

FINAL—Addendum Archaeological Assessment for Punalu‘u Beach Lots, Punalu‘u Ahupua‘a, Ko‘olauloa District, Island of O‘ahu

TMK: (1) 5-3-002:034 (por.)



Prepared For:

G70
925 Bethel Street, 5th Floor
Honolulu, Hawaii 96813



April 2017



Keala Pono Archaeological Consulting, LLC • PO Box 1645, Kaneohe, HI 96744 • Phone 808.381.2361

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Prepared By:

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MANAGEMENT SUMMARY

An archaeological inventory survey (AIS) was conducted for a beach lot in Punalu‘u Ahupua‘a, Ko‘olauloa District, O‘ahu: TMK: (1) 5-3-002:034 (por.). A revetment is proposed for seven properties, TMK: (1) 5-3-002:032, 033, 034, 035, 041, 046, and 051. The original AIS (McElroy and Eminger 2017) included all properties except Parcel 034. The current archaeological work consisted of pedestrian survey that covered 100% of the .026 ha (.065 ac.) project area on Parcel 34, as well as test excavations consisting of one trench. Due to negative findings, the AIS results are presented as an archaeological assessment (AA).

The survey was done in preparation for ground disturbance associated with construction of a proposed revetment on the makai side of the property that will help to curtail erosion. The project area has been disturbed by modern use, and no archaeological remains were found on the surface or during trenching.

Even though this survey produced no findings, archaeological monitoring is recommended because human remains have been found previously in several locations near the project area. An archaeological monitoring plan must be submitted to the State Historic Preservation Division (SHPD) for review and acceptance before construction commences.

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INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for a proposed shoreline protection revetment in Punalu'u Ahupua'a, Ko'olauloa District, on the island of O'ahu. The revetment will cross and may impact portions of seven TMK parcels: TMK: (1) 5-3-002:032, 033, 034, 035, 041, 046, and 051. The original AIS (McElroy and Eminger 2017) included all parcels except Parcel 034. This AIS Addendum was designed to identify, document, assess significance, and provide mitigation recommendations for any historic properties that may be located in the Parcel 034 project area in anticipation of the proposed construction.

This report is drafted to meet the requirements and standards of state historic preservation law, as set out in Chapter 6E of the Hawai'i Revised Statutes and the State Historic Preservation Division's (SHPD's) draft *Rules Governing Standards for Archaeological Inventory Surveys and Reports*, Hawaii Administrative Rules (HAR) §13-276. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13-275-5(b)(5)(A).

The report begins with a description of the project area and a historical overview of land use, Hawaiian traditions, and archaeology in the area. The next section presents methods used in the fieldwork, followed by results of the survey. 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.

The Project Location and Description

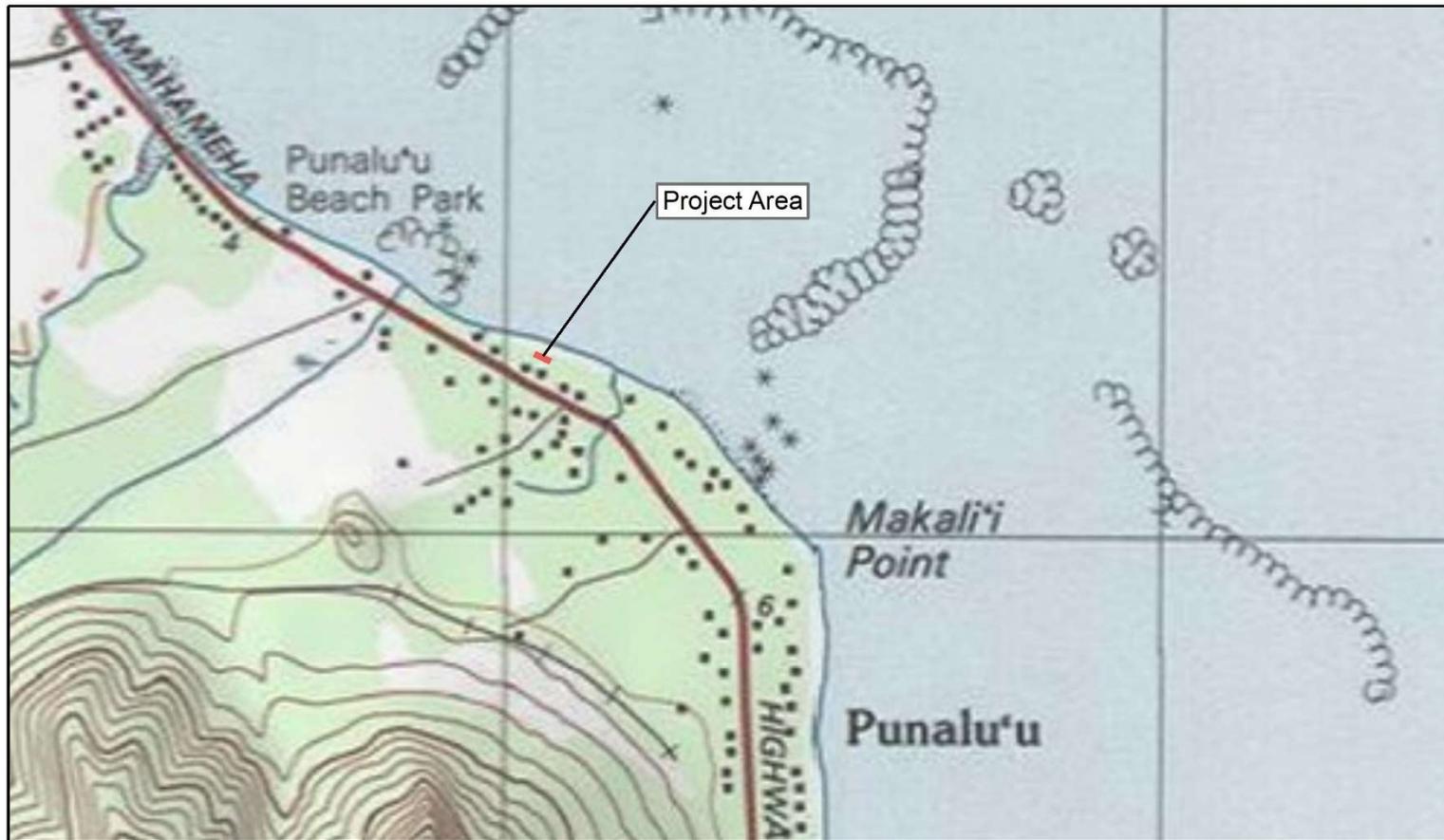
The project area is located on the coast of Punalu'u, Ko'olauloa District, on the island of O'ahu (Figures 1 and 2). The survey area consists of a portion of TMK: (1) 5-3-002:034. Parcel 34 is a 13,966 ft.² lot owned by Violeta Tablit. The parcel is bounded by the beach on the north, Kamehameha Highway on the south, and private lots on the east and west. The project area is on the makai (north) side of the lot and encompasses .026 ha (.065 ac.) of the property.

The parcel is a beachfront lot at an elevation of less than 6 m (20 ft.) above sea level. During high surf, sea water is pushed well into the yard of the property. Rainfall averages 150–200 cm (60–80 in.) per year in coastal Punalu'u, with higher rainfall toward the back of the valley (Juvik and Juvik 1998:56). Punalu'u Stream is the main drainage and only perennial stream in Punalu'u Valley. Several intermittent streams run along ridges and gulches. Vegetation in the project area consists of landscaped plants and grasses. Soils are of the Kaena-Waialua association, described by Foote et al. (1972) as follows:

Kaena-Wailua association: Deep, mainly nearly level and gently sloping, poorly drained to excessively drained soils that have a fine-textured to coarse-textured subsoil or underlying material; on coastal plains and talus slopes and in drainageways.

Specifically, soils consist entirely of Jaucas Sand, 0–15% slopes (JaC) (Figure 3).

The project consists of constructing a shoreline protection revetment on the makai side of the seven properties noted above. The revetment structure will extend inland roughly 4.5 m (15 ft.) from the shoreline (the mid-crest of the shoreline scarp). The revetment will have an approximately 4 m (12 ft.) width along its entire length. The foundation section will be on the makai edge, with boulders placed at a depth of roughly -1.2 m (144 ft.) from grade, and the rock slope rises inland on a 1.5:1.0 slope to a crest of +1.5 m (+5 ft.) maximum. Only the foundation section will be excavated; the rest of the revetment will lie on the slope.



