalt cobbles and gravel; base of excavation.	Natural



**Figure 14. Profile 1, northeast face profile drawing and photo.**



**Figure 15. Profile 2, northwest face profile drawing and photo.**

## SUMMARY AND CONCLUSION

In summary, improvements to Kamehameha Highway took place in Waikāne, Hakipu‘u, and Kualoa 1 and 2 Ahupua‘a, Ko‘olaupoko District, and Ka‘a‘awa Ahupua‘a, Ko‘olauloa District, on the island of O‘ahu, Hawai‘i. The project route covered 7.9 km (4.9 mi.), crossing through portions of TMK: (1) 4-8-003, -004, -005; 4-9-001, -002, -003, -004, -005, -006, -007, -008, -009; 5-1-001, -003, -006, -008, -009, and -013, aside from a 200 m-long exception zone at the Hakipu‘u/Kualoa 1 Ahupua‘a boundary where there was no construction. Archaeological monitoring was conducted for two locations along this route, both in Waikāne. No cultural material or deposits were encountered during monitoring. Because of the potential for cultural resources to occur along the project route, it is recommended that archaeological monitoring is conducted for any future work in the vicinity.

## GLOSSARY

<b><i>ahupua‘a</i></b>	Traditional Hawaiian land division usually extending from the uplands to the sea.
<b><i>‘auwai</i></b>	Ditch, often for irrigated agriculture.
<b><i>awa</i></b>	The milkfish, or <i>Chanos chanos</i> , often raised in fishponds in ancient times.
<b><i>debitage</i></b>	Waste by-products of stone tool manufacture.
<b><i>hala</i></b>	The indigenous pandanus tree, or <i>Pandanus odoratissimus</i> , which had many uses in traditional Hawai‘i. Leaves were used in mats, house thatch, and basketry; flowers were used for their perfume; keys were utilized in lei and as brushes; roots and leaf buds were used medicinally; and wood was fashioned into bowls and other items.
<b><i>heiau</i></b>	Place of worship and ritual in traditional Hawai‘i.
<b><i>humuhumunukunukuāpua‘a</i></b>	A triggerfish of the genus <i>Rhinecanthus</i> , either <i>R. aculeatus</i> or <i>R. rectangulus</i> .
<b><i>‘ili</i></b>	Land division, next in importance to <i>ahupua‘a</i> and usually a subdivision of an <i>ahupua‘a</i> .
<b><i>imu</i></b>	Underground pit or oven used for cooking.
<b><i>inoa</i></b>	Name, term, title.
<b><i>kahakai</i></b>	Beach, seashore, coast.
<b><i>Kahiki</i></b>	A far away land, sometimes refers to Tahiti.
<b><i>kahua</i></b>	Open place for sports, such as <i>‘ulu maika</i> .
<b><i>kahuna</i></b>	An expert in any profession, often referring to a priest, sorcerer, or magician.
<b><i>kai</i></b>	Sea, sea water; area near the sea, seaside, lowlands; tide, current in the sea; insipid, brackish, tasteless.
<b><i>kalo</i></b>	The Polynesian-introduced <i>Colocasia esculenta</i> , or taro, the staple of the traditional Hawaiian diet.
<b><i>kapa</i></b>	Tapa cloth.
<b><i>kapu</i></b>	Taboo, prohibited, forbidden.
<b><i>ko‘a</i></b>	Fishing shrine.
<b><i>konohiki</i></b>	The overseer of an <i>ahupua‘a</i> ranked below a chief; land or fishing rights under control of the <i>konohiki</i> ; such rights are sometimes called <i>konohiki</i> rights.
<b><i>kula</i></b>	Plain, field, open country, pasture, land with no water rights.
<b><i>kuleana</i></b>	Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
<b><i>kupua</i></b>	Demigod, hero, or supernatural being below the level of a full-fledged deity.
<b><i>lo‘i, lo‘i kalo</i></b>	An irrigated terrace or set of terraces for the cultivation of taro.
<b><i>loko</i></b>	Inside, interior. Pond, lake, pool.
<b><i>Māhele</i></b>	The 1848 division of land.

