Archaeological Inventory Survey
Draft—Archaeological Inventory Survey for TMK: (1) 4-7-006:010 (por.) and :018 in Waihe'e Ahupua'a, Ko'olaupoko District, Island of O'ahu, Hawai'i

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July 2020

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MANAGEMENT SUMMARY

An archaeological inventory survey (AIS) was conducted for the proposed Waie'e Lo'i Restoration and Learning Center in Waie'e Ahupua'a, Ko'olauloa District, on the island of O'ahu on a portion of TMK: (1) 4-7-006-010 and all of TMK: (1) 4-7-006-018. Pedestrian survey of 115.51 ha (28.43 ac.) in Waie'e identified two archaeological sites consisting of 15 features. SHIP 08919 is the main access road and two culverts associated with the road. SHIP 08920 includes the other archaeological features found within the project area. These consist of terraces, water control features, C-shaped structures, an old road, historic structural remnants, and a possible platform. Excavation of eight test units yielded volcanic glass, charcoal, and modern or historic materials. Two charcoal samples were submitted for wood taxa identification but they were not suitable for radiocarbon dating.

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INTRODUCTION

At the request of G70, Keala Pono Archaeological Consulting conducted an archaeological inventory survey (AIS) for the proposed Waiea’s Loi Restoration and Learning Center in Waiea’s Ahupua’a, Ko’olaupoko District, on the island of O‘ahu on a portion of TMK: (1) 4-7-006:010 and all of TMK: (1) 4-7-006:018. This work was designed to identify, document, assess significance, and provide mitigation recommendations for any historic properties that may be located in the study 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 6 of the Hawaii 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.

The report begins with a description of the study area and an 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.

Project Location and Natural Environment

The study area consists of 11.51 ha (28.43 ac.) on a portion of TMK: (1) 4-7-006:010 and all of TMK: (1) 4-7-006:018, in Waiea’s Ahupua’a, Ko’olaupoko District, on the island of O‘ahu (Figures 1 and 2). TMK: (1) 4-7-006:010 is a 36 ha (89 acres) parcel, while TMK: (1) 4-7-006:018 is a .036 ha (.08 ac.) plot. Both properties are owned by the City and County of Honolulu. The project area begins at the mauka end of Waiea’s Road and extends along the south side of the Board of Water Supply access road for approximately 1 km (.62 mi.). The project area then veers south away from the access road for approximately 250 m (820 ft.) toward steeply sloping terrain on the valley’s south side. The Board of Water Supply access road marks the northwest boundary of the project, while the southeast boundary is bordered by an undeveloped property.

Waiea’s Valley includes 527.56 ha (1,303.67 ac.) of land, 326.96 ha (807.94 ac.) of which are forest reserve (Chan 1954:1). The area of study lies toward the middle of valley along Waiea’s Stream. Geologically speaking, this region sits in the giant caldera that formed the Ko‘olau Mountain Range in ancient times. It is a place of consistent rain and trade winds:

Carrying the burden of the trade wind rains, the windward side of O‘ahu is more weathered than the leeward areas of the island, and now this vast caldera wall is reduced to a line of sheer cliffs... The flat valley floors are extensively eroded, and are now mostly joined, studded here and there with isolated remnant peaks and ridges connected to the central massif. (Klieger et al. 2005:5)

The Ko‘olau Mountain Range is 60 km (37 mi.) long and makes up the mauka boundary of Waiea’s Ahupua’a. In the Pleistocene, Waiea’s Valley went through periods of submergence and emergence. It is believed that the valleys of Windward O‘ahu were under roughly 365 m (1,200 ft.) of water and filled with sediment as they gradually emerged (Stearns in Chan 1954:3). Today, Waiea’s Valley has several main features: 1) the Ko‘olau Mountains at the head of the valley, which are balsalt with a complex of dikes; 2) a high terrace in the valley center, made up of old alluvium that built up between the streams; 3) a coastal plain composed of younger alluvium; and 4) a bench at the seashore made up of silt and other sediments washed downstream and reworked by wave action (Chan 1954:2–7). There are two perennial springs at the back of the valley that contribute to the
surface drainage of the ahupua’a. The springs originate in dikes that are under pressure at the base of the Koʻolau Mountains; they are responsible for much of the water flow in Waileʻe Stream (Chan 1954:7).

Situated mostly in the valley center, topography of the study area is moderately to steeply sloping, and vegetation is generally very dense, with some places enveloped in thick tangles of banana and others covered by brush. The project area lies between roughly 40-100 m (130-330 ft) above mean sea level (masl), approximately 2 km (1.2 mi.) from the coast at Kahului Bay. Mean annual rainfall is 207 cm (82 in.) per year at the Waileʻe gaging station that is situated toward the mauka end of the project (Giambelluca et al. 2013). Waileʻe Stream, a perennial watercourse, runs through the project area.

Four soil types occur within the study area: Hanalei silty clay 2-6% slopes (HnB); Lolekaa silty clay, 3-8% slopes (LoB); Tropaquatea (Tr); and Waiakaa silty clay, 25-40% slopes (WpE) (Figure 3). Hanalei series soils developed in alluvium and are often used for pasture, sugarcane, taro, and vegetable farming (Foote et al. 1972:288). Lolekaa soils developed in colluvium and alluvium that is old and gravelly. These soils are generally used for housing, sugarcane, wildlife habitat, and pasture (Foote et al. 1972:83). Tropaquetae are flooded soils that are utilized for wetland agriculture, such as the cultivation of rice, taro, or watercress (Foote et al. 1972:121). Waiakaa series soils developed in colluvium and alluvium, and are typically used for housing, pasture, and truck crops (Foote et al. 1972:130). Also in the vicinity are Hanalei silty clay 0-2% slopes (HnA); Lolekaa silty clay 0-15% slopes (LoC); Lolekaa silty clay 15-25% slopes (LoD); Lolekaa silty clay 25-40% slopes (LoE); Lolekaa silty clay 40-70% slopes (LoF); Pearl Harbor clay (Ph); rock outcrop (Ro); Walua silty clay, 3-8% slopes (WpF); and Waiakaa silty clay, 40-70% slopes (WpF).

Project Description

The project will create a lo‘i restoration and learning center to educate the public about the importance of streams, watersheds, and regenerative agriculture. Proposed activities of the center include the following:

- restore existing fallow lo‘i
- help maintain an existing ‘auwai system used by the taro farmers downstream
- restore riparian and forest areas with appropriate native and non-invasive plants

Development of the learning center will occur in two phases. Phase 1 will take place on an approximately 5.3 ha (13 ac.) area from the end of Waileʻe Road to the dam (Figure 4). Phase 1 will consist of the following:

- Service learning work days starting with reopening fallow lo‘i and helping maintain the ‘auwai system; learn about invasive species (terrestrial and aquatic), watersheds, and regenerative agriculture
- Scheduled service learning days with groups and schools
- Develop a parking area for scheduled groups and events to alleviate parking congestion in the neighborhood; the gravel parking area will be large enough for a bus turn around
- Replace the gate at the end of Waileʻe Road with a more aesthetically pleasing gate
- Install a gate past the proposed parking area to prevent vehicle access to the rest of the valley

Figure 3. Project area on a TMK plot map (State of Hawai‘i 1937).
Traditional Cultural and Historic Background

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the study area. In the attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., mo'olelo, mele, place names) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai'i State Library, the State Historic Preservation Division, as well as online at databases such as the Hawai'i Department of General Accounting map database, Ulukau, and Waipoua 'Aina. Historical maps, archaeological reports, and historical reference books were among the materials examined.

Waiakea in the Pre-Contact Era

Information regarding traditional land use and occupation in Waiakea. Ahiapua'a is often intertwined with the mo'olelo of its neighboring ahiapua'a, Kahalu'u to the south and Ka'a'ala to the north. Information compiled for the pre-contact era includes data on place names, land use, and subsistence, as well as several mo'olelo, ol, and 'olelo no eau. Together, they give us an idea of what life may have been like in this storied place.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names “usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated… The place names provide a living and largely intelligible history” (Pukui et al. 1974:4).

Place names associated with the study area are listed in: Place Names of Hawaii (Pukui et al. 1974), along with the meanings of the names and/or other comments about the specific locales:

1ʻAbu-intau. Land division, stream. In 1845, Ka-mehameha III granted a tract of land in this area to the Catholic mission for the first Catholic school in the Islands. Each street name in the subdivision combines Hui- (house) with the name of a bird… Lit, bird cluster (perhaps so called because the birds from nearby Moku-maunu were caught here and tied together in bunches). (Pukui et al. 1974:6)

2ʻAbui-intamau. Pool at ʻAbui-intamau, Oʻahu. Lit, birds looking (for water). (Pukui et al. 1974:5)

3ʻAhu-o-Laka. Islet (5.1 acres, swash at high tide), off Kaʻa-huʻu. Lit, altar of Laka. (Pukui et al. 1974:6)

4Hana-mo-o. Stream, Waiheʻe, Oʻahu. Lit, chicken chased. (Pukui et al. 1974:34)


6Kaha-huʻu. Land division/stream, and fishpond…associated with the Ua-poʻai-hale (house encircling rain…) perhaps named by fishermen who used to dive here for fish…A series of wet taro terraces here are said to be the largest on Oʻahu. See Ka-hona. Lit, diving place. (Pukui et al. 1974:62)

7Ka-hona. Old name for Kaha-huʻu fishpond. Lit, the earth. (Pukui et al. 1974:66)

8Kâlê. Stream, Waiakea, Oʻahu. Lit, waited for. (Pukui et al. 1974:77)

9Kaneheʻea-leau. Mountain ridge…named for a god ancestor of Pele, his female companion was said to be Ke-papa islet nearby… Lit, Kane royal companion. (Pukui et al. 1974:84)
Ka-papa. Offshore island (14 feet elevation) ... A fishing shrimp is here. See Kāne-ho-ʻia-ni. Lit., the flat surface. (Pukui et al. 1974:87)  
Waʻiheʻe. Land section and stream ... Lit., squid liquid (A miste, Ke-ika-o-Ki, the shadow of Kū, was told that his speech would be restored if he went to Kahiki to be married. On the way he was attacked by a huge squid which he killed and threw to Ka-i-heʻe, Oʻahu. Slime flowed over the land; hence the name ...). (Pukui et al. 1974:221-222)  

Subsistence and Traditional Land Use  

With its productive fishponds of Kāneʻohe Bay and extensive agricultural lands, Waimeʻe Ahupuaʻa was a thriving community in pre-contact times (Devaney et al. 1982). The ocean provided a variety of resources, such as limu, heʻe, crustaceans, and reef fish (Chun 1945:17). At least two fishponds were known to exist near Waimeʻe in Kahaluʻu. One was called Pokole (McAllister 1933), and the other was called Kahouna (McAllister 1933), which is also listed as Kahouna in Place Names of Hawaii (Pukui et al. 1974). This latter pond is also known as Kahaluu fishpond today. Evidence of the community’s traditional marine subsistence is further marked by its coastal fishing shrines, one of which was constructed on Kapapu Island and another situated in the sea there (McAllister 1933:172).  

Although Waimeʻe was one of the larger ahupuaʻas fronting Kāneʻohe Bay, the broad flats of Waimeʻe, together with Kahuku on the north and Kahaluʻu on the south, formed a system of continuous agricultural terraces, comprising one of the largest areas of pondland agriculture on the windward coast (Handy 1940:96). The terraces of Waimeʻe Ahupuaʻa were situated along Waimeʻe Stream and continued back into the valley for at least 1.5 miles (Handy 1940:96). While driedland kalo was also cultivated in the kula lands between Kahaluʻu and Ahuimanu Stream (Handy 1940), it was the wetland loʻi that would have dominated the landscape:  

The ahupuaʻa [of Kahaluʻu], although practically continuous with Waimeʻe, is sheltered for most of its shore length behind low coastal hills, and its area contours are quite broken by the winding Kahaluʻu Stream and its tributaries, Waisla (Living-water), Ahuimanu (Discovered-and-broken), and Kahalakua (Hollow-terraces). For this reason, despite the breadth of the stream valley, the loʻi sections of Kahaluʻu are tucked away in pockets of land watered from the several streams; there are few large continuous areas, but the total area under cultivation in ancient times must have been very considerable ...  

The seaward flats of the three contiguous ahupuaʻas of Kānaʻa, Waiʻele, and Kahaluʻu together made up one of the largest single areas of wet-kula land on the Koʻolau coast. It is a region of ample rainfall ... (Handy et al. 1991:454)  

Approximately 40 ha (100 ac.) of Waimeʻe land were under cultivation of kalo in the pre-contact era (Devaney et al. 1982:36). They are described as continuing all the way to the back of the valley:  

The main stream bearing this name [Waimeʻe] has its headwaters in a waterfall against the mountain wall, and is joined by two others, Hamana and Kalia. Carefully terraced but abandoned terraces loʻi follow the stream and its tributaries almost to their several sources. (Handy et al. 1991:453)  

However, in a University of Hawaiʻi Master’s thesis on Waimeʻe, Chun indicates that not all of the valley was used for loʻi:  

Judging from the lack of major irrigation works, the natives of Waimeʻe apparently did not utilize most of the valley for agriculture. This was especially true in regards to wet-kula farming. Irrigation ditches were made only along the alluvial soils and coastal areas where water could easily be diverted from the stream due to the relative leviness of these areas. An absence of irrigation ditches on the elevated terraces of older alluvium indicates that no intensive farming occurred here, although it is quite likely that dry-land crops may have been cultivated sporadically in small cleared areas.  

According to Emory (noted archaeological Kenneth P. Emory), prior to the decline in native population all of the potential taro lands, especially where water was accessible, was utilized and cultivated for taro. On the basis of irrigation ditches and kalana awards, most of the areas suitable for taro agriculture were situated along the main stream of the valley and the coastal lowlands. (Chun 1954:27, 28)  

An irrigation ditch more than one mile in length extends through the valley, although Chun (1954:44) believes that this ditch post-dates 1880. Dryland crops grown in the pre-contact period in Waimeʻe likely included olonā, ʻulu, waake, and ʻawa.  

Moʻolelo  

As mentioned earlier, Hawaiian place names were connected to traditional stories through which the history of the places was preserved. These stories were referred to as moʻolelo, a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or protractive. Moʻolelo were repositories of cultural insight and a foundation for understanding history and origins, often presented as allegories to interpret or illuminate contemporary life (...Certainly many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language) (Nogelmeier 2006:429–430).  

There are different moʻolelo that speak of the naming of Waimeʻe. One account indicates that the name refers to a loʻi which belonged to aliʻi (Handy et al. 1991:453):  

It is said that the ahupuaʻa [Waimeʻe] took its name from a ʻālewaga (a small species of the maluia or eel) called Paʻele, into which the main stream empties. (Handy et al. 1991:453)  

The name of Waimeʻe Ahupuaʻa literally translates to “squid liquid” (Pukui et al. 1974:221) or “squid water” (Handy and Handy 1972:453). Pukui et al. (1974) relate that this derived from a moʻolelo about a man who killed a large squid. The man, who was a māua, journeyed to Kahiki so that his voice would return. Along the way, he killed a large squid and threw it, splattering its slime across the land, and Waimeʻe was thus named (see Place Names section).  

Waimeʻe is also mentioned in the epic saga of Hiʻiakaikapiopele, as Hiʻiaka travels along the windward Oʻahu coast:  

They went on, passed Kahaluu, Waihok, and Kaalaoa and on up to Auilili. There they saw Puʻoe making ready to fight them and Hiʻiaka-ka-poli-o-Pele chanted thus:  

Puʻoe, the chief challenges to battle,  
He challenges on the day of his strength,  
He is strong, indeed. Therefore the two fought and killed Puʻoe. They continued, passed Waiahole, Waikane, Hikikipu, Hiʻiaka said to Wahineamao, “There is our trail above Ka-kohu. The precipice is steep below.” (Ka Loo o Ka Lahui in Sterling and Summers 1978:192)
Two other mo‘o‘elo, recounted in Sites of Oahu (Sterling and Summers 1978), are shared here. While both mo‘o‘elo do not mention Waialae in particular, they speak of neighboring Kahu‘u, and much of the history and land use of Waialae is intertwined with Kahu‘u. It is interesting that although these two mo‘o‘elo appear to be disconnected, they share a common theme, which is probably not coincidental. These two stories both speak of competition for the marine resources of Kāne‘ōhe Bay. This reinforces the fact that the area was known to have prized resources in its sea since the earliest times.

The first mo‘o‘elo mentions the trickster hero Maui, and his rightful connection to Kahu‘u. Due to his guile, Maui managed to secure the fishery rights to the waters off of Kahu‘u’s coast. Here is that mo‘o‘elo as told in Sites of Oahu:

The ahupua‘a of Kahu‘u belonged to Maui–akalana. It was a land over which the sources of food were disputed, especially the low islands of Ahua and Kapapa where octopus were caught and the uhu fish of Kapana caught in nets.

The judges’ helper and high priest took Waialae and Waikane as his boundaries, but the judges had a ruling against anything defiling. Should any of them be smeared with excreta, he ceased to handle sacred objects or participate in their work.

Maui–akalana built a mound above Ha‘ikala, and made seven ridges and in the mound he secreted some excreta. He met his brothers and the two assistants of the supreme judges and told them that there was a precious treasure in the mound, diamonds and pearls and the first to dig rapidly into it might have them. They agreed to do it and when they began to dig and scrape away the earth, each of the judges’ assistants was anxious to get at the precious treasure. They observed no rules, restricted or otherwise in their eagerness to be the first to reach the heap of riches. Whose hands became dirty? This person’s --- that person’s. So Ahua-a-Laka, Kapapa and the uhu fish caught in the nets at the sea of Kapana became the property of Kahu‘u. The assistants of the supreme judges were ashamed and left their sacred offices and the name (of one), Ku, was given to kupa‘ula (a kind of wooden bowl) and (of the other), Lono, to the ipe‘o-o-Lono container in the men’s eating house.

Kohi-kohia-kupahale (Dig-in-haste, name of the mound), can still be found at Kahu‘u, where Ahuimanu faces the north, at the left side of the backs of Kahu‘u and Pakolo, on the east side of the top of Ha‘ikala. Kupapolu is the resting place on the seaward side of Kahu‘u-lauli, facing the spring of Kameha‘ikana. (Sterling and Summers 1978:195)

The other story does not mention any person’s name in particular, as the gods of old are the central characters of this mo‘o‘elo. Specifically, the god of Kailua, characterized as the protagonist, and the god of Kaua‘i, characterized as the antagonist, met for fishing rights. In the end, the god of Kailua prevailed, and an islet was placed in the sea of Kahu‘u marking the boundary of the fishing grounds between the people of Kailua and the people of Kahu‘u. The name of that islet was Ahu-a-Laka, meaning “Altar of Laka,” and it is still known today. Here is that mo‘o‘elo as told in Sites of Oahu:

There were, and are, along this shore, various fish grounds, each with its god. And sometimes these gods of the fish disagree.

This happened with two that controlled this shore. They quarreled on a matter of right and wrong. The men of Kailua were coming to fish in Kailua bay, and fish grew scarce. The people died from want of food.

The god of Kailua was justly enraged. He sent a challenge to the god of the pockers, proposing a battle for control of the shore.

They met and fought, and the righteous god won. But he proved to be a kind-hearted god. He made a pact with the god of Kaua‘i, from henceforth forever, the men of Kaua‘i should fish in Kailua, and the men of Kailua would fish in Kailua.

So it was settled, and this island was put into the sea, where the men can see it when they round the point. When the sand appears above the waves, it is time to turn the boat around. (Sterling and Summers 1978:196)

Oil and Mele

The noteworthiness of specific locales in Hawaiian culture is further bolstered by their appearances in traditional chants. An oli refers to a chant that is done without any accompaniment of dance, while a mele refers to a chant that may or may not be accompanied by a dance. These expressions of folklore have not lost their merit in society today. They continue to be referred to in contemporary discussions of Hawaiian history, identity, and values.

Appearing in perhaps one of the greatest known songs of Hawaiian oral traditions, the epic journey of Hi‘iaka, is a chant Hi‘iaka uttered in Kahu‘u in response to the inclement weather she encountered there. Perhaps she had come upon the famous Kahu‘u rain, the Po‘aihale, which was known to go in circles while pouring from above rather than just passing through the area like other showers do on the trade winds. Here are the words to Hi‘iaka’s chant along with its translation and commentary by Emerson in his publication, Pele and Hi‘iaka: A Myth from Hawai‘i:

Hi‘iaka found many things to try her patience and ruffle her temper in Pali-Koolau Squalis, heavy with raindrops picked up by the wind in its passage across the broad Pacific, slashed against her and mired the path, but worse than any freak of the weather were her encounters with that enlawful thing, the mo‘o; not the bold robber creature of Hawaii which took to the wilds, as if in recognition of its own outlawry, but that meager skulk, whose degenerate spirit had parted with its last atom of virtuous courage and chung to human society only as a vampire, unwilling to forego its parasitic hold on humanity. It was in the mood and spirit begetted of such experiences that she sang:

Iho Koolau, e, iho Koolau! Vile, vile is this Koolau weather; At kena i ka ua o Koolau. One soaks in the rain till he’s full. Ke ua mai la i Ma‘a‘eli, The rain, it pours at Ma‘ae‘eli. Ke hoowea‘a‘a mai la i Heeia. It gatters the land at Heeia; Ke kupa la ka ua i ke kai. It lapses the sea with a whip.

Ha‘a hula le‘a ka wa The rain, it dances in gloe I Ahuimanu, ka wa hooni. At Ahuimanu, moving Ho‘ono‘ana i ka pu‘u ko‘a. And piling the coral in heaps, Ka ua posakale o Kahu‘u. Shifting from side to side of the house, this whiscking rain of Kahu‘u. Lu‘u‘u‘u e, lu‘u‘u‘u iho nei au The heavy and sad, alas, is I ka puolo waimaka o ko anahi —Mine eyes, a bundle of tears, Ke kului iho nei, e. Are full to o‘erflowing. (Emerson 1977:90–91)

‘Olelo No‘eau

Like oli and mele, traditional proverbs and wise sayings, known as ‘olelo no‘eau, have been another means by which the history of Hawaiian places has been recorded. In 1983, Mary Kawena Pukui published a volume of close to 3,000 ‘olelo no‘eau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawai‘i well (Pukui 1983).
Approximately 500 places are listed in the 'ōlelo no'eau book along with the proverbs and wise sayings that refer to these specific places. Of these 500 or so localos, Waile'e on Maui is noted, while Waile'e on O'ahu is not. There is one 'ōlelo no'eau that is specifically associated with Kahalu'u, and it refers to the Kahalu'u rain mentioned in the mo'olelo section above. The 'ōlelo no'eau is as follows:

Ka ua pō'ā'ahake o Kahalu'u.
The rain that moves around the homes of Kahalu'u.

Referred to Kahalu'u of windward O'ahu. (Pukui 1983:173)

There is another 'ōlelo no'eau which refers to the Ko'olau region in general. This proverb suggests that Waile'e and other windward ahupua'a are lush and well-watered. Here is that 'ōlelo no'eau as it appears in Pukui's book:

Nā pali hialihi o ke Ko'olau.
The dark hills of Ko'olau.

There are always dark and beautiful with trees and shrubs. (Pukui 1983:249)

Waile'e in the Early Historic Era

When the first Westerners arrived in the Hawaiian archipelago in 1778, the islands were not yet united under one ruler. At that time, the entire island of O'ahu was under the rule of Chief Kahahana. In 1783, Chief Kahahana’s reign ended with the invasion and victory of Chief Kahekili of Maui. This would forever be the end of O'ahu’s independence as an sovereign entity. When Chief Kahekili died in 1794, control of O'ahu went to his son Kalaniʻikua. The following year, Chief Kamehameha of Hawai'i Island invaded O'ahu to engage Kalaniʻikua in battle. Kamehameha overwhelmed Kalaniʻikua's warriors, effectively gaining control of all the islands from Hawai'i to O'ahu. Eventually, Kamehameha would make a peaceful agreement with Chief Kaumāumāu'i of Kaua'i, bringing that island and Ni'ihau into the fold and thereby uniting the Hawaiian archipelago under one rule (Kamakau 1996, Kamehala 1995).

Under Kamehameha’s rule, the island of O'ahu was administered by High Chief Boki. After Kamehameha’s death in 1819, Chief Boki continued to be the island’s governor until he left on his South Seas voyage in 1829. After him, his wife, High Chiefess Li'ilie became the O'ahu governor until 1831 when she was replaced by Kuakini (Devaney et al. 1982, Kamakau 1996).

The first foreigner’s account of Waile'e comes from missionary Levi Chamberlain, who recorded memoirs of his 1826 trip through the area. He described wet, marshy conditions but did not mention wetland cultivation:

We had a long walk over hills and streams of water between hills and along marshy tracts and reached Waile'e at one-fourth before nine. We left Waile'e at ten o'clock and walked towards the seaside where we used a muddy path most of the way and waded through a long tract of rushes through mud and water nearly knee deep. (Chamberlain 1826:5)

Despite the introduction of westerners and western ways into the islands, the first half of the 19th century did continue to see the cultivation of taro in Waile'e and other ahupua'a of the Ko'olau district. However, population decline is evident in an 1855 census, which listed only 135 people in Waile'e, consisting of 65 men, 50 women, 11 boys, and 9 girls (Parker in Chum 1945:19-20). An account by missionary and businessman E.O. Hall in 1939 states that large expanses of taro land in the Kāneʻohe Bay area were lying in waste because they were not needed to feed the diminished population (Chum 1954:53). Much of this decrease in population of Native Hawaiians is attributed to foreign-introduced diseases (Devaney et al. 1982).

Waile'e and the Changes in Land Tenure

During the reign of Kamehameha III, as the Hawaiian kingdom became increasingly exposed to outside influences, the Hawaiian monarchy faced a crossroads of major change. “The Constitution of 1840 confirmed that only two offices could convey allodial title. These were the mō‘ī and the kūhina mā. The Māhele was an instrument that began to settle the constitutionally granted vested rights of three groups in the dominion of the kingdom—mō‘ī, ali‘i, and the maka‘āinana” (Beamer 2014:143). However, the king felt the difficulty of governing a land where the influence of foreigners had been growing. Dr. David Kamakau Sai describes this predicament:

Kamehameha III’s government stood upon the crumbling foundations of a feudal autocracy that could no longer handle the weight of geo-political and economic forces sweeping across the islands. Uniformity of law across the realm and the centralization of authority had become a necessity. Foreigners were the source of many of these difficulties. (Sai 2008:52)

“Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land ownership” (Moftit and Fitzpatrick 1995:11). Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850.

The Māhele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom—the government, the chiefs, and the maka‘āinana. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups. Following the Māhele, the only group with an undefined interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Beamer 2008:194–195)

Although the Māhele had specifically set aside lands for the King, the government, and the chiefs, this did not necessarily alienate the maka‘āinana from their land. On the contrary, access to the land was fostered through the reciprocal relationships which continued to exist between the commoners and the chiefs. Perhaps the chiefs were expected to better care for the commoners’ rights than the commoners themselves who arguably might have been less knowledgeable of foreign land tenure systems. Indeed, the ahupua‘a rights of the maka‘āinana were not extinguished with the advent of the Māhele, and Beamer points out that there are “numerous examples of ho‘a‘aina living on Government and Crown Lands post-Māhele which indicate the government recognized their rights to do so” (Beamer 2008:274).

Ho‘a‘aina who chose not to acquire allodial lands through the Kuleana Act continued to live on Government and Crown Lands as they had been doing as a class previously for generations. Since all titles were awarded, “subject to the rights of native tenants.” The ho‘a‘aina possessed habitation and use rights over their lands. (Beamer 2008:274)

For those commoners who did seek their individual land titles, the process that they needed to follow consisted of filing a claim with the Land Commission, having their land claim surveyed, testifying in person on behalf of their claim; and submitting their final Land Commission Award (LCA) to get a binding royal patent. However, in actuality, the vast majority of the native population never received any LCAs recognizing their land holdings due to several reasons such as their unfamiliarity with the process, their distrust of the process, and/or their desire to cling to their traditional way of land tenure regardless of how they felt about the new system. In 1850, the king passed another law,
this one allowing foreigners to buy land. This further hindered the process of natives securing lands for their families.

After the Māhele, the fisheries of the region were divided into shares that were privately owned (Devaney et al. 1982). The kono'iki and maka'akūona of each ahu'apua'a retained fishing rights and the kono'iki would place a kapu on a given fish species within the fishery as necessary. By 1851, all fisheries were made public (Devaney et al. 1982).

There were 25 LCA's awarded in Waihe'e that include 59 kuleana plots (Chun 1954:24). Most were located mauka of Kamehameha Highway along the streams, with a few scattered on the makai side of the highway and along the coast. They consisted of loi, kula, and house sites (Chun 1954:24). Two LCAs were awarded within the study area, and several were located makai of the project (see Figure 11). LCA 2070 'Apana 2 was awarded to Kealohana, and LCA 2311 'Apana 1 was awarded to Hālai. Māhele testimony for both LCA mention loi (Figures 5 and 6). LCA 2070 'Apana 2 was also a house lot, while LCA 2311 'Apana 1 noted five loi bordering by streams and cliffs.

A total of 120 acres of Waihe'e land was awarded to konohiki, and the remainder was set aside as crown lands (Chun 1954:24). In 1855 Kamehameha V granted a large portion of Waihe'e Valley to missionary Benjamin W. Parker. By 1859, Parker had purchased all the land in the ahu'apua'a that was not awarded as kuleana plots (Chun 1954:22). In 1927, Parker's lands were transferred to the Bishop Trust Company, who subdivided and sold them, mostly to Japanese rice farmers (Chun 1954:25).