Legend
█ Project Area

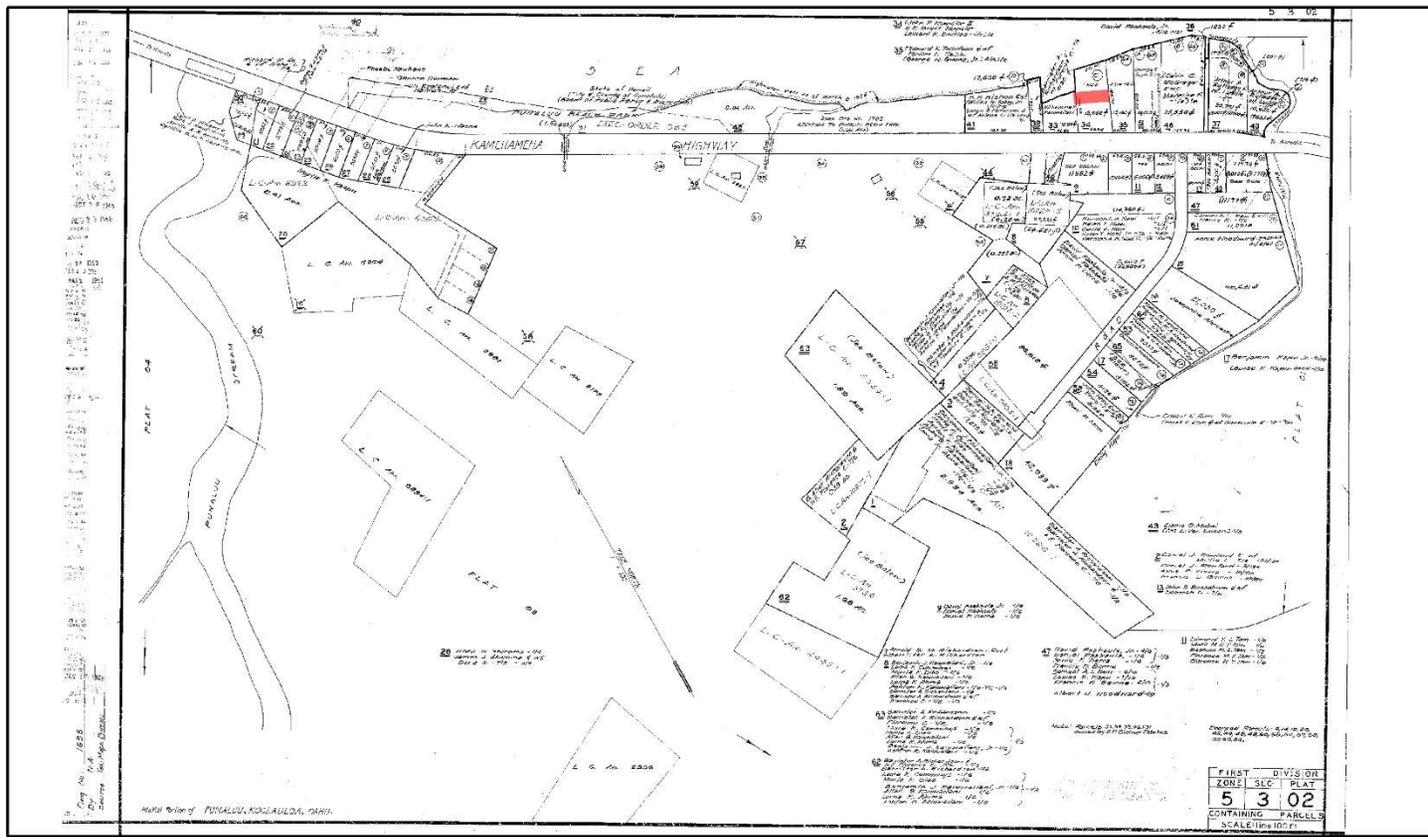
Keala Pono

0 0.25 0.5 1 Kilometers



Layer Credits: USGS Topographical Kahana Quadrangle Map 1992

Figure 1. Location of current project area on a 1992 USGS topographic map.



Legend
■ Project Area

Keala Pono



Figure 2. Location of current project area (in red) on TMK plat (1) 5-3-02.

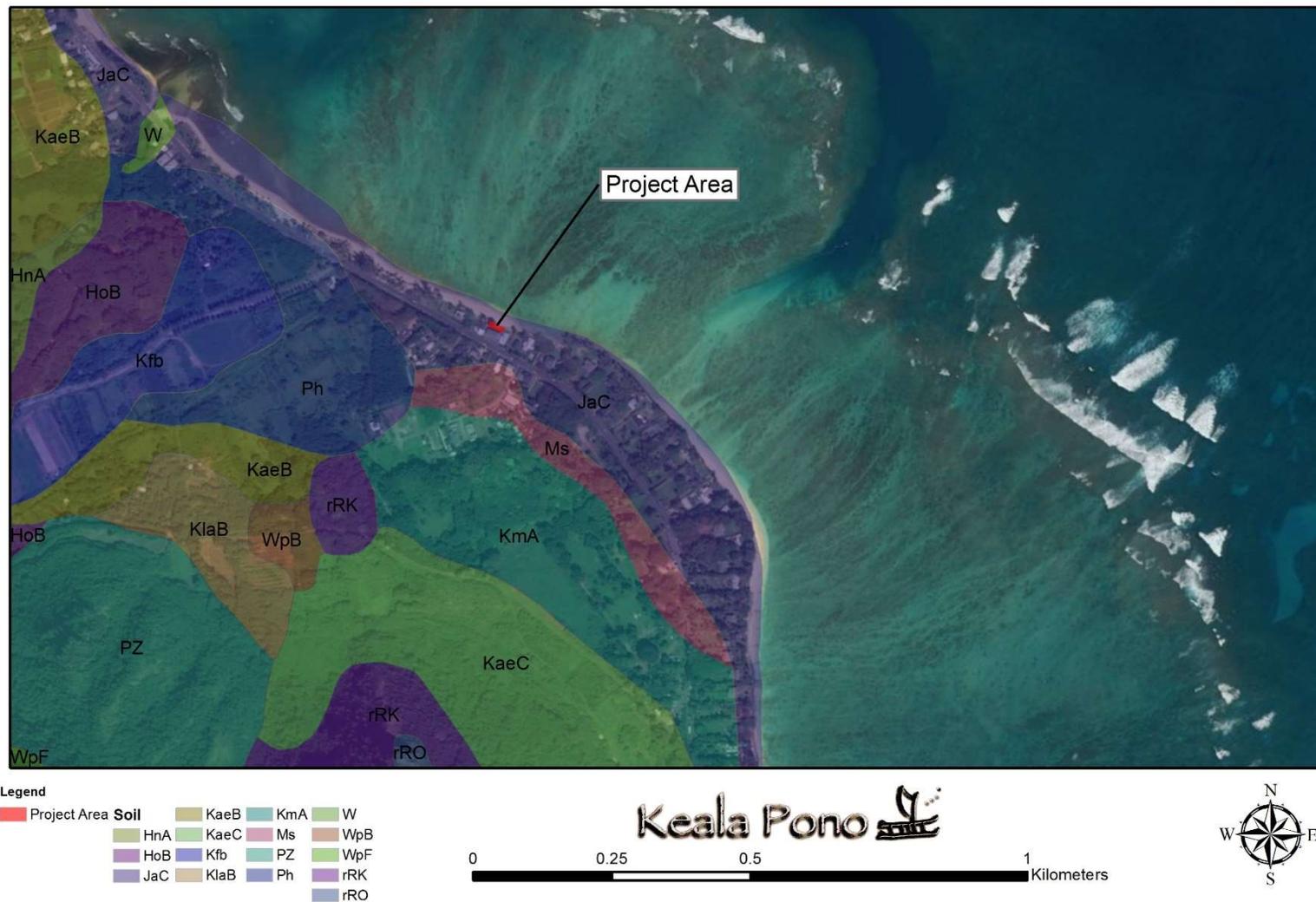


Figure 3. Soil types in Punalu‘u (data from Foote et al. 1972).

BACKGROUND

This section provides an overview of the cultural and historical characteristics of the project area, including mo'olelo, place names, wind and rain names, an 'olelo no'eau, a discussion of land use through time, historic maps, Māhele land documents, and summaries of previous archaeological studies. For a more detailed background for Punalu'u the reader is referred to a comprehensive ethno-historical study conducted for Kamehameha Schools by Maly and Maly (2005).

Mo'olelo and Traditional Land Use

The name Punalu'u translates to "Spring dived for," or "Coral dived for" (Pukui et al. 1974:194). The first alternative is explained as "A spring in the sea of cool fresh water, cool as the water from the clouds when drunk," while the second is thought to refer to coral that was burned and used as hair bleach (Sterling and Summers 1978:165).

Punalu'u is mentioned in several mo'olelo. The most prominent recounts the adventures of the demigod Kamapua'a. Other mo'olelo involve the gods Kāne and Kanaloa, as well as Hi'iaikaipoliopole, sister of the goddess Pele.

The Mo'olelo of Kamapua'a

Punalu'u is mentioned as a location of the exploits of the legendary Kamapua'a, a kino lau, or supernatural being with the ability to take multiple body forms (Akana 2004). Kamapua'a was distinguished for his hog body form and was a god of agriculture, rain, and fertility. Kamapua'a's father was Kahikiula, younger brother of 'Olopana, chief of O'ahu. His mother was Hina, daughter of Kamaulaniho and Kananu'unuikumamao, who lived on Maui but were originally from Kahiki. Kamapua'a's parents scorned him at birth, whereupon he was cared for by his grandmother, Kamaulaniho, and his older brother, Kekeleiaiku. Kamapua'a grew up as a pig, but this was only known to Kamaulaniho.

After many years in his pig body, Kamapua'a resolved to show himself to his mother. While Hina was bathing, Kamapua'a scampered upstream to Oliwai and dammed the water, forcing her to travel farther upstream to bathe. There Kamapua'a revealed himself to his mother and recited a chant, telling her that he was her child. Hina did not understand the meaning of the chant, but took the pig-child home, where he was raised by his older brother, Kekeleiaiku.