<b><i>makahiki</i></b>	A traditional Hawaiian festival starting in mid October. The festival lasted for approximately four months, during which time there was a <i>kapu</i> on war.
<b><i>makai</i></b>	Toward the sea.
<b><i>mauka</i></b>	Inland, upland, toward the mountain.
<b><i>menehune</i></b>	Small people of legend who worked at night to build structures such as fishponds, roads, and <i>heiau</i> .
<b>midden</b>	A heap or stratum of refuse normally found on the site of an ancient settlement. In Hawai‘i, the term generally refers to food remains, whether or not they appear as a heap or stratum.
<b><i>moku</i></b>	District, island.
<b><i>mo‘o</i></b>	Lizard, dragon, water spirit.
<b><i>mo‘olelo</i></b>	A story, myth, history, tradition, legend, or record.
<b><i>muliwai</i></b>	River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.
<b>mullet</b>	<i>Mugil cephalus</i> , or ‘ama‘ama, a very choice indigenous fish.
<b><i>niho palaoa</i></b>	Pendant fashioned from whale tooth worn by Hawaiian royalty.
<b><i>‘ōlelo no‘eau</i></b>	Proverb, wise saying, traditional saying.
<b><i>poi</i></b>	A staple of traditional Hawai‘i, made of cooked and pounded taro mixed with water to form a paste.
<b>post-contact</b>	After A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
<b>pre-contact</b>	Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.
<b><i>pu‘uhonua</i></b>	Place of refuge.
<b><i>‘ulu</i></b>	The Polynesian-introduced tree <i>Artocarpus altilis</i> , or breadfruit.
<b><i>‘ulu maika</i></b>	Stone used in the <i>maika</i> game, similar to bowling.
<b><i>wauke</i></b>	The paper mulberry, or <i>Broussonetia papyrifera</i> , which was made into tapa cloth in traditional Hawai‘i.

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## **APPENDIX A: SHPD NHPA SECTION 106 LETTERS**

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
**STATE HISTORIC PRESERVATION DIVISION**  
601 KAMOKILA BOULEVARD, ROOM 555  
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**WILLIAM J. AILA, JR.**  
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BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

**ESTHER KIAIINA**  
FIRST DEPUTY

**WILLIAM M. TAM**  
DEPUTY DIRECTOR - WATER

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

February 20, 2014

Glenn Okimoto  
Director of Transportation  
State of Hawaii, Department of Transportation  
869 Punchbowl Street  
Honolulu, HI 96813-5097

LOG NO: 2014.00213  
DOC NO: 1402NN10  
Archaeology

Dear Dr. Okimoto:

**SUBJECT: National Historic Preservation Act Section 106 Consultation –  
Kamehameha Highway Safety Improvements from Waikane Valley Road to Ka'a'awa Bridge  
Federal Aid Project No. HSIP-083-1(069)  
Waikane, Hakipu'u, Kualoa, and Ka'a'awa Ahupua'a,  
Ko'olaupoko and Ko'olauloa Districts, Island of O'ahu  
TMK: (1) 4-8-003, 004, 005; 4-9-001 thru 009; 5-1-001, 003, 006, 008, 009, and 013**

Thank you for your letter dated January 15, 2013, initiating consultation with SHPD in accordance with 36 CFR 800.3 for the proposed Kamehameha Highway Safety Improvement project extending from Waikane Valley Road to Ka'a'awa Bridge on State Route 83 (HWY-DD 2.6188). Your letter indicates the proposed project is a State Department of Transportation (HDOT) project which will receive funding from the Federal Highway Administration (FHWA), Federal Aid Project No. HSIP-083-1(069). Therefore this is a federal undertaking requiring historic preservation review under Section 106 of the National Historic Preservation Act. The proposed project involves the installation of milled centerline/shoulder rumble strips, pavement markings, striping, signage, and guardrail and end treatments; drainage improvements; and re-setting of existing guardrail.

Your letter defines the project area consists of about 24,550 linear feet of roadway and the area of potential effects (APE) as comprising about 29.7 acres within the state's right of way. Your historical research indicates that the APE falls within the historic district to Kualoa Ahupua'a (SIHP 50-80-06-528), which is listed on both the Hawaii Register of Historic Places and the National Register of Historic Places. Also, the following several historic properties occur or extend into the APE: a burial (SIHP 50-80-06-4060) located at the Intersection of Kamehameha Highway and Johnson Road (Hammatt 1994), a burial cluster (SIHP 50-80-06-5376) located *maka* of the highway and the Kualoa Ranch (Dye 1996 and Spear 1996), and a burial and cultural deposit (SIHP 50-80-06-3759) located near Ka'a'awa Beach. In addition, your letter identifies 17 organizations and/or individuals to whom you are sending NHPA Section 106 consultation letters, and states your intent to place a NHPA Section 106 notice/advertisement in the *Honolulu Star Advertiser* newspaper.