New Industries: Sugar, Rice, and Dairy

As noted above, large expanses of taro land lay abandoned in the Kāne'ōhe region by 1870 (Devaney et al. 1982:36-37), and it appears that sugar agriculture came to an early decline in Waihe'e. By the 1860s, sugar planting was considered to be at the commercial level in the Kane'hoe Bay region (Devaney et al. 1982:42). Chun describes a small sugar enterprise in the area:

In 1865 two Englishmen Green and McKibbin, made an early attempt to establish a sugar plantation in Kahuku to the north of Waihe'e. Ten acres of leased land in Waihe'e were a part of their plantation. The area leased was used mainly as a mill and dwelling site, with the small remaining acreage probably planted in sugar cane. (Chun 1954:29)

Rice agriculture began in windward O'ahu in the mid-19th century. At this time the contracts of Chinese sugar laborers were ending and they turned to rice farming, which was familiar to them. Specifically in 1857 a group of former rice farmers from southern China completed their sugar contracts and began farming rice in former taro loi's (Chun 1954:55-56). By 1880 the Waihe'e sugarcane fields were also converted to rice paddies (Devaney et al. 1982:50). It has been speculated that the long irrigation ditch that runs for more than a mile in Waihe'e was built at this time (Chun 1954:44). The ditch is not believed to be older because: 1) archaeologist J.G. McAllister (1933) did not record it as a pre-contact site, while he did record a slightly longer ditch in Waiapua; the Waihe'e ditch would have been the second longest pre-contact ditch on the island; 2) a flume is present in an area where Native Hawaiians would have chosen an alternate route for the ditch; and 3) there are no LCAs along most of the fields that the ditch feeds (Chun 1954:44-46).

In the second half of the 19th century, the Chinese population in the islands increased from 364 to a whopping 21,616 (Chun 1954:56). At the height of the rice era in Waihe'e in the mid-1890s the abandoned taro loi's were converted to rice paddies, dikes were narrowed in width, additional irrigation channels were constructed, and livestock was brought in to compact the soils (Chun 1954, Devaney et al. 1982). Cattle ranching also took place after the late 1800s, with at least 150 acres of Waihe'e land devoted to pasturage (Chun 1954).
and several structures dot the area. One set of structures along the stream/ditch is labeled “Flag? MILL.” Rice and sugarcane lands are identified, although they do not extend into the project area.

The second map dates to 1876, and although it shows the entire island of O’ahu, there are many details illustrated in the Waie’e region (Figure 8). The project lands are labeled at “Gr. 1812” and Kahoua Fishpond is visible along the coast. There is a mill in Waie’e, makai of the project area. Kamehameha Highway appears to be in its current position along the coastline, and the offshore islands, including Ahi o Laka, are illustrated.

The third map, from 1880, was drawn for the Ka’alaea Sugar Plantation (Figure 9). This map shows individual land plots, with those of Kahale and Kamae partially overlapping with the east side of the project area. On the north side, a small portion of what is probably a fence line is within the project boundaries. Peaks to the northwest of the project are labeled Kapiliolokia, Ulimakoli, Nanakaulaena, and Kailio.

Approximately 160 acres were planted in rice between 1880 and 1927, including the vicinity of the project area (Devaney et al. 1982:50, 56). The peak of the rice industry in Waie’e corresponds to the Sing Chong Company moving into the valley in 1894, with Sing Chong and the other rice farmers leasing the land from the Parker family (Chun 1954:58):

On December 24, 1894, all of Parker’s estate was leased to the company (Sing Chong) for a period of twenty years, at an annual rent of nine hundred dollars. The company apparently made good use of the land and also realized good profits, for at the termination of the lease in 1914 it re-leased Parker’s lands again, this time for ten years at an annual rent of $1,500. Again, on January 1, 1924, Parker’s estate was leased for another ten years to the same company for $1,800 a year.

As for the native ku‘uanas, most of them passed into the hands of the rising rice plantation or to individual farmers. Of the original fifty-four acres of native ku‘uanas, only about seventeen acres or about twenty-eight per cent remained in Hawaiian possession by 1936. (Chun 1954:59)

It is also believed that water buffalo, or carabao, were introduced to Waie’e with the Sing Chong plantation in 1894 (Chun 1954:67). The water buffalo on O’ahu were described in a _Paradise of the Pacific_ article from 1897:

> ...Here’s a rice field, Chinese almost invariably working them, and in the most primitive manner, dragging a quaint old forked stick plow through the rice fields with the Hongkong cow. I have never seen a poor or thin Chinese cow yet, and I have seen them everywhere on this island. All these Chinese cows are of a mouse color and fat as butter... (Bauml in Chun 1954:68)

The 19th century ended with the overthrow of the Hawaiian monarchy and the U.S. claim of annexation of the Hawaiian Islands. Throughout the islands, former government lands and crown lands were no longer under the oversight of the monarchy. After the overthrow, the U.S. federal government and the American military increased its land use around Waie’e and Ko’olaulapoko and throughout the islands.

**Waie’e in the 20th Century and Beyond**

A 1902 O’ahu map shows the project area at the boundary of grazing lands (outlined in orange) and forest reserves (outlined in blue) (Figure 10). A large area toward the coast is striped in blue, which designates rice and taro wetlands. Two landings are also depicted at the coast.
Kilohana in Waie`e interviewed by Chun (1954:65) noted that “nearly every level area on the terraces, river plain and coastal plain were under rice cultivation as late as the 1920’s.” By the 1930s there were 25 irrigation ditches in Waie`e, extending a total of 4.39 km (2.73 mi.) (Chun 1954:64). In a ravine north of the alluvial terrace (see Natural Environment section), a tunnel was built through a narrow part of the terrace to feed the rice paddies of that drier area (Chun 1954:64-65). Rice began to decline in Hawai`i because of factors such as competition from California rice growers, changed immigration policies, as well as a stem borer outbreak, and the Sing Chong Company finally ended its lease in 1933.

While rice was on the decline in Waie`e, pineapple was taking hold in the Kīhei`ohe Bay region, with a peak period of cultivation between 1910 and 1925 (Devaney et al. 1982:61). A Libby, McNeil & Libby pineapple cannery was built in Kahalu`u, approximately one mile south of Waie`er Valley. The plan to build the large-scale cannery was realized in 1911 after they acquired the Ahiimanu Ranch, and the accompanying plantation workers’ housing for the cannery gained the name of “Libbyville.” Unfortunately, as a result of the Libby pineapple company’s establishment, Kahalu`u’s Haalauian homestead Heiau was destroyed. A second pineapple enterprise was established in 1910 on Castle lands in `Ahia`a, under the name of the Koolau Fruit Company. It was later purchased by Dole’s Hawaiian Pineapple Company. The pineapples were grown in fields in the uplands of windward O`ahu, and Sing Chong subleased the higher areas of its lands to Japanese pineapple farmers. Between 1920 and 1926, approximately 16 ha (40 ac.) of Waie`e uplands were cultivated in pineapple (Chun 1954:80). However, the pineapple operations in Kahalu`u could not compete with those on the leeward side of the island, and they shut down in the 1920s (Devaney et al. 1982).

In the 1930s Japanese farmers began moving into the valley, where they cultivated rice or pineapples. A map dating to 1936 shows what look like large lo`i systems within the project area (Figure 11). This map illustrates `auwai, terraces, and something labeled as “Kīhe Rock” within the project. The current access road ends where it meets Waie`e Stream and continues as a trail that splits off in multiple directions. A Japanese school was built in Waie`e and it remained open until ca. 1941 and the beginning of World War II (Chun 1954:83). Large tracts of windward lands were used for military training during the war. One particular base was called the Henis Combat Training Area (CTA), which included 912 ha (2,254 ac.) in Kahalu`u, Ka`ala`a, and Waie`e and approximately 80 ha (200 ac.) in He`eia Kea (U.S. Army Corps of Engineers n.d.). Between 1943 and 1945, the CTA was utilized “as an encampment for troops, an ammunition storage facility, a firing range, and as a maneuver and artillery impact area for jungle and assault training” (U.S. Army Corps of Engineers n.d.). During World War II a pillbox at Pu`u Maka`e`e was constructed, along with facilities that included roads, barracks, a mess hall, a theater, ammunition storage facilities, a motor pool, firing ranges, hand grenade ranges, as well as bayonet and obstacle courses (U.S. Army Corps of Engineers 2011).

By 1953, land ownership of Waie`e had shifted to mostly Japanese immigrants (Chun 1954:81). At that time, approximately 117 ha (290 ac.) of the 200 ha (496 ac.) of agricultural land in Waie`e was owned by Japanese. This consisted of 31 individual plots, with a 3.6 ha (9 ac.) average per family, aside from one large plot of 77 ha (190 ac.) owned by the Higa family (Chun 1954:81). By the mid-1960s taro farming returned to the valley, parts of the uplands were cleared for the farming of truck crops, and much of the valley slopes were cultivated in bananas (Chun 1954:95–97). In addition, large tracts of former rice lands were converted to pasture for cattle (Chun 1954:98).

Two maps show the project area at this time. The first map depicts land use of Waie`e (Figure 12). The quality of the map makes it difficult to distinguish between taro, truck crops, and papaya, but patches of these are depicted within the project area. On the east end of the project area, the map shows that bananas were grown. The second map illustrates ditches, and what is labeled as “main ditch” runs through most of the project area on the north side of Waie`e Stream (Figure 13).
Figure 11. Portion of a map for a Land Court application (Harvey 1956).

Figure 12. Portion of a map showing land use in Waiea's Valley (Chen 1954).
The post-World War II era witnessed a rapid modernization of the Ko‘olau District, including Waiakea-a-Akupa‘a. The Board of Water Supply’s Waiakea’s Tunnel was constructed in 1955 at the head of Waiakea Valley (Devaney et al. 1982:82). It runs for approximately 5 km (1,500 ft) to the dike zone deep in the Ko‘olau Mountains (Kendrick 2000). A variety of developments were proposed for the area and Kahului Highway was improved to support the future Valley of the Temples subdivision and other growth in the region in 1967. Further construction development continued into the following decades to include major infrastructure improvement projects (Helber, Hastert, and Fee 2007:1–22).

Previous Archaeology

Previous archaeological surveys offer significant information regarding traditional and historic land use. However, few studies have been conducted in the vicinity of the study area. The following discussion summarizes the findings of archaeological studies in Waiakea and at the Waiakea/Kahului border, based on reports found at the SHPD Kapolei library (Figure 14 and Table 1).

Although McAlister (1933) did not record any archaeological sites in Waiakea-Akupa‘a, two were documented not far from Waiakea: Kahouua, a Kaha‘u fishpond (Site 319) and Hala-hala‘a ma‘ona Heiau (Site 320). What is now known as Kahouua fishpond (Site 319) was formerly called Kahouua or Kahouua. This pond had a wall that was roughly 365 m (1,200 ft) long, and it supported a watch house. There were two moku‘i (spaces in the sluice gates) along the wall of the fishpond (McAlister 1933:179). Hala-hala‘a ma‘ona Heiau was destroyed by the time of McAlister’s (1933:176–177) survey—dismantled when the Libby, McNeill & Libby cannery was built on the site. It is said that the cannery was a failure because the heiau was desecrated.

No archaeological work took place in Waiakea until the 1980s, when an archaeological reconnaissance survey was conducted at coastal Waiakea (Kendrew 1981). No findings were reported from this study. Although lo‘i were recorded on historic maps of the area, no evidence of these were identified on the surface.

An archaeological reconnaissance survey for the proposed Paradise Village Development, east of Kahului Stream also had no findings (Barrera 1982). The location was used as a modern dumping area, and the ground surface was not visible. Subsurface survey or archaeological monitoring during construction were recommended.

Human remains were encountered at a construction site east of Kahului Stream on the makai side of Kahului Highway (Neller 1984). Fire-cracked rock and basalt flakes and tools were found at the base of the burial pit.

Archaeological monitoring at the wastewater pumping station at La‘aniai Beach Park, along Kāne‘ohe Bay yielded no findings (Shun 1992). Eight depositional layers were recorded during excavations, all culturally sterile.

An archaeological inventory survey was conducted at a 2.5-acre property located roughly 1 km east of the current project area (McEwen 2006). The survey consisted of a surface inspection and archaeological trenching. No cultural remains were encountered during the excavations or the surface survey. The remains of a piggery feature were noted, although they were thought to be less than 50 years old at the time of the survey.

An archaeological inventory survey at Kahului Regional Park consisted of a pedestrian survey and subsurface testing (Tulchin and Hammatt 2007). There were no findings.
An archaeological inventory survey at Kahala’u Beach Park identified one archaeological site (Perzinski et al. 2001). This consisted of two subsurface foundations and a cesspool dating to the early-20th century (SHP 50-80-08-5540). The site lacked integrity however, and was determined to not be significant.

Archaeological monitoring at the intersection of Kamehameha and Kekākīlī Highways was conducted for improvements to the intersection (Hunkin et al. 2010). No archaeological resources were observed during the monitoring.

In sum, archaeological work in the project vicinity has been relatively limited, with most projects occurring closer to the coast. Many projects produced negative findings, although agricultural remains were noted in the uplands, and a human burial, a fishpond, a heiau, and 20th century structural remnants were found near the coast.

Summary of Background Information

Wa’ie’e is a well-watered area that supported large fields of taro in the pre-contact era, with both wetland and dryland taro cultivated. At least two fishponds were maintained along the coast in nearby Kahala’u, adding to the abundant ocean resources of the region. Mo’olelo of the area speak of competition for the marine resources, indicating the importance of ocean food sources.
The historic period brought about widespread changes to the region, with sugar, rice, pineapple, military, and ranching enterprises making their mark on the landscape. During the Māhele of 1848, there were two LCAs awarded within the subject property and Māhele testimony for both parcels mention lo'i.

Previous archaeology has identified a few sites in the area. These include agricultural remains in the uplands, and a human burial, a fishpond, a heliau, and 20th century structural remains were found near the coast. Because the current project area lies along a major stream, traditional agricultural remains might be expected. These could include terraces, ‘auwai, and subsurface pondfield deposits. Remnants of historic era land use would likely be related to rice, sugarcane, or pineapple cultivation.

**Anticipated Findings and Research Questions**

As noted above, a variety of archaeological remains are known to occur in Waihē. However, most of these are located on or near the coast. As the project area is located along a stream in the central part of the ahupua‘a, traditional lo‘i or remnants of historic rice, sugarcane, or pineapple agriculture are the most probable site types to be found.

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 any vestiges of pre-contact land use within the survey area, particularly lo‘i along Waihē Stream?** Where are they located and to what time period do they belong?
2. **Are there remains of historic-era use of the study area, particularly sites related to rice, sugarcane or pineapple agriculture?**

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 study area.

**METHODS**

Pedestrian survey was conducted on March 28, March 29, May 7, and May 14–16, 2019. Two to five archaeologists were present per day for the survey, including Windy McElroy, PhD; Trisha Drennan, MA; Steven Eminger, Arleene Garcia-Herbst, CPhl; Jeffrey Lapinau; Max Pinonnesupil, MA; and Danielle Sheehan, BA. Site documentation was carried out on October 22–24 and 28–31, 2019 and January 14–17 and 21–23, 2020 by Windy McElroy, Lapinau, Pinonnesupil, Shemesh, Tiffany Brown, BA, and Robin Kapoi, BA. Subsurface testing was conducted on May 15, 16, and 18, 2020. Archaeologists participating in the subsurface testing included Windy McElroy, Pinonnesupil, Lapinau, Dana Nicole Avila, BA; Ikika McElroy, AA; and Kileanalani McElroy, MA, with 3–6 archaeologists present per day. Windy McElroy served as Principal Investigator, overseeing all aspects of the project.

Much of the project area was covered in dense vegetation, and visibility was poor. Approximately 9% of the project area was not walked due to vegetation conditions (see Figure 17). Vegetation consisted of several dense patches of hau (Figure 15), as well as other areas covered in ginger, vines, or weeds (Figure 16). The upland portion of the project area (to the south) consisted of slopes forested in hala and fera and had better visibility than the lowlands. Archaeological sites were identified visually and were marked with pink flagging tape and recorded with a 3 m-accurate Garmin GPSMap 62st.

Vegetation clearance to assist site documentation was conducted by Hui Kū Moani Ola. Weed whackers, chainsaws, and hand tools were used to cut the brush. At least one archaeologist was on site during the vegetation clearance to direct the clearing crew and assure that archaeological sites were not impacted. Sites were mapped using tape and compass. Digital photos were taken using iPhone and Android cameras.

Test units (TU) were excavated in eight locations across the project area. Excavation was conducted by hand with trowels and whisk brooms. Vertical provenience was measured from the surface, and trenches were excavated to sterile soil with saprolitic rock. Profiles were drawn and photographed, and soils were described to USDA standards using Munsell soil color charts (Munsell Color 2010), the USDA Soil Survey Manual (Soil Science Division Staff 2017), and a soil texture flowchart (Thien 1979). Excavated soil was screened through ¼-inch mesh at the discretion of the archaeologists. Trench locations were recorded with a 3 m-accurate Garmin GPSMap 62st, and all trenches were 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). Collected materials will be temporarily stored at the Keala Pono office in Kapolei, Hawai‘i until the close of the project, when they will be turned over to the landowner.
RESULTS

Pedestrian survey was conducted in the 11.51 ha (28.43 ac.) project area. Two archaeological sites were identified, consisting of 15 features. SIHP 50-80-10-08919 is the main access road and two culverts associated with the road. SIHP 50-80-10-08920 includes the other archaeological features found within the project area. These consist of terraces, water control features, C-shaped structures, an old road, historic structural remnants, and a possible platform. Subsurface testing consisted of the excavation of eight test units. Traditional and historic artifacts, modern material, and charcoal were collected. Two charcoal samples were submitted for radiocarbon dating.

Community Consultation

A cultural impact assessment for the project covered the TMK: (1) 4-7-006-010 (por.) and :018 project area (McGuire et al. 2019). Four community members were interviewed. Interviewees identified 'ula 'ula and lei-making as traditional gathering practices occurring in the project area. Interviewees also identified several archaeological sites including 'lo'i, 'auwai, walls, adze quarries, and burial sites that may lie within the project area. The interviewees were concerned about the large numbers of hikers in the valley and the negative effects this has had on the area and its residents. In all, the project was generally supported by the interviewees.

Pedestrian Survey

The surface survey included 91% of the 28.43 ac. study area (Figures 17–19). Much of the project area was covered in dense vegetation, and visibility was generally poor. Approximately 9% of the project area was not walked due to vegetation conditions, consisting of 1.2 ac. in the southwest, 15 ac. in the center, and 63 ac. in the northeast of the project (see Figure 17). The main vegetation in the lowlands consisted of several dense patches of hala (see Figure 15), as well as other areas covered in ginger, vines, or weeds (see Figure 16). The upland portion of the project area (on the south) consisted of slopes forested in hala and ferns and had better visibility than the lowlands. Two archaeological sites were found: SIHP 08919, which includes the main road and two associated culverts; and SIHP 08920, a large complex of terraces, water control features, C-shaped structures, an old road, historic structural remnants, and a possible platform.

SIHP 50-80-10-08919

SIHP 08919, consists of the main access road and two culverts associated with the road. The road (Feature 08919a) extends through much of the northern edge of the project area, while one culvert (Feature 08919b) is located in the central western portion of the project, and the other (Feature 08919c) is on the far west side (see Figure 17).

The road (Feature 08919a) appears to be an extension of Waialae Road that continues from the mauka (west) end of the current Waialae Road southwest through almost the entire project area, and continuing outside the project boundary to the southwest. A portion of the road first shows up on an 1880 map (see Figure 9), where it ends roughly halfway up the project area and connects with a hatched line. There is no key on the map, but the hatched line may represent a fence or other boundary since the topography there would be too steep for a train track. A 1936 map shows a trail extending from the road’s end (see Figure 11). The entire road can be seen on a 1937 map (Figure 20; see Figure 2), indicating that the mauka portion of the road was constructed by this time.

The section of road within the project area consists of two segments, roughly 1.3 m wide each. One segment of the road runs for 850 m from the end of the current Waialae Road on the east to where
Figure 17. Location of archaeological features and areas that were not surveyed due to heavy vegetation (USGS 1998).

Figure 18. Location of archaeological features and areas that were not surveyed due to heavy vegetation, north side of project area (topographic map provided by G70).
it exits the project area on the west at a sharp bend. The other road segment enters the project area 55 m south of where it exited and continues in a moderate curve for 180 m where it again exits the project area and continues for an undetermined length beyond the project boundaries. The road is mostly asphalt and gravel paved but is not well maintained, with many potholes and areas where the asphalt has deteriorated (Figure 21). It is currently used as an access road for the Board of Water Supply.

Feature 08919b consists of two culverts that extend beneath the road in the west-central part of the project area (see Figure 17). The western culvert is built of mortared cobble stones that house a cement pipe which extends beneath the road to the other side (Figures 22 and 23). The culvert on the east side of the road is constructed of unmortared piled stones and boulders that retain the slope beneath the pipe (Figures 24 and 25). In total, the feature measures 10 m long by 1 m wide and up to 2 m tall. It functions as a water control device and is likely historic in age.

The Feature 08919c culvert is located on the west side of the road toward the west end of the project area (see Figure 17). It consists of a wall with a cement pipe embedded in it, and a rock alignment (Figure 26). The wall is made up of mortared basalt cobble stones and stones with a cement cap (Figure 27). It measures 1.8 m long, 48 cm wide, and up to 90 cm tall. A large stone on the south side of the wall is set into the natural soil slope. A cement pipe runs out of the bottom of the wall at the center and continues beneath the road. There was no corresponding culvert visible on the opposite side of the road. Approximately 80 cm southwest of the pipe is a rock alignment made up of cobble stones set into the ground in a single alignment. The alignment is 150 cm long, 40 cm wide, and up to 50 cm tall. The Feature 08919c culvert functions as a water control device and is likely historic in age.

In sum, SHIP 08919 consists of a road and two culverts that are associated with the road. The road functions as transportation, while the culverts serve as a water control feature. The eastern portion of the road dates to at least 1880 when it is depicted on a historic map, while the western portion is not illustrated on historic maps until 1957. The culverts likely date to the time the adjacent segments of road were constructed. The site is in fair to good condition; the road is still intact and in use today, although it is in need of repair. The culverts are mostly intact, although there is damage on the northwest end of Feature 08919c, evidenced by missing rock and mortar. The culverts still function to divert water under the road.

Figure 21. Segment of Feature 08919a road. Orientation is to the northwest.

Figure 22. Feature 08919b western culvert, east face profile drawing.

Figure 23. Feature 08919b western culvert. Orientation is to the east.
Figure 24. Feature 08919b eastern culvert, west face profile drawing.

Figure 25. Feature 08919b eastern culvert. Orientation is to the west.

Figure 26. Feature 08919c culvert, plan view drawing.

Figure 27. Feature 08919c culvert. Orientation is to the northeast.
SIHIP 50-80-10-08920

SIHIP 08920 includes the other archaeological features found within the project area. They make up a network of ditches, agricultural features, a possible animal husbandry structure, and an old road. These were grouped into 12 features, each is described below. Together they likely represent use of the area from traditional times to the present.

Feature 08920a is a ditch located at the east corner of the project area (see Figure 17). This ditch is also known as Waihe'e 'Aauwi 2 (BWS 2011). It measures 20 m long, 1 m wide, and the wall of the ditch is up to 85 cm tall (Figure 28). The ditch runs along the east side of the stream where it is made up of a wall of cobbles and stones set in cement on the west and a cliff on the east, which form a ditch between them (Figure 29). On the south end of the wall there is an opening to the stream for water flow. A stone dam (Minoe'wi 1) begins in this area and crosses the stream. The minoe'wi is built with river gravel, cobbles, and stones, and appears to be recently constructed or modified (Figure 30). The ditch continues out of the project boundary to the northeast where it consists of cut earth with no mortar or stonework. Within the ditch on the north end are two ceramic pipes that form a tunnel to the earthen ditch that continues outside the project area. This feature is likely historic in age and functioned as a water control feature.

Feature 08920b consists of structural remnants located in the northeastern portion of the project area, just east of Feature 08920c 'Aauwi 1 (see Figure 14). The structure is made up of broken cement troughs situated on a cement foundation (Figure 31), with parts of the cement foundation composed of mortared rock (Figure 32). Rusted metal posts are visible on the foundation (Figure 33), and sheets of galvanized steel remain on some of the troughs. Each trough exhibits a cement drain at the southeast end. In all, the structure measures 14 m long, 6 m wide, and up to 30 cm high. Historic material, including bottles and jars were collected from the surface of this feature (see Laboratory Analysis section). The cultural material and structural remains suggest that this feature is historic in age. It may have functioned as a pig pen or had some other animal husbandry use.

Feature 08920c is a large complex of terraces and 'aauwi situated along the central and south portion of the northern project area (see Figure 17). It consists of two 'aauwi, a mound, and three terraced areas that are severely overgrown in ha'au (Figure 34). Feature 08920c 'Aauwi 1 is a ditch that runs the entire length of the complex on the northwest side of the terraces and south of the access road. It is composed of an earthen ditch that extends for approximately 220 m (Figure 35). This ditch is also known as Waihe'e 'Aauwi 1 (BWS 2011). 'Aauwi 1 is as deep as 2.2 m in places where the terrain is steeply sloping. Its northeastern end exhibits a portion that is lined on both sides with cement (Figure 36). This cement feature measures 16.5 m long, 3 m wide, and up to 70 cm deep. It is heavily overgrown, and modern trash litters both banks of the cement feature (Figure 37). On the northeastern end, the ditch continues to feed lolo downstream while its southwestern end is near a modern dam (Minoe'wi 2). The minoe'wi is made up of stacked stones and cobbles and modern material such as cardboard and leaves that are constructed across Waihe'e Stream (Figure 38).

Feature 08920c 'Aauwi 2 is a ditch that runs through the south and center portion of the Feature 08920c complex (see Figure 34). It is an earthen ditch that extends for roughly 300 m and is up to 80 cm deep. A perpendicular offshoot of this 'aauwi extends northwest between the terrace features of the complex. The two 'aauwi functioned as water control features; their age is undetermined, although 'Aauwi 1 is still in use and maintained today. Feature 08920c Mound 1 is a mound located at the northern end of Feature 08920c, between the two 'aauwi. It is made up of piled cobbles and stones that form a roughly square shape (Figure 39). The mound measures 2.5 m long, 1.2 m wide, and 25 cm tall (Figure 40). Excavation at this feature suggests that it is a natural rather than cultural feature (see Subsurface Testing section).

Figure 28. Feature 08920a ditch, plan view drawing (note that only the portions of the wall visible above the water are shown).
Figure 28. Feature 08920a ditch. Orientation is to the south.

Figure 30. Feature 08920a, mānōwai (foreground) and ditch (background). Orientation is to the east.

Figure 31. Feature 08920b structural remnants, plan view drawing.

Figure 32. Feature 08920b rock and mortar foundation. Orientation is to the west.
The terraced areas of the Feature 08920c complex consist of Features 08920c Terraces 1, 2, and 3 (see Figure 34). Terrace 1 is an expanse of terracing in the northern part of Feature 08920c. This area is characterized by earthen berms with a few segments that are reinforced with piled stones and cobbles (Figure 41). The longest berm is approximately 100 m long, and the berms are typically 1 m wide and 50 cm tall (e.g., Figure 42). Between the berms, the terrain is flat. Terrace 2 is an expanse of terracing in the central portion of Feature 08920c. This area is characterized by earthen berms with some segments that are reinforced with piled or stacked stones and cobbles. The most prominent section of stonework consists of an L-shaped berm at the northeast corner of the feature (Figure 43). This section exhibits a 35 m-long berm (Figure 44) with several remnants of perpendicular berms that extend into a flat area obscured by dense hau. The longest berm has a short segment of stacked stones and cobbles two courses high. This berm rises as much as 115 cm above 'Auwai 2, which is to the south. The perpendicular berm remnants are less substantial, rising 40 cm tall at most. Excavation of Terrace 2 yielded charcoal found beneath stonework, although wood taxa identification was inconclusive and the sample was not submitted for radiocarbon dating (see Subsurface Testing and Laboratory Results sections). Terrace 3 appears to be one large terrace in the southern portion of Feature 08920c. 'Auwai 2 is on the north of the terrace, while the 'Auwai 1 is on the west, and Waiehe Stream is on the south and east. An earthen berm roughly parallels the stream for part of its length, then continues northeast to connect with 'Auwai 2. While the berm exhibits sections of piled stones and cobbles (e.g., Figure 45), it is mostly earthen (Figure 46). The berm is approximately 200 m long and as tall as 150 cm where it transitions into the natural stream cut along Waiehe Stream. Terraces 1, 2, and 3 were likely used for wetland agriculture, although their age is undetermined. The complex is visible on a 1936 map, where 37 terraces and an 'auwai are depicted (see Figure 11). It is likely that most of the terraces have eroded so badly that they are not identifiable in the heavy vegetation that has overtaken the area. In all, Feature 08920c probably functioned a wetland agricultural complex of undetermined age, but at least dating to 1936.

Feature 08920d consists of two rock wall segments located in the central part of the project area, just south of the access road (see Figure 17). The northern segment is composed of cobbles and stones in a 2.6 m-long alignment, approximately half of which is stacked and the other half is in a single alignment (Figure 47). This segment measures 20 cm wide and 35 cm tall (Figure 48). The southern segment lies 7.5 m to the south (see Figure 47). It is made up of piled cobbles and stones in a 4.2 m-long alignment. This segment measures 60 cm wide and 30 cm tall. On the north side of this wall segment is a depression that forms what may have once been a ditch (Figure 49). The ditch appears to channel a possible spring that trickles from the small slope above it, although it is unclear where the ditch once led to. This feature may have been used for water control. Its age is undetermined.
Figure 39. Feature 08920c Mound, plan view drawing.

Figure 40. Feature 08920c Mound. Orientation is to the south.