One day Kekeleiaiku had Kamapua'a carry a load of taro huli to his grandmother's garden. When they arrived at the garden, Kekeleiaiku went to get the other farmers, leaving Kamapua'a alone with the huli. When he returned, the pig had planted all the huli and had grown into a hog. Then Kamapua'a spoke, complaining that the people were hungry because 'Olopana had placed a kapu on chickens, but no one believed that the voice came from the hog. When they returned home that evening, Kekeleiaiku fed a chicken to Kamapua'a and later complained that he ate all the meat and left only the gravy. The next night, Kamapua'a stole some of 'Olopana's chickens and brought them back for his family. Night after night, he continued stealing 'Olopana's chickens until none were left. Then he took the chickens of Kapaka, and when those were gone, he took the chickens of Punalu'u and Kahana.

One night when he returned from his chicken-stealing, one of 'Olopana's chickens, named Kaniakamoa, was crowing, and Kamapua'a chased it all night down to the ocean, and up to the mountains. At dawn the people saw Kaniakamoa sitting on Kamapua'a's back, and they accused Kamapua'a of eating 'Olopana's other chickens. 'Olopana was in Kāne'ohe at the time, and when

he heard the news, he sent warriors to capture Kamapua‘a. They tied him to a pole and began carrying him to ‘Olopana. When they had carried him as far as Kahana Stream, Kamaulaniho recited a chant that empowered her grandson, and Kamapua‘a ate all but one of the men. The one man who was spared was Makali‘i, and he returned to ‘Olopana and informed him of what had happened. Upon hearing this, ‘Olopana sent more men to bring the hog to him. They captured Kamapua‘a again, but as they were taking him through Kalaeoka‘ō‘io, Kamaulaniho chanted once again, and Kamapua‘a consumed all the men except Makali‘i. Makali‘i returned to ‘Olopana a second time, bearing the bad news, and ‘Olopana sent more warriors after Kamapua‘a. Again, Kamapua‘a was captured and taken as far as Punalu‘u, when his grandmother recited another chant. Kamapua‘a ate the men once again, only sparing Makali‘i to relay the news to ‘Olopana. The chief sent even more men to capture Kamapua‘a, and this time they were in Kapaka when Kamaulaniho recited her chant.

The empowered Kamapua‘a consumed the entire army again, only sparing Makali‘i as a messenger. ‘Olopana decided that he must do more to apprehend the hog-thief, so he called to all of O‘ahu to wage war against Kamapua‘a. Kamapua‘a heard of ‘Olopana’s plans and took his people to Kaliuwa‘a, known today as Sacred Falls, where they climbed up his body to the safety of the cliff-top. In doing so, Kamapua‘a’s back gouged out indentations on the cliff-side that can still be seen today. Once his people were safe, Kamapua‘a dammed the water of Kaliuwa‘a. ‘Olopana and his men arrived, and a battle ensued. Kamapua‘a was nearly killed, but he released the dammed water, killing ‘Olopana and all but one man; Makali‘i knew that Kamapua‘a could not be killed and escaped to Kaua‘i.

Upon ‘Olopana’s death, the island of O‘ahu fell into the hands of Kamapua‘a and he gave large amounts of land to a priest named Lonoawohi. This did not sit well with Hina and Kahikiula, and they went to live on Moloka‘i. Kamapua‘a missed his parents, so he transformed into a humuhumunukunukuāpua‘a and traveled across the sea to Moloka‘i. There he transformed into a human and convinced his parents to return to O‘ahu. Satisfied that his parents were home, Kamapua‘a turned into his fish body for a final journey to Kahiki, the ancestral homeland.

Other Mo‘olelo

The pool Kukaiole is said to be associated with the god Kanaloa’s visit to the area (McAllister 1933). When Kanaloa came to Punalu‘u, he placed one foot on Pu‘u o Māhie in Kahana and the other on Punalu‘u Point. Below, he saw men planting kalo in uneven rows. He called out to them but they could not see him. Once he tired of this teasing, he drank from Kukaiole Pool, where rats were known to chew the ‘awa growing by the pool. As a result of this, Kanaloa became dizzy and fell into the water.

A mo‘olelo is known for Punalu‘u Stream (Raphaelson 1929 in Sterling and Summers 1978). It is said that the gods Kāne and Kanaloa disguised themselves and went to the house of some fishermen who lived near the stream. The fishermen invited them in and offered them food, but they had no fish. The disguised gods asked who the fishermen worshipped, and their reply was “Kāne and Kanaloa.” The fishermen went out to get fish for their visitors, and the gods, pleased with their answer, chanted “E inu, e inu i ka wai kukae ole,” and dead fish laid out to dry came to life in the stream for the fishermen to catch. The phrase is still repeated by fishermen (Raphaelson 1929 in Sterling and Summers 1978:168).

A final mo‘olelo was found that mentions Punalu‘u. It tells the tale of a man that was killed while surfing. He and a woman walked through various areas, including Punalu‘u. When the two reached Kaluanui, Hi‘iakaikapoliopole, younger sister of the goddess Pele, saw them and it brought her to tears.

Moa'e is the name of the wind that blows through Punalu'u (Nakuina 1992). It is a trade wind that also shares its name with winds of Kohala-iki, Hawai'i; Kahikinui, Maui; Pālā'au, Moloka'i; and Lehua Island, west of Ni'ihau.

A rain name for Punalu'u is revealed in the following 'ōlelo no'eau (Pukui 1983:169):

Ka ua kīkē hala o Punalu'u
The hala-pelting rain of Punalu'u

Refers to the rain at Punalu'u, O'ahu.

Land Use

Descriptions of known archaeological sites help to inform on how the project area and the surrounding lands were used in the past. At least seven heiau and a fishpond were located in Punalu'u in ancient times. The fishpond and several of the heiau have been either completely or partially destroyed.

Pu'uakeau Heiau was located in Kapana (Sterling and Summers 1978). No other information could be found for this heiau.

Pupuka Heiau was located between Punalu'u and Kaluanui. This small heiau was reported as mostly destroyed (Thrum 1909 in Sterling and Summers 1978:165).

Maka Heiau is a two or three platform structure with terraces between platforms and surrounded by walls. The heiau was located in a cane field, and cane growing inside likely obliterated any interior components (McAllister 1933).

Hanawao Heiau is located on top of a pu'u above cane fields on the south side of the valley. It has been almost completely destroyed for use as a cemetery (McAllister 1933).

A possible heiau is noted on the mauka side of the Hanawao Heiau pu'u, the name of which has been lost (McAllister 1933). The site is made up of at least three platforms, with terraces on the lower level. Sugarcane was cultivated inside the structure historically, and the upper platforms were affected.

Kaluaolohe Fishpond was a pond for ali'i use that is now destroyed. Mounds were built up in the water for taro cultivation. The pond was located between Hanawao Heiau and a road (McAllister 1933).

Kaumakaulaula Heiau, a heiau luakini reported as destroyed, once stood near Maipuna Stream on the makai side of the Government Road. The ahu and temple area were on the south side of the site, while the priest's house was on the north. It is said that at night, the eyes of all the pigs around the temple turn red, and on certain nights drum beating and chanting can be heard (Thrum 1915:91-95). The heiau was reported as destroyed (McAllister 1933:163).

An unnamed heiau is located at the base of the ridge that separates Punalu'u from Kahana (McAllister 1933). It was partially destroyed by sugarcane cultivation but an abundance of coral was said to have remained when it was recorded in 1933.

Punalu‘u was richly cultivated traditionally, with kalo terraces extending far back into the valley, ‘ulu on the hillsides, kō and mai‘a along the stream, and niu near the coast (Handy and Handy 1940). Kalo was the dominant cultivated crop in the valley:

All the way to the sea the grasslands and the cane fields, when cut over or newly planted, show clearly the outlines of old [taro] terraces. This, then, was formerly a continuous area of terraces, watered by Punalu‘u Stream, widening from a quarter of a mile above to half a mile at the base of the valley and spreading out like a fan on the coastal plain over an area of four tenths of a mile long and eight tenths of a mile wide. (Handy and Handy 1940:92)

Land Ownership and Māhele Land Tenure

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 lands 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 land claims were awarded to kama‘āina totaling only about 30,000 acres and recorded in ten large volumes.

During the Māhele, the land of Punalu‘u went to William Pitt Leleiōhoku, husband of Ruth Ke‘elikōlani. Princess Ruth received the land after the death of her husband and son. Upon her death in 1883, Punalu‘u was passed to her cousin Bernice Pauahi Bishop. The project parcel is on a portion of LCA 9971, which is the large part of Punalu‘u that was awarded to William Pitt Leleiōhoku. There were 61 other LCAs in Punalu‘u, but they are much smaller awards and are not within the project parcels. Provided below are copies of the original documents and their translations for LCA 9971. Not much information is afforded for the Punalu‘u lands.