Your letter also requests that SHPD provide any information we may have concerning historic resources within or near the APE, as well as any names and contact information for any individuals or organizations that may be knowledgeable about the project area or any person who may be a descendent with ancestral or cultural ties to the project area.

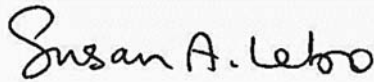
SHPD has no additional information to offer at this time. However, we request more information on the proposed undertaking in order to adequately determine the area of potential effects (APE), including all access and staging areas. We understand that the undertaking is in the preliminary planning phases and that the scope of work is subject to change pending consultation with stakeholders, including Native Hawaiian Organizations. We look forward to continuing consultation on the development of this undertaking, on the identification of historic properties (36 CFR Part 800.4), and on the assessment of adverse effects (36 CFR Part 800.5). We appreciate the consultation you've

Dr. Glenn M. Okimoto  
February 20, 2014  
Page 2

conducted thus far with Native Hawaiian Organizations, and look forward to your continued consultation with all interested parties throughout the identification, evaluation and, if necessary, mitigation processes.

Please contact Deona Naboa at (808) 692-8015 or at [Deona.Naboa@Hawaii.gov](mailto:Deona.Naboa@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,

A handwritten signature in black ink that reads "Susan A. Lebo". The signature is written in a cursive, flowing style.

Susan A. Lebo, PhD  
Oahu Lead Archaeologist

cc: Li Nah Okita    [Li.nah.okita@dot.gov](mailto:Li.nah.okita@dot.gov)  
Meesa Otani      [Meesa.otani@dot.gov](mailto:Meesa.otani@dot.gov)

NEIL ABERCROMBIE  
GOVERNOR OF HAWAII



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
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ENGINEERING  
FORESTRY AND WILDLIFE  
HISTORIC PRESERVATION  
KAOHOLA WATERSHED RESERVATION COMMISSION  
LAND  
STATE PARKS

July 23, 2014

Meesa Otani  
Environmental Engineer  
300 Ala Moana Blvd. Rm 3-306  
Honolulu, HI 96850

LOG NO: 2014.03031  
DOC NO: 1407NN15  
Archaeology

Dear Ms. Otani:

**SUBJECT: Chapter 6E-8 and National Historic Preservation Act (NHPA) Section 106 Consultation – Kamehameha Hwy Safety Improvements, Waikane Valley Road to Ka'a'awa Bridge Federal Aid Project No. HSIP-083-1 (069) Waikane, Hakipu'u, Kualoa, Ka'a'awa Ahupua'a, Ko'olaupua District, Island of Oahu TMK: (1) 4-8-003 thru 005, 4-9-001 thru 009, 5-1-001, 003, 006, 008, 009, 013**

Thank you for your letter dated June 3, 2014, initiating NHPA Section 106 consultation with SHPD in accordance with 36 CFR 800.3 for the Kamehameha Highway Safety Improvement Project located along Kamehameha Highway, Route 83, between Waikane Valley Road and Ka'a'awa Bridge. Your letter indicates the proposed project is a State Department of Transportation (HDOT) project which will receive funding from the Federal Highway Administration (FHWA), Federal Aid Project No. HSIP-08301 (069). Therefore this is a federal undertaking requiring historic preservation review under Section 106 of the National Historic Preservation Act. Our office is aware that this project is taking place on State land, by a State agency; therefore this is also a State undertaking that will also require historic preservation review under HRS Chapter 6E-8.

The proposed project involves the installation of milled centerline and shoulder rumble strips, pavement markings, guardrail and end treatments, and drainage improvements. Staging areas will be confined to the ROW. Most of the improvements will occur within previously disturbed areas of the existing roadway from shoulder edge to shoulder edge, also known as the right of way (ROW). Ground disturbing activities relating to drainage improvements are expected to exceed up to 3 feet below the previously disturbed substrate. The areas affected by this are a 6 ft. by 6 ft section approximately 500 ft. north of Kamaka Place, and a 83 ft. by 5 ft. wide section near Moli'i Fishpond.