Figure 41. Feature 08920c Terrace 1, portion of central berm, plan view drawing.

Figure 42. Feature 08920c Terrace 1, portion of central berm. Orientation is to the northeast.
Figure 47. Feature 08920d rock wall segments, plan view drawing.

Figure 48. Feature 08920d, northern wall segment. Orientation is to the north.

Figure 49. Feature 08920d, southern wall segment. Orientation is to the south.
Feature 08920e is a terrace remnant located in the central part of the project area along the west side of the stream (see Figure 17). The remnant consists of a linear bank on the south and a retaining wall and drainage way on the northeast (Figure 50). Both are heavily overgrown. The bank is composed of soil with piled cobbles and stones and measures 20 m long, 1.6 m wide, and up to 55 cm tall (Figure 51). The retaining wall is built of cobbles and stones that may have once been stacked but now appear piled and eroding into the stream (Figure 52). It measures 3 m long, 1 m wide, and 1.34 cm high. An opening that appears to be a drainage into the stream is on the northwest side of the wall. Excavation yielded isolated charcoal, however it was not found within or beneath feature rocks and is therefore not suitable for radiocarbon dating (see Subsurface Testing and Laboratory Results sections). Feature 08920e may be a remnant of an agricultural terrace. Its age is undetermined.

Feature 08920f consists of a possible platform and alignment located in the central part of the project area on the north side of the stream (see Figure 17). The platform is made up of piled cobbles and stones and has been disrupted by a large tree (Figures 53 and 54). Adjacent to the platform is a boulder alignment that forms an elongated C-shape with the platform. The feature measures 4.5 m long, 4.2 m wide, and 60 cm tall. A doll head was found within the rocks of the platform where it adjoins to the alignment (Figure 55). It was left in place. Historic or modern material and scattered charcoal were recovered from within the feature during excavation (see Subsurface Testing and Laboratory Results sections). Based on the collected materials, this feature is historic or modern in age, but its function is of yet undetermined.

Feature 08920g is a C-shaped structure located in the central part of the project area on the north side of the stream (see Figure 17). The feature is composed of a single alignment of cobbles and stones, measuring 2.3 m long, 2.2 m wide, and up to 30 cm high (Figure 56). It is not a very substantial feature (Figure 57) and did not likely function as a habitation structure. Excavations at this feature yielded no findings (see Subsurface Testing section). The age and function of this feature is undetermined.

Feature 08920h is a series of connected C-shaped structures located in the central part of the project area on the north side of the stream (see Figure 17). The feature is made of piled stones and boulders, some of which have fallen over. Several other piled rock walls radiate out from the C-shape to form a series of possibly habitation areas (Figure 58). The structure measures 9 m long, 6 m wide. Excavations yielded a modern glass shard found beneath the rocks of the feature, rending the C-shape a modern construction (see Subsurface Testing and Laboratory Results sections). It may have functioned as a modern temporary shelter (Figure 59).

Feature 08920i is a cement structure that crosses Waibike Stream near the Feature 08920j terrace complex (see Figure 17). The cement spans 9.2 m of the stream in an east to west orientation (Figure 60). It measures roughly 7 m at its widest point, and is up to 60 cm in height. Stones and boulders are cemented into both the east and west ends, and there is a cement slope in the center (Figure 61). A USGS stream gaging station lies 2 m to the southeast, on the east bank of the stream. Feature 08920i is a water control feature that may be historic in age.

Feature 08920j is a terrace complex located along the eastern boundary of the project area, east of the stream (see Figure 17). The system is made up of a large terrace, two small terraces, and an 'auwai (Figures 62 and 63). The large terrace abuts the project boundary on the south and the complex continues further south, outside the survey area. The large terrace is composed of an earthen bank with some areas reinforced with rock. The maximum height of this bank is 2 m, and its slope covers a width of approximately 5 m. The northern small terrace steps down from the large terrace on the north. It exhibits a much narrower earthen bank that has a maximum height of 1.90 m (Figure 64). The southern small terrace exhibits a wall made up of piled stones and cobbles up to 45 cm tall, with
Figure 51. Feature 08920e terrace remnant (berm). Orientation is to the northeast.

Figure 52. Feature 08920e terrace remnant (retaining wall). Orientation is to the south.

Figure 53. Feature 08920f platform (right) and alignment (left), plan view drawing.

Figure 54. Feature 08920f. Orientation is to the south.
Figure 55. Close up of doll head at Feature 08920f. The face was originally turned toward the interior of the structure and was returned to its original position after the photo was taken. Orientation is to the south.

Figure 57. Feature 08920g. Orientation is to the southeast.

Figure 56. Feature 08920g C-shaped structure, plan view drawing.

Figure 58. Feature 08920h C-shaped structures, plan view drawing.
one section of two-course stacking. The 'a'wai segment runs along the east side of this terrace (Figure 65) and extends out of the project area to the northeast. The south end of the 'a'wai transitions into an old road (see Feature 08920) although on a 1936 map it continues to the stream (see Figure 11). As a whole, the complex measures approximately 120 m long and 90 m wide. A 1937 TMK map shows the 'a'wai extending along the eastern project boundary and turning west to meet the stream (see Figure 17). Excavations at the feature yielded volcanic glass and scattered charcoal, wood taxa identification of the charcoal was inconclusive, rendering the sample not suitable for radiocarbon dating (see Subsurface Testing and Laboratory Results sections). The complex is visible on a 1936 map, where 31 terraces and an 'a'wai are depicted (see Figure 11). It is likely that most of the terraces have eroded so badly that they are not identifiable in the heavy vegetation that has overtaken the area. The Feature 08920 complex likely functioned as a wetland agricultural system of undetermined age, but at least dating to 1936.

Feature 08920K is a terrace complex located along the western boundary of the project area, just west of the access road (see Figure 17). A stone-faced retaining wall runs roughly north-south, and the area above the retaining wall is flat, suggesting a terrace (Figure 66). This wall is composed of cobbles and stones stacked 2–7 courses high. A perpendicular wall divides this terrace from another lower terrace to the north (see Figure 66). This perpendicular wall becomes less substantial toward the west, where only the tops of a few rocks are visible on the surface. It is likely that much of this wall is buried. An earthen ditch runs below the two terraces (Figure 67) but is cut off on the south by the access road, suggesting that the ditch pre-dates the road. The complex in total is approximately 40 m long by 30 m wide, with the tallest portion of wall measuring 110 cm. It is heavily overgrown with ginger, and although the entire ginger patch was walked and the identified walls were cleared of vegetation, it is possible that there are additional walls of the system that are low or buried that were not found during the survey. Excavations at this feature did not collect anything to determine age or function of the terrace complex (see Subsurface Testing section). A turn-mold glass bottle was wedged within the main wall of this terrace (see Laboratory Analysis section), although this would not necessarily point to a post-contact construction date for the wall. A 1936 map shows two LCAs in the Feature 08920K vicinity (see Figure 11). While 1931 systems are depicted in other areas of this map, none are shown at the Feature 08920K location, suggesting that the feature dates to a later time. This feature likely functioned as a wetland agricultural system, the age of which is undetermined, but possibly dating to the historic period.

Feature 08920 consists of a dirt road remnant located in the southern part of the project area, south of the stream (see Figure 17). The road is characterized by a flat swath that cuts through the natural slope (Figures 68 and 69). Stone facing was noted on the downslope side just outside the project area to the east, and several metal pipe remnants were found along the road (Figure 70). The road
Figure 62. Feature 08920j terrace complex, plan view drawing.

Figure 63. Portion of Feature 08920j, southernmost terrace, plan view drawing; closer view to show test unit location.

Figure 64. Feature 08920j berm of small terrace on the north. Orientation is to the east.
Overall the site is in poor to fair condition; many of the features are severely overgrown and suffer from erosion. Several of the SHIP 08920 features may be historic in age, while the age of most features is undetermined. After subsurface testing, one of the features was determined to be modern (Feature 08920b), while another is thought to be natural (08920c Mound). The site may represent use of the area from traditional times to the present.

Subsurface Testing

The subsurface testing strategy was approved by SHPD before testing began. A total of eight test units were excavated to determine the presence or absence of subsurface archaeological deposits or material (Table 2; see individual feature plan view drawings for test unit locations). All units were excavated by hand and were terminated at a compact layer of sterile soil with saprolitic rock unless otherwise noted. No archaeological deposits were found; charcoal and cultural material were very sparse. Stratigraphy consisted entirely of natural alluvial deposits (Table 3).

Table 2. Test Unit Data

<table>
<thead>
<tr>
<th>Test Unit</th>
<th>Feature #</th>
<th>Description</th>
<th>Function</th>
<th>Age</th>
<th>TU Size (cm) and Location</th>
<th>Data Recovered</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU 1</td>
<td>08920c</td>
<td>Mound</td>
<td>natural</td>
<td>N/A</td>
<td>50x50 over mound</td>
<td>charcoal found beneath wall; wood taxa identification inconclusive; not suitable for dating</td>
</tr>
<tr>
<td>TU 2</td>
<td>08920c</td>
<td>Terrace 2</td>
<td>wetland ag</td>
<td>undetermined</td>
<td>50x50 abutting terrace wall</td>
<td>isolated charcoal found in soil; wood taxa identification inconclusive; not suitable for dating</td>
</tr>
<tr>
<td>TU 3</td>
<td>08920c</td>
<td>terrace remnant</td>
<td>agriculture</td>
<td>undetermined</td>
<td>50x50 abutting terrace wall</td>
<td>charcoal found in soil; wood taxa identification inconclusive; not suitable for dating</td>
</tr>
<tr>
<td>TU 4</td>
<td>08920f</td>
<td>platform and alignment</td>
<td>undetermined</td>
<td>historic or modern</td>
<td>50x100 over platform</td>
<td>charcoal, wood fragments found in soil; wood taxa identification inconclusive; not suitable for dating</td>
</tr>
<tr>
<td>TU 5</td>
<td>08920g</td>
<td>possible C-shape</td>
<td>undetermined</td>
<td>modern</td>
<td>50x50 inside C-shape</td>
<td>none</td>
</tr>
<tr>
<td>TU 6</td>
<td>08920h</td>
<td>possible C-shape</td>
<td>possible temporary shelter</td>
<td>modern</td>
<td>50x50 inside C-shape</td>
<td>modern glass beneath feature rocks</td>
</tr>
<tr>
<td>TU 7</td>
<td>08920j</td>
<td>Lo'i and 'auwai</td>
<td>wetland ag</td>
<td>undetermined</td>
<td>50x50 abutting terrace wall</td>
<td>isolated charcoal and volcanic glass found in soil; wood taxa identification inconclusive; not suitable for dating</td>
</tr>
<tr>
<td>TU 8</td>
<td>08920k</td>
<td>Lo'i</td>
<td>wetland ag</td>
<td>undetermined</td>
<td>50x50 abutting terrace wall</td>
<td>none</td>
</tr>
</tbody>
</table>

In summary, SHIP 08920 includes 12 features. These consist of terraces, water control features, C-shaped structures, an old road, historic structural remnants, and a possible platform. The largest feature of the site is a wetland agricultural complex with two 'auwai, multiple terraces, and a mound.

measures 2–3 m wide and approximately 150 m long. The north end begins at the 'auwai of the Feature 08920j agricultural system, then the road continues, contouring the slope until it makes a U-turn and ends at a soil berm on the south. It is possible that this is the road illustrated in Figure 20 labeled as "20 ft. Road & Pipeline Easement," although the alignment depicted on the map does not exactly match what was followed on the ground, and the Feature 089201 road is not 20 ft. (6 m) wide. Feature 089201 is likely historic and may have been used to install and/or maintain the pipeline.
Table 3. Soil Descriptions

<table>
<thead>
<tr>
<th>Test Unit</th>
<th>Layer</th>
<th>Depth (cm)</th>
<th>Color</th>
<th>Description</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU 1</td>
<td>2</td>
<td>0-30</td>
<td>10YR 3/3 dark brown</td>
<td>Sandy clay loam; 6% roots, 60% rocks; saprolitic rock; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 2</td>
<td>1</td>
<td>0-17</td>
<td>10YR 2/2 very dark brown</td>
<td>Clay; 1% roots, 50% rocks; isolated, scattered charcoal at 14 cmbs; saprolitic rock; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 3</td>
<td>1</td>
<td>0-48</td>
<td>10YR 2/2 very dark brown</td>
<td>Clay loam; 10% roots, 7% rocks; isolated, scattered charcoal at 25 cmbs; saprolitic rock; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 4</td>
<td>1</td>
<td>0-50</td>
<td>10YR 3/4 dark yellowish brown</td>
<td>Clay; 15% roots, 15% rocks; modern or historic debris; isolated, scattered charcoal; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 5</td>
<td>1</td>
<td>0-53</td>
<td>10YR 3/2 very dark grayish brown</td>
<td>Sandy loam: 20% roots, 5% rocks; saprolitic rock; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 6</td>
<td>1</td>
<td>0-40</td>
<td>10YR 3/2 very dark grayish brown</td>
<td>Clay loam; 10% roots, 30% rocks; modern debris; saprolitic rock; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 7</td>
<td>1</td>
<td>0-52</td>
<td>10YR 2/2 very dark brown</td>
<td>Loamy clay; 6% roots, 5% rocks; isolated scattered charcoal and volcanic glass; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
<tr>
<td>TU 8</td>
<td>1</td>
<td>0-58</td>
<td>10YR 3/2 very dark grayish brown</td>
<td>Clay loam; 30% roots, 30% rocks; base of excavation.</td>
<td>Natural Alluvium</td>
</tr>
</tbody>
</table>

TU 1 was excavated at Feature 08920c Mound, roughly in the center of the rock mound (see Figure 71). The unit measured 50 x 50 cm wide and was excavated to 50 cm below surface (cmbs). Stratigraphy consisted of a single deposit of natural alluvium (Figures 71 and 72). This deposit was a dark brown (10YR 3/3) sandy clay loam. No archaeological deposits or cultural material were identified. Excavation was stopped because the steep topography, culturally-sterile stratigraphy, and occurrence of saprolitic rock suggests a natural rock outcrop rather than a cultural feature.

TU 2 was placed at Feature 08920c Terrace 1, against a terrace wall (see Figure 43). The unit measured 50 x 50 cm wide and was excavated to 17 cmbs, where saprolitic rock was prevalent. Excavation proceeded beneath the rocks of the terrace wall to recover material suitable for dating. Isolated scattered charcoal was collected from beneath the rocks of the wall at 14 cmbs (see Laboratory Analysis). Stratigraphy consisted of a single deposit of natural alluvium (Figures 73 and 74). This deposit was a very dark brown (10YR 2/2) clay. No archaeological deposits or cultural material were identified, aside from the few small pieces of scattered charcoal.

TU 3 was placed at Feature 08920c, against a rock wall (see Figure 50). The unit measured 50 x 50 cm and was excavated to 48 cmbs, where saprolitic rock was prevalent. Isolated scattered charcoal was collected from the unit at 25 cmbs, not beneath the rocks of the wall (see Laboratory Analysis). Excavation proceeded beneath the rocks of the wall to recover material suitable for dating, although none was found. Stratigraphy consisted of a single deposit of natural alluvium (Figures 55 and 76). This deposit was a very dark brown (10YR 2/2) clay loam. No archaeological deposits or cultural material were identified, aside from the few small pieces of scattered charcoal.
TU 4 was placed at Feature 08920f, on top of the rock platform (see Figure 53). The unit initially measured 50 x 50 cm and was extended to 50 x 100 cm to get farther into the interior of the platform. Three courses of rock were removed before the ground surface was exposed, and excavation extended to 50 cmhs, where saprolitic rock was prevalent. Stratigraphy consisted of a single deposit of natural alluvium (Figures 77 and 78). This deposit was a dark yellowish brown (10YR 3/4) clay. Isolated, scattered charcoal and materials that are possibly modern or historic were collected from beneath the rocks of the platform (see Laboratory Analysis). No archaeological deposits were identified.
TU 5 was placed at Feature 08920g, within the interior of the C-shaped structure, abutting the rocks of the structure (see Figure 56). The unit measured 50 x 50 cm and was excavated to 53 cmbs, where saprolitic rock was prevalent and excavation was impeded by tightly packed cobbles and stones. Excavation proceeded beneath the rocks of the wall to recover material suitable for dating, although none was found. Stratigraphy consisted of a single deposit of natural alluvium (Figures 79 and 80). This deposit was a very dark grayish brown (10YR 3/2) sandy loam. No archaeological deposits or cultural material were identified.

![Figure 79. TU 5 at Feature 08920g, west face profile drawing.](image)

![Figure 80. TU 5 south face profile photo.](image)

TU 6 was placed at Feature 08920h, within the interior of the most prominent C-shaped structure, abutting the rocks of the structure (see Figure 58). The unit measured 50 x 50 cm and was excavated to 40 cmbs, where saprolitic rock was prevalent. Excavation proceeded beneath the rocks of the wall to recover material suitable for dating, although none was found. A fragment of modern glass was recovered from 16 cmbs, beneath the rocks of the C-shape (see Laboratory Analysis). Stratigraphy consisted of a single deposit of natural alluvium (Figures 81 and 82). This deposit was a very dark grayish brown (10YR 3/2) clay loam. No archaeological deposits or cultural material were identified, aside from the piece of modern glass.

![Figure 81. TU 6 at Feature 08920h, east face profile drawing.](image)

![Figure 82. TU 6 east face profile photo.](image)
TU 7 was placed at Feature 08920j, against a terrace wall (see Figure 63). The unit measured 50 x 50 cm and was excavated to 52 cmbs, where saprolitic rock was prevalent. Scant isolated scattered charcoal and volcanic glass were collected from the unit between 30 and 52 cmbs, not beneath the rocks of the wall (see Laboratory Analysis). Excavation proceeded beneath the rocks of the wall to recover material suitable for dating, although none was found. Stratigraphy consisted of a single deposit of natural alluvium (Figures 83 and 84). This deposit was a very dark brown (10YR 2/2) loamy clay. No archaeological deposits were identified.

Figure 83. TU 7 at Feature 08920j, south face profile drawing.

Figure 84. TU 7 south face profile photo.

TU 8 was placed at Feature 08920k, against a terrace wall (see Figure 66). The unit measured 50 x 50 cm and was excavated to 38 cmbs, where the unit started flooding with water and further excavation was impeded by large, tightly packed rocks (Figure 85). There was no other suitable place to excavate this feature, as shallow standing water and rising water was visible on the surface at all other walls of the terrace. Stratigraphy consisted of a single deposit of natural alluvium (Figures 86 and 87). This deposit was a very dark grayish brown (10YR 3/2) clay loam. No archaeological deposits or cultural material were identified.

Figure 85. TU 8 at Feature 08920k, plan view, base of excavation.

Figure 86. TU 8 at Feature 08920k, west face profile drawing.
Laboratory Results

A small assemblage of traditional and historical material was collected during the archaeological inventory survey. Most of the assemblage consists of glass bottles, however a single ceramic artifact, several metal items, two fragments of volcanic glass, and scattered charcoal were also collected. A total of 27 items were collected and given accession (Acc.) numbers (Appendix A).

Traditional Artifacts

Two fragments of volcanic glass were recovered from 30-52 crabs within TU 7 at Feature 08920j (Acc. 21a and 21b). They are small fragments (Figure 88), together weighing 8 g. Volcanic glass was used in food preparation, processing of plant materials, and in fine woodworking (Barrera and Kirch 1973). It is not uncommon to find volcanic glass in lo‘i sites, for example in a study of lo‘i in Waiānu, Moloka‘i, McElroy (2007:195) recovered volcanic glass from seven of 13 lo‘i systems investigated.

Historic Artifacts

In total, 22 possible historic artifacts were collected (see Appendix A). Artifacts that were sufficiently old – produced or in use at least 50 years before present—and of a diagnostic nature will be discussed further in this section. These consist of 20 items: 15 glass items, one fragment of ceramic bowl, and four metal items. A modern glass shard recovered from TU 6 and a non-diagnostic rusted piece of metal from TU 4 will not be discussed further. Historic material was found on the surface and in within one test unit, with most of the artifacts concentrated on the surface around Feature 08920b (Table 4).

Glass

All terminology used here to describe glass artifacts and determine their dates has been taken from The Parks Canada Glass Glossary (Jones and Sullivan 1989), in tandem with the IMACS User’s Guide (1992a) maintained by the Department of Anthropology at the University of Utah, and the “Historic Glass Bottle Identification & Information Website” (Lindsey 2019a) maintained by Bill Lindsey. For bottles particular to Hawai‘i, Hawaiian Bottles of Long Ago (Elliot and Gould 1988) and The Handbook of Hawaiian Machine Made Soda Bottles (Millar 1986) were consulted. The 13 glass artifacts consisted entirely of containers (bottles and jars).

Glass Bottle Dating: Mold Seams, Finishers, and Manufacturer’s Marks

There have been three major technological innovations in the manufacture of container glass – which will hereafter be used interchangeably with the term “bottle” - that are key to dating such artifacts. The free-blowing of glass, using a blowpipe alone has a history that goes back into deep antiquity, making such vessels desirable with great certainty. Its popularity greatly tapered off as newer methods provided more standardized bottle shapes and sizes. In the United States free-blown utilitarian bottles generally pre-date 1860. From ca. 1650, the mold-blowing of bottles was introduced to the industry. This method involved glass being blown into a square one-piece mold that gave the bottle its body shape, while its finish (lip and bore) was shaped by hand. Later datable developments in mold technology include: 1730s – the first use of dip molds in making cylindrical English “wine” bottles (buige seam around the shoulder, no embossed label); 1750 – introduction of a 2-piece hinged mold (seams down opposite sides/conner run below finish to cross the base on the diagonal, embossed labels on shoulder/base only); 1822 – invention of the 3-piece Ricketts mold (seams down opposite sides of body from below finish to circular seam on base); ca. 1850 – 3-piece cup-bottom mold introduced (seams down opposite sides of body from below finish to seam encircling heel); 1870s – “turn-molds” introduced for making “seamless” cylindrical bottles (highly polished, perfectly circular in horizontal cross-section) [e.g., Acc. 1 (Figure 89)] (Jones and Sullivan 1989; Lindsey 2019b; IMACS 1992a).

<table>
<thead>
<tr>
<th>Feature and Layer</th>
<th>Glass</th>
<th>Ceramics</th>
<th>Metal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>08919a Surface</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>08920b Surface</td>
<td>10</td>
<td>1</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>08920c, TU 4 Layer 1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>08920j Surface</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>08920k, Surface, within Lo‘i Wall</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
The glassmaking industry experienced profound change as automation was introduced. By 1904 the Owens fully automatic bottle machine had been patented (sometimes broken seams on opposite sides of the body run all the way up and over the finish, circular suction scar on base) (e.g., Acc. 2 [Figure 90]). Automation got its start with the slightly earlier development of the semi-automatic press-and-blow machines, used from the 1910s onward to produce milk bottles and other wide-mouth food jars (smooth, circular mark on center of base). By 1920 the use of machines had entirely replaced older methods of glass bottle manufacture in North America. This advance removed the human glassblower from the bottle-making equation entirely (Jones and Sullivan 1989; Lindsey 2019a).

Machine-made glass bottles dating from ca. 1920 onward are generally of a more uniform thickness, without the internal bubbling seen in the earliest products of automation (IMACS 1992a).

Automatic bottle machines formed bottles in their entirety, from base to finish (body seams run all the way up and over the finish). The standardizations made possible by machine-making saw the decline of the cork stopper, except for wine and liquor, in favor of screw caps and crown finishes from 1930 onward [e.g., Acc. 3 (Figure 91)] (Jones and Sullivan 1989; Lindsey 2019c).

Manufacturer marks located on the base and/or heel of mold-blown and machine-made bottles enable, when present, the pinpointing of a bottle’s date of production. Variations in company names or logos, as well as plant and date codes, can narrow it down to the exact year a bottle rolled off the assembly line [e.g., Acc. 15 (Figure 92)] (Lindsey 2019d). The Ricketts & Co. Glassworks, the same that had patented the 2-piece mold, was among the first to emboss bottle bases with their company name in the 1820s. By the 1850s, these maker’s marks could move from the center of the mold-blown bottle’s base. This was possible because the recently developed snap-case could hold a bottle for finishing without marring its base, as the previously used pontil rod inevitably had (Lindsey 2019b). While some glass bottle makers were including the rare date code on bottles in the latter half of the 19th century, date codes only became the norm on soda and milk bottles around 1930. By 1934, federal law in the U.S. required date codes on liquor bottles. Subtle changes in the glass company names and logos, as well as manufacturing date codes on bottle bases, further refine the dating of bottles from the 1940s onward (Lockhart and Hoening 2018:15; Lindsey 2019d).

Innovations in bottle labeling technology are datable, as well. 1650—individuals and taverns begin having their names/monograms/dates stamped into glass seals affixed to the bodies of ‘wine’ bottles (applied glass blob impressed with design from intaglio seal to create embossing while the glass is still hot); 1750—bottle bodies themselves became embossable with the introduction of the 2-piece...
mold; 1822—the Rickett mold allowed for the embossing of bottle shoulders; 1866—plate molds made it possible to emboss interchangeable labels, representing unique bottle contents, onto the bodies of standardized bottles (seam around the embossed label on the side of the body); 1934—applied color labels (ACL) were introduced in designs specific to given brand names (bottle contents labeled with baked-on enamels) [e.g. Acc. 2 (see Figure 9)] [Hume 1969; Jones and Sullivan 1989].

The carefully researched evolutions in form and decoration (labeling) of bottles used by specific bottling companies for particular contents (household products, medicines, sodas, beers, milk bottles, etc.) can also be used to pin down a date range for the production of a bottle (Elliott and Gould 1988; Jones and Sullivan 1989; Lindsey 2019a, b, c, d; Lockhart and Hoenig 2016; Lockhart et al. 2013a, 2013b).

Other datable features that appear on bottles include: 1933–1964—the embossing of a statement to the effect that “Federal Law Prohibits the Sale or Reuse of this Bottle” on liquor bottles, as mandated by post-prohibition legislation in the U.S. (Lindsay 2017d); 1934—beer bottles marked as non-returnable/non-refillable; 1940—“No Deposit—No Return” appearing on soda bottles (e.g., Acc. 13) (Antiquities Section of the Utah Division of State History 2015). In Hawaii’s, designation of the bottling location with certain abbreviations can also be used to date bottles: pre-1898—H.I. (Hawaiian Islands) or S.I. (Sandwich Islands); ca. 1898–1939—H.T. or T.H. ( Territory of Hawaii). Particular colors of glass can be highly diagnostic as well, given known dates for the invention of the chemical for methods that produced them: 1880–1925—amethyst (purple) from the addition of manganese; 1914–1930s—honey/wheat (pale amber) from the addition of selenium. Other colors became more popular for particular bottle forms at given periods: 1890–milk (opaque white) glass became more popular for cosmetics bottles and jars; 1890—cobalt (blue) became more popular for medicine bottles (Jones and Sullivan 1989; IMACS 1992a).

These features were called on in determining the earliest possible date of production for each of the 15 glass bottles or fragments that were accessioned. All 15 glass artifacts were container glass (bottles) that were dated. These results were then sorted by quarter-century to determine the chronological time frame of the assemblage (Table 5). Note that most of the bottles were not dated to a precise date, but instead to a range; in those cases, the earliest date for the item was used. Most items dated to 1925 or later (n=12), with only a few coming from earlier time periods (n=3) (see Table 5). All ten artifacts from Feature 08920b dated to 1934 or later. The oldest glass bottle was found wedged within the wall of Feature 08920k. This was a turn-mold bottle that dated from 1880–1919 [Acc. 1 (see Figure 8)].

Table 5. Earliest Production Dates for Glass Bottles (n=15)

<table>
<thead>
<tr>
<th>Earliest Probable Date</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850–1874</td>
<td>1</td>
</tr>
<tr>
<td>1875–1899</td>
<td>0</td>
</tr>
<tr>
<td>1900–1924</td>
<td>2</td>
</tr>
<tr>
<td>1925–1949</td>
<td>8</td>
</tr>
<tr>
<td>1950–1974</td>
<td>4</td>
</tr>
</tbody>
</table>

Glass Bottle Use: Form, Function, Decoration

The technological changes in glassmaking outlined above were driven by a desire for greater standardization in the capacity and shape of glass bottles, to better reflect the nature and quantity of their contents, as well as increase efficiency in bottle production (Jones and Sullivan 1989:22). Such standardization reflected the growing commodification of the world, with goods increasingly flowing from producer to consumer through tightly regulated and taxed national and international markets (Johnson 1996:187–196). While the evolution of mouth-blown molds could ensure the ever-more consistent shaping and embossing of bottle exteriors, it was not until the advent of machine manufacture that internal bottle capacities could be said to be truly uniform from one bottle to another (Jones 1986).