W.P. Leleiōhoku

LCA 9971 (Book 10, Page 613)

R.P. 7804 (Book 29, Page 143)

Native Register (p.502 v.5)

9971	<u>Wm. P. Leleiōhoku</u>	Honolulu, Feb. 12, 1848
Jurisdiction	<p style="text-align: center;">Ka Luna Hirina Kulanā.</p> <p>Aloha oukou. ʻO hoʻi aku nei au ma kaiea pepa a me ka pepa i fili hope mai, i kōi maʻau Kulanā a hōia a pau, maʻau Hawaiʻi a Kauai, he maʻau Kulanā a hōia maʻau, a me maʻau Kulanā ka Kauhale. Eia maʻau Kulanā a hōia maʻau.</p>	

9971 Wm. P. Leleiōhoku

Honolulu, Feb 14 1848

Na Luna Hoona Kuleana. Aloha oukou. Ke hoike aku nei au ma keia pepa a me ka pepa i pili hope mai, i ko'u mau Kuleana Aina a pau, mai Hawaii a Kauai, he mau Kuleana Aina maoli, a me na Kuleana pa Kauhale. Eia na Kuleana Aina maoli.

Native Register (p.502 v.5) [translated]

No. 9971 Wm. P. Leleiōhoku Honolulu, Feb. 14, 1848

The Land Commissioners, Greetings: I hereby state on this paper, and on the attached paper, all my claims for land, from Hawaii to Kauai, genuine claims for land, and house lot claims. Here are the claims for Aina maoli /lands genuinely owned/:

The Lands of Wm. P. Leleiōhoku Page 503

<u>The Lands</u>	<u>Type of Land</u>	<u>District</u>	<u>Island</u>
1. Hookena	Ahupua'a	Kona	Hawaii
2. Kiloa	" no award	"	"
3. Honokohauiki	"	"	"
4. Kaumalumalu	"	"	"
5. Lauhulu	" no award	"	"
6. Auhaueae	" Kekauonohi	"	"
	laid off _____	page 614 v.10	
7. Moeauoa	"	"	"
8. Lehuulaiki	Do "	"	"
	Halepohaku) - Kailua		
	Halelau)		
	Pahipa Waimea		
9. Kapua	"	"	"
10. Hilea	" L. Kamehameha	Kau	"
11. Kahilipali	"	"	"
12. Kahuku	Do " no awards	"	"
13. Puaaloa (none)	" Palaa	Puna	"
14. Kikala	"	Hilo	"
15. Waikolca	"	Hamakua	"
16. Honopue	Do " none	"	"
	Honopueo		

The Lands of Wm. P. Leleiōhoku Page 503

<u>The Lands</u>	<u>Type of Land</u>	<u>District</u>	<u>Island</u>
17. Kaiwiki	Ahupua'a	Hamakua	Hawaii
18. Paalaea	"	"	"
19. Niulii	"	Kohala	"
20. Aualua	Do " none	"	"
	Lot at Iole Two		
21. Poepoe	"	"	"
22. Puanui	"	"	"
23. Hukiaa	Do " none	"	"
24. Kealahewa	Do " to Kaonaha	" No.8595 ^B	"
25. Kapaa	Do " to Kale Davis	" 8522B	"
26. West half of the District of Hamakua poko (none)			Maui
27. Napuuniale	Do " none	Hamakualoa	"
28. Hanawana	Do " to Kanui H.K. No.5250	"	"
	of Kaiko		
29. Kuaiaha	"	"	"
30. Puako	Do " none	Lahaina	"
31. Aki 2	" Kekauonohi	"	"
32. Kamalo	Kaamola " No.9971	Kona	Molokai
33. Punaluu		Koolau poko	"

The Minutes of P. Council May 27, 1850

34. Punalau
35. Kaakopua

"
a mahina /farm/

Koolau loa Oahu
Honolulu "

Those are my lands -- some Ahupua'as and the 'ilis in them and the half of the district of Hamakua-Poko. The 'ilis and the leles of these ahupua'as and the leles and 'ilis which are in the lands of others, and their lihis and places which were wrongly transferred to someone else, and the ones wrongfully entered by those with no right thereto, and the things denied in the nature of the rights of the natives, that is my share for which my claims are presented to you. The lihi places which were taken in by the King and the chiefs in order to benefit the populace and the Government are conveyed, if they truly are needed by the Government and all the people, then my directions to you shall be void, but an explanation should be given me to enable me to release these lihis outside of my land and district boundaries. But, if these lihis are taken by someone in order to enrich the occupant, or the Government, perhaps, it shall be possible to quiet the title and return it to me, as in my Document which Describes Lihis, to be issued hereafter; on this paper only you shall investigate the claims which I am here stating. The Lihis Leles and the claims for lihi and mahina and ko'ele, and the lihis from upland to sea, and the fishing grounds, perhaps, and all the Rights which pertain to these lands, are what I hereby ask for,

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to quiet title and award to me, excepting the Government's ko'eles which are not attached; if however the Government's Po'alu is not also changed, and the ko'eles which enrich it, without being for the benefit of the populace, and if some words opposing these claims are not reinvestigated, then, consider me, without my having to ask, in the way that I am now quieting title. All the land has been surveyed on its boundaries for the exact separation of the division, and the payment of the commutation has been made. This is also for the Government and the Government will pay for its survey if it passes to its share, if not, however, it is not possible to divide up the Government's Third. The witnesses of these claims are the populace who well know of my occupancy, and also the King's Mahele Book, which is well known. These lands are for myself and for ourselves and my heirs and representatives and we shall be able to work on these claims when our time shall come to substantiate them. I am, respectfully, your obedient servant,

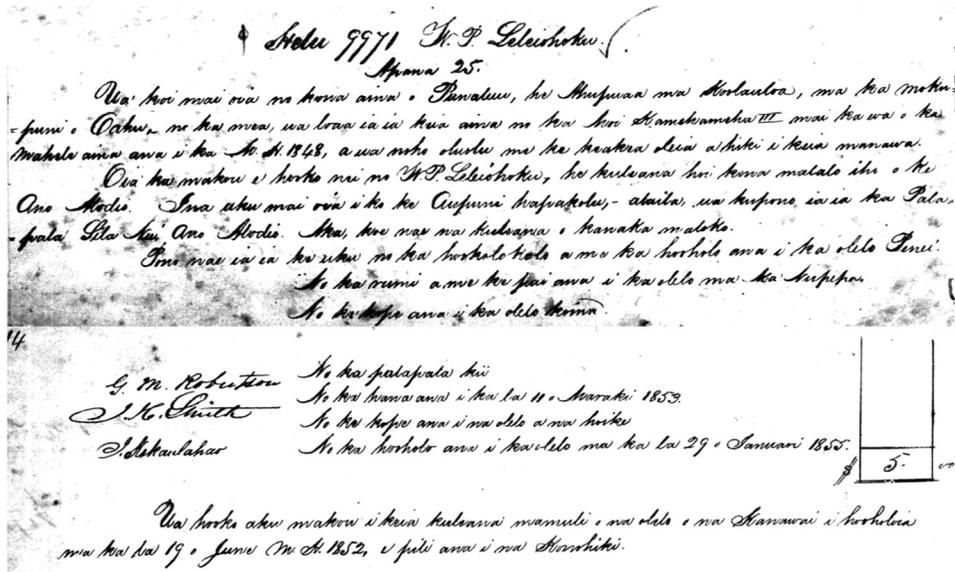
WM. P. LELEIOHOKU

Here are the house lot claims and the sites, some claims for land on Hawaii, Maui, and here on Oahu. They are numbered as follows:
No. 1 "Hulihee Lot and the house within" at Kona, Hawaii. No. 2 House lot for Tailor Shop at Keopu, Kona, Hawaii. No. 3 Lot at Kaaipuhi.
No. 4 A lot at Niunalu. No. 5 Kalakeakua Lot. No. 6 Puuloa Lot at Lanihau. No. 7 Lot occupied by Laioha. No. 8 House site at a place called the Fort, of the Island of Hawaii,

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with five houses in it. No. 9 Lot in Kahaluu. No. 10 Papaula Lot at Honuaula. No. 11 Papa, house site at Honuaula. No. 12 Lot for Naluana. No. 13 Kaulomalie Lot at Honaunau. No. 14 Waioha, house lot at Honaunau. No. 15 Lot at Holualoa. No. 16 Lot at Hianaloli.
No. 17 House site mauka of Kainaliu. No. 18 Lot at Kuapehu, Kaawaloa. No. 19 Some house sites, named Kaaipu in Kawaihae, Kohala. No. 20 Kaeao is the name, at Kalaeone in Kawaihae. No. 21 House site named Poohuai. No. 22 House site in the middle of the commoners' land.
No. 23 Kamakahonu Lot in Waimea. No. 24 Kaaihapi at Puako. No. 25 Two house lots at Iole. No. 26 House site at Niulii, Kohala.
No. 27 Lot at Waipio, Hamakua. No. 28 Lot at Kamaoa, Kau. No. 29 Three lots at Kahilipali, Kau. No. 30 Lot at Keopu, Kaluapaa. No. 31 Lot at Kalamauu. No. 32 Lot occupied by Lee, Kailua. No. 33 Lot to Umiokalani at Kailua. No. 34 Lot occupied by Kemaouha. No. 35 Lot at Pakina in Kau, occupied by Laanui. No. 36 House lot at Kuhua, Lahaina, Maui. No. 37 House lot occupied by Kahinu in Honolulu.
No. 38 Parcel of land named Pakaka occupied by Jimo Robisona /James Robinson/ No. 39 Kaaihee on the east of the kula of Kahua, a lele of Kalawahine, seaward of Makiki. Your obedient servant,