Your letter defines the area of potential effect (APE) as the 50-60 foot wide ROW and as consisting of approximately 24,550 linear feet or 29.7 acres. Your historical research indicates that a portion of the project will be in the historic Kualoa District (50-80-06-528) that is listed on both the Hawaii State Register of Historic Places and the National Register of Historic Places. In addition, there are three historic properties within the APE in the following locations:

SIHP Number	Historic Property Type	Specific Location	Associated Report
50-80-06-4060	Single human bone	Intersection of Kamehameha Hwy. and Johnson Road	Hammatt, 1994
50-80-06-5376	Several burials	Mauka side of the highway and the Kualoa Ranch	Dye, 1996 and Spear, 1996
50-80-06-3759	Burials and cultural layer	Mauka side of the highway and the Kualoa Ranch	

Your letter also indicates that the no ground disturbing activities is anticipated to will take place in the historic Kualoa District, as well as in the vicinity the above burials. It also identifies 17 organizations and/or individuals to whom you sent NHPA Section 106 consultation letters. Of these, Kiersten Faulkner of Historic Hawaii Foundation (HHF) responded with concerns regarding the project's impact to Site 528, the historic Kualoa District. Mr. Kaleo Manuel of DHHL requested an extension to provide comments but none was received by the extended comment period deadline. For those who did not respond within the 30 days, HDOT contacted each organization by email and or phone on February 19, 2014 and March 10, 2014. Edward Ayau of Hui Hooniho and Hui Malama I Na Kupuna o Hawaii Nei, and Dr. Kamana'opono Crabbe of OHA, requested that state laws and regulatory procedures relating to inadvertent discovery of human skeletal remains be followed. OHA requested other NHOs be contacted as consultants and provided HDOT with contact information for Ohana Matoon and DeeDee Letts. HDOT sent emails to these individuals, but did not receive any responses. In addition you letter states that a Section 106 notice of consultation/advertisement was published in the Honolulu Star Advertiser on January 31, 2014. Ms. Andrea Anixt responded and expressed concerns unrelated to historic properties.

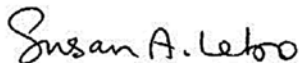
You have determined that the proposed undertaking to install milled centerline and shoulder rumble strips, pavement markings, guardrail and end treatments, and drainage improvements will result in no adverse effect to historic properties because: (1) majority of the work will be confined within the previously disturbed substrate within the ROW, (2) archaeological monitoring will be conducted during excavation for the drainage improvements near Kamaka Place and Moli'i Fishpond as excavation is anticipated to exceed beyond previously disturbed substrate, and (3) no ground disturbing activities will be performed within the historic district or near historic properties identified in the APE.

We concur with the FHWA's project determination of **no adverse effect with agreed-upon archaeological monitoring** for the sections near Kamaka Place (Station 585+00), approximately 500 feet north of Kamaka Place (Station 590+00), and near the Moli'i Fishpond (Station 666+00). The archaeological monitoring program will involve on-site monitoring below the base course to mitigate the project's effects on any newly-identified historic properties. Any departure will occur only with written concurrence from SHPD.

Please submit an archaeological monitoring plan that accurately reflects the proposed work to our office for review and approval prior to the start of construction. The monitoring plan should contain information specified in *Secretary of the Interior's Standards for Archeological Documentation* and the requirements set forth in Hawaii Administrative Rules (HAR) §13-279-4. The monitoring plan must indicate that the project is a Section 106 undertaking.

Please contact Deona Naboa at (808) 692-8015 or at [Deona.Naboa@Hawaii.gov](mailto:Deona.Naboa@Hawaii.gov) if you have any questions or concerns regarding this letter.

Aloha,



Susan A. Lebo, PhD  
Oahu Lead Archaeologist

cc: Li Nah Okita [li.nah.okita@hawaii.gov](mailto:li.nah.okita@hawaii.gov)  
Todd Nishioka [todd.nishioka@hawaii.gov](mailto:todd.nishioka@hawaii.gov)