Patent medicines, sold as curatives on the basis of their unique and secretive compositions, were among the first contents for which uniquely shaped bottles were made, as marketing plays in the 18th century (Ortenfanger and Bogard 1969:72). Undifferentiated olive green “wine” bottles were the standard container used to ship, store, and serve all sorts of alcoholic beverages (wine, beer, cider, spirits) wherever the English had a trade or colonial presence from the late-17th century. By the mid-18th century, English glassmakers were differentiating between squatter beer-style and taller wine-style cylindrical bottles (Jones 1986). As the 19th century progressed, and the use of multi-part molds expanded, bottle forms multiplied and were increasingly tied to specific contents, with both bottle and contents produced in relatively small batches. Bottle form, as well as glass color, was often dictated by the nature of the contents and their use: thicker-walled bottles were employed when intended for repeated reuse, like those filled with beer and soda water; cylindrical brown bottles could handle carbonation and keep damaging sunlight away from beer (e.g., Acc. 4); cylindrical glass bottles of a pale aqua color were capable of withstanding the carbonation while showcasing the healthful purity of soda water and were easier to make after 1863, flanged or patent lips were common to bottles with medicinal contents, as these containers were meant to be opened and reused frequently with cork or glass stoppers. Trends in the association of glass color with content, including the use of cobalt glass for medicine bottles, continued through the transition to machine production, although the aqua glass of earlier soda water bottles gradually gave way to truly clear glass in many (though not all) soda bottles (Lindsey 2019c; Jones and Sullivan 1989; IMACS 1992a).
The 15 bottles include the following:

- 4 Soda / Mineral Water bottles:
  - 1 green turn-mold soda bottle likely produced between 1880 and 1910 [Acc. 1 (see Figure 89)]
  - 1 colorless Honolulu Soda Water Company bottle produced by Owens Illinois Bottling Company in Oakland California in 1966 [Acc. 2 (see Figure 90)] (Lockhart and Hoening 2018)
  - 1 colorless Coca-Cola bottle produced by Owens Illinois Bottling Company in Oakland California in 1967 [Acc. 3 (see Figure 91)] (Lockhart and Hoening 2018)
  - 1 colorless machine-made soda bottle produced as early as 1910 (Acc. 5)

- 2 Beer bottles:
  - 1 amber Dainippon Brewing Company bottle, filled between 1911 and 1949 (Acc. 4) (Ross 2009)
  - 1 green Anchor Hocking Glass Company beer bottle produced as early as 1938 (Acc. 13) (Lockhart et al. 2017)

- 7 Jars used for canning:
  - 6 colorless Anchor Hocking Glass Company jars produced as early as 1938 (Acc. 6-11) (Lockhart et al. 2017)
  - 1 colorless Glass Containers Corporation jar produced between 1934 and 1968 (Acc. 12) (Lockhart et al. 2015)

- 2 One-gallon carboys (large containers often used for transporting water or chemicals, or for at-home fermentation of beer/wine):
  - 1 colorless carboy produced in either 1965, 1975, or 1985 (Acc. 14) (Lockhart and Hoening 2018)
  - 1 colorless carboy produced in 1951 [Acc. 15 (see Figure 92)] (Lockhart and Hoening 2018)

---

### Table 6. Contents/Use of Glass (n=15)

<table>
<thead>
<tr>
<th>Glass Use/Contents</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soda/Mineral Water</td>
<td>4</td>
</tr>
<tr>
<td>Beer</td>
<td>2</td>
</tr>
<tr>
<td>Food</td>
<td>7</td>
</tr>
<tr>
<td>Water/Chemicals/Alcohol</td>
<td>2</td>
</tr>
</tbody>
</table>

---

The Movement of Bottles: Where They Were Made and Where They Were Filled

When considering how bottles moved around in the past, two pieces of retrievable information need to be considered independently. The first is, where the bottle itself was produced. The second is, where the bottle was filled (i.e., its contents "bottled"). Whether or not these questions can be answered depends entirely on what information the bottle itself contains (Schulz and Allen 2016).

For some glass manufacturers (e.g., Owens-Illinois), more specific information on glass plant locations can be gleaned from plant codes included in the maker's mark embossed on bottle bases (Lockhart et al. 2018; Lockhart and Hoening 2018). For other glass manufacturers, previous research can at least narrow down the location of bottle production to country, and possibly region within that country, based on just the maker's marks (Lockhart et al. 2016, Lockhart et al. 2017).

All of the glass artifacts that could be identified to origin came from either the mainland U.S. (n=12) or from Japan/Korea (n=1 bottle in three fragments) (Table 7). None originated in Hawai‘i, a testament to the islands' continued reliance on imported glass (Elliot and Gould 1988:6). Interestingly, while none of the glass bottles were manufactured in Hawai‘i, at least one was filled on the islands (Acc. 2 (see Figure 90)). The only other item that bottling location could be identified was made in Japan or Korea and also bottled there.

### Table 7. Origin of Bottle Glass

<table>
<thead>
<tr>
<th>Origin of Bottle</th>
<th>Number of Artifacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Mainland, General</td>
<td>8</td>
</tr>
<tr>
<td>Oakland, CA</td>
<td>3</td>
</tr>
<tr>
<td>Undetected</td>
<td>2</td>
</tr>
<tr>
<td>Brockport, NY</td>
<td>1</td>
</tr>
<tr>
<td>Japan or Korea</td>
<td>1</td>
</tr>
</tbody>
</table>

---

### Ceramics

The general terminology used here to describe the ceramic artifact was taken from The Archaeologist's Fieldwork Companion (Kipher 2007), in tandem with the IMACS User's Guide (1992b) maintained by the Department of Anthropology at the University of Utah.

The assemblage contains only a single ceramic artifact, consisting of two fragments of a Japanese porcelain bowl, produced between 1854 and the present-day (Maryland Archaeological Conservation Laboratory 2012). The ceramic fragments were found on the surface within Feature 089209.

- 2 fragments of a Japanese porcelain bowl of a style still constructed today but originating in the 1854 [Acc. 16 (Figure 93)] (Maryland Archaeological Conservation Laboratory 2012)
Metal

Metal artifacts found throughout the survey area could have dated from as early as the mid-19th century to the present (Table 8). The metal items consisted of two pieces of stainless steel flatware, an industrial valve, and a .30 caliber carbine cartridge casing. The earliest probable production of the flatware can be placed in the 1920s when stainless steel became a common material for flatware (Britannica 2020). While the valve itself is difficult to date, the threading visible in its production places its earliest possible production in the mid-19th century (Hounshell 1978). The .30 caliber carbine cartridge was first put into production in 1942 as the standard ammunition for the M1 Carbine, a light personal defense weapon issued to infantry in World War II (Barnes 2009). Both pieces of flatware, along with the valve, were found on the surface in association with Feature 08920b. The .30 caliber cartridge casing was found in Unit 4, beneath the rocks of Feature 08920f, indicating the 1940s as an earliest possible date for that feature.

<table>
<thead>
<tr>
<th>Earliest Probable Date</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1850-1875</td>
<td>1</td>
</tr>
<tr>
<td>1875-1899</td>
<td>0</td>
</tr>
<tr>
<td>1900-1924</td>
<td>2</td>
</tr>
<tr>
<td>1925-1949</td>
<td>1</td>
</tr>
<tr>
<td>1950-1974</td>
<td>0</td>
</tr>
</tbody>
</table>

In total, there were four metal artifacts:

- 1 stainless steel spoon, produced with technology utilized since 1920 (Acc. 17) (Britannica 2020)
- 1 stainless steel butter-knife blade, produced with technology utilized since 1920 (Acc. 18) (Britannica 2020)
- 1 valve, produced with technology utilized since the mid-19th century, the valve itself is more modern in appearance however (Acc. 19) (Hounshell 1978)
- 1 .30 caliber carbine cartridge case, first put into production in 1942 (Acc. 20) (Barnes 2009)

Wood Charcoal

The main purpose of identifying the taxa of wood charcoal is to select short-lived species for radiocarbon dating. The heartwood of large trees can produce dates that are significantly older than the date in which the tree was burned. Selecting short-lived woods for dating reduces the effects of this problem, known as in-built age, or the old wood problem (e.g., Dye 2000). When selecting charcoal for dating, the context where the sample was collected is critical in establishing a relationship between the charcoal and the feature, in this case surface architecture. Charcoal found in excavation at a lower depth than the foundation of a feature provides a terminus post quem, or date before which the feature was not built. Academic literature has underscored the importance of responsible radiocarbon dating in Hawai’i:

> For many years, Hawaiian archaeologists have labored under the false assumption that it is possible to estimate the age of surface architectural features by dating materials found on, within, or near them. This has resulted in a corpus of radiocarbon dates whose association with particular archaeological events is unclear; in the case of surface architecture this means that the archaeologist has not identified the stratigraphic relationship of the dated material to the base of the structure and so cannot be confident of the relationship between them. (Dye 2010:144)

Determining stratigraphic relationships at surface architecture was particularly difficult during the current excavations, as only one stratigraphic layer was identified in all test units and no subsurface features such as firepits were encountered. For this reason, test units were excavated into the side walls of the units as appropriate, beneath the foundations of the surface architecture, with the goal of recovering material suitable for dating that would provide a terminus post quem.

Four samples of wood charcoal were recovered from excavations (see Appendix A). They were all scattered, isolated fragments, not found within a firepit or other fire-related feature. At TU 2 of Feature 08920c, the charcoal (Acc. 24) was collected from beneath the rocks of the lo’i wall, and could potentially provide a terminus post quem for the wall (i.e., the wall was not constructed before the charcoal was deposited). At TU 7 of Feature 08920d, charcoal (Acc. 25) was found in association with volcanic glass (Acc. 21a and 21b) (see Figure 15) and could potentially provide a date for use or deposition of the volcanic glass. These two charcoal samples were submitted for wood taxa identification; however results were inconclusive (Appendix B) and therefore they were not submitted for radiocarbon dating.

The other charcoal samples came from TU 3 at Feature 08920e (Acc. 27) and TU 4 at Feature 08920f (Acc. 26). At Feature 08920c, the isolated, scattered charcoal was found within the test unit at a position that was not beneath the wall of the feature. Because the relationship of the charcoal to the surface architecture could not be determined, this sample was not selected for wood taxa identification or radiocarbon dating. At Feature 08920f, modern or historic material was found beneath the rocks of the platform, confirming that the feature is not traditional in age and precluding the need for radiocarbon dating, which is less precise in later years because of increased carbon in the atmosphere.

Summary of Findings

Pedestrian survey of 11.51 ha (28.43 ac.) in Waie’o identified two archaeological sites consisting of 15 features. SHIP-08919 in the main access road and two culverts associated with the road. SHIP08920 includes the other archaeological features found within the project area. These consist of terraces, water control features, C-shaped structures, an old road, historic structural remnants, and a possible platform. Subsurface testing yielded volcanic glass, charcoal, historic material, and modern debris. Two charcoal samples were submitted for wood taxa identification but results were
inconclusive. No charcoal was submitted for radiocarbon dating because no samples suitable for
dating were identified.

The only two in-situ historic artifacts encountered in the project area were a turn-mold bottle from the
loʻi wall at Feature 08920k and a .30 caliber bullet found 41 at cred's in TU 4 of Feature 08920f. These
artifacts date to as early as the 1880s and 1940s respectively. While context of the bullet indicates
a historic to modern age for Feature 08920f, the bottle found within the wall at Feature
08920k may or may not have been placed there at the time it was built. The artifacts found scattered
on the surface at Feature 08920b are consistent with early to mid-20th century use of the feature. A
fragment of modern glass beneath the rocks of Feature 08920b indicates a modern age for that
feature.

The glass collection dated from the late-19th century to the mid 20th century and was concentrated
in the early to mid-19th century. The turn-mold soda bottle found in a terrace wall at ZL was the only
bottle made without an automatic bottle machine. Almost all of the glass bottles found were traced
to manufacturers in the U.S. Mainland, with only one bottle being produced in Japan. At least one
of the soda bottles was bottled locally.

Research questions for the survey can be answered as follows:

1. Are there any vestiges of pre-contact land use within the survey area, particularly loʻi along
Waialae’s Stream? Where are they located and to what time period do they belong?

Several possibly pre-contact archaeological features, including loʻi, were found within the survey
area. The construction style of the three terrace complexes (Features 08920c, 08926, and 08920k)
is consistent with pre-contact loʻi (dry-stacked rock walls; roughly rectangular shaped terraces that
step down with elevation; ‘auwai to divert stream water). Volcanic glass was recovered from one of
the loʻi excavations (TU 7 at Feature 08920j). This would suggest a pre-contact time period for use
of the area, as volcanic glass is not uncommon at pre-contact loʻi (e.g., McElroy 2007). The context of
the find does not definitively date Feature 08920k as a pre-contact structure, however. At Feature
08920k a historic bottle was found within a terrace wall, and the feature is not shown on a 1936 map
where other loʻi are depicted. However, these lines of evidence do not conclusively assign a post-
contact age for the wall or the complex. As expected, loʻi were found not far from Waialae Stream.
Feature 08920c is the largest and farthest downstream of the loʻi complexes. Features 08920j and
08920k are situated on opposite sides of Waialae Stream, at the bend in the project area (see Figure
17).

2. Are there remains of historic-era use of the study area, particularly sites related to rice,
sugar cane or pineapple agriculture?

SIHP 08919 dates to the historic era, and it was used for transportation. It consists of a road and two
culverts. SIHP 08920 contains six possible historic features. Two of these are water control features
(Features 08920a and 08920d), one is a possible pig pen (Feature 08920b), and one is a road (Feature
08920c). These features all incorporate concrete in their construction except for the road, which
exhibits rusted metal pipes in places. The Feature 08920f platform is either historic or modern in age,
based on material found within the rocks of the feature. The function of Feature 08920f could not be
determined. Whereas none of the historic features could be definitively linked to sugarcane or
pineapple cultivation, it is likely that the SIHP 08919 road, and possibly the Feature 08920c road
were used for transportation of these agricultural products that were known to be cultivated in the valley.

SUMMARY AND RECOMMENDATIONS

An archaeological inventory survey was conducted for the proposed Waialae’s Lo’i Restoration and
Learning Center on a portion of TMK: (1) 4-7-006-010 and all of TMK: (1) 4-7-006-018, in Waialae’s
Alaupua’a, Ko’olauapoko District, on the island of O’ahu. The archaeological work consisted of a
pedestrian survey that covered 91% of the 11.51 ha (28.43 ac.) project area. The remaining 9% was
not covered due to vegetation that severely impeded movement and visibility of the ground surface.

Two archaeological sites were identified during pedestrian survey. SIHP 08919 is the main access
road and two culverts associated with the road. SIHP 08920 includes the other archaeological
features found within the project area. These consist of terraces, water control features, C-shaped
structures, an old road, historic structural remnants, and a possible platform. They make up a network
of ditches, agricultural features, a possible animal husbandry structure, and a transportation feature
(rode). Table 9 provides data on the features of the two sites.

Traditional artifacts, historic artifacts, charcoal, and modern debris were collected (see Appendix
A). Traditional artifacts consist of two fragments of volcanic glass, historic artifacts were comprised
mostly of bottles, although ceramics and metal items were recovered as well. Historic artifacts dated
from as early as 1880, although most of the assemblage dated from 1925 and later. Two samples of
charcoal were submitted for wood taxa identification but the results were inconclusive, rendering
the charcoal not suitable for radiocarbon dating.

Significance Evaluation

Significance assessments for SIHP 08919 and 08920 were conducted following the criteria
established in HAR §13-284-6 and are summarized in Table 10.

The criteria of significance are as follows:

To be significant, a historic property shall possess integrity of location, design, setting, materials,
workmanship, feeling, and association; and shall meet one or more of the following criteria:

(1) Criterion “a”. Be associated with events that have made important contribution to the
broad patterns of our history;

(2) Criterion “b”. Be associated with the lives of persons important in our past;

(3) Criterion “c”. Embody the distinctive characteristics of a type, period, or method
of construction, represent the work of a master, or possess high artistic value;

(4) Criterion “d”. Have yielded, or is likely to yield, information important for research
on prehistory or history;

(5) Criterion “e”. Have an important value to the native Hawaiian people or to another
ethnic group of the state due to associations with cultural practices once carried
out, or still carried out, at the property or due to associations with traditional beliefs,
events or oral accounts — these associations being important to the group’s history
and cultural identity. (HAR 13-284-6[b])

SIHP 08919 retains integrity of location, design, setting, materials, workmanship, feeling, and
association. The road and culverts are in their original location and setting, have not changed in
design, feeling, or association, and although the features of the site have deteriorated slightly over
time, integrity of workmanship generally remains intact. The site is significant under Criterion d of
Table 9. Data for Archaeological Features

<table>
<thead>
<tr>
<th>Feature #</th>
<th>Description</th>
<th>Function</th>
<th>Age</th>
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<tr>
<td>08919a</td>
<td>road</td>
<td>transportation</td>
<td>historic</td>
</tr>
<tr>
<td>08919b</td>
<td>culvert</td>
<td>water control</td>
<td>historic</td>
</tr>
<tr>
<td>08919c</td>
<td>culvert</td>
<td>water control</td>
<td>historic</td>
</tr>
<tr>
<td>08920a</td>
<td>'auwai</td>
<td>water control</td>
<td>historic</td>
</tr>
<tr>
<td>08920b</td>
<td>concrete structural remnants</td>
<td>possible animal husbandry</td>
<td>historic</td>
</tr>
<tr>
<td>08920c</td>
<td>le'i</td>
<td>wetland ag</td>
<td>undetermined</td>
</tr>
<tr>
<td>08920d</td>
<td>rock wall segments</td>
<td>water control</td>
<td>undetermined</td>
</tr>
<tr>
<td>08920e</td>
<td>terrace remnant</td>
<td>agriculture</td>
<td>undetermined</td>
</tr>
<tr>
<td>08920f</td>
<td>platform and alignment</td>
<td>undetermined</td>
<td>historic or modern</td>
</tr>
<tr>
<td>08920g</td>
<td>possible C-shape</td>
<td>undetermined</td>
<td>undetermined</td>
</tr>
<tr>
<td>08920h</td>
<td>possible C-shape</td>
<td>possible temporary shelter</td>
<td>modern</td>
</tr>
<tr>
<td>08920i</td>
<td>concrete feature</td>
<td>water control</td>
<td>historic</td>
</tr>
<tr>
<td>08920j</td>
<td>le'i and 'auwai</td>
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<td>08920l</td>
<td>road remnant</td>
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IIAR §13-284-6 for its potential to yield further information on early roadways in Hawai‘i and the post-contact history of Waie‘e Valley.

Recommendations of Project Effects and Treatment

SIIHP 08919 and 08920 are significant under IIAR §13-284-6. Site-specific and project-wide recommendations are listed in Table 11.

As the road is still being utilized today, SIIHP 08919 may be subjected to periodic maintenance as needed. No further archaeological work is recommended for SIIHP 08919, other than archaeological monitoring, which is a project-wide recommendation (see below).

Selected features of SIIHP 08920 are slated for rehabilitation. The Secretary of the Interior defines rehabilitation as follows:

- The act or process of making possible a compatible use for a property through repair, alteration, and additions while preserving those portions or features which convey its historical, cultural, or architectural values. (Secretary of the Interior 1995:60)

A preservation plan should be prepared in accordance with IIAR §13-277-3 to ensure proper treatment of this site. The preservation plan should outline which features of the site will be rehabilitated, as well as short and long term preservation measures for these features and the site as a whole.

Additionally, archaeological monitoring is recommended for all parts of the project area 1) to ensure that none of the archaeological sites are impacted during construction; 2) to determine if archaeological features are located within the areas that could not be surveyed due to heavy vegetation; and 3) for the possibility of encountering buried archaeological features or deposits, even if none were found during subsurface testing. An archaeological monitoring plan should be prepared for the property in accordance with IIAR §13-279-4. 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 and the SHPO should be contacted.

SIIHP 08920 is in general retains integrity of location, design, setting, materials, workmanship, feeling, and association. The features of the site are in their original location and setting, have not changed in feeling or association, and although several features are in poor condition, integrity of design and workmanship generally remain intact for the site as a whole. The site is significant under Criteria d and e of IIAR §13-284-6 for its potential to yield further information on the pre- and post-contact history of Waie‘e Valley, and for its cultural importance. The lo‘i systems are of particular cultural importance as the ditches are still utilized by farmers today, and the ancient lo‘i may be rehabilitated to be functional again.
### Table 11. Recommended Current and Future Treatment Measures and Mitigation Commitments

<table>
<thead>
<tr>
<th>Location</th>
<th>Recommended Treatment Measures and Mitigation Commitments</th>
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<tr>
<td>SHIP 08919</td>
<td>- Maintenance to road and culverts as needed</td>
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<tr>
<td></td>
<td>- Archaeological monitoring</td>
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<tr>
<td>SHIP 08920</td>
<td>- Possible rehabilitation of selected features</td>
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<tr>
<td></td>
<td>- Preservation plan</td>
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<td></td>
<td>- Archaeological monitoring</td>
</tr>
<tr>
<td>Entire Project</td>
<td>- Archaeological monitoring</td>
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### Glossary

- **ahupua’a**: Traditional Hawaiian land division usually extending from the uplands to the sea.
- **ʻāina**: Land.
- **aliʻi**: Chief, chiefess, monarch.
- **ʻawai**: Ditch, often for irrigated agriculture.
- **ʻawa**: The shrub *Piper methysticum*, or kava, the root of which was used as a ceremonial drink throughout the Pacific.
- **hala**: The indigenous pandanus tree, or *Pandanus odoratissimus*, which had many uses in traditional Hawai’i. Leaves were used in mats, house thatch, and basketry; flowers were used for 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.
- **hale**: House.
- **hau**: The indigenous tree *Hibiscus tiliaeuxis*, which had many uses in traditional Hawai’i. Leaves were used in mats, house thatch, and basketry; flowers were used for 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.
- **he’e**: Octopus (*Pleurosperus* sp.).
- **helau**: Place of worship and ritual in traditional Hawai’i.
- **`ōi`ōi ʻāina**: Native tenants that worked the land.
- **Kahiki**: A far away land, sometimes refers to Tahiti.
- **Kalo**: The Polynesian-introduced *Colocasia esculenta*, or taro, the staple of the traditional Hawaiian diet.
- **kapu**: Taboo, prohibited, forbidden.
- **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.
- **kuhina nui**: Prime minister or premier. Keʻahumanu was the first kuhina nui. The position was abolished in 1864.
- **kula**: Field, field, open country, pasture, land with no water rights.
- **kuleana**: Right, title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.
- **limu**: Refers to all sea plants, such as algae and edible seaweed.
- **loʻi, loʻi kalo**: An irrigated terrace or set of terraces for the cultivation of taro.
- **Māhele**: The 1848 division of land.
- **makaʻainana**: Common people, or populace; translates to “people that attend the land.”
- **mākāhā**: A fishpond sluice gate.
- **makai**: Toward the sea.
mānōwai Part of a le‘i system that is composed of a structure that slows water without damming it completely. The mānōwai functions to channel water by breaking it up into smaller streams. Līk, the cardiovascular or circulatory system.

mānuka Inland, upland, toward the mountain.

mele Song, chant, or poem.

mo‘i King.

mo‘o Lizard, dragon, water spirit.

mo‘islelo A story, myth, history, tradition, legend, or record.

mu‘ilwai River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.

‘Stelno‘eau Proverb, wise saying, traditional saying.

oli Chant.

olona The native plant Tocchardia latifolia, traditionally used for making cordage.

pre-contact Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.

terminus post quem A date earlier than an archaeological event of interest.

‘ulu The Polynesian-introduced tree Artocarpus altis, or breadfruit.

wanke The paper mulberry, or Broussonetia papyrifera, which was made into tapa cloth in traditional Hawai‘i.

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APPENDIX A: ARTIFACT INVENTORY

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<th>Art No.</th>
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<th>Condition</th>
<th>Surface</th>
<th>Context</th>
<th>Site</th>
<th>State</th>
<th>Period</th>
<th>Sex</th>
<th>General Findings</th>
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</tbody>
</table>

99
ANALYSIS OF CHARCOAL SAMPLES FROM WAIHE‘E, O‘AHU,
KEALA PONO ARCHAEOLOGICAL CONSULTING PROJECT 119

By
Gail M. Murakami
Wood Identification Laboratory
International Archaeological Research Institute, Inc.

June 12, 2020

APPENDIX B: WOOD TAXA IDENTIFICATION

INTRODUCTION

Two charcoal samples from Keala Pono Archaeological Consulting Project 119 were submitted to the Wood Identification Laboratory at International Archaeological Research Institute, Inc. (IARI) for analysis. The samples, from a site in Waihe‘e on the island of O‘ahu, Hawai‘i, were examined for the selection of short-lived taxa for radiocarbon dating. This service includes taxon identification of known short-lived woody plants or plant parts, such as nuts, shells or tubers, as well as a screening of the sample for the presence of known historically introduced woody plants or plant parts.

METHODS

The freshly fractured transverse, tangential, and radial facets of charcoal fragments were examined with the aid of a dissecting microscope at magnifications of up to 80X. Taxonomic identifications were made by comparing observed anatomical characteristics with those of woods in the IARI reference collection. Vouchers associated with the collection have been verified and archived at the Department of Botany, University of Hawai‘i at Mānoa. Other published references, including books, journal articles, technical documents, and wood atlases, were also consulted.

RESULTS

This analysis resulted in no identifications of the three charcoal taxa found in the two samples examined. Some resemblance to native taxa was seen in the charcoal, however, no definitive identification, based on multiple features, could be made. Consequently, short-lived native taxa, such as wood shrubs or plant parts, appropriate for radiocarbon dating, were not identified. While no historically introduced plants in the reference collection matched with the charcoal taxa, the collection of recent plant introductions is not complete. The table below summarizes the results.

<table>
<thead>
<tr>
<th>WDL No.</th>
<th>Taxon</th>
<th>Plant Part</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
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<td>Sample 1: Feature 08920L, Layer 1/3, 30-52 cmbs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010-1</td>
<td>Indeterminate</td>
<td>Wood charcoal</td>
<td>Soft wood</td>
</tr>
<tr>
<td>Sample 2: Feature 08920t, Terrace 2, 14 cmbs</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2010-2</td>
<td>Indeterminate</td>
<td>Wood charcoal</td>
<td></td>
</tr>
<tr>
<td>2010-3</td>
<td>Indeterminate</td>
<td>Wood charcoal</td>
<td>Ligum; alliform parenchyma</td>
</tr>
</tbody>
</table>
Sample 1 (Feature 08920), Layer 1/5, 30-52 cmths) contained small pieces of charcoal whose cross section resembled that of *iliahi* (sandalwood, *Santalum*) or *oho‘ia lehua* (*Metrosideros*) but the tangential face could not be seen well enough to definitively determine identification.

Sample 2 (Feature 08920c; Terrace 2, 14 cmths) contained two taxa but neither matched native or introduced taxa in the wood reference collection.
Cultural Impact Assessment
Draft—Cultural Impact Assessment for TMK: (1) 4-7-006:010 (por.) and :018 in Waihe‘e Ahupua‘a, Ko‘olaupoko District, Island of O‘ahu, Hawai‘i

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Prepared By:
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Windy Keala McElroy, PhD
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December 2019

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MANAGEMENT SUMMARY

A Cultural Impact Assessment was conducted for TMK (1) 4-7-005/010 (po'e) and 4-18 in Waie’a Ahupua’a, Ko’olaupoko District on the island of O‘ahu. This was done in preparation for ground disturbance associated with construction and renovations for the Waie’a Riparian Learning Center. The current study took the form of background research and an ethnographic survey consisting of four interviews with five community members, all of which are included in this report.

The background research synthesizes traditional and historic accounts and land use history for the Waie’a area. Community consultations were performed to obtain information about the cultural significance of the subject properties and the surrounding area, as well as to address possible concerns of community members regarding the effects of the proposed project on places of cultural or traditional importance.

As a result of this work, the cultural significance of Waie’a Valley has been made clear. Waie’a has a long and sustained history of cultivation, particularly with taro farming done by Hawaiian, Okinawan, Japanese, and Chinese families. The area has seen many changes over the years, including shifts in water flow due to stream alterations, as well as increased foot traffic as the valley became identified as a popular hiking destination on social media.

Interviews with individuals knowledgeable about the project lands produced information on its rich cultural history. Interviewees identified bula bīlau and lei-making as traditional gathering practices occurring in the project area. Interviewees also identified several archaeological sites including lo‘i, ‘oewai, walls, adze quarries, and burial sites that may lie within the project area. Waie’a Road is also a historic property, as it was noted to have been constructed as a coral road during World War II. An archaeological inventory survey is recommended to determine if vestiges of these or other sites remain on the properties.

The interviewees were concerned about the large numbers of hikers in the valley and the negative effects this has had on the ‘āina and its residents. Managed access and invasive plant species removal were recommended. The idea of inviting hikers in to help control the feral pig population was put forth, as well as offering cultural residency to interns who could live and work in the valley for a period of time. The interviewees also remarked on the joint jurisdiction of the subject properties, between the Department of Parks & Recreation and the Board of Water Supply, and that it would be preferable to have stewardship under one entity. In all, the project is a product of community effort and the work of the KEY Project, and was generally supported by all interviewees.
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INTRODUCTION

At the request of G10, Kealapono Archaeological Consulting a Cultural Impact Assessment (CIA) for the proposed Waiehe’E Riparian Learning Center in Waiehe’E Ahupua’a, Ko‘olaupoko District, on the island of O‘ahu on a portion of TMK (1) 4-7-006-010 and all of TMK (1) 4-7-006-018. This CIA was designed to identify any cultural resources or practices that may occur in the area and to gain an understanding of the community’s perspectives on the proposed activity on the properties.

The report begins with a description of the study area and a historical overview of land use and archaeology in the Ahupua’a. The next section presents methods and results of the ethnographic survey. Results are summarized and recommendations are made in the final section. Hawaiian words, flora and fauna, and technical terms are defined in a glossary. Also included are appendices with documents relevant to the ethnographic survey, including full transcripts of the interviews.

Project Location and Natural Environment

The study area consists of 11.51 ha (28.43 ac.) on a portion of TMK (1) 4-7-006-010 and all of TMK (1) 4-7-006-018, in Waiehe’E Ahupua’a, Ko‘olaupoko District, on the Island of O‘ahu (Figures 1 and 2). TMK (1) 4-7-006-010 is a 36 ha (89 acre) parcel, while TMK (1) 4-7-006-018 is a 0.36 ha (.08 ac.) plot. Both properties are owned by the City and County of Honolulu. The project area begins at the mauka end of Waiehe’E Road and extends along the south side of the Board of Water Supply access road for approximately 1 km (.62 mi.). The project area then veers south away from the access road for approximately 250 m (820 ft.) toward steeply sloping terrain on the valley’s south side. The Board of Water Supply access road marks the northwest boundary of the project, while the southeast boundary is bordered by an undeveloped property.