WM. P. LELEIOHOKU



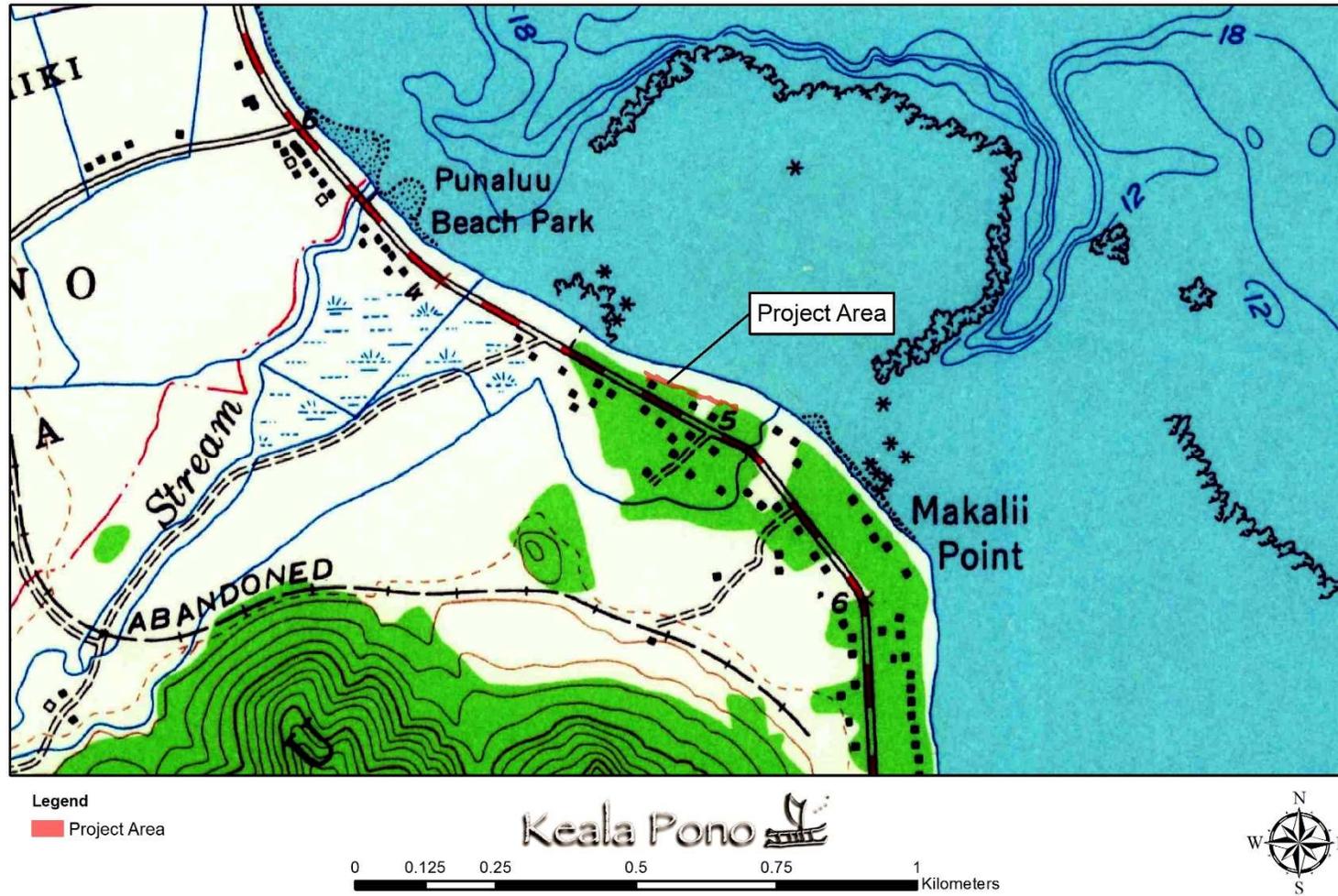
Historic Land Use

Historically the agricultural focus in Punalu‘u shifted to rice and sugarcane, with infrastructure associated with these activities including a ditch system, railroad, and rice mill. Taro, pineapple, and vegetables were cultivated in Punalu‘u as well. Rice was brought to the valley as early as 1862, and the Punalu‘u rice mill sat alongside Punalu‘u Stream, powered by a large water wheel. Sugarcane fields eventually took over the rice paddies, and these were fed by the ditch, tunnel, and flume system, built in 1907 (Maly and Maly 2005:281). The railway ran from the Kahuku Plantation Company mill to Kahana as early as 1908 (Maly and Maly 2005:280). A 1919 U.S. War Department map shows the railroad running inland of the project parcels (Figure 4). The railway closed in 1952, and the U.S. military used Punalu‘u Valley for training during World War II. The 1950s also saw a boom in house construction along the coast, with many structures visible along the coastline and Kamehameha Highway (Figure 5). The Ko‘olau Plantation Company closed in 1971 (Dorrance 2000).

Previous Archaeology

Many archaeological studies have been carried out in Punalu‘u. These are listed in Table 1 and illustrated in Figure 6. The following is a summary of previous archaeological work in the vicinity of the project area. State Inventory of Historic Places (SIHP) numbers are prefixed by 50-80-06.

McAllister recorded five archaeological sites in the general vicinity of the project area during his island-wide survey in the 1930s (McAllister 1933). These include Site 292, a possible heiau, Site 293, Hanawao Heiau, Site 294, Kaluaolohe Fishpond, Site 295, Kaumakaulaula Heiau, and Site 296, an unnamed heiau. Site 292 was located on the mountain side of Hanawao. At least three platforms were observed, but the structure was affected by sugarcane cultivation at the time of McAllister’s visit. Site 293, Hanawao Heiau, located on a pu‘u on the south side of the valley, had already been used for many years as a cemetery when McAllister recorded it in the 1930s. He noted that most of the original features had been destroyed. Site 294 is a fishpond that McAllister recorded as destroyed. It was once located a quarter mile mauka of the government road. Site 295



Layer Credits: USGS HI Kahana 1954

Figure 5. Portion of a topographic map showing several structures in the vicinity of the project area (USGS 1954).

Table 1. Previous Archaeology and Related Studies in Punalu‘u

Author and Year	Location	Work Completed	Findings
McAllister 1933	O‘ahu Island	Island-wide Survey	Recorded four heiau and a fishpond in the general vicinity of the project.
Denison 1975	200 ac. along Punalu‘u Stream	Reconnaissance	Documented 16 new sites.
Medical Examiner 1988	Green Valley Rd. at 53-185 Kamehameha Hwy.	Inadvertent Burial Documentation	Recorded disturbed & fragmented remains and left them in place.
Kennedy 1992	Punalu‘u Valley	Reconnaissance	Identified four mounds, an ‘auwai, and terraces.
Jourdane 1995, Colin & Hammatt 2000	Paniolo Café	Inadvertent Burial Documentation	Documented a cultural layer and two human burials.
Perzinski & Hammatt 2004	Kamehameha Hwy.	Archaeological Monitoring	Identified 18 sites, including human burials and cultural layers.
O‘Hare et al. 2005	Hanawao Heiau	Archaeological Inventory Survey	Recorded four features, including a pavement, walls, and a historic cemetery.
Maly and Maly 2005	Punalu‘u Ahupua‘a	Ethno-historical Study	Compiled historical documents and interviewed community members.
Tulchin & Hammatt 2006	Hanawao Heiau	Archaeological Inventory Survey	Documented a set of rock alignments.
Tulchin et al. 2007	North of Punalu‘u Stream Mouth	Field Check	Identified a historic drainage pipe
O‘Hare et al. 2007	Punalu‘u Beach Lots 1, 15, 20, 21, 27, 28	Archaeological Inventory Survey	Recorded one burial at Lot 15, it was reinterred.
O‘Hare et al. 2008a	Punalu‘u Beach Lots 12 & 19	Addendum Archaeological Inventory Survey	Documented a human burial and fragmented human remains.
O‘Hare et al. 2008b	Punalu‘u Beach Lots 4, 6, 25, & 36	Addendum Archaeological Inventory Survey	No findings.
Altizer et al. 2009	Punalu‘u Beach Lots 1, 4, 6, 12, 17, 19, 20, 21, 25, 27, 28, 36	Monitoring	Identified seven burials on four lots: Lots 12, 21, 27, and 28.
Tulchin & Hammatt 2009	Hanawao Heiau	Burial Site Component of an Archaeological Data Recovery Plan	Outlined treatment for 64 sets of human remains recovered by Perzinski and Hammatt (2004).
Paolello et al. 2012	Punalu‘u Beach Lot 8	Archaeological Inventory Survey	No findings.
Hunkin et al. 2012	Punalu‘u Beach	Archaeological Monitoring	No findings.
Mierzejewski et al. 2014	Punalu‘u Beach Park	Archaeological Monitoring	No findings.
LaChance et al. 2014a	Punalu‘u Beach Lot 31	Archaeological Inventory Survey	Identified a cultural layer.

Table 1. (Cont.)