Waiehe’E Valley includes 527.56 ha (1,303.67 ac.) of land, 326.96 ha (807.94 ac.) of which are forest reserve (Chun 1954:1). The area of study lies toward the middle of valley, along Waiehe’E Stream. Geologically speaking, this region sits in the giant caldera that formed the Ko’olau Mountain Range in ancient times. It is a place of consistent rain and trade winds.

Carrying the burden of the trade wind rains, the windward side of O‘ahu is more weathered than the leeward areas of the island, and now this vast caldera wall is reduced to a line of sheer cliffs... The flat valley floors are extensively eroded, and are now mostly joined, studded here and there with isolated remnants of peaks and ridges connected to the central massif. (Kleiger et al. 2005:5)

The Ko’olau Mountain Range is 60 km (37 mi.) long and makes up the mauka boundary of Waiehe’E Ahupua’a. In the Pleistocene, Waiehe’E Valley went through periods of submergence and emergence. It is believed that the valleys of Windward O‘ahu were under roughly 365 m (1,200 ft.) of water and filled with sediment as they gradually emerged (Stearns in Chun 1954:5). Today, Waiehe’E Valley has several main features: 1) the Ko’olau Mountains at the head of the valley, which are basalt with a complex of dikes; 2) a high terrace in the valley center, made up of old alluvium that built up between the streams; 3) a coastal plain composed of younger alluvium; and 4) a beach at the seashore made up of silt and other sediments washed downstream and reworked by wave action (Chun 1954:5–7). There are two perennial springs at the back of the valley that contribute to the surface drainage of the Ahupua’a. The springs originate in dikes that are under pressure at the base of the Ko’olau Mountains, they are responsible for much of the water flow in Waiehe’E Stream (Chun 1954:7).
Situated mostly in the valley center, topography of the study area is moderately to steeply sloping, and vegetation is generally very dense, with some places enveloped in thick tangles of bush and others covered in ginger. The project area lies between roughly 40–100 m (130–330 ft.) above mean sea level (amsl), approximately 2 km (1.2 mi.) from the coast at Kāne‘ohe Bay. Mean annual rainfall is 207 cm (82 in.) per year at the Waihe‘e gaging station that is situated toward the mauka end of the project (Giambelluca et al. 2013). Waihe‘e Stream, a perennial watercourse, runs through the project area.

Four soil types occur within the study area: Hānalei silty clay 2-6% slopes (HaB); Lolekaha silty clay, 3-8% slopes (LoB); Hāpapepea peat (TR); and Wai‘anae silty clay, 25-40% slopes (WpE) (Figure 3). Hānalei series soils developed in alluvium and are often used for pasture, sugarcane, taro, and vegetable farming (Foote et al. 1972:38). Lolekaha soils developed in colluvium and alluvium that is old and gravelly. These soils are generally used for housing, sugarcane, wildlife habitat, and pasture (Foote et al. 1972:83). Hāpapepea is a peatland soil that is utilized for wetland agriculture, such as the cultivation of rice, taro, or watercress (Foote et al. 1972:121). Wai‘anae series soils developed in colluvium and alluvium, and are typically used for housing, pasture, and truck crops (Foote et al. 1972:130). Also in the vicinity are Hānalei silty clay 0–2% slopes (HaA); Lolekaha silty clay 8–15% slopes (LoC); Lolekaha silty clay 15–25% slopes (LoD); Lolekaha silty clay 25–40% slopes (LoE); Lolekaha silty clay 40–70% slopes (LoF); Pearl Harbor clay (P); rock outcrop (rRO); Wai‘anae silty clay, 3-8% slopes (WpB); and Wai‘anae silty clay, 40–70% slopes (WpF).

Project Description

The project will create a riparian learning center to educate the public about the importance of streams, watersheds, and regenerative agriculture. Proposed activities of the center include the following:

- restore existing fallow lo‘i
- help maintain an existing ‘auwai system used by the taro farmers downstream
- restore riparian and forest areas with appropriate native and non-invasive plants

Development of the learning center will occur in two phases. Phase I will take place on an approximately 5.3 ha (13.6 ac.) area from the end of Waihe‘e Road to the dam (Figure 4). Phase II will consist of the following:

- Service learning work days starting with reopening falled lo‘i and helping maintain the ‘auwai systems; learn about invasive species (terrestrial and aquatic), watersheds, and regenerative agriculture
- Scheduled service learning days with groups and schools
- Develop a parking area for scheduled groups and events to alleviate parking congestion in the neighborhood; the gravel parking area will be large enough for a bus turn around
- Replace the gate at the end of Waihe‘e Road with a more aesthetically pleasing gate
- Install a gate past the proposed parking area to prevent vehicle access to the rest of the valley
- Remove invasive plants in the project area and restore them with native species from the area
Figure 3. Soils in the vicinity of the project area.

Figure 4. Conceptual design of the proposed Waihe'e Riparian Learning Center (courtesy of G70).
• Create a pavilion/hale to hold workshops, meetings, and presentations
• Identify comfort station/composting toilet options (identify infrastructure needs and feasibility)
• Install interpretive signage about the different focus areas (funding dependent)
• Construct and maintain an on-site nursery for native plants and other suitable plants for restoration and cultivation

Phase II will take place on an additional 5.7 ha (14 ac) that extend from the dam to the "ginger patch” bordering Board of Water Supply (BWS) lands (see Figure 6). This phase will consist of the following:

• Clear the "ginger patch" area and convert it into another lo‘i (identify ‘auwai and potential impact to taro farmers downstream)
• Remove invasive plants in the project area and restore the landscape with native species from the area

Traditional Cultural and Historic Background

This section of the report presents background information as a means to provide a context through which one can examine the cultural and historical significance of the study area. In an attempt to record and preserve both the tangible (e.g., traditional and historic archaeological sites) and intangible (e.g., mo‘olelo, mele, place names) culture, this research assists in the discussion of anticipated finds. Research was conducted at the Hawai‘i State Library, the State Historic Preservation Division, as well as online at databases such as the Hawai‘i Department of General Accounting map database, Ulukau, and Walhoma ‘Aina. Historical maps, archaeological reports, and historical reference books were among the materials examined.

Waihe‘e in the Pre-Contact Era

Information regarding traditional land use and occupation in Waihe‘e. Ahupua‘a is often intertwined with the mo‘olelo of its neighboring ahupua‘a, Kahalu‘u to the south and Ka‘ala‘e to the north. Information compiled for the pre-contact era includes data on place names, land use, and subsistence, as well as several mo‘olelo, ‘o‘i, and ‘olelo no‘eau. Together, they give us an idea of what life may have been like in this storied place.

Place Names

One often overlooked source of history is the information embedded in the Hawaiian landscape. Hawaiian place names “usually have understandable meanings, and the stories illustrating many of the place names are well known and appreciated. The place names provide a living and largely intelligible history.” (Pukui et al. 1974:xxi)

Place names associated with the study area are listed in Place Names of Hawai‘i (Pukui et al. 1974), along with the meanings of the names and/or other comments about the specific localities:

1. ‘Ahu‘iamau. Land division, stream. In 1845, Kaumenahoa III granted a tract of land in this area to the Catholic mission for the first Catholic school in the Islands. Each street name in the subdivision combines hula (Hula) with the name of a bird…Lit., bird cluster (perhaps so called because the birds from nearby Mo‘olehua were caught here and tied together in bunches). (Pukui et al. 1974:6)


Ahu‘u-o-Laka. Islet (3.1 acres, swash at high tide), off Kahu-lu‘u…Lit., altar of Laka. (Pukui et al. 1974:6)


Kahua-lu‘u…land division…stream, and fishpond…associated with the Ua-pu‘a-i-hale (house encircling rain….) perhaps named by Fishermen who used to dive here for fish….A series of wet taro terraces here are said to be the largest on O‘ahu. See Ka-bomaua. Lit., diving place. (Pukui et al. 1974:82)

Ka-bomaua. Old name for Kahu-lu‘u fishpond…Lit., the earth. (Pukui et al. 1974:66)

Kihia…Stream, Waihe‘e, O‘ahu. Lit., waited for. (Pukui et al. 1974:77)

Kīne‘he‘a-lani. Mountain ridge…named for a god ancestor of Pele; his female companion was said to be Ka-papa islet nearby…Lit., Kāne royal companion. (Pukui et al. 1974:84)
Subsistence and Traditional Land Use

With its productive fishponds of Kāne‘ohi Bay and extensive agricultural lands, Waihe‘e Aupua‘a was a thriving community in pre-contact times (Devaney et al. 1982). The ocean provided a variety of resources, such as limu, he‘e, crustaceans, and reef fish (Chun 1945:17). At least two fishponds were known to exist near Waihe‘e in Kahaluu‘u. One was called Pokole (McAllister 1933), and the other was called Kahouna (McAllister 1933), which is also listed as Kahouna in Place Names of Hawaii (Pukui et al. 1974). This latter pond is also known as Kahaluu‘u Fishpond today. Evidence of the community’s traditional marine subsistence is further marked by its coastal fishing shrimes, one of which was constructed on Kapapua Island and another situated in the sea there (McAllister 1933:172).

Although Waihe‘e was one of the smaller aupua‘a fronting Kāne‘ohi Bay, the broad flats of Waihe‘e, together with Ka‘a‘ala‘e on the north and Kahaluu‘u on the south, formed a system of continuous agricultural terraces, comprising one of the largest areas of pondsfield agriculture on the windward coast (Handy 1940:90). The terraces of Waihe‘e Aupua‘a were situated along Waihe‘e Stream and continued back into the valley for at least 1.5 miles (Handy 1940:96). While dryland kalo was also cultivated in the kula lands between Kahaluu‘u and ‘Ahinaumalu Streams (Handy 1940), it was the wetland lo‘i that would have dominated the landscape:

The aupua‘a [of Kahaluu‘u], although practically continuous with Waihe‘e, is sheltered for most of its shore length behind low coastal hills, and its area contours are quite broken by the winding Kahaluu‘u Stream and its tributaries, Wai‘a‘a (Living-water), Ahulamanu (Discovered-and-broken), and Kalahaka (Hidden-terrace). For this reason, despite the breadth of the stream valley, the lo‘i sections of Kahaluu‘u are tacked away in pocon of land watered from the several streams; there are few large continuous areas, but the total area under cultivation in ancient times must have been very considerable...

The seaward flats of the three contiguous aupua‘a of Ka‘a‘ala‘e, Waihe‘e, and Kahaluu‘u together made up one of the largest single areas of wet-raro land on the Koolau coast. It is a region of ample rainfall... (Handy et al. 1991:454)

Approximately 40 ha (100 ac.) of Waihe‘e land were under cultivation of kalo in the pre-contact era (Devaney et al. 1982:36). They are described as continuing all the way to the back of the valley:

The main stream bearing this name [Waihe‘e] has its headwaters in a waterfall against the mountain wall, and is joined by two others, Hina‘ama and Kalia. Carefully terraced and abandoned tero lo‘i follow the stream and its tributaries almost to their several sources. (Handy et al. 1991:453)

However, in a University of Hawai‘i Master’s thesis on Waihe‘e, Chun indicates that not all of the valley was used for lo‘i:

Judging from the lack of major irrigation works, the natives of Waikane apparently did not utilize most of the valley for agriculture. This was especially true in regards to wet-raro farming. Irrigation ditches were made only along the alluvial soils and coastal areas where water could easily be diverted from the stream due to the relative levelness of these areas. An absence of irrigation ditches on the elevated terraces of older alluvium indicates that no intensive farming occurred here, although it is quite likely that dry-land crops may have been cultivated sporadically in small cleared areas...

According to Emory (noted archaeologist Kenneth P. Emory), prior to the decline in native population of all the potential taro lands, especially where water was accessible, was utilized and cultivated for taro. On the basis of irrigation ditches and Kahouna awards, most of the areas suitable for taro agriculture were situated along the main stream of the valley and the coastal lowlands. (Chun 1954:27, 28)

An irrigation ditch more than one mile in length extends through the valley, although Chun (1954:44) believes that this ditch post-dates 1880. Dryland crops grown in the pre-contact period in Waihe‘e likely included olima, 'ula, weake, and 'awa.

Mo‘olelo

As mentioned earlier, Hawaiian place names were connected to traditional stories through which the history of the places was preserved. These stories were referred to as “mo‘olelo, a term embracing many kinds of recounted knowledge, including history, legend, and myth. It included stories of every kind, whether factual or fabulous, lyrical or prose. Mo‘olelo were repositories of cultural insight and a foundation for understanding history and origins, often presented as allegories to interpret or illuminate contemporary life... Certain many such [oral] accounts were lost in the sweep of time, especially with the decline of the Hawaiian population and native language” (Nogelmeier 2006:439–439).

There are different mo‘olelo that speak of the naming of Waihe‘e. One account indicates that the name refers to a lo‘i which belonged to alii (Handy et al. 1991:453):

It is said that the aupua‘a [Waihe‘e] took its name from a man named ‘O‘i belonging to the a‘i or the place situated musaka of the muliwai (lagoon) called Pe‘ele, into which the main stream empties. (Handy et al. 1991:453)

The name of Waihe‘e Aupua‘a is literally translates to “squick liquid” (Pokui et al. 1974:221) or “squick water” (Handy et al. 1991:453). Pokui et al. (1974) relate that this derived from a mo‘olelo about a man that killed a large squid. The man, who was a mute, journeyed to Kahili so that his voice would return. Along the way, he killed a large squid and threw it, splattering its slime across the land, and Waihe‘e was thus named (see Place Names section). Waihe‘e is also mentioned in the epic saga of Hī‘iakaikapōlolepe, as Hī‘iaka travels along the windward O‘ahu coast:

They went on, passed Kahaluu, Waikoe, and Kaaalua and up to Auōlili. There they saw Pueo making ready to fight them and Hiina‘a-kua-poli-o-Pele chanted thus:

Pueo, the chief challenges to battle,
He challenges on the day of his strength,
The two fought and she killed Pueo. They continued, passed Waiahole, Waikane, Hōkū‘upu, Hiina‘a said to Wahineomauo, “There is our trail above Kai-kole. The precipice is steep below.” (Ka Leo o Ka Lahui in Sterling and Simmons 1978:192)
Two other mo'olelo, recounted in *Sites of Oahu* (Sterling and Summers 1978), are shared here. While both mo'olelo do not mention Waialua’s in particular, they speak of neighboring Kahu’u’s, and much of the history and land use of Waialua’s is intertwined with Kahu’u’s. It is interesting that although these two moʻolelo appear to be disconnected, they share a common theme, which is probably not coincidental. These two stories both speak of competition for the marine resources of Kane‘ohe Bay. This reinforces the fact that the area was known to have prized resources in its sea since the earliest times.

The first mo‘olelo mentions the trickster hero Maui, and his rightful connection to Kahu‘u. Due to his guile, Maui managed to secure the fishery rights to the waters off of Kahu‘u’s coast. Here is that mo‘olelo as told in *Sites of Oahu*:

The ahupua‘a of Kahu‘u belonged to Maui-akalana. It was a land over which the sources of food were disputed, especially the low islands of Ana and Kapuapa where octopus were caught and the uhu fish of Kapuna caught in nets.

The judges’ helper and high priest took Waiʻhole and Waikane as his boundaries, but the judges had a ruling against anything defiling. Should any of them be smeared with excretia, he ceased to handle sacred objects or participate in their work.

Maui-akalana built a mound above Hoʻakolo, and made seven ridges and in the mound he secreted some excretia. He met his brothers and the two assistants of the supreme judges and told them that there was a precious treasure in the mound, diamonds and pearls and the first to dig rapidly into it might have them. They agreed to do it and when they began to dig and scrape away the earth, each of the judges’ assistants was anxious to get to the precious treasure. They observed no rules, restricted or otherwise in their eagerness to be the first to reach the heap of richness. Whose hands became dirty? This person’s — that person’s. So Ahu-ula, Ulapo and the uhu fish caught in the nets at the sea of Kapuna became the property of Kahu‘u’s. The assistants of the supreme judges were ashamed and left their sacred offices and the name (of one), Ku, was given to kuapua (a kind of wooden bowl) and (of the other), Lono, to the Ipi-o-Lono container in the men’s eatinghouse.

Kohi-kohi-kualape (Dig-in-kaane, name of the mound), can still be found at Kahu‘u’s, where Ahu-aina faces the north, at the left side of the backs of Ka‘u‘a‘a and Paholo, on the east side of the top of Ha‘a‘ako. Kupopo is the resting place on the seaward side of Kaualii-lani, facing the spring of Kemeha‘ikena. (Sterling and Summers 1978:195)

The other story does not mention any person’s name in particular, as the gods of old are the central characters of this mo‘olelo. Specifically, the god of Ka‘u‘a, characterized as the protagonist, and the god of Kualoa, characterized as the antagonist, met and fought for fishing rights. In the end, the god of Kualoa prevailed, and an islet was placed in the sea of Kahu‘u’s marking the boundary of the fishing grounds between the people of Ka‘u‘a and the people of Kahu‘u’s. The name of that islet was Ahu-ula, meaning “Altar of Laka,” and it is still known today. Here is that mo‘olelo as told in *Sites of Oahu*:

There were, and are, along this shore, various fish grounds, each with its god. And sometimes these gods of the fish disagree.

This happened with two that controlled this shore. They quarreled on a matter of right and wrong. The men of Kualoa were coming to fish in Ka‘u‘a bay, and fish grew scarce. The people died from want of food.

The god of Kualoa was justly enraged. He sent a challenge to the god of the prayers, proposing a battle for control of the shore.

They met and fought, and the righteous god won. But he proved to be a kind-hearted god. He made a pact with the god of Kualoa, from thence forth forever, the men of Kualoa should fish in Kualoa and the men of Ka‘u‘a would fish in Kualoa.

So it was settled, and this island was put into the sea, where the men can see it when they round the point. When the sand appears above the waves, it is time to turn the boat around. (Sterling and Summers 1978:196)

Oil and Mele

The noteworthiness of specific locales in Hawaiian culture is further bolstered by their appearances in traditional chants. An oil refers to a chant that is done without any accompaniment of dance, while a mele refers to a chant that may or may not be accompanied by a dance. These expressions of folklore have not lost their merit in society today. They continue to be referred to in contemporary discussions of Hawaiian history, identity, and values.

Appearing in perhaps one of the greatest known sagas of Hawaiian oral traditions, the epic journey of Hi‘iaka, is a chant Hi‘iaka uttered in Kahu‘u in response to the inclement weather she encountered there. Perhaps she had come upon the famous Kahu‘u’s rain, the Po‘alaha, which was known to go in circles while pouring from above rather than just passing through the area like other showers do on the tradewinds. Here are the words to Hi‘iaka’s chant along with its translation and commentary by Emerson in his publication, *Pele and Hi‘iaka: A Myth from Hawaii*:

Hi‘iaka found many things to try her patience and ruffle her temper in Pa‘i-Koolau: Squalls, heavy with mindrops picked up by the wind in its passage across the broad Pacific, slatted against her and mired the path; but worse than any freak of the weather were her encounters with that outlaw thing, the mo‘o; not the bold robber-creature of Hawaii which took to the wilds, as if in recognition of its own outlawry, but that meaner skulk, whose degenerate spirit had parted with its last atom of virtuous courage and chung to human society only as a vampire, unwilling to forego its parasitic hold on humanity. It was in the mood and spirit begotten of such experiences that she sang:

*Ino Koolau, e, ino Koolau! Vile, vile is this Koolau weather; At kēna i ka ua o Koolau. Once soaks in the rain till he’s full. Ke wa mai la i Mauielī. The rain, it pours at Mauielī. Ke hewoa‘au‘a mai la i Heeia. It gatters the land at Heeia; Ke kupa la ka ua i ke kai. It lashes the sea with a whip.

Ha‘a hula le‘a ka ua The rain, it dances in glee
I Aha‘imanu, ka wa hooni. At Aha‘imanu, mourning
Hooma‘e i ka pu‘u ko’a. And piling the coral in heaps.
Ka ua poukalole o Kahu‘u. Shifting from side to side of the house, this whistling rain of Kahu‘u’s.
Lu‘u ‘u‘u e, hu‘u‘u iho nei au Heavy and sad, alas, am I
I ka puamo‘o wai‘amaka o ka ono—Mine eyes, a bundle of tears,
Ke kula iho nei, e. Are full to o‘erflowing. (Emerson 1997:96-91)

ʻOlelo Noʻeau

Like oil and mele, traditional proverbs and wise sayings, known as ʻolelo noʻeau, have been another means by which the history of Hawaiian places has been recorded. In 1983, Mary Kawena Pukui published a volume of close to 3,600 ʻolelo noʻeau that she collected throughout the islands. The introductory chapter of that book reminds us that if we could understand these proverbs and wise sayings well, then we would understand Hawai‘i well (Pukui 1985).
Approximately 500 places are listed in the 'ōlelo no'eau book along with the proverbs and wise sayings that refer to those specific places. Of these 500 or so locales, Waie'e on Maui is noted, while Waie'e on O'ahu is not. There is one 'ōlelo no'eau that is specifically associated with Kahalu'u, and it refers to the Kahalu'u rain mentioned in the mo'olelo section above. The 'ōlelo no'eau is as follows:

Ka ua po'aiala o Kahalu'u.
The rain that moves around the homes of Kahalu'u.

Refers to Kahalu'u of windward O'ahu. (Pukui 1983:173)

There is another 'ōlelo no'eau which refers to the Ko'olau region in general. This proverb suggests that Waie'e and other windward ahu'pu'a are lush and well-watered. Here is that 'ōlelo no'eau as it appears in Pukui's book:

Nā pali hilaialuh o ke Ko'olau.
The dark hills of Ko'olau.
The hills and cliffs of the windward side of O'ahu are always dark and beautiful with trees and shrubs. (Pukui 1983:249)

**Waie'e in the Early Historic Era**

When the first Westerners arrived in the Hawaiian archipelago in 1778, the islands were not yet united under one ruler. At that time, the entire island of O'ahu was under the rule of Chief Kahanuana. In 1783, Chief Kahanuana's reign was ended with the invasion and victory of Chief Kahahului of Maui. This would forever be the end of O'ahu's independence as a sovereign entity. When Chief Kahahului died in 1794, control of O'ahu went to his son Kalani'kūpule. The following year, Chief Kamehameha of Hawai'i Island invaded O'ahu to engage Kalani'kūpule in battle. Kamehameha overwhelmed Kalani'kūpule's warriors, effectively gaining control of all the islands from Hawai'i to O'ahu. Eventually, Kamehameha would make a peaceful agreement with Chief Kaumuali'i of Kaua'i, bringing that island and Ni'ihau into the fold and thereby uniting the Hawaiian archipelago under one rule (Kamakau 1996, Kanabohe 1995).

Under Kamehameha's rule, the island of O'ahu was administered by High Chief Boki. After Kamehameha's death in 1819, Chief Boki continued to be the island's governor until he left on his South Seas voyage in 1829. After him, his wife, High Chiefess Liiliha became the O'ahu governor until 1831 when she was replaced by Kaumualii (Devaney et al. 1982, Kamakau 1996).

The first foreigner's account of Waie'e comes from missionary Levi Chamberlain, who recorded memoirs of his 1826 trip through the area. He described wet, marshy conditions but did not mention wetland cultivation:

_We had a long walk over hills and streams of water between hills and along marshy tracts and reached Waie'e at noon—a little before nine. We left Waie'e at ten o'clock and walked towards the seashore where we used a muddy path most of the way and waded through a long tract of rushes through mud and water nearly knee deep. (Chamberlain 1826:5)_

Despite the introduction of westerners and western ways into the islands, the first half of the 19th century did continue to see the cultivation of taro in Waie'e and other ahu'pu'a of the Ko'olau papa district. However, population decline is evident in an 1855 census, which listed only 135 people in Waie'e, consisting of 65 men, 50 women, 11 boys, and 9 girls (Parker in Chum 1945:19-20). An account by missionary and businessman E.O. Hall in 1939 states that large expanses of taro land in the Kāne'ohe Bay area were lying in waste because they were not needed to feed the diminished population (Chum 1954:53). Much of this decrease in population of Native Hawaiians is attributed to foreign-introduced diseases (Devaney et al. 1982).

**Waie'e and the Changes in Land Tenure**

During the reign of Kamahana III, as the Hawaiian kingdom became increasingly exposed to outside influences, the Hawaiian monarchy faced a crossroads of major change. “The Constitution of 1840 confirmed that only two offices could convey allodial title. These were the mōʻi and the kuhina nui. The Māhele was an instrument that began to settle the constitutionally granted vested rights of three groups in the dominion of the kingdom—mōʻi, all of the maka’ainana” (Bamer 2014:143). However, the king felt the difficulty of governing a land where the influence of foreigners had been growing. Dr. David Keanai Sai describes this predicament:

Kamehameha III’s government stood upon the crumbling foundations of a feudal autocracy that could no longer handle the weight of geo-political and economic forces sweeping across the islands. Uniformity of law across the realm and the centralization of authority had become a necessity. Foreigners were the source of many of these difficulties. (Sai 2008:62)

“Several legislative acts during the period 1845–1855 codified a sweeping transformation from the centuries-old Hawaiian traditions of royal land tenure to the western practice of private land ownership” (Mo`iflat and Fitzpatrick 1995:11). Most prominent of these enactments was the Māhele of 1848 which was immediately followed by the Kuleana Act of 1850.

The Māhele was an instrument that began to settle the undefined rights of three groups with vested rights in the dominion of the Kingdom — the government, the chiefs, and the maka’ainana. These needed to be settled because it had been codified in law through the Declaration of Rights and laws of 1839 and the Constitution of 1840, that the lands of the Kingdom were owned by these three groups. Following the Māhele, the only group with an uncontroverted interest in all the lands of the Kingdom were the native tenants, and this would be later addressed in the Kuleana Act of 1850. (Bamer 2008:194–195)

Although the Māhele had specifically set aside lands for the King, the government, and the chiefs, this did not necessarily alienate the maka’ainana from their land. On the contrary, access to the land was fostered through the reciprocal relationships which continued to exist between the commoners and the chiefs. Perhaps the chiefs were expected to better care for the commoners’ rights than the commoners themselves who arguably might have been less knowledgeable of foreign land tenure systems. Indeed, the ahu’pu’a rights of the maka’ainana were not extinguished with the advent of the Māhele, and Bamer points out that there are “numerous examples of hoa’aina living on Government and Crown Lands post-Māhele which indicate the government recognized their rights to do so” (Bamer 2008:274).

Hoa’aina who chose not to acquire allodial lands through the Kuleana Act continued to live on Government and Crown Lands as they had been doing as a class previously for centuries. Since all titles were awarded, “subject to the rights of native tenants.” The hoa’aina possessed habitation and use rights over their lands. (Bamer 2008:274)

For those commoners who did seek their individual land titles, the process that they needed to follow consisted of filing a claim with the Land Commission; having their land claims surveyed; testifying in person on behalf of their claim; and submitting their final Land Commission Award (LCA) to get a binding royal patent. However, in actuality, the vast majority of the native population never received any LCAs recognizing their land holdings due to several reasons such as their unfamiliarity with the process, their distrust of the process, and/or their desire to cling to their traditional way of land tenure regardless of how they felt about the new system. In 1850, the king passed another law,
this one allowing foreigners to buy land. This further hindered the process of natives securing lands for their families.

After the Māhēle, the fisheries of the region were divided into shares that were privately owned (Devaney et al. 1982). The kōnoliki and makā'īlana of each aluapua'a retained fishing rights and the kōnoliki would place a kapa on a given fish species within the fishery as necessary. By 1851, all fisheries were made public (Devaney et al. 1982).

There were 26 LCAs awarded in Waihē that include 59 kuleana plots (Chun 1854:24). Most were located mauka of Kamehameha Highway along the streams, with a few scattered on the makai side of the highway and along the coast. They consisted of lo'i, kula, and house sites (Chun 1854:24). There were no LCAs awarded within the study area, but one LCA was located not far to the north. Kaloholani was awarded LCA 7099.2, and eight lo'i are noted in the Māhēle testimony. A total of 120 acres of Waihē land was awarded to kōnoliki, and the remainder was set aside as crown lands (Chun 1954:24). In 1855 Kamehameha V granted a large portion of Waihē Valley to missionary Benjamin W. Parker. By 1869, Parker had purchased all the land in the aluapua'a that was not awarded as kuleana plots (Chun 1954:25). In 1927, Parker’s lands were transferred to the Bishop Trust Company, who subdivided and sold them, mostly to Japanese rice farmers (Chun 1954:25).

New Industries: Sugar, Rice, and Dairy

As noted above, large expanses of taro land lay abandoned in the Kānēohe region by 1839 (Devaney et al. 1982:36–37), thus it appears that taro agriculture came to an early decline in Waihē. By the 1860s, “sugar planting was considered to be at the commercial level” in the Kaneohe Bay region” (Devaney et al. 1982:42). Chun describes a small sugar enterprise in the area:

In 1865 two Englishmen Green and McKibbin, made an early attempt to establish a sugar plantation in Kālualoa to the north of Waihē. Ten acres of leased land in Waihē were a part of their plantation. The area leased was used mainly as a mill and dwelling site, with the small remaining acreage probably planted in sugar cane. (Chun 1954:29)

Rice agriculture began in windward O‘ahu in the mid-19th century. At this time the contracts of Chinese sugar laborers were ending and they turned to rice farming, which was familiar to them. Specifically in 1857 a group of former rice farmers from southern China completed their sugar contracts and began farming rice in former taro lo‘i (Chun 1954:55–56). By 1880 the Waihē sugar cane fields were also converted to rice paddies (Devaney et al. 1982:50). It has been speculated that the long irrigation ditch that runs for more than a mile in Waihē was built at this time (Chun 1954:64). The ditch is not believed to be older because: 1) archeologist J.G. McAllister (1953) did not record it as a pre-contact site, while he did record a slightly longer ditch in Waialae; the Waihē ditch would have been the second longest pre-contact ditch on the island; 2) a fire is present in an area where Native Hawaiians would have chosen an alternate route for the ditch; and 3) there are no LCAs along most of the fields that the ditch feeds (Chun 1954:44–46).