Author and Year	Location	Work Completed	Findings
LaChance et al. 2014b	Punalu'u Beach Lot 29	Archaeological Inventory Survey	Identified a cultural layer and a human burial.
LaChance et al. 2014c	Punalu'u Beach Lot 23	Archaeological Inventory Survey	No findings.
Filimoehala et al. 2014	Mauka of Kamehameha Hwy. and into Punalu'u Valley	Archaeological Inventory Survey	Recorded six sites: an irrigation network, concrete foundations, an imu, a buried terrace, and buried pondfield deposits.
Hammatt et al. 2015	Punalu'u Beach Lots 1, 4, 6, 12, 17, 19, 20, 21, 25, 27, 28, and 36	Archaeological Monitoring	Identified seven sets of human remains.
McElroy and Eminger 2016	Punalu'u Beach Lots 32, 33, 35, 41, 46, 51	Archaeological Inventory Survey	No findings.

is Kaumakaulaula Heiau. It was once located on the makai side of the highway but was reported as destroyed. Site 296 is a heiau that sits at the foot of the ridge between Punalu'u and Kahana, near the railroad track. It was covered in sugarcane during McAllister's visit and he was only able to observe piles or rows of stones.

The first modern archaeological study in the valley was a large-scale reconnaissance survey that covered 200 acres flanking Punalu'u Stream (Denison 1975). A total of 29 new sites were recorded, which later were condensed into 16 site numbers. They include heiau, agricultural features, and mound and wall complexes.

Human remains were unearthed at TMK: 5-3-004/005 on Green Valley Road (Medical Examiner 1988). Designated as SIHP 3764, the burial was that of a middle aged to elderly individual, likely of Hawaiian ancestry. The remains were left in place.

An archaeological reconnaissance was conducted for a new well site on the south side of the valley (Kennedy 1992). Archaeological sites recorded during the project include four mounds, an 'auwai, and several terraces. A search was made for the unnamed heiau recorded by McAllister (1933), but it was not relocated.

Human remains were unearthed at the former Paniolo Café, across the street from Punalu'u Beach Lots 13 and 14 (Jourdane 1995; Colin and Hammatt 2000). The remains were previously disturbed and disrupted by the construction at Paniolo Café. The remains were part of two burials that were designated as SIHP 5132. A weak cultural layer was also identified.

Archaeological monitoring was conducted along a 4 km-long stretch of Kamehameha Highway from Kahana Valley Road to Choy Lane (Perzinski and Hammatt 2004). In all, 18 new sites were recorded. These included 15 sites comprised of 64 human burials (SIHP 6574–6588), as well as three cultural layers (SIHP 6695–6697). Closest to the project area are burials 6582 through 6588 and the three cultural layers (Figure 7). Radiocarbon dating of charcoal from two of the burial pits returned ages of AD 1320–1460 and 1445–1955 respectively. Charcoal from a midden

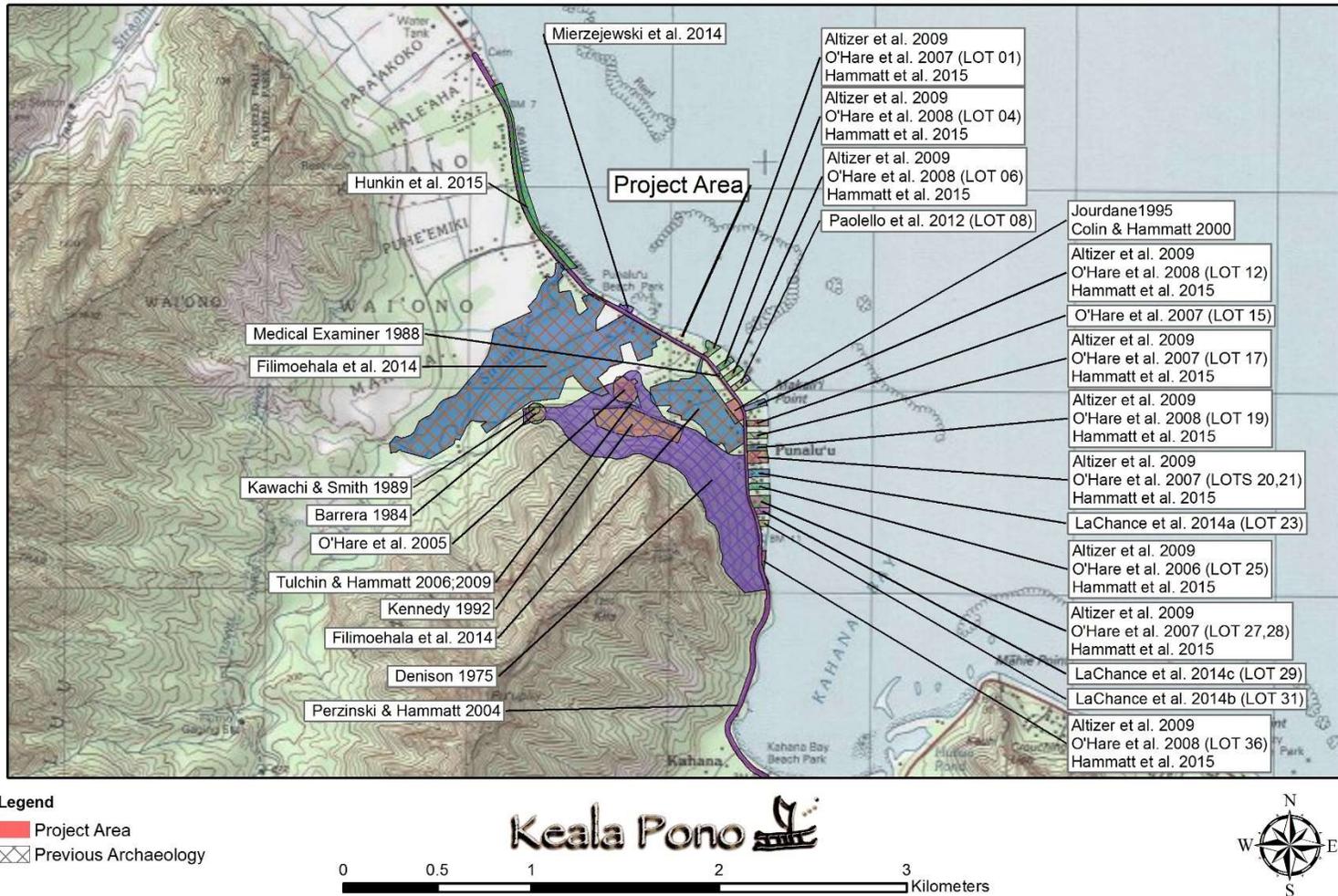


Figure 6. Previous archaeological investigations in Punalu'u.

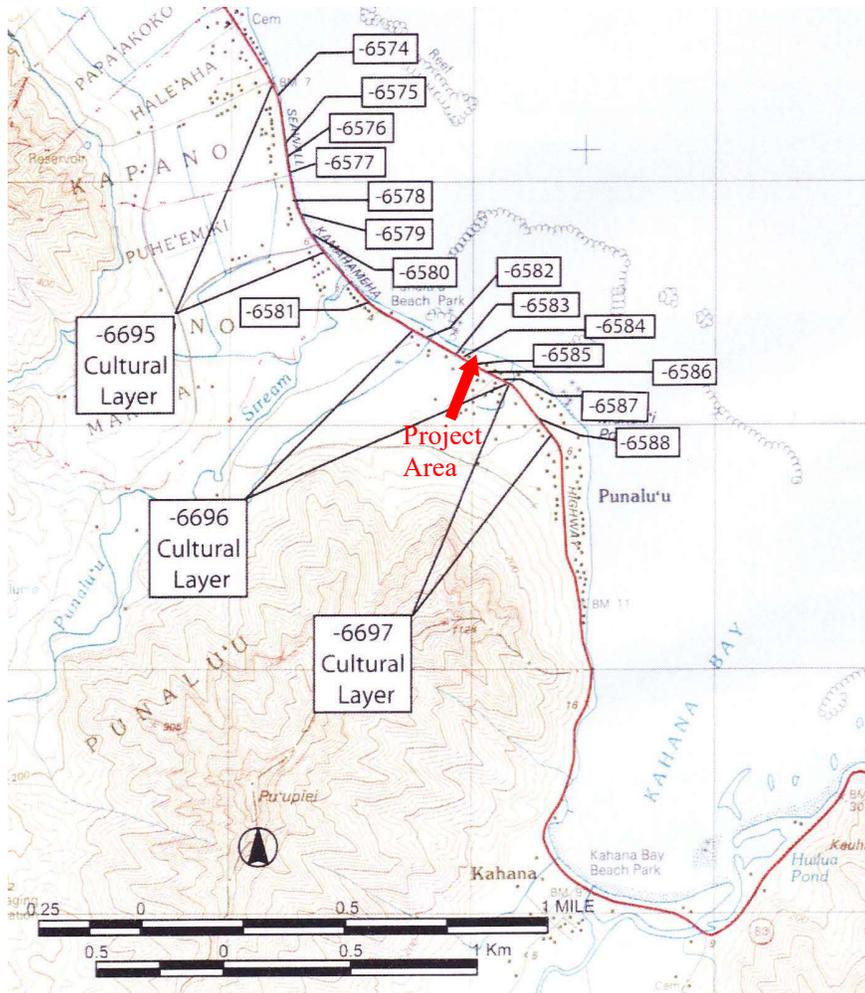


Figure 7. Archaeological sites identified during work along Kamehameha Highway (adopted from Perzinski and Hammatt 2004:18).

concentration within one of the cultural layers returned a date of AD 1530–1955. Artifacts found with the burials include stone tools, lei niho palaoa, a glass bottle, and beads of various materials. A burial site component of an archaeological data recovery plan delineated the treatment for the 64 sets of human remains to be reinterred at Hanawao Heiau (Tulchin and Hammatt 2009).