In the second half of the 19th century, the Chinese population in the islands increased from 364 to a whopping 21,616 (Chun 1954:56). At the height of the rice era in Waihē in the mid-1890s the abandoned taro lo‘i were converted to rice paddies, dikes were narrowed in width, additional irrigation channels were constructed, and livestock was brought in to compact the soils (Chun 1954, Devaney et al. 1982). Cattle ranching also took place after the late 1800s, with at least 150 acres of Waihē land devoted to pasturage (Chun 1955).

Three historic maps date to this period. The first map is from 1874 and it depicts the Kālualoa Sugar Plantation and Waihē Valley (Figure 5). A railroad is shown leading up to Waihē’s road, not far from the project area. What may be two streams or ditches run down the length of Waihē Valley.
and several structures dot the area. One set of structures along the stream/ditch is labeled “Flag? MILL.” Rice and sugarcane lands are identified, although they do not extend into the project area.

The second map dates to 1876, and although it shows the entire island of O‘ahu, there are many details illustrated in the Waie‘e region (Figure 6). The project lands are labeled as “Gr. 1812” and Kahouma Fishpond is visible along the coast. There is a mill in Waie‘e, makai of the project area. Kamehameha Highway appears to be in its current position along the coastline, and the offshore islands, including Ahi o Laka, are illustrated.

The third map, from 1880, was drawn for the Kaala Sugar Plantation (Figure 7). This map shows individual land plots, with those of Kahale and Kameha partially overlapping with the east side of the project area. On the north side, a small portion of the railroad is within the project boundaries. Peaks to the northwest of the project are labeled Kapilolola, Ulimaaloli, Nanaikaula, and Kailio.

Approximately 160 acres were planted in rice between 1880 and 1927, including the vicinity of the project area (Devaney et al. 1982:50, 56). The peak of the rice industry in Waie‘e corresponds to the Sing Chong Company moving into the valley in 1894, with Sing Chong and the other rice farmers leasing the land from the Parker family (Chun 1954:58):

- On December 24, 1894, all of Parker’s estate was leased to the company [Sing Chong] for a period of twenty years, at an annual rent of nine hundred dollars. The company apparently made good use of the land and also realized good profits, for at the termination of the lease in 1914 it re-leased Parker’s lands again, this time for ten years at an annual rent of $1,500.
- Again, on January 1, 1924, Parker’s estate was leased for another ten years to the same company for $1,800 a year.

As for the native kuleanas, most of them passed into the hands of the rising rice plantation or to individual farmers. Of the original fifty-four acres of native kuleanas, only about seventeen acres or about twenty-eight per cent remained in Hawaiian possession by 1936. (Chun 1954:59)

It is also believed that water buffalo, or carabao, were introduced to Waie‘e with the Sing Chong plantation in 1894 (Chun 1954:87). The water buffalo on O‘ahu were described in a Paradise of the Pacific article from 1897:

...Here’s a rice field, Chinese almost invariably working them, and in the most primitive manner, dragging a quaint old forked stick plow through the rice fields with the Hongkong cow. I have never seen a poor or thin Chinese cow yet, and I have seen them everywhere on this island. All these Chinese cows are of a mousy color and fat as butter... (Bauges in Chun 1954:88)

The 19th century ended with the overthrow of the Hawaiian monarchy and the U.S. claim of annexation of the Hawaiian Islands. Throughout the islands, former government lands and crown lands were no longer under the oversight of the monarchy. After the overthrows, the U.S. federal government and the American military increased its land use around Waie‘e and Ko‘olaupoko and throughout the islands.

Waie‘e in the 20th Century and Beyond

A 1902 O‘ahu map shows the project area at the boundary of grazing lands (outlined in orange) and forest reserves (outlined in blue) (Figure 8). A large area toward the coast is striped in blue, which designates rice and taro wetlands. Two landings are also depicted at the coast.

Figure 6. Portion of a map of O‘ahu, showing the Waie‘e region (Alexander et al. 1876).
Kipuna in Waie'e interviewed by Chun (1954:63) noted that “nearly every level area on the terraces, river plain and coastal plain were under rice cultivation as late as the 1920's.” By the 1930s there were 25 irrigation ditches in Waie'e, extending a total of 4.39 km (2.73 mi.) (Chun 1954:64).

In a ravine north of the alluvial terrace (see Natural Environment section), a tunnel was built through a narrow part of the terraces to feed the rice paddies of that drier area (Chun 1954:64-65). Rice began to decline in Hawaii because of factors such as competition from California rice growers, changed immigration policies, as well as a stem borer outbreak, and the Sing Chong Company finally ended its lease in 1933.

While rice was on the decline in Waie'e, pineapple was taking hold in the Kake'ake'a Bay region, with a peak period of cultivation between 1910 and 1925 (Devaney et al. 1982:61). A Liberty, McNiel & Libby pineapple cannery was built in Kahaluu, approximately one mile south of Waie'e Valley. The plan to build the large-scale cannery was realized in 1911 after they acquired the Ahuimanu Ranch, and the accompanying plantation workers' housing for the cannery gained the name of “Libbysville.” Unfortunately, as a result of the Libby pineapple company's establishment, Kahaluu's Halua'akamana Heiau was destroyed. A second pineapple enterprise was established in 1913 on Castle lands in Alahimau, under the name of the Koolau Fruit Company. It was later purchased by Dole's Hawaiian Pineapple Company. The pineapples were grown in fields in the uplands of windward O'ahu, and Sing Chong subleased the higher areas of its lands to Japanese pineapple farmers. Between 1920 and 1926, approximately 16 ha (40 ac.) of Waie'e uplands were cultivated in pineapple (Chun 1954:80). However, the pineapple operations in Kahaluu could not compete with those on the leeward side of the island, and they shut down in the 1920s (Devaney et al. 1982).

In the 1930s Japanese farmers began moving into the valley, where they cultivated rice or pineapples. A Japanese school was built in Waie'e and it remained open until ca. 1941 and the beginning of World War II (Chun 1954:83). Large tracts of windward lands were used for military training during the war. One particular base was called the Heiva Combat Training Area (CTA), which included 912 ha (2,254 ac.) in Kahaluu, Kala'ala, and Waie'e and approximately 80 ha (200 ac.) in He'elia Kea (U.S. Army Corps of Engineers n.d.). Between 1945 and 1945, the CTA was utilized “as an encampment for troops, an ammunition storage facility, a firing range, and as a maneuver and artillery impact area for jungle and assault training” (U.S. Army Corps of Engineers n.d.). During World War II a pillbox at Pa'au Mi'el'i'i was constructed, along with facilities that included roads, barracks, a mess hall, a theater, ammunition storage facilities, a motor pool, firing ranges, hand grenade ranges, as well as bayonet and obstacle courses (U.S. Army Corps of Engineers 2011).

By 1953, land ownership of Waie'e had shifted to mostly Japanese immigrants (Chun 1954:83). At that time, approximately 117 ha (290 ac.) of the 200 ha (490 ac.) of agricultural land in Waie'e was owned by Japanese. This consisted of 31 individual plots, with a 3.6 ha (9 ac.) average per family, aside from one large plot of 77 ha (190 ac.) owned by the Higa family (Chun 1954:81). By the mid-1960s taro farming returned to the valley, parts of the uplands were cleared for the farming of truck crops, and much of the valley slopes were cultivated in bananas (Chun 1954:95-97). In addition, large tracts of former rice lands were converted to pasture for cattle (Chun 1954:98).

Two maps show the project area at this time. The first map depicts land use of Waie'e (Figure 9). The quality of the map makes it difficult to distinguish between taro, truck crops, and papayas, but patches of these are depicted within the project area. On the east end of the project area, the map shows that bananas were grown. The second map illustrates ditches, and what is labeled as "main ditch" runs through most of the project area on the north side of Waie'e Stream (Figure 10).

The post-World War II era witnessed a rapid modernization of the Ko'olaupoko District, including Waie'e Aliapua'a. The Board of Water Supply's Waie'e Tunnel was constructed in 1955 at the
head of Waie'e Valley (Devaney et al. 1982:82). It runs for approximately 2 km (1,500 ft.) to the
dike zone deep in the Ko‘olau Mountains (Kendrick 2000). A variety of developments were
proposed for the area and Kahului Highway was improved to support the future Valley of the
Temples subdivision and other growth in the region in 1967. Further construction development
continued into the following decades to include major infrastructure improvement projects (Helber,

Previous Archaeology

Previous archaeological surveys offer significant information regarding traditional and historic land
use. However, few studies have been conducted in the vicinity of the study area. The following
discussion summarizes the findings of archaeological studies in Waie‘e and at the
Waie‘e-Kahului border, based on reports found at the SHPD Kapiolani library (Figure 11 and Table
1).

Although McAllister (1933) did not record any archaeological sites in Waie‘e, two were
documented not far from Waie‘e in Kahului: Kahonai (now called Kahaluu) Fishpond (Site 319)
and Halaakamoa Hieau (Site 520). What is now known as Kahaluu Fishpond (Site 319) was
formerly called Kahonai or Kahonua. This pond had a wall that was roughly 365 m (1,200 ft.) long,
and it supported a watch house. There were two mlkhil (spaces in the sluice gates) along the wall
of the fishpond (McAllister 1933:170). Halaakamoa Hieau was destroyed by the time of
McAllister’s (1933:170–171) survey—dismantled when the Libby, McNiel & Libby cannery was
built on the site. It is said that the cannery was a failure because the heiau was desecrated.

No archaeological work took place in Waie‘e until the 1980s, when an archaeological
reconnaissance survey was conducted at coastal Waie‘e (Kennedy 1981). No findings were
reported from this study. Although lo‘i were recorded on historic maps of the area, no evidence of
these were identified on the surface.

An archaeological reconnaissance survey for the proposed Paradise Village Development, east of
Kahaluu Stream also had no findings (Barrera 1982). The location was used as a modern dumping
area, and the ground surface was not visible. Subsurface survey or archaeological monitoring during
construction were recommended.

Human remains were encountered at a construction site east of Kahaluu Stream on the makai side
of Kahului Highway (Neuffer 1984). Fire-cracked rock and basalt flakes and tools were found at the
base of the burial pit.

Archaeological monitoring at the wastewater pumping station at La‘anani Beach Park, along
Kane‘ohe Bay yielded no findings (Slan 1992). Eight depositional layers were recorded during
evacuations, all culturally sterile.

An archaeological inventory survey was conducted at a 2.5-acre property located roughly 1 km east
of the current project area (McElroy 2006). The survey consisted of a surface inspection and
archaeological trenching. No cultural remains were encountered during the excavations or the
surface survey. The remnants of a piggery feature were noted, although they were thought to be less
than 50 years old at the time of the survey.

An archaeological inventory survey at Kahaluu Regional Park consisted of a pedestrian survey and
subsurface testing (Tungu and Hammatt 2007). There were no findings.
Table 1. Previous Archaeology Near the Study Area

<table>
<thead>
<tr>
<th>Author and Year</th>
<th>Location</th>
<th>Type of Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>McAllister 1933</td>
<td>Island-Wide</td>
<td>Survey</td>
<td>Identified two sites on the coast near the Kahalu‘u/Wahe‘e Alapapa boundary. Kahouma (also called Kahouma or Kahalu‘u) fishpond (Site 319).</td>
</tr>
<tr>
<td>Kennedy 1981</td>
<td>Coastal Wahe‘e</td>
<td>Reconnaissance Survey</td>
<td>None.</td>
</tr>
<tr>
<td>Barres 1982</td>
<td>West Side of Kahouma Fishpond</td>
<td>Reconnaissance Survey</td>
<td>None.</td>
</tr>
<tr>
<td>Neller 1984</td>
<td>East of Kahalu‘u Stream</td>
<td>Burial Report</td>
<td>Documented human remains along with fire-cracked rock and bone flakes and tools (SHIP 50-80-10-2897).</td>
</tr>
<tr>
<td>Shinn 1992</td>
<td>Larnani Beach Park</td>
<td>Archeological Monitoring</td>
<td>None.</td>
</tr>
<tr>
<td>McKern 2006</td>
<td>Wahe‘e</td>
<td>Archeological Inventory Survey</td>
<td>None.</td>
</tr>
<tr>
<td>Tucklin and Hammett 2007</td>
<td>Kahalu‘u Regional Park Survey</td>
<td>Archeological Inventory Survey</td>
<td>None.</td>
</tr>
<tr>
<td>Petrinski et al. 2001</td>
<td>Kahalu‘u Beach Park</td>
<td>Archeological Inventory Survey</td>
<td>Identified SHIP 50-80-08-5580, which consisted of 20th century subsurface foundations and an associated cistern.</td>
</tr>
<tr>
<td>Hunkin et al. 2010</td>
<td>Kanehama and Kaheliki Hwy. Intersection</td>
<td>Archeological Monitoring</td>
<td>None.</td>
</tr>
</tbody>
</table>

An archaeological inventory survey at Kahalu‘u Beach Park identified one archaeological site (Petrinski et al. 2001). This consisted of two subsurface foundations and a cistern dating to the early-20th century (SHIP 50-80-08-5580). The site lacked integrity however, and was determined to not be significant.

Archaeological monitoring at the intersection of Kanehama and Kaheliki Highways was conducted for improvements to the intersection (Hunkin et al. 2010). No archaeological resources were observed during the monitoring.

In sum, archaeological work in the project vicinity has been relatively limited, with most projects occurring closer to the coast. Many projects produced negative findings, although agricultural remains were noted in the uplands, and a human burial, a fishpond, a heiau, and a 20th century structural remnant were found near the coast.

Summary of Background Information

Wahe‘e is a well-watered area that supported large fields of taro in the pre-contact era, with both wetland and dryland taro cultivated. At least two fishponds were maintained along the coast in nearby Kahalu‘u, adding to the abundant ocean resources of the region. Mo‘olelo of the area speak of competition for the marine resources, indicating the importance of ocean food sources.
The historic period brought about widespread changes to the region, with sugar, rice, pineapple, military, and ranching enterprises making their mark on the landscape. During the Māhele of 1848, there were no LCAs awarded within the subject properties, although one located nearby supported eight lo‘i.

Previous archaeology has identified a few sites in the area. These include agricultural remains in the uplands, and a human burial, a fishpond, a heiau, and 20th century structural remains were found near the coast. Because the current project area lies along a major stream, traditional agricultural remains might be expected. These could include terraces, ‘auwai, and subsurface pondfield deposits. Remnants of historic era land use would likely be related to rice, sugarcane, or pineapple cultivation.

ETHNOGRAPHIC SURVEY

There are some things that cannot be found in the archives, in textbooks, or at the library. It is here, through the stories, knowledge and experiences of our kama‘aina and kūpuna, that we are able to better understand the past and plan for our future. With the goal to identify and understand the importance of, and potential impacts to, traditional Hawaiian and historic cultural resources and traditional cultural practices of Wa‘ahoe, ethnographic interviews were conducted with community members who are knowledgeable about the project area.

Methods

This Cultural Impact Assessment was conducted through a multi-phase process between October and December, 2019. Guiding documents for this work include The Hawai‘i Environmental Council’s Guidelines for Assessing Cultural Impacts, A Bill for Environmental Impact Statements, and Act 50 (State of Hawai‘i). Personnel involved with this study are Windy McElroy, PhD, Principal Investigator of Keala Pono Archaeological Consulting, and Gina McGuire, MS, Ethnographer.

Interviewees were selected because they met one or more of the following criteria: 1) was referred by Keala Pono Archaeological Consulting or G70; 2) had/has ties to the project area or vicinity; 3) is a known Hawaiian cultural resource person; 4) is a known Hawaiian traditional practitioner; or 5) was referred by other cultural resource professionals. Five individuals participated in the current study. Mana‘o and ‘ike shared during these interviews are included in this report.

Interviews were taped using digital MP3 recorder. During the interviews, each person was provided with a map or aerial photograph of the subject properties, the Agreement to Participate (Appendix A), and Consent Form (Appendix B), and briefed on the purpose of the Cultural Impact Assessment. Research categories were addressed in the form of open questions which allowed the interviewee to answer in the manner that he/she was most comfortable. Follow-up questions were asked based on the interviewee’s responses or to clarify what was said.

Transcription was completed by listening to recordings and typing what was said. A copy of the edited transcript was sent to each interviewee for review, along with the Transcript Release Form. The Transcript Release Form provided space for clarifications, corrections, additions, or deletions to the transcript, as well as an opportunity to address any objections to the release of the document (Appendix C). When the forms were returned, transcripts were corrected to reflect any changes made by the interviewee.

Several potential interviewees were contacted, resulting in four interviews (Table 2). Note that during the interview with John Reppun, Kīhei Naba‘ele‘a was available to join the conversation and provided additional mana‘o, therefore five individuals participated in the four interviews. The ethnographic analysis process consisted of examining each transcript and organizing information into research themes, or categories. Research topics include: connections to the project lands, place names and mele, archaeological sites, gathering practices, change through time, and concerns and recommendations for the project. Edited transcripts are presented in Appendices D-G.
Interviewee Background

The following section includes background information for each interviewee, in their own words. This includes information on their 'ohana and where the interviewee was born and raised. The interviewees are Kapi'o Faris, John Reppun, Steven Springel, and Rick Towill.

Table 2. List of Individuals Contacted

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Method of Contact</th>
<th>Result of Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kapi'o Faris</td>
<td>Kalo farming revival leader</td>
<td>Telephone, In Person</td>
<td>Interviewed</td>
</tr>
<tr>
<td>Steven Springel</td>
<td>Waie'a Aluopua'a Initiative member, knowledgeable on archaeological sites in the valley</td>
<td>Telephone, In Person</td>
<td>Interviewed</td>
</tr>
<tr>
<td>Clifford Wong</td>
<td>Kalo farmer in Waie'a</td>
<td>Telephone</td>
<td>Declined</td>
</tr>
<tr>
<td>Makainui Cypher</td>
<td>Ko'olauopoke Hawaiian Civic Club</td>
<td>Telephone, Email</td>
<td>No Response</td>
</tr>
<tr>
<td>Kepa Maly</td>
<td>Cultural specialist</td>
<td>Telephone, Femail</td>
<td>Declined</td>
</tr>
<tr>
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<td>Rick Towill</td>
<td>Longtime Waie'a resident, property owner, property neighbor</td>
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<td>John Reppun</td>
<td>Longtime Waie'a resident, kalo farmer, chiefly executive director of KEY Project, Kahaluu's Neighborhood Board member</td>
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<td>Kihei Nahale'a</td>
<td>Director of Halualani Education Alliance, In Person</td>
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<td>Joined interview with John Reppun</td>
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Kapi'o Faris

I was born on Moloka'i, lived in Waie'a, Maui, and then moved to O'ahu and went to Kamahama schools. Finished my high school in California, went to two different colleges in California. Did a little post work at Scripps Institute. And was a harbor master at Redondo Beach for many years. Then I retired from that and became a boat shop owner. I sold balsa and motors. And trailers and did a lot of contract work for the government. And then my wife retired so we decided to sell out and come home. And we're back in Hawai'i and got involved with teaching the kids at KEY Project. And bettering the environment in our area. My dad came to Hawai'i because he got hurt playing football at Oregon State. He was in the hospital for two years. So he had to get well in a warm environment, they told him. So he moved to Hawai'i. He sold newspapers around the island at night driving a loop and then later he moved to Maui and he wrote for the Maui News and he also worked at the airport. Then he started flying his own plane and crop duster. Then he started an airline and that's how he met my mom. She's one of 17 children all raised in Waie'a, Maui and he became very in-tune to Hawai'i time.

Steven Springel

I was born in the Territory of Hawai'i and grew up in Kailua and I've lived in Waie'a since 1956. My parents moved to Hawai'i in 1951 shortly after the war. My father ran the Omega Communications station in Haua Valley until his retirement. And my mother received her doctorate from the University of Hawai'i, PhD in Psychology. And my father is passed away now. And my mother and my sister live in the UK now.

Rick Towill

I actually grew up on the adjacent property on the ridge on the Kahuku side of the property. My parents bought 45 acres back when St. Charles Company sold off all of the land that was once in rice, then was pineapple, then in the 50's they sold it all. I was born in '38 and my parents built the house up there in 1960 and lived there ever since. Then I attended Punahou School and went to Oregon State, started ge-engineering after that. Then my folks sold the property but we had some remnant pieces of the property. We live below that property now on a two acre parcel where my wife and I built a home, and we raised our two boys there... I guess on my mom's side, do all the way to the Rice family, which were a missionary family from the East Coast of the United States. On my dad's side, my grandfather came from Virginia, came with the JD White Engineering Company in 1918, something like that, and was surveying for the fuel tanks that they were putting up on Kahuku Road and adjacent to Pearl Harbor. And then my grandmother's side, my great-grandfather came from New Zealand; biologist with Rothschild expedition, they were seeking flora and fauna for the collection in England. He ended up managing the ranch, the ranch, he worked for the Robinsons on Kauai for many years and then they cleared the land and then my grandmother and her older brothers were born and then they moved to Moloka'i and they had the ranch there for a time and took the family all the way back to New Zealand. Through the grapevines, scuttlebutt, he found out about the management of the ranch out on Lana'i and took that and came by himself for a year to make sure he secured the job before he brought the family over. And it all worked out, brought the family back.

John Reppun

I was born, actually, Ho'olehua, Moloka'i. My dad was a general practitioner, was a doctor on Moloka'i for about 15 years. So several of us were born on Moloka'i, others of us on Lanai. One in Baltimore when he was in med-school. But my dad grew up in Kahalu'u here. Imigrated from Russia. He was born in the Ural Mountains in Russia and my mom was from Pennsylvania. Dad grew up in Hawai'i, his father also was a doctor along the windward coast, so very familiar with many of the families. So my dad inherited patients who had been my grandfather's patients. There were not many doctors around at the time. We were close friends with the father of Al-Batia, a doctor in Kahuku. And he'd go up to Waimea to Kahuku. Kind of a range that he might go. So we grew up in Kahalu'u, near where my dad lived when he was a kid and you know my brothers and I, my sister, six kids, one girl, it was a wild ride. It was great growing up in a big family.

And I was born in 1952 so I'm kind of in the middle of the family. And it was an interesting time to grow up, born in the Territory of Hawaii and transitioning into the State of Hawai'i. In the course of growing up in this community, went to school at Benjamin Parker Elementary in Kåne'ohe, there was no Kahalu'u Elementary at the time. There was a Waialua Elementary, I don't even know if 'Ailulani had been built yet, because my dad's office was in Kåne'ohe, we would catch a ride, go along the beach road, what we now call the beach road, there was no Kamehame Highway. And so we went to Benjamin Parker Elementary, most of us, and we were very lucky to go on to high school at Punahou. I'm very grateful for that.

Topical Breakouts

The following sections are extended quotations from the interviews, organized by topic. Interviewer provided information on connections to the project lands, place names and mele,
archaeological sites, gathering practices, change through time, and concerns and recommendations for the proposed Waie`e Riparian Learning Center.

Connections to the Project Area

I just did a lot of hiking in this area. And I saw this property for sale and the stream and I said to my wife, “We’re moving.” When I was young, I grew up with my Tutus on Maui, ever after I went away for school, I would fly home for vacation, weekends, to stay with my Tutus. And they taught me the Hawaiian way of fishing and preserving our environment. I started looking into our streams and started noticing we have so many aquarium species and we’re losing all our native species. And we’re losing our water. We’re losing everything. So I started getting involved in protecting the `ōopua and the hilliwai and all the native stream species. And that in turn, to protecting the water and water rights and why they have to keep taking water out of the stream? It’s time to start recycling and do more recycling. [Kaipo Farris]

What I’ve been trying to do is to get the State to, as new construction starts, so many homes, thousand homes, five hundred homes, whatever it may be. That they’re required to have recycling systems on site for their homes. And to start using recycling water for their lawns and toilets and so forth. And save the water, put the water back in the streams where it belongs. To protect the species. So the water leads to the land. And loss of water, and the land being torn up by a lot of hikers not paying attention to trails and so forth, four wheelers going where they don’t belong in our watershed, every time it rains all that mud gets washed into the stream down into the opening of the mouth of the stream and that kills our nursery areas for our ocean fish. ‘Cause that’s where they come in, to protect themselves, in the freshwater from the predators. And when it’s all muddy and dirty, where do they end up? Farther out to sea. Too bad, get eaten. So I started working with the water department. [Kaipo Farris]

Personally, I’ve done a lot of hiking throughout the Valley. I’ve done a lot of photography throughout the valley. For a while I had a company called Pictures of Hawaii where I would sell my photography and I used to do a lot of hiking with some friends of mine. We did a lot of little investigating and just learning the valley. It’s always been a place for me to take my dogs and exercise. I tell people that I don’t need to go to the gym, the valley is my gym. [Steven Springer]

When I was young in my 20s and 30s I spent a lot of time up there, my friend Glen and I camped up there by the second waterfall, which is actually Waie`e waterfall, the first waterfall is Hāmāma Waterfall. And we camped at Waie`e waterfall for three, four days, and we built a pole square and retaining wall and make ponds. It was quite an interesting time to be in the valley. [Steven Springer]

John Reppun and I signed a memorandum of understanding with the Board of Water Supply back in the ‘90s with the intent on creating such a riparian zone, outside classroom that would be managed by KEY Project in Kahalu`u. And so, it still is the dream. [Rick Towill]

...I got involved in farming with my brothers; kind of running away from the world, trying to hide from what we saw happening around us but instead finding ourselves jumping right into it. By getting involved in farming, in particular wanting to learn more about things like taro farming, discovering that streams were starting to dry up and the reasons why: water diversions by the Board of Water Supply, following on the heels of sugar and pineapple, with the know-how to tap and divert water from one watershed to another, from one side of the island to another. It was a grand awakening. And the whole time, discovering reference material, reading through descriptions of each ahupua`a’s, learning what an ahupua`a is, the seasons: Makahiki, not just a football jamboree at the stadium, but an actual season and starting to learn the cycles of life that were surrounding us, it was fascinating. [John Reppun]

I started working at KEY Project in the early ‘80s, started in teaching at the alternative learning center, which got me medical coverage while farming part-time which was great, put me in direct contact with the students from the very familiar that I had grown up with, who were the product of pretty difficult times: development pressure, the war in Vietnam going on, and seeing the sons and daughters of guys I grew up with impacted by drug use, by disenfranchisement, separation from the land, lack of familiarity with their surroundings, so that was my introduction to KEY Project. One of the exercises I used to do with kids, I would give each of them a long piece of paper and ask them to draw Ko`olau Poko... [John Reppun]

Place Names and Mele

I understand terms like Hāmāma Falls, the name of the falls in the back, my understanding of Hāmāma is that it refers to a portal, into a different realm and I can understand that, I relate to that. The falls as we first knew it, was this wide expense, and when the Board of Water Supply sunk its straws into the cup, that got narrowed drastically today, and we do, we go up to the falls, we take kids up, we impact the Board of Water Supply’s withdrawal of water as teachable moments. [John Reppun]

There’s one mele that stands out. Ka Ulu Po`ai Hale or Po`ai Hale, both are used. That has to do with a rain that swirls around the hale or the hale grove. And Waie`e, Kahalu`u are known for its hale groves. I remember that because I heard that from one of the staff members here at KEY, who was involved in hula and we traced it back to Puakea who was very familiar with that particular mele. So there are names of winds and rains that come in certain ways around Waie`e and Kahalu`u that are important to bring forward. [John Reppun]

I’d have to describe to [my students] what Ko`olau Poko was, the moso, right? They didn’t know those terms, they didn’t know those places...Mokoli`i, Chinanuma’s Hat, Kaopu, is a flat surface, is that island at the edge of the bay before it drops off to the deep beyond Kāne`ohe Bay. My brothers and I would camp out on those islands, watch the birds, go surfing, go diving. Mokapu Peninsula, now part of the military industrial complex, every kid should be given an opportunity. The military should not be allowed to be on Mokapu unless they have extensive programs to ensure that the citizens around it have access to Ko`olau Ponds, the ethos between understanding water used to circulate between the bays through those fishponds and saline, kind of wetland areas. He`i`i fishponds... [John Reppun]

...a guy that you probably want to talk to is Kep`a Maly. He actually was close with Ho`ohia Kawelo who actually wrote a chant, a song for this area. So he’s quite familiar with some of the `ōlelo from way back. He actually helped us on our property here. We wanted to name our property. And he went back and got for us, retrieved from early maps that have a whole bunch of place names and our particular property and the one where the landslide happened, of which we own currently, it was `Eli of Ka`ululua and was dated from Kanamahelua the 5th to a man by the name of James Stewart. I want to go and find more information about him because it’s a name that’s always on a lot of land deeds but don’t know the background on him. But anyway, there’s a whole bunch of; there’s Nana Ka`a`a, which is the spider on the ridge if you’re facing the ridge of the Ko`olau it’s on the right hand side, sort of above the property I grew up on. I have the map I can share with...
you on that. Anyway, with Keala's help we named our property Ka'uulua, sort of refresh life, kind of thing. [Rick Towill]

Archaeological Sites

In the valley there, I know that in our property, the 45 acre piece that I grew up on, there's a series of dikes. On the north side of Wahe'e Valley comes down and then it breaks off into two ridges that forms kind of a triangle and we had the middle triangle. And then between those two ridges there were quite a number of, I think there were two or three basaltic dike complexes, this is where the earth cracks open and the lava goes up and cools very slowly. And create these rock, the lava cooling slowly, it turns into basalt. That's where adze, stone adzes were quarried. We actually found quite a number of them. I still have some adze blanks from our property. Adze blanks are sort of in the general shape of an adze but they're kind of squared off and the Hawaiians would carry them down or transfer them to whomever near the shore and that's where they would sort of grind the ends down to create the point to be able to dig soil or whatever they were going to use the adze for. [Rick Towill]

The area was fed before that, by an 'auwai that was maintained by all of the farming communities. They would go once a month, Saturday once a month, and clear all the bushes and make sure the 'auwai was unobstructed. The 'auwai is actually recorded on the Land Court map, located on the original, what's known as the part on our properties, is called the Land Court Application 1133. Remnants of the 'auwai exist but it's no longer a functioning 'auwai, down Wahe'e Road because places in the road there was an elevated flume, passed through some piping going down Wahe'e Road. Wahe'e Road, so some of the issues that you probably know of this area, when I was a little kid, was all coral roads, all the roads, the roads in the area were coral and coral aggregate. I believe those roads were built during the war. You know, military operations. I think they used a portion of the ridge in Wahe'e Valley. It's kind of bare on one end, towards the front of the valley, I think they used that for target practice and that sort of thing. [Rick Towill]

I've not really found any 'ula maikas or anything like that in Wahe'e Valley but Larry Higa, on his property, which is down across from Kahului Elementary School, they farmed that property in sweet potato in the '40s, late '30s. He found some adzes that he has, a foot long, maybe 14 inches long. Appropriately shaped with the cutting edges and so forth... Not too many 'ula maikas in the area. There were some of them, sort of sling shots. They look like a miniature, shrunked football kind of thing, like an inch or two long. I think I have one of those. [Rick Towill]

So the back part of Kahului's Regional Park is a long stretch where lo'i used to be used. Used to be a rice mill, just at the top part of the lagoon. Used to have 'auwai where Kahului's Fire Station 1, used to be lo'i. [John Ruppert]

That used to be a traditional lo'i site and it had a wall at one time. Parts of the wall are still visible. They had water coming from the stream across the, now there's a road there, a gravel road, coming through that road into the ginger patch. The ginger had taken over because it's wet, lot of water there. It's still real wet. There's still a spring up above. It's got cold enough water, I've taken temperatures. I think if we pull the ginger we can get the water to flow. That's to be seen. That needs to be done. [Kaipo Farris]

Well, I've come across several ancient sites in the valley. The back right side of the valley there's a trail, a pig hunting trail that circles the valley for the most part, through the back of the valley. There's some terraced areas back there with some interesting wall structures for food storage and if you do the research and the history of the valley, one time the valley was pretty clear and there was a lot of cattle grazing and now all the vegetation is overgrown in the valley again. [Steven Springle]

But there's a lot of historical sites in the valley that are overgrown, you don't even know are there until you stumble upon. What I wanted to bring up that's important, is that this whole valley at one point was Kalahiki land. Belonged to the Kalihi family. I forgot when it was that it was taken from them because they didn't pay their taxes. But, there's burial sites, there's Kalahiki family burial sites up there. I've spoken with people, second hand, about it. There's also Ho'okoking family members buried up there. [Steven Springle]

I would be most concerned where they want to do the development in the lower part of the valley here [pointing to location on project site map]. This is the gate, on both sides of the road here there were houses. And I'm not sure where the burials and all the family members are buried, I would assume close in this area here. This place right here, this is an ancient lo'i. You can tell by the way the land is laid and the way the river can be diverted and exit over here, it is an ancient lo'i. Guarantee. Over here, before the bridge on the right over here, there's an old wall site you need to be aware of. The other sites that I know about are way back in the valley. Not even near this area [points toward main development location].