In 2005 an ethno-historical study was completed for Kamehameha Schools that covered the entire ahupua‘a of Punalu‘u (Maly and Maly 2005). Historical documents were compiled, including Māhele testimony and land conveyance files. Kūpuna and kama‘āina of Punalu‘u were interviewed as well.

In 2005 and 2006 archaeological inventory surveys were conducted for a proposed burial reinterment site on the hill where Hanawao Heiau is located, on the southeast side of Punalu‘u Valley (O’Hare et al. 2005; Tulchin and Hammatt 2006). The earlier survey recorded four features on the pu‘u: the heiau pavement, walls associated with the heiau, a historic cemetery at the top of the pu‘u, and a wall at the base of the hill. The later survey identified a parallel stone alignment.

The reinterment site was proposed for the slopes of the pu‘u where no surface architecture was found.

A field inspection was carried out for four agricultural parcels on the north side of Punalu‘u Stream (Tulchin et al. 2007). The current irrigation network that ran through the farms was thought to be an ‘auwai system that was utilized since traditional times. An historic drain pipe was the only archaeological feature recorded.

A 119.8-acre survey mauka of Kamehameha Highway in Punalu‘u Valley identified six archaeological sites (Filimoehala et al. 2014). They include a historic irrigation network (SIHP 7236), a complex of historic concrete foundations and a stone-lined pond (SIHP 7718), a subsurface imu (SIHP 7727), a subsurface lo‘i terrace (SIHP 7728), and two subsurface lo‘i deposits (SIHP 7733 and 7734). Charcoal from the imu produced a date of 300±30 BP, which calibrates to AD 1646–1690, 1728–1810, or post-1926 (Filimoehala et al. 2014:103).

Most relevant to the current study, a series of projects at the Punalu‘u Beach Lots unearthed several sets of human remains and cultural layers (O’Hare et al. 2007; O’Hare et al. 2008a; Altizer et al. 2009; LaChance 2014a; LaChance 2014b; Hammatt et al. 2015). On Lot 15 one burial, SIHP 6938 was reinterred (O’Hare et al. 2007). On Lot 19, scattered human remains were found in a previously disturbed area. Undisturbed remains were found below and designated as SIHP 6939 (O’Hare et al. 2008a). Scattered human remains were also found on Lot 12. These were designated as SIHP 6947 and reinterred on the property (O’Hare et al. 2008a). Archaeological monitoring at previously surveyed parcels unearthed seven additional burials (Altizer et al. 2009). These included SIHP 6962 on Lot 28; SIHP 6963 on Lot 27, SIHP 6964 on Lot 12, and SIHP 6965 on Lot 21. At Lot 31, a cultural layer was encountered and recorded as SIHP 7476 (LaChance et al. 2014a). Nearby at Lot 29, the same cultural layer and a human burial were found (La Chance et al. 2014b). The burial was designated as SIHP 7480. The most recent study identified seven human burials, grouped into five sites: SIHP 6962–6965 (Hammatt et al. 2015). These were found on Lots 12, 21, 27, and 28. Other projects at the Beach Lots and at Punalu‘u Beach Park had no findings (O’Hare et al. 2008b; Paolello et al. 2011; Hunkin et al. 2012; LaChance et al. 2014c; Mierzejewski et al. 2014), including a survey of the parcels adjacent to the project area (McElroy and Eminger 2017).

Summary of Background Information

Mo‘olelo, Māhele documents, historic maps, and previous archaeological reports provide a wealth of information on the traditional and historic use of Punalu‘u. The valley has been a fertile base for agriculture for hundreds of years. Irrigated taro was grown traditionally, while sugarcane and rice were important historical crops. Fishing was carried out in the sea, the streams, and in fishponds. Several heiau are known for the valley, and human burials occur in sandy areas along the coast and elsewhere. Punalu‘u was also a main habitation area, with the population sustained from the abundant agricultural and ocean resources.

Anticipated Findings and Research Questions

Although no previous archaeological fieldwork has been done specifically within the project area, studies conducted nearby can help inform on the kinds of subsurface archaeological resources that may be found. Previous archaeological research on nearby Punalu‘u beach lots and along Kamehameha Highway has identified human burials and subsurface cultural layers. Although none were found on adjacent properties, it is possible that these might be located within the project area. Human burials may or may not be marked with surface architecture and may or may not be defined by a burial pit. They may be whole burials or fragmentary in nature. Cultural layers are

characterized by darkened sediment, often with charcoal fragments, midden, and/or artifacts within the layer. Cultural layers might also contain features such as fire pits.

Research questions will broadly address the identification of the above archaeological resources and may become more narrowly focused based on the kinds of resources that are found. Initial research questions are as follows:

1. Are there subsurface cultural deposits or evidence of human burials within the survey area? Where are they located and what time period do they belong to?
2. Are there any vestiges of historic-era use of the project area, particularly surface remains or subsurface deposits associated with sugarcane and rice cultivation?

Once these basic questions are answered, additional research questions may be developed in consultation with SHPD, tailored to the specific kinds of archaeological resources that occur in the project area.

METHODS

Pedestrian survey and subsurface testing were conducted on March 7, 2017 by Windy McElroy, PhD and Jeffrey Lapinad. McElroy served as Principal Investigator, overseeing all aspects of the project.

For the pedestrian survey, the ground surface was visually inspected for surface archaeological remains, with transects walked for the entire area. Archaeologists were spaced approximately 5 m apart. Of the .026 ha (.065 ac.) survey area, 100% was covered on foot. Vegetation was very light, consisting of landscaped grass with a few small coconut trees, and did not affect visibility.

A test trench (TR) was excavated in one location within the project area. The excavation strategy was approved by SHPD beforehand via email. A mini excavator was used for excavation of the trench (Figure 8). Vertical provenience was measured from the surface. A profile was drawn and photographed, and sediments were described using Munsell soil color charts and a sediment texture flowchart (Thien 1979). The trench location was recorded with a 3 m-accurate Garmin GPSmap 62st, and the trench was backfilled after excavation.

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 materials were collected and no laboratory analyses were conducted.



Figure 8. Excavation of trench with mini excavator. Orientation is to the south.

RESULTS

Pedestrian survey and subsurface testing were conducted in the .026 ha (.065 ac.) project area. No archaeological resources were found. Excavation of one test trench did not yield any evidence of subsurface archaeological deposits or features.

Pedestrian Survey

The surface survey included 100% of the .026 ha (.065 ac.) project area. No surface archaeological remains were observed within any part of the project area; any archaeological features that may have once been present are no longer there because of the extensive modern use of the land. The entire project area consists of a landscaped yard.

Subsurface Testing

A subsurface testing plan was approved by SHPD before trenching began. The one trench (TR 8) was excavated within the project area to determine the presence or absence of subsurface archaeological deposits or material (Figures 9–10 and Table 2). No archaeological resources were found, and stratigraphy consisted of fill and beach sand.

TR 8 was located in the center of the makai portion of Parcel 34 (see Figure 9). The trench measured 5.5 m long and 36 cm wide and was excavated to 140 cm below surface (cmbs). The trench could not be excavated to the depth of sea water because cave-ins prevented deeper excavation. Stratigraphy consisted of fill at the surface with beach sand below (Figures 11 and 12, see Table 2). No archaeological deposits or materials were identified.

Summary of Findings

Pedestrian survey of .026 ha (.065 ac.) in Punalu‘u yielded no findings. The entire project area has been disturbed by modern landscaping for the current lawn. Subsurface testing, consisting of one trench, did not identify any subsurface cultural deposits or features. Stratigraphy consisted of fill above beach sand.



Figure 9. Location of AIS trenches (TR 1–7) and the AIS Addendum Trench (TR 8) on aerial imagery.

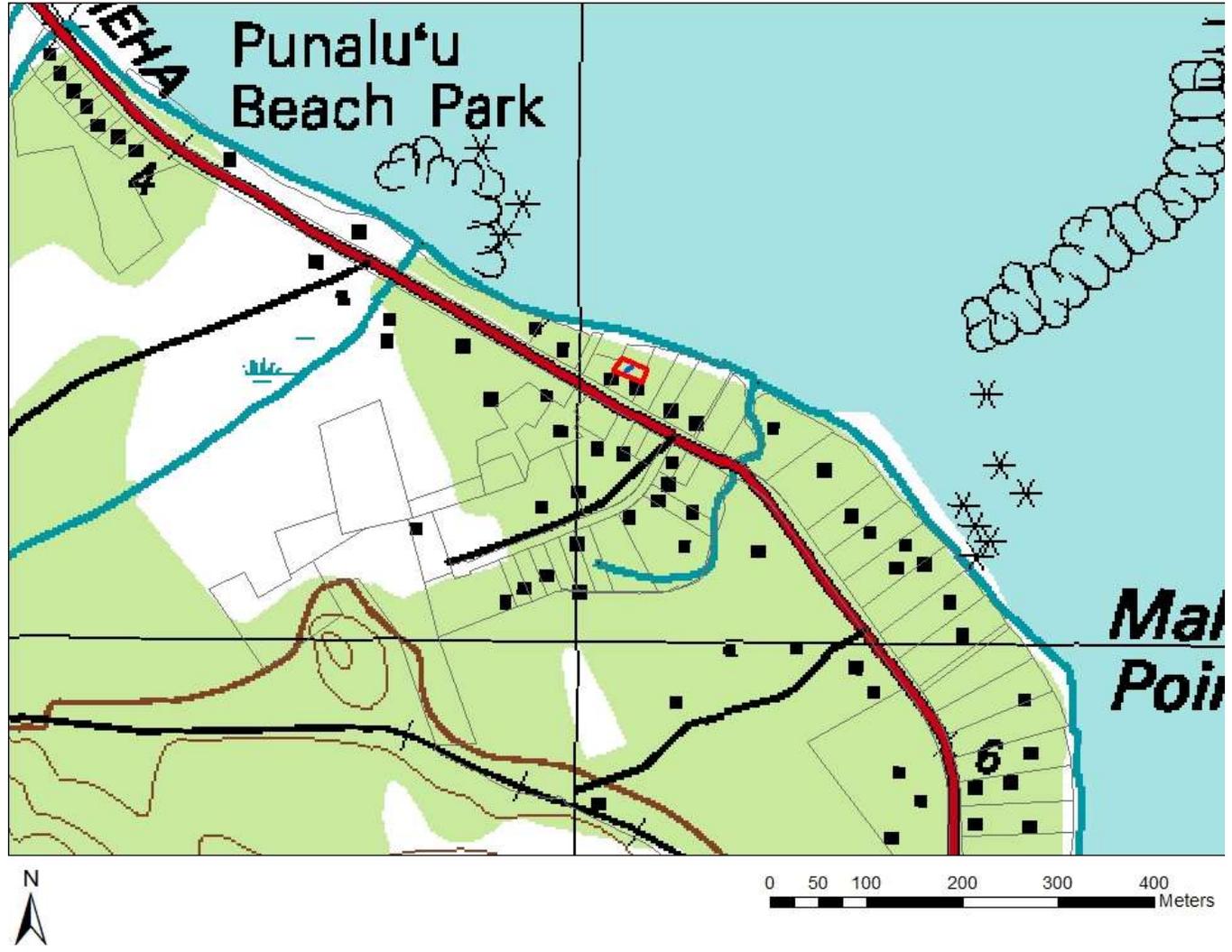


Figure 10. Wider view of trench location (in blue) on a 1992 USGS map. The project area is outlined in red.

Table 2. Sediment Descriptions

Location	Layer	Depth (cmbs)	Color	Description	Interpretation
TR 8, Parcel 34	I	0–23	10YR 6/4	Fine sand; 20% roots; sparse modern debris; smooth, abrupt boundary.	Fill/Topsoil
	II	23–60	10YR 4/2	Medium sand; 20% roots, 10% basalt gravel; modern debris; smooth, very abrupt boundary.	Fill
	III	60–140+	10YR 7/4	Coarse sand; 2% roots, 2% coral cobbles and gravel; base of excavation.	Beach Sand

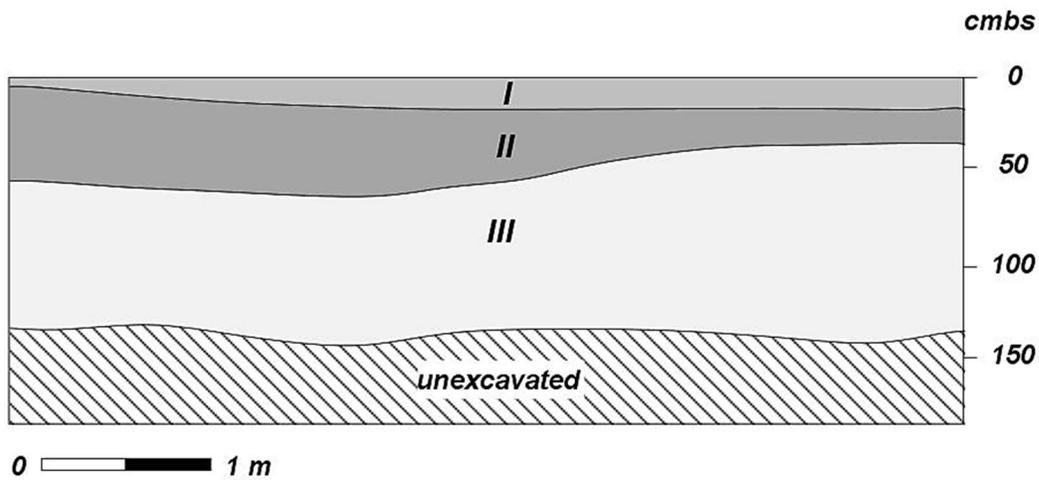


Figure 11. TR 8 northwest face profile drawing.



Figure 12. TR 8 northwest face photo, northeast end of trench.

SUMMARY AND RECOMMENDATIONS

An archaeological inventory survey was conducted for portion of a beach lot in Punalu'u at TMK: (1) 5-3-002:034 in the Ko'olauloa District of O'ahu. A revetment is proposed for seven properties, TMK: (1) 5-3-002:032, 033, 034, 035, 041, 046, and 051. The original AIS (McElroy and Eminger 2017) included all parcels except Parcel 034. The current archaeological work included pedestrian survey that covered 100% of the .026 ha (.065 ac.) project area on Parcel 34, as well as test excavations consisting of one trench. Due to negative findings, the AIS results are presented as an archaeological assessment per HAR §13-275-5(b)(5)(A).

No surface archaeological remains were found during pedestrian survey of the parcel. The entire area has been disturbed by modern activity, particularly landscaping of the lawn. Likewise, subsurface testing did not yield any evidence of subsurface archaeological features or deposits. Stratigraphy consisted of fill above beach sand.

Even though this survey produced no findings, archaeological monitoring is recommended because subsurface cultural layers and human remains have been found previously in the vicinity (Perzinski and Hammatt 2004). An archaeological monitoring plan meeting the requirements of HAR §13-279 shall be submitted to SHPD for review and acceptance before construction commences. It is possible that human remains may be discovered during construction activities, even though no such evidence was found during the survey. Should human burial remains be discovered during construction activities, work in the vicinity of the remains should cease immediately and the SHPD should be contacted.

GLOSSARY

ahu	A shrine or altar.
ahupua‘a	Traditional Hawaiian land division usually extending from the uplands to the sea.
ali‘i	Chief, chiefess, monarch.
‘auwai	Ditch, often for irrigated agriculture.
‘awa	The shrub <i>Piper methysticum</i> , or kava, the root of which was used as a ceremonial drink throughout the Pacific.
boulder	Rock 60 cm and greater.
cobble	Rock fragment ranging from 7 cm to 25 cm.
false kamani	The tropical almond tree, or <i>Terminalia catappa</i> , a post-Contact introduction to Hawai‘i.
gravel	Rock fragment less than 7 cm.
heiau	Place of worship and ritual in traditional Hawai‘i.
huli	The top of the kalo used for planting; shoot.
humuhumunukunukuāpua‘a	A triggerfish of the genus <i>Rhinecanthus</i> , either <i>R. aculeatus</i> or <i>R. rectangulus</i> .
imu	Underground pit or oven used for cooking.
Kahiki	A far away land, sometimes refers to Tahiti.
kalo	The Polynesian-introduced <i>Colocasia esculenta</i> , or taro, the staple of the traditional Hawaiian diet.
kama‘āina	Native-born.
Kanaloa	A major god, typically associated with Kāne.
Kāne	The leading of the traditional Hawaiian deities.
kapu	Taboo, prohibited, forbidden.
kino lau	The different forms that a supernatural being may take.
kō	The Polynesian introduced <i>Saccharum officinarum</i> , or sugarcane, a large grass traditionally used as a sweetener and for black dye.
konohiki	The overseer of an ahupua‘a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.
kupuna	Grandparent, ancestor; kūpuna is the plural form.
lei niho palaoa	Ivory pendant, originally probably whale’s tooth, also of stone, shell or wood, later also of walrus tusk.
lo‘i, lo‘i kalo	An irrigated terrace or set of terraces for the cultivation of taro.
luakini	Large heiau of human sacrifice.
Māhele	The 1848 division of land.

mai‘a	The banana, or <i>Musa</i> sp., whose fruit was eaten and leaves used traditionally as a wrapping for cooking food in earth ovens.
makai	Toward the sea.
mauka	Inland, upland, toward the mountain.
midden	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.
mo‘olelo	A story, myth, history, tradition, legend, or record.
niu	The Polynesian-introduced tree <i>Cocos nucifera</i> , or coconut.
‘ōlelo no‘eau	Proverb, wise saying, traditional saying.
pu‘u	Hill, mound, peak.
stone	Rock fragment ranging from 25 cm to 60 cm.
‘ulu	The Polynesian-introduced tree <i>Artocarpus altilis</i> , or breadfruit.

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