Up in this area right here, there's old military remains up there. [Steven Springle]

I would think that of most importance is to find out where these people have their family members buried. I think you need to look into that and speak to them directly... I mean, if you realize back in the '30s and '40s that was Kalahiki land, Kahului family up in that area. Back in those days people didn't bury their family in grave yards like we do now, they buried them in the mountain. You know? So, it's only normal for there to be people buried there, guaranteed. [Steven Springle]

I think that, this site should be taken a look at [pointing to map]. Right before the bridge, the bridge is by the pond. Somewhere in this area. It's real overgrown. Just take a look at this area. I can't be sure if it's an ancient Hawaiian site or not, there's a lot of wall construction in that area. And how old it is, it could be within the last century for all I know. But the other site I know about is way in the back here [pointing to map]. It's old, I know it's real old. The other thing, to navigate this valley, what my friend and I found best, is follow the mango trees, 'cause birds don't drop mango seeds. They don't grow at random. People planted those mango trees. For instance, if you come up the Jeep trail, before you get to the ponds, maybe about right here [pointing to map] there's two mango trees like gates, like an entry gate into something. So people planted those mango trees for that purpose, yeah? And then if you get further back up into the, by the waterfall, you can look across to the other side of the valley you can see the path to the trail that goes along here [pointing to map] and it's all marked by mango trees. You just travel from mango tree to mango tree. If you go down here in this area [pointing to map] there's a line of 'ula trees, six 'ula trees planted across like this, in a perfect line. From here to here [pointing to map]. So it's like, somebody planted these trees like this for a purpose. The old trees can be like a map to the valley of old of how people lived in the valley. 'Cause like I said, birds don't carry those kind of trees and plant them like other stuff. [Steven Springle]

The army used to come in here and they used to practice maneuvers. Old Man Higa told me when he first moved to the valley back in the '40s that there's tanks coming up the road and doing military practice. And if you go up in this area here, there's an old concrete bunker. Near that concrete bunker we used to find hazardous waste in the dirt; a lot of old Jeeps that were abandoned up there and by hazardous waste I mean we would find medical vials, stuff like that. [Steven Springle]
Gathering Practices

So Board of Water Supply engaged the Bishop Museum in a study of the flora and fauna of the back of the valley. Really extensive study not too long ago. But all kinds of plants that, whether it's things like mamai or things that haliu would use. I think that's important to bring forward. Jeff Preble, part-time staff here at KFY, he's very interested in this whole Wa‘ie‘e‘Apu‘a’s initiative that we have going, very knowledgeable about different plants we have musu. [John Reppun]

Not really [the project won't affect cultural practices] that I know of other than the ‘auwai is active from I think probably halfway up the property that you're working and the Reppuns maintain that diversion from the stream through this ‘auwai that Rachel Hall. She was one of twelve kids from Kaua‘i. [Rick Towlil]

There's a really good location, which we've sort of called the Ginger Patch, the road kind of goes up the hill from the gate and it drops down and goes across a small tributary, sort of an intermittent stream, and then you reach this place which has a whole bunch of white and yellow ginger, which we actually harvest the ginger blossoms for KEY Project's fundraiser and other things. [Rick Towlil]

There have been a couple of haliu that came in. And yes, I help them out, I've shown them to several areas where they can go and find what they need. And now they come on their own. They always stop in to say hi. [Kaua‘i Farias]

Change Through Time

There's a lot of invasive species in the valley, a lot of invasive species that I've seen change the flora of the whole valley over the last several decades. That's one of the things that really depletes me about the valley as well as the foot traffic as well. [Steven Springig]

Since the internet, social media, the foot traffic is off of the charts. It's, I mean, for the most part people stick to the jeep trail, the main road, there are people that go off on other trails and create new trails. So, it's just, you know, most of the people there are conscientious, good people for the most part, but there's you know, people that have no regard, no respect for the valley. [Steven Springig]

I have some pictures of how it used to look with the koa trees. The koa trees were affected by the fire in the late '90s and that's when the right hillside was overtaken by invasive species. Used to be maile. The very back corner, almost to the back corner, used to be a whole ravine of rosy apples. But the valley, you know, if you study the history, the valley originally had eight waterfalls until the Board of Water Supply came in there started taking the water. Now two remain. The third waterfall, it runs pretty prevalent when it rains hard. [Steven Springig]

You know, as far as the community's concerned, back in the old days, everybody grew up as kids. They would go up there as kids and swim. It would be the community playground. It would be, I'm sure it would be the same like you growing up Big Island, you guys go up to the pond, you go swim. It was that way for the community and it got overrun and now it's restricted to everybody and so, this is one of the things that my neighbor, he mentioned, he cannot go up there to visit his relatives that are buried up there. Ken Iliga. He mentioned that to me. And I feel the same way, you know, I've always raised dogs. I have two dogs buried up there on the hillside. I can't go, I can't take my dog I have right now running and exercise like I used to up there. It's taken away something precious from the community, from the people who live there. It's taken away from us. We cannot take our children and our grandchildren up there to go swimming in the pond like we used to. I have pictures of my daughters when they are just babies, two, three years old, and my father in law and I carried them up there to the pond to swim. That's all gone. We can't do that now. [Steven Springig]

Not the fact that it's gated. I mean, it's always been gated. Now it's, you get cited by the police. It's restricted area now. And I mean, it's always been No Trespassing signs, Board of Water Supply but still everybody would go. The social media and the masses have ruined it for everyone now. Especially the people of the community. It's been taken away from us. The parking on the street and everything, was a big concern and everyone was upset about that. But now, it's not too bad 'cause a lot of people not coming now. So, the police have done their job and it's been working. But, nevertheless we cannot go up there either. I used to go up there two, three times a week. I get off, take my dog and can go for a run. I can't do that anymore. I kind of miss that. Hawai'i's changed a lot. [Steven Springig]

Mayor Fasi was going to put a golf course in the back of the valley. John Reppun saw it to that that didn't happen. And so, that actually sat with Parks Department and then they somehow named it the Waialae Nature Preserve, which is to the detriment of the community around here. 'Cause when Facebook and all that kind of stuff came along, someone got the bright idea saying what a wonderful hike it is back there. And the community actually made enough fuss that there's been rubbish and stuff left up there, defecation, they've actually found for the second time bacteria in the water, so they've had to shut it down. [Rick Towlil]

When you go in the back there, they actually put an inclined well, Board of Water Supply, at the base of Hīmāna Falls back in the '80s and the Reppuns and others had a contested case hearing because when that inclined well was put in at the time it drastically reduced the flow of water in Waile‘e Stream, which limited the use of that water for two patch purposes and so forth. [Rick Towlil]

Luckily Waile‘e Stream has very few obstructions in the stream. One of them is the fish ladder, which was a USGS gauging station and we considered taking it out and then thinking about what the real issue was, the aquatic life being able to get past that. So we did the fish ladder project. The other obstruction, manmade is the crossing of what used to be the Nakawā’s farm. A number of houses down from the gate there's a driveway that goes across Waile‘e Stream. It goes to the farm that Bob Nakawā’s father, where Bob grew up on. The Nakawā’s farm, used to be absolutely beautiful lo‘i, rock walls, terraces, all maintained with a sickle. He would do it all with a sickle. I think some of that’s been bulldozed by the person who came in after. But that would be a really important site to go look at. There was a ford in the stream, the stream flowed over it. Then you get down to Ala‘aha Road, where Waile‘e Stream comes under the bridge there, that’s been altered but the water’s still running through there. [John Reppun]

My brothers built their own lo‘i right there, making the rock walls, running water in gutters that were hung through the house from the stream to the lo‘i, wonderful piping hot water that we would bathe before we would go back into the stream... and then the taro all rotten. And we were like, “wait a minute, what's going on here?” My brothers went consulting with Rachel Hall, who was from Hāna‘ape‘pe, Kaua‘i, married Joe Hall over here in Waile‘e’s, was farming taro in Waile‘e’s. And that was our introduction to Waile‘e’s, to go and ask her. Her sage response: “You want to learn how to grow taro? Take over that lo‘i,” right next to her. So farming alongside this Hawaiian woman who really knew her taro. But she also had problems with rot and eventually that led to, something else is going on here. We looked at the water, something’s happening with the water. Board of Water Supply had come into Waile‘e’s and had started to tap water with wells and tunnels and eventually got to the point where they could turn a valve and pretty much dry up Waile‘e Stream, turn off Hīmāna Falls. [John Reppun]
Concerns and Recommendations

Actually, by having something that’s, John and I envisioned through KIY project in the back of the valley, we could incorporate some invasive removal because there’s albizia, there’s this other thing, it’s on the State noxious plant list, it has a yellow flower and it’s somehow been isolated to this valley. It migrated from the Kahuku side of the valley and it’s become a problem. By doing an outside classroom and some of those efforts we can eradicate some of those invasives which don’t help the land. [Rick Towill]

No actually, the surrounding community is quite supportive of an effort like this because it would work towards limiting just the free for all access that’s been happening for the last five or six years. I think going forward, there needs to be an effort to make the visitors that visit Hawai’i understand that there’s a protocol and a respect that needs to happen. I think if something were added to the video that’s played on the incoming flight that talks about invasive species, declaring unwanted plants and animals. That if something like that were offered, that would be good. It’s gotten, I think we’re just beginning to see the signs, the industry has too many people coming here now. The State and County doesn’t manage access to open areas very well. [Rick Towill]

The idea of moving the gate back and creating a parking lot, I’m totally against that. Because then you’re going to have people coming up there at night to drink in that vacant parking lot. And that’s going to create more problems for the neighborhood. [Steven Springel]

It’s the gate. The gate has to keep people from even getting in there. Where the gate is located now, close to the homes, they can’t really park there. If they do, people call the cops ‘cause it’s right by their house. But if they’re further back in the valley, where they can manifest at midnight, making trouble, nobody’s gonna know they back there. Then they come down the road at 50 miles an hour in the middle of the night, it’s a problem. That’s a concern. [Steven Springel]

The other thing that was brought up at the Neighborhood Board Meeting was that there’s two entities, the Board of Water Supply and Parks & Recreation. It seems Parks & Recreation, they have a thousand and one things to do already so they’re not really, you know, concerned about this area. And if it was put all under Board of Water Supply or one entity, then there would be better management. Right now, you have two entities that are trying to be consolidated, whereas if had just one entity it would be a lot easier and faster. [Steven Springel]

Because if we have one land owner, and honestly don’t think of them as owners, I think of them as stewards, better to have one agency, better to turn this all into a watershed, down to the gate. Because there’s this portion of Wailea Nature Reserve that’s under Parks & Recreation, there’s this implication that there’s this recreational resource up there. Thousands of people going up there, literally thousands. And they’re going up there thinking it’s a destination, it’s a recreation area. I’m not against a lot of people going up, but if they’re going up for a purpose, if it’s managed access, and they’re going to help with fighting invasives and restoring koa’s, and they’re going in learning groups by permit or arrangement, which the Board of Water Supply does anyway. [John Reppun]

It’s better for it to be a managed access watershed area, including inviting in hunting groups at certain times to cull the risk of feral pigs. Right now there’s not hunting allowed, guys go anyway. Because there’s so many pigs up there. That’s been our pitch. This is a fairly recent conversation where we’re trying to get BWS to take this all on, so then we don’t have to be stuck with a place one, phase two. Getting vehicles, small vans, 15 passenger vans. There’s a parking area, it’s adjacent to the land that Rick Towill owns, put like a gate. area, kind of like what Ho‘omaluhia has, so anybody going up there is passing by some kind of a facility. Have a checking point. Parking area up here, I’m generally in favor of that. There’s a logical bus turn around area, and a bus coming up and dropping off kids in a program. And if they drive right in with parking there and a turn-around up there makes sense. The very first issue for me is, first of all they’re doing an environmental assessment. Because the City is not there and probably shouldn’t be there, down here is Kahuku Regional Park. They have so much on their plate down there, they can’t possibly take this on, they don’t have the ability or interest. [John Reppun]

We know how to restore a fishpond, we know how to get the ‘awaa flowing, we know how to plant, how to harvest. But we don’t know how that ko‘olau relationship works, how to interact with the community. The idea is to have a space with some cabins in on and we have interns, a business intern, a cultural intern, a poet, you know, kumu hula, those interns are cycling through, they work with you on your farms, with your kids, so we’re constantly enriching ourselves, we’re constantly learning... and maybe we talk about the pavilion, the parking area, but shouldn’t we also talk about building in this opportunity to stay, work, live there even if it’s for a period of time? Cultural residency... A day trip to me is like somebody diving with a snorkel and a mask as opposed to going with an aquascope. So some way of being in these spaces, not only manua, here, the wetland area. Creating those spaces where people go and stay for a longer moment... A pilot project just in order to see up the questions we could be asking, would be really awesome. [John Reppun]

That’s the struggle though with the uplands. The uplands historically is not meant for people to gather resources and bring down and not have a lot of that traffic in there. Because culturally speaking, you leave it in that state. The challenge is, about people going up into that space, even guys that say they’re hunters and stuff, I think the perspective of what it’s supposed to do for the people that live in those more habitat areas, is a challenge of how you manage that. About who should have access and when and how. And I’m not trying to limit the access, but it’s definitely a challenge on understanding what is its primary role to sustaining the water that we all need to survive and the secondary resources it provides: medicine, food. For me, recreation is very low on the list in some ways. But it still has its recreation value. It’s a challenge.[Kilie Nakahae’a]

That is the whole community’s responsibility: the viability of the ahupua’a, I’m one that thinks it’s important for people to have access but there’s levels of access. Also requires sense of reciprocity. Traditionally, ahupua’a meant if you like eat, or you like water, then you goin’ come help clean. And if that’s happening, then there’s opportunities for other to come and see that. You have to celebrate that kind of relationship that people have with their place. Which it is a good thing to show. It requires an organization or a family, like John says, they keep that responsibility of keeping it with integrity. It requires some type of management or cooperation that allows the community to come and speak to their concerns and the community to enforce or mitigate those concerns. There has to be some form of community-based residence that resides in that place. Like a KIY Project, like a family that understands the responsibility. They should be given the opportunity to subsistence themselves, be supported by... to model the relationship that is very Hawaiian. [Kilie Nakahae’a]

Immerse. Re-cultivate. The thing about the cultural residency, there’s a sense of intermingling. You’re going in to let go of whatever you have and accept what’s there. That’s kind of an important thing. So if we talk about infrastructure, or support systems that do that, I think that’s very helpful. Having people that can stay there that can train people and accept people in in a way that spiritual, emotional management is happening. It’s never about the physical. It’s dependent upon your attitude and your emotions. People don’t
realize those things aren’t in check, people are going to get hurt. Physical infrastructure or support systems allow people to become calibrated into a space. [Kilieh Nahale’a]

They have a program on protecting the environment. So we started looking into the plants up there. And there’s so many invasive species up here, I would say it’s probably impossible to get back to where we were. There’s old, old Hawaiian trees, very rare, I know where they are up here in the valley but they’re getting so encroached upon by Christmas berry and thimble berry. And these trees take forever to grow. The wood is so hard that the Hawaiians used to use it as an anchor, that wood. And that’s the tree, you know? There’s a couple of them up here. They take forever; they’re 70 years old and they’re only six inches around. You know, they grow for years and those things need to be protected and they’re just getting choked out. [Kaipo Fari]

We’ve been working with the police department to try and keep the 800-a-day hikers down to a very minimum and trying to stop it at all, stop all of it, “cause the pollution in the water, the pollution on the land. And this is a watershed, you know? There’s other waterfalls to go visit, this watershed, the water from these streams also goes into taro patches and farms down below here. And when you have 800 people a day hiking with no facilities, you know where all that’s going. And that’s why the stream now, has been considered, you know, to stay out of. Because it’s polluted, has E. coli and so forth. So that’s where we are, we’re trying to teach the kids how to protect the ‘aina. [Kaipo Fari]

We spent two days picking up trash, we filled two 35 foot bins with trash, I mean not just from that one spot, but all up and down. We’ve done many more cleanups and that’s all from the hikers. Bottles, beer cans, you can’t believe it. So anyway, we cleared an area, smoothed it out, bulldozer in there, made it all nice and level, made an area for parking and for buses to be able to turn around. So the buses and whatever traffic this pavement may incur, keeps traffic out of the neighborhood. So we don’t take the neighborhood’s parking. You know, we don’t want to upset the neighbors. They’ve been upset enough by all the tourists— 800 on weekends. That’s why the policeman is up there now. Right at the gate there. They don’t pay attention to the signs, they take pictures next to it with their kids. A ‘No Trespassing’ sign. And teaching their kids, it’s ok to trespass, how’s that? [Kaipo Fari]

We need to be sure that any work we do around the stream and the lo‘i, that we do not affect the people downstream. And we should get their ok that this is our plan, and is it ok with you? And some of the kids that are working in the lo‘i now are our kids. So, should go ok. [Kaipo Fari]

I think we could put it back to somewhat of what it used to be by teaching the kids about water and about native species and then we can have a nursery and put some of the plants back that belong in there. Take out invasives, find a way to take them out so they don’t regrow. We have had many kids that we’ve worked with that are now back again here with master’s degrees, working with us. [Kaipo Fari]

Summary of Ethnographic Survey

The interviewees shared their extensive knowledge and experiences of Waie‘e. Several place names and mele names were shared. It was noted that the name Hiilamana Falls refers to a portal to a different realm. One mele of the area is titled Ka Ua Po‘ai Hale or Po‘ai Hale. The mele speaks of a rain that swirls around the hula groves that the region is known for. Traditional gathering practices were also identified for the area. These include mamoiki and ginger gathering, as well as the collecting of other plant materials by hula halaus. Koa, mango, and ‘ulu trees were discussed as important natural resources in the valley, and the ‘aawai is an active resource that is still maintained today. The project area was discussed as a critical piece of the Waie‘e and Kahalu‘u’s watersheds, the waters from which flow makai, impacting kalo farmers and the community further down the valley. The streams were also mentioned as important resources for Hawaiian freshwater species including the hihiwai and ‘o‘opa.

Interviewees identified archaeological sites within the project area, such as lo‘i, ‘aawai, old walls, and basalt dike complexes that were quarried for making adzes. Waie‘e Road is also a historic property, as it was noted to have been constructed as a canal road during World War II. There may also be burials of the families Kahalihi and Ho‘okano, although it is not known whether these are within the project area or not. Cultural resources noted outside the project area include lo‘i, ‘aawai, a rice mill, wall structures for food storage, and military remains such as a concrete bunker.

Interviewees remarked on recent changes in Waie‘e Valley including increased foot traffic and consequent restrictions to access to reduce the hiking footprint of trash, defecation, and erosion. The increased bacteria levels in the stream were noted, due to the high levels of incoming traffic. It was suggested that tourists to Hawai‘i should be educated on protocol, respect, and the harmful effects of bringing invasive plants to the islands. The Waie‘e Riparian Learning Center was discussed as an opportunity to promote managed, reciprocal access to the valley. There were varying opinions on how this should be managed, with one interviewee remarking on the creation of a parking lot as a potential place for future trouble in the neighborhood and that the gate should be where the neighbors can see it. The idea of inviting hunters in to help control the feral pig population was put forth, as well as offering cultural residency to interns who could live and work in the valley for a period of time. Because what happens in the maka‘a areas affects the people downstream, it was recommended that the residents and farmers downstream should be consulted on the proposed project. The interviewees also remarked on the joint jurisdiction of the subject properties, between the Department of Parks & Recreation and the Board of Water Supply, that it would be preferable to have stewardship under one entity. In all, the project is a product of community effort and the work of the KEY Project, and was generally supported by all interviewees. The overwhelming numbers of hikers and their effects were noted as a major problem, and the proposed project might help by managing access to the area.
SUMMARY AND RECOMMENDATIONS

Waie'e Valley has a long history of agriculture and as an abundant upupa'a. These traditions continue today, with kalo farming revitalization as an integral part of recent history and ongoing community connection to place. Population levels and kalo farming declined in the 1820s and 1830s as a result of disease and changes in land tenure with the sugar, rice, and dairy industries. Waie'e was put under development pressure throughout the 1900s, but has largely retained its role as a rural watershed. Ongoing community concerns in the Ko'olaulopoko region include water rights, flooding, and development.

This study highlights the unique history of Waie'e and demonstrates the importance of this place to the community. Four interviews of community members were conducted so that they could share their mana'o and help to identify any potential cultural resources or practices that might be affected by the proposed Waie'e Riparian Learning Center.

Cultural Resources, Practices, and Beliefs Identified

Archival research and ethnographic interviews compiled for the current study revealed that Waie'e was a culturally significant area with many of the natural resources which supported traditional subsistence activities. In the project area, this would have centered on kalo farming.

The interviewees identified several traditional cultural practices that are carried out in the project area today including gathering of mamaki and ginger, as well as the collecting of other plant materials by hula hula, and maintenance of the 'auwai. Interviewees identified many important natural resources including wai, old koa, mango, and 'uala trees, pau'a, as well as freshwater fauna.

Archaeological sites were identified within the project area by the interviewees. These include lo'i, 'auwai, old walls, and basalt dike complexes that were quarried for making adzes. Waie'e Road was noted to have been constructed as a coral road during World War II, and there may also be burials of the families Kalahiiki and Ho'okano within the project area or nearby.

Previous archaeological research in Waie'e has been focused in the makai portion of the valley and along the coast. Although no previous archaeological studies have been conducted within the project area, archival research tells us that there were 28 LCAAs awarded in Waie'e, including 59 kuleana plots, most of which were situated along the stream (Chun 1954;24). There were no LCAAs awarded within the study area, although one LCA was located not far to the north, where eight lo'i were recorded in Māhele testimony.

Potential Effects of the Proposed Project

Whereas the proposed project may affect the cultural resources and practices noted above, the interviewees generally expressed that the effects would be positive, particularly since the Waie'e Riparian Learning Center is focused on reviving lo'i and 'auwai systems and engaging the next generation with cultural watershed use. The project has the potential to provide a system for reciprocal-based access and aid in invasive plant species removal. The design of the gate and parking lot framework will have wider implications for parking, access, and neighborhood traffic and safety.

Confidential Information Withheld

During the course of researching the present report and conducting the ethnographic survey program, no sensitive or confidential information was revealed. No confidential information was withheld from the current report.

Conflicting Information

No conflicting information was obvious in analyzing the gathered sources. On the contrary, a number of themes were repeated and information was generally confirmed by independent sources.

Recommendations/Mitigations

In general, the interviewees were concerned about the overwhelming numbers of hikers in the valley and the negative effects this has had on the 'āina and its residents. Managed access was an important theme that recurred across the interviews. In addition, invasive plant species removal was discussed by all interviewees as an important mitigation tool. All interviewees talked about the role of the project area as a maska site that needs to be managed with the cascade effect of water to more makai-located farmers and communities. Because what happens in the maska areas affects the people downstream, it was recommended that the residents and farmers downstream should be consulted on the proposed project. The idea of inviting hunters in to help control the feral pig population was put forth, as well as offering cultural residencies to interns who could live and work in the valley for a period of time. Several of the interviewees expressed a desire that jurisdiction of the project area be consolidated with the Board of Water Supply in efforts to streamline administration and permit management in the best possible hands. One interviewee identified the Ho'okano, Kalahiiki families as having family members possibly buried on the project properties. Further work may need to be done with these 'ohana to determine if the project will affect any burial sites.

Summary and Conclusion

In conclusion, background research and oral history interviews identified several archaeological resources within and outside the project area that will be affected by the proposed project. An archaeological inventory survey is recommended to gather more information on the surface and possibly subsurface cultural resources within the study area. The community should be kept informed and their concerns and recommendations should be considered during all phases of the proposed work. Waie'e Valley is clearly valued, both for its traditional uses and history as well as contemporary role in agricultural and cultural revitalization and as a critical source of fresh water.
### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>ahu pua'a</td>
<td>Traditional Hawaiian land division usually extending from the uplands to the sea.</td>
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<tr>
<td>'aina</td>
<td>Land.</td>
</tr>
<tr>
<td>albizia</td>
<td>A genus of trees invasive to Hawai‘i, particularly <em>Falcatoria moluccana</em>.</td>
</tr>
<tr>
<td>ali'i</td>
<td>Chief, chieftess, monarch.</td>
</tr>
<tr>
<td>'auwai</td>
<td>Ditch, often for irrigated agriculture.</td>
</tr>
<tr>
<td>'awa</td>
<td>The shrub <em>Piper methysticum</em>, or kava, the root of which was used as a ceremonial drink throughout the Pacific.</td>
</tr>
<tr>
<td>hala</td>
<td>The indigenous pandanus tree, or <em>Pandanus odoratissimus</em>, 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.</td>
</tr>
<tr>
<td>hālau</td>
<td>Meeting house for hula instruction or long house for canoes.</td>
</tr>
<tr>
<td>hale</td>
<td>House.</td>
</tr>
<tr>
<td>hānai</td>
<td>Foster child, adopted child; to raise, feed, or sustain; a provider or caretaker.</td>
</tr>
<tr>
<td>Haole</td>
<td>White person, American, Englishman, Caucasian; formerly any foreigner.</td>
</tr>
<tr>
<td>hau</td>
<td>Native tree <em>Hibiscus tiliaecus</em></td>
</tr>
<tr>
<td>he'e</td>
<td>Octopus (<em>Octopus</em> spp.).</td>
</tr>
<tr>
<td>heiau</td>
<td>Place of worship and ritual in traditional Hawai‘i.</td>
</tr>
<tr>
<td>hīhīwai</td>
<td>The endemic freshwater gastropod, <em>Nerita granosa</em>, which is eaten raw or cooked.</td>
</tr>
<tr>
<td>hoʻiʻina</td>
<td>Native tenants that worked the land.</td>
</tr>
<tr>
<td>ike</td>
<td>To see, know, feel; knowledge, awareness, understanding.</td>
</tr>
<tr>
<td>imu</td>
<td>Underground pit or oven used for cooking.</td>
</tr>
<tr>
<td>Kahiki</td>
<td>A far away land, sometimes refers to Tahiti.</td>
</tr>
<tr>
<td>kalo</td>
<td>The Polynesian-introduced <em>Colocasia esculenta</em>, or taro, the staple of the traditional Hawaiian diet.</td>
</tr>
<tr>
<td>kapu</td>
<td>Taboo, prohibited, forbidden.</td>
</tr>
<tr>
<td>koa</td>
<td>Native tree, <em>Acacia koa</em>, hardwood tree used for canoe construction.</td>
</tr>
<tr>
<td>kolohi</td>
<td>Mischievous, unethical, naughty, rascal, prankster, vandal; to misbehave or cheat.</td>
</tr>
<tr>
<td>konohiki</td>
<td>The overseer of an ahu pua'a ranked below a chief; land or fishing rights under control of the konohiki; such rights are sometimes called konohiki rights.</td>
</tr>
<tr>
<td>kūhina nui</td>
<td>Prime minister or premier. Ka‘ahumanu was the first kūhina nui. The position was abolished in 1864.</td>
</tr>
<tr>
<td>kūhina</td>
<td>Plain, field, open country, pasture, land with no water rights.</td>
</tr>
<tr>
<td>kuleana</td>
<td>Right; title, property, portion, responsibility, jurisdiction, authority, interest, claim, ownership.</td>
</tr>
<tr>
<td>kumu hula</td>
<td>Hula teacher/master.</td>
</tr>
<tr>
<td>kupuna</td>
<td>Grandparent, ancestor; kūpuna is the plural form.</td>
</tr>
<tr>
<td>limu</td>
<td>Refers to all sea plants, such as algae and edible seaweed.</td>
</tr>
<tr>
<td>lo'i, lo'i kalo</td>
<td>An irrigated terrace or set of terraces for the cultivation of taro.</td>
</tr>
<tr>
<td>Lono</td>
<td>The Hawaiian god associated with such things as agriculture, rain, and the makahiki, a time of peace.</td>
</tr>
<tr>
<td>Māhele</td>
<td>The 1848 division of land.</td>
</tr>
<tr>
<td>mâlå</td>
<td>A fish pond sluice gate.</td>
</tr>
<tr>
<td>makai</td>
<td>Toward the sea.</td>
</tr>
<tr>
<td>mānani</td>
<td><em>Pipturus</em> spp., a small native tree. Fiber from its bark was used to make a kind of coarse tapa. Sometimes spelled manake in old texts.</td>
</tr>
<tr>
<td>manaʻo</td>
<td>Thoughts, opinions, ideas.</td>
</tr>
<tr>
<td>mango</td>
<td>Trees of the genus <em>Mangifera</em>, introduced to Hawai‘i in the 19th Century and well known for their edible fruit.</td>
</tr>
<tr>
<td>mauka</td>
<td>Inland, upland, toward the mountain.</td>
</tr>
<tr>
<td>mele</td>
<td>Song, chant, or poem.</td>
</tr>
<tr>
<td>mō'i</td>
<td>King.</td>
</tr>
<tr>
<td>moku</td>
<td>District, island.</td>
</tr>
<tr>
<td>moʻo</td>
<td>Lizard, dragon, water spirit.</td>
</tr>
<tr>
<td>moʻolelo</td>
<td>A story, myth, history, tradition, legend, or record.</td>
</tr>
<tr>
<td>muliwai</td>
<td>River mouth, estuary, or pool near the mouth of a stream, enlarged by ocean water left there at high tide.</td>
</tr>
<tr>
<td>ʻohana</td>
<td>Family.</td>
</tr>
<tr>
<td>ʻōlelo noʻeau</td>
<td>Proverb, wise saying, traditional saying.</td>
</tr>
<tr>
<td>oli</td>
<td>Chant.</td>
</tr>
<tr>
<td>olonā</td>
<td>The native plant <em>Touchardia latifolia</em>, traditionally used for making cordage.</td>
</tr>
<tr>
<td>ʻoʻopu</td>
<td>Fish of the families <em>Eliostidae</em>, <em>Gobiidae</em>, and <em>Bleniidae</em>.</td>
</tr>
<tr>
<td>polie</td>
<td>Gleaming, shining, a flash of light.</td>
</tr>
<tr>
<td>pre-contact</td>
<td>Prior to A.D. 1778 and the first written records of the Hawaiian Islands made by Captain James Cook and his crew.</td>
</tr>
<tr>
<td>pu'a</td>
<td>Pig.</td>
</tr>
<tr>
<td>uhu</td>
<td>An adult parrotfish, one of two genera of the <em>Scaridae</em> family known to occur in Hawai‘i.</td>
</tr>
<tr>
<td>ʻulu</td>
<td>The Polynesian-introduced tree <em>Artocarpus altius</em>, or breadfruit.</td>
</tr>
<tr>
<td>ʻulu maika</td>
<td>Stone used in the maika game, similar to bowling.</td>
</tr>
</tbody>
</table>
wai  Water or liquid other than salt water.

waiawi  Psidium cattleianum f. lucidum, the yellow strawberry guava.

wauke  The paper mulberry, or Broussonetia papyrifera, which was made into tapa cloth in traditional Hawai‘i.

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Agreement to Participate in the Cultural Impact Assessment for the
Waihe'e Riparian Learning Center
Gina McGuire, Ethnographer, Keala Pono Archaeological Consulting

You are invited to participate in a Cultural Impact Assessment (CIA) for the Waihe'e Riparian Learning Center in Kahalu‘u, on the island of O‘ahu (herein referred to as “the Project”). The Assessment is being conducted by Keala Pono Archaeological Consulting (Keala Pono), a cultural resource management firm, on behalf of G70. The ethnographer will explain the purpose of the Assessment, the procedures that will be followed, and the potential benefits and risks of participating. A brief description of the Assessment is written below. Feel free to ask the ethnographer questions if the procedures need further clarification. If you decide to participate, please sign the attached Consent Form. A copy of this form will be provided for you to keep.

Description of the Project

This CIA is being conducted to collect information about the Project in the Kahalu‘u area in Ko‘olaupono on O‘ahu Island through interviews with individuals who are knowledgeable about this area, and/or about information including (but not limited to) cultural practices and beliefs, mo‘olelo, mele, or oli associated with this area. The goal of this Assessment is to identify and understand the importance of any traditional Hawaiian and/or historic cultural resources, or traditional cultural practices within the Project. This Assessment will also attempt to identify any effects that the proposed development may have on cultural resources present, or once present within the Project area.

Procedures

After agreeing to participate in the Assessment and signing the Consent Form, the ethnographer will digitally record your interview and it may be transcribed in part or in full. The transcript may be sent to you for editing and final approval. Data from the interview will be used as part of the ethno-historical report for this project and transcripts may be included in part or in full as an appendix to the report. The ethnographer may take notes and photographs and ask you to spell out names or unfamiliar words.

Discomforts and Risks

Possible risks and/or discomforts resulting from participation in this Assessment may include, but are not limited to the following: being interviewed and recorded; having to speak loudly for the recorder; providing information for reports which may be used in the future as a public reference; your uncompensated dedication of time; possible misunderstanding in the transcribing of information; loss of privacy; and worry that your comments may not be understood in the same way you understand them. It is not possible to identify all potential risks, although reasonable safeguards have been taken to minimize them.

Benefits

This Assessment will give you the opportunity to express your thoughts and opinions and share your knowledge, which will be considered, shared, and documented for future generations. Your sharing of knowledge may be instrumental in the preservation of cultural resources, practices, and information.

Confidentiality

Your rights of privacy, confidentiality and/or anonymity will be protected upon request. You may request, for example, that your name and/or sex not be mentioned in the Assessment material, such as in written notes, on tape, and in reports; or you may request that some of the information you provide remain off-the-record and not be recorded in any way. To ensure protection of your privacy, confidentiality and/or anonymity, you should immediately inform the ethnographer of your requests. The ethnographer will ask you to specify the method of protection and note it on the attached Consent Form.

Refusal/Withdrawal

At any time during the interview process, you may choose to not participate any further and ask the ethnographer for the tape and/or notes. If the transcription of your interview is to be included in the report, you will be given an opportunity to review your transcript, and to revise or delete any part of the interview.
Consent Form

I, __________________________, am a participant in the Cultural Impact Assessment for the Waihe'e Riparian Project (herein referred to as “the Project”). I understand that the purpose of the Assessment is to conduct oral history interviews with individuals knowledgeable about the Project and the surrounding area of Waihe'e on O'ahu Island. I understand that Keala Pono Archaeological Consulting and/or G70 will retain the product of my participation (digital recording, transcripts of interviews, etc.) as part of their permanent collection and that the materials may be used for scholarly, educational, land management, and other purposes.

I hereby grant to Keala Pono and G70 ownership of the physical property delivered to the institution and the right to use the property that is the product of my participation (e.g., my interview, photographs, and written materials) as stated above. By giving permission, I understand that I do not give up any copyright or performance rights that I may hold.

I also grant to Keala Pono and G70 my consent for any photographs provided by me or taken of me in the course of my participation in the Assessment to be used, published, and copied by Keala Pono and G70 and its assignees in any medium for purposes of the Assessment.

I agree that Keala Pono and G70 may use my name, photographic image, biographical information, statements, and voice reproduction for this Assessment without further approval on my part.

If transcriptions are to be included in the report, I understand that I will have the opportunity to review my transcripts to ensure that they accurately depict what I meant to convey. I also understand that if I do not return the revised transcripts after two weeks from the date of receipt, my signature below will indicate my release of information for the draft report, although I will still have the opportunity to make revisions during the draft review process.

By signing this permission form, I am acknowledging that I have been informed about the purpose of this Assessment, the procedure, how the data will be gathered, and how the data will be analyzed. I understand that my participation is strictly voluntary, and that I may withdraw from participation at any time without consequence.

Consultant Signature ______________________ Date ____________

Print Name __________________________ Phone ____________

Address ___________________________

Thank you for participating in this valuable study.
Transcript Release

I, ____________________, am a participant in the Cultural Impact Assessment for the Waihe’e Riparian Project (herein referred to as “the Project”) and was interviewed for the Assessment. I have reviewed the transcripts of the interview and agree that the transcript is complete and accurate except for those matters delineated below under the heading “CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS.”

I agree that Keala Pono Archaeological Consulting and/or G70 may use and release my identity, biographical information, and other interview information, for the purpose of including such information in a report to be made public, subject to my specific objections, to release as set forth below under the heading “OBJECTIONS TO RELEASE OF INTERVIEW MATERIALS.”

CLARIFICATION, CORRECTIONS, ADDITIONS, DELETIONS:

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TALKING STORY WITH
KAPOI FARIS (KF)

October 19, 2019 / 3:00 PM / Uncle Kape's House, Waie'e, Oahu
Interview by Gina McGuire (GM)

GM: I'm here at the top of Waie'e Road with Uncle Kapoi Farris. We're talking story about the Waie'e Riparian Learning Center. Today is October 19, 2019. To start off, Uncle could you please tell me a little bit about yourself?

KF: Kapoi Farris. I was born on Moloka'i, lived on Waie'e, Maui, and then moved to Oahu and went to Kahuku schools. Finished high school in California, went to two different colleges in California. Did a little post work at Scripps Institute. And was a harbor master at Redondo Beach for many years. Then I retired from that and became a boat shop owner. I sold boats and motors. And trailers and did a lot of contract work for the government. And then my wife retired so we decided to sell out and come home. And we're back in Hawaii'i and got involved with teaching the kids at Ke'Y project. And bettering the environment in our area.

GM: Do you want to talk a little bit about your family background, your parents?

KF: Sure. My dad came to Hawaii'i because he got hurt playing football at Oregon State. He was in the hospital for two years. So he had to get well in a warm environment, they told him. So he moved to Hawaii'i. He sold newspapers around the island at night driving a Jeep and then later he moved to Maui and he wrote for the Maui News and he also worked at the airport. Then he started flying his own plane and crop dusting. Then he started an airline and that's how he met my mom. She's one of 17 children all raised in Waie'e, Maui and he became very in-tune to Hawaii'iana.

GM: Your dad sounds like a really cool guy! Could you talk about your experience with the Waie'e Valley and how you came to know this area?

KF: I just did a lot of hiking in this area. And I saw this property for sale and the stream and I said to my wife, "We're moving." When I was young, I grew up with my Tatas on Maui, even after I went away for school, I would fly home for vacation, weekends, to stay with my Tutas. And they taught me the Hawaiian way of fishing and preserving our environment. I started looking into our streams and started noticing we have so many aquarium species and we're losing all our native species. And we're losing our water. We're losing everything. So I started getting involved in protecting the 'o'opu and the hiihiwai and all the native stream species. And that in turn, is protecting the water and water rights and why they have to keep taking water out of the streams? It's time to start recycling and do more recycling. A recycling plant can do more. We talked to them, they said "why, all we need the State to do is tell us go ahead. Bring some more water." But no, it's big money. What I've been trying to do is to get the State to, in new construction starts, so many homes, thousand homes, five hundred homes, whatever it may be. That they're required to have recycling systems on site for their homes. And to start using recycling water for their lawns and toilets and so forth. And save the water, put the water back in the streams where it belongs. To protect the species. So the water leads to the land. And loss of water, and the land being turn up by a lot of hikers not paying attention to trails and so forth, four wheelers going where they don't belong in our watershed, every time it rains all that mud gets washed into the stream down into the opening of the mouth of the stream and that kills our nursery areas for our ocean fish. Cause that's where they come in, to protect themselves, in the freshwater, from the predators, And when it's all muddy and dirty, where do they end up? Farther out to sea. Too bad, get eaten. So I started working with the water department. They have a program on protecting the environment. So we started looking into the plants up here. And there's so many invasive species up here, I would say it's probably impossible to get back to where we were. There's old, old Hawaiian trees, very rare. I know where they are up here in the valley but they're getting so encroached upon by Christmas berry. And ti'ami berry. And these trees take forever to grow. The wood is so hard that the Hawaiians used to use it as an anchor, that wood. And that's the tree, you know? There's a couple of them up here. They take forever, they're 70 years old and they're only six inches around. You know, they grow for years and those things need to be protected and they're just getting choked out. We've been working with the police department to try and keep the 800-day bikers down to a very minimum and trying to stop it at all, stop all of it, 'cause the pollution in the water, the pollution on the land. And this is a watershed, you know? There's other waterfalls to go visit, this watershed, the water from these streams also goes into taro patches and farms down below here. And when you have 800 people a day hiking with no facilities, you know where all that's going. And that's why the stream now, has been considered, you know, to stay out of. Because it's polluted, has E. coli and so forth. So that's where we are, we're trying to teach the kids how to protect the 'ina.

GM: Could you expand on how you've seen the area change? Is there anything you'd like to add?

KF: I think we could put it back to somewhat of what it used to be by teaching the kids about water and about native species and then we can have a nursery and put some of the plants back that belong in there. Take out invasives, find a way to take them out so they don't regrow. We have had many kids that we've worked with that are now back again here with master's degrees, working with us.

GM: That's awesome!

KF: It is.

GM: Could you share any knowledge about any mo'i olole, olo, important place names for the area?

KF: No, I'm not the one for that.

GM: That's totally ok.

KF: As I said, I'm a newcomer here, myself. I've only been here ten, twelve years I think. My home is Moloka'i and Waie'e, Maui.

GM: You were talking a little bit earlier (before interview started) about the 'awa'iai and a spring over here [pointing to map]. Do you want to talk a little bit more about traditional sites you know of in this area?

KF: That used to be a traditional lo'i site and it had a wall at one time. Parts of the wall are still visible. They had water coming from the stream across the, now there's a road there, a gravel road, coming through that road into the ginger patch. The ginger had taken over because it's wet, lot of water there. It's still real wet. There's still a spring up above. It's got cold enough water, I've taken temperatures. I think if we pull the ginger we can get the water to flow. That's to be seen. That needs to be done. We figure if we don't have enough we can run a pipe from the upper, where the bridge is, the first bridge past the ice pond, everyone calls it, right by that first bridge, just around the corner, we can take water from that stream down. We have a hundred yards, just a little over a hundred yards run. And then the water can come into here. We originally went up here, we spent several days cleaning the area. We had a lot of help from the school kids came. We spent two days picking up trash, we filled two 35 foot bins with trash, I mean not just from that one spot, but all up and down. We've done many more cleanups and that's all from the hikers. Bottles, beer cans, you can't believe it. So anyway, we cleared an area, smoothed out, bulldozer in there, made it all nice and level, made an area for parking and for buses to be able to turn around. So the buses and whatever traffic
this pavilion may incur, keeps traffic out of the neighborhood. So we don’t take the neighborhood’s parking. You know, we don’t want to upset the neighbors. They’ve been upset enough by all the tourists—800 on weekends. That’s why the policeman is up there now. Right at the gate there. They don’t pay attention to the signs, they take pictures next to it with their kids. A ‘No Trespassing’ sign. And teaching their kids, it’s ok to trespass, how’s that?

GM: Laughs. Are you aware of any traditional gathering or cultural practices within the area?

KF: There have been a couple of hulaus that come in. And yes, I help them out, I’ve shown them to several areas where they can go and find what they need. And now they come on their own. They always stop in to say hi.

GM: We’ve talked about biking and community concerns with that, but are there any other cultural concerns the community might have regarding the area that we should be aware of?

KF: We need to be sure that any work we do around the stream and the lo’is, that we do not affect the people downstream. And we should get their ok that this is our plan, and is it ok with you? And some of the kids that are working in the lo’i now are our kids. So, should go ok.

GM: My last question is, do you have any other recommendations for other kāpuna or any other locals who might be good to talk story with from the area?

KF: I’m sure you talked to John.

GM: Reppun?

KF: Yeah. He knows all the ins and outs. He’s got it all upstairs, he knows the people and places and dates. I’m more of an on-hands dude. Is Amy Shinoshi involved? She’s the Board of Water Supply liaison. She’d be a good one to talk to. She’s very nice, very smart.

GM: Right on, I will check on that. Thank you so much for your time, Uncle Kaipo.
TALKING STORY WITH

JOHN REPPUN (JR)

December 5, 2019 / 9:00 AM / KEY Project, Waiale'a Ahupua'a
Interview by Gina McGuire (GM)

GM: I’m here with Uncle John Reppun outside the KEY Project in Waile‘a. It’s December 5th, we’re talking about the proposed Waile‘a Riparian Learning Center. Just to start us off Uncle, can you tell us a little bit about yourself, where you were born, grew up...

JR: Okay, So, I’m John Reppun. I was born, actually, Ho‘olehua, Moloka‘i. My dad was a general practitioner, was a doctor on Moloka‘i for about 15 years. So several of us were born on Moloka‘i, others of us on Lāna‘i and one, my sister, the oldest, in Baltimore when he was in med-school. But my dad grew up in Kalahū‘a here. Immigrated from Russia. He was born in the Urals Mountains in Russia and my mom was from Pennsylvania. Dad grew up in Hawai‘i, his father also was a doctor along the windward coast, a very familiar with many of the families. So my dad inherited patients who had been my grandfather’s patients. There were not many doctors around, back in the day from Waimānalo to Kāna‘ulu. Kind of a range that he might follow. So we grew up in Kalahū‘a, near where my dad lived when he was a kid and you know my brothers and I, my sister, six boys, one girl, it was a wild ride. It was great growing up in a big family.

And I was born in 1952 so I’m kind of the middle of the family. And it was an interesting time to grow up, born in the Territory of Hawaii and transitioning into the State of Hawaii and I remember when I was in elementary school all of us probably what, kindergartners or first graders, being trotted out to the road with American flags in our hands to wave American flags. I would definitely question that today. I might fly that flag a little bit upside down. I would question why are we doing this? Because in the course of my lifetime, very aware of the pressures, the movements that have been pushed onto Hawai‘i that have, in many respects, wiped out or really heavily impacted what used to be in Hawai‘i. And why that’s so important, it’s not just a cultural thing, here we are 2019, I was born in 1952. In 2019 we are probably much more dependent on outside sources of food, families that are from Hawai‘i that grew up in Hawai‘i, whether they are Hawaiian or mixed or whatever, struggle a lot harder now to stay in place, medically people are struggling far more than they used to, they are living far less healthy lives. To top it all off, sea levels are rising. We were scolded for fighting progress when we first started to buck up against the political machine, whether it was a neighborhood or a County, or a State, or a Federal level. I still grimmace when I hear that phrase, “you can’t stop progress.” But you can, if you can name it as what it really is, it wasn’t progress. Oceans are full of plastic, we’ve got dump sites that we don’t know what to do with, chemials... you know, hanging over our water systems from Red Hill to Kāne‘ohe Marine Base, so where are we? So, that’s a background in a nut shell.

In the course of growing up in this community, I went to school at Benjamin Parker Elementary in Kāne‘ohe, there was no Kahului or ‘Ala‘aniu Elementary at the time. There was a Wahooloe Elementary so, because my dad’s office was in Kāne‘ohe, we would catch a ride, go along the beach road (Kamehameha Highway), what we now call the “beach road,” there was no Kalakīki Highway. And so we went to Benjamin Parker Elementary, most of us, and we were very lucky to go on to high school at Punahou. I’m very grateful for that just to start with, for being able to juxtapose the value of private education, the reality of public education, the importance of public education, and beyond that, most importantly, that we’re all still in the same canoe when we get on the other end. Whether you come through public or private school you end up as citizens of these islands, under whatever jurisdiction you want to recognize, and you still have the same responsibility for stewardship. That’s my short answer to your first question.

GM: No, that’s all good! Did you want to talk a little bit about how you came to know the project area?

JR: Sure, so I’ll start before my time at KEY Project. I went away to college. I had the opportunity to go away, to upstate New York, Hamilton College. Each summer before and during, I would come back and work, usually a construction job. I worked with Young Brothers one summer. It was fascinating to watch what was coming and going, the commerce between islands: herding pigs off the barges in the docks of downtown Honolulu or pigs from Kauwaihei or driving 100 Toyotas into the bowels of the barge. I worked also construction, Alber’s Feedmill, places like State Tile, where we were just all day long muscle work, just loading conveyer belts with tile, you knew these machines that bevel the edges and then stack them to a pallet. During those college years, summer time jobs, I was becoming more and more aware of the impacts of post-statehood development that were sweeping across the state and here at home in Kahului, even from high school times, watching the major flooding that happened in the ‘60s. And I mean major flooding and watching the development that came with Kahului Highway, breaking through the back of ‘Ahuimanu, Valley, obliterating streams, ‘a‘wa‘a systems. Even though I didn’t really know exactly how those systems worked at the time, we didn’t grow up around it, we grew up in a big family house, sibling rivalry was probably the most important thing to us, going to school every day. But slowly becoming more and more aware of the rural landscape, of the agrarian lifestyle that surrounded us, that the kids I grew up playing football and baseball with, this is where they came from, the Hawaiian, Okinawan families, all of their values and so on came from that lifestyle.

The flooding in the ‘60s was something to behold, I remember riding my bike down to the end of Lulanī Street, out onto the point overlooking the intersection by Hygienic Store and it had been raining and raining, and in the course of those days of the flooding, I remember watching, going down to Aka‘elele Road across the river, and marveling at how the river was raging under the bridge, then a couple of hours later, coming back down and, “oh you can’t go to the bridge, the bridge is over-topped”, and then in the course of that day watching an eight-bedroom house coming down the river with people in it, watching cars, cows, floating in Kāne‘ohe Bay, people bejson rescued out of their cars right in the intersection by Hygienic Store, the walls of Kahului’s fishpond blasted open. This was what I later came to understand what the Army Corps might call a 500-year flood. Today those kind of events are happening more and more frequently. They don’t even use the term 500-year because of things like climate change and increasing frequency and intensity of weather events. So, witnessing that, plus my upbringing... my civic awareness that I took with me beyond my college years, my parents getting very involved in community planning... just as they spent time fighting and clawing their way with their pens and correspondence, getting to the planning tables, the rest of us grew up with that same drive.

So today, when I finally came back from college on the mainland I got involved in farming with my brothers, kind of running away from the world, trying to hide from what we saw happening around us but instead finding ourselves jumping right into it. By getting involved with farming, in particular wanting to learn more about things like taro farming, discovering that streams were starting to dry up and the reasons why: water diversions by the Board of Water Supply, following on the heels of sugar and pineapple, with the know-how to tap and divert water from one watershed to another, from one side of the island to another. It was a grand awakening. And the whole time, discovering reference material, reading through descriptions of each ahupua‘a, learning what an ahupua‘a is, the seasons of Makahiki, not just a football jamboree at the stadium, but an actual season and starting to learn the cycles of life that were surrounding us, it was fascinating.

I started working at KEY Project in the early ‘80s, started in teaching at the alternative learning center, which got me medical coverage while farming part-time which was great, put me in direct contact with the students from the very families that I had grown up with, who were the product of
pretty difficult times: development pressure, the war in Vietnam going on, and seeing the sons and daughters of guys I grew up with impacted by drug use, by disenfranchisement, separation from the land, lack of familiarity with their surroundings, so that was an introduction to KEY Project. One of the exercises I used to do with kids, I would give each of them a long piece of paper and ask them to draw Ko’olau Poko, inevitably out of 15-18 kids, 15-18 years of age, all of them who had grown up in this area, Kahalu‘u, the surrounding ahupua‘a, I would never ever see the Mokapa Peninsula, I never saw a fishpond, I never saw Mokoli‘i, Kapaa Islands, and they wouldn’t know where Ko’olau Poko was, I’d have to describe what Ko’olau Poko was, the "moku", right? They didn’t know those terms, they didn’t know those places, and these are all kids, these are kids. I’d ask them, how many of you have been into Kāne‘ohe Bay, maybe 3 out of 15 or 18 kids had even been into Kāne‘ohe Bay. And you know, coming from a big family, where we had a row boat, we rowed everywhere. We figured out how to sail, row out and sail back, cause the wind’s coming onshore. At first it was almost laughable and then it was tragic to realize that we were a whole generation into people who were completely separated from their surroundings. The major feature that showed up on every single map that they drew was, guess?

GM: I don’t know.

JR: The Windward Mall. So, that’s what these kids were growing up with. The major archaeological feature was the Windward Mall. On Bishop Estate land, mind you. So that kind of led the conversations that we had at KEY and have continuously had at KEY Project, which is a pretty important community center. That informed the conversations, what they needed to be, I think. If we’re raising a generation that doesn’t have the terminology, the lexicon of its own cultural background, geographical background, are we just out there stepping Band-Aids on gaping wounds? And so ever since, that revelation informed my community involvement. I went from teaching at KEY, part time, part time while I was also trying to farm and doing community development work, serving on the Kahalu‘u Neighborhood Board, which my dad was the first chair of and rabbit raising, getting involved in all the different battles: fighting off zoning that promoted intense development and displacement for our area. The zoning that came out of the ’60s was zoning that was so exploitive, in deep draft harbor, a second city in Kāne‘ohe Bay area, an oil refinery in Temple Valley—Ahimuanu, plans for a nuclear power plant in He‘eia, H-3 coming at us. You know? We were at the other end of these really big gun barrels that were fueled by post-statehood corporate interests.

The push, with plan laid for our area around corporate tables downtown, far from the community started off with Alexander & Baldwin, the Big Five, Dillingham and Standard Oil, that had caused issues with community organizing, plans for dredging the Wai‘anae, and so on. I saw the writing on the wall that they were not going to be able to force our community into that scenario, then came the smaller land owners, who still had development dreams and schemes for oil and light industry, taking advantage of existing zoning that had not been seen by or approved by community that would displace agriculture and impact rural/agrarian lifestyles and resources. We spent decades of battling off what we did not want to see as our future, fighting our way to the planning tables, dealing with City officials who would say things like, and I won’t give names to those officials, “Communities don’t belong in planning.” We inherited from early community organizers, parents and mentors, the drive to question authority and a belief that the community had the right to be "at the table" a part of the planning process that would determine the future of our area. There was a lot of community organizing going on back then, growing through the late ’60s, ’70s and early ’80s because there was a lot of families that still had kuleana lands or who were renting lands to farm. They were not going to give up easily, they were going for fight for lands that had productive agriculture for centuries, niche farming that was happening: lo‘i, banana patches, areas where the plantations’ early efforts had not touched or were no longer in use. Cause plantations came sweeping through windward O‘ahu, not touching, but still impacting the lowlands in each valley, from vast areas being cultivated in taro, flood plains, and then rice where water was a critical resource. Plantations swept through the higher ground until they could figure out how to take water from the windward side to the drier, more economically viable broad expanses areas on the leeward side.

But the riches and the kula properties in-between, held us together to a considerable extent. So the community organizing that happened, brought all these different ethnicities together. That was how we held on. We managed to hold together, Hui Malama ‘Aina o Ko‘olau was one example of a host of organizations, farmers, fishermen that continued to meet and fight back. Amazing history to grow up around. I finished college around 1975, then for a time worked in Wyoming, finally found my way home, get involved in farming with my brothers. I remember touring with Calvin Hoe and others, who farmed in Wai‘ale‘ale, learning about things like Makalintangi. I remember around ’75 or so, my parents, my mom especially was involved in the community with the Koa Luma Newspaper, we used to communicate with the community about the issues we were facing. My brothers, we had use of some land that my dad line up for us. He was the doctor for an Okinawan family and whose own sons weren’t interested in farming at that time. We ended up working that land. My brothers built their own lo‘i right there, making the rock walls, running water in gutters that were hung through the hau bush from the stream to the lo‘i, wonderful piping hot water that we would bathe before it would go back into the stream... and then the taro all notice. And we were like, "wait a minute, what’s going on here?" My brothers were consulting with Rachel Hall, who was from Hanapepe, Kaua‘i, married Joe Hall ever here in Wai‘ele, was farming taro in Wai‘ele. And that was our introduction to Wai‘ele, to go and ask her. Her sage response: "You want to learn how to grow taro? Take over that lo‘i," right next to her. So farming alongside this Hawaiian woman who really knew her taro. But she also had problems with rot and eventually that led to, something else is going on here. We looked at the water, something’s happening with the water. Board of Water Supply had come into Wai‘ele and had started to tap water with wells and tunnels and eventually got to the point where they could turn a valve and pretty much dry up Wai‘ele’s Stream, turn off Hilmann Falls. We landed at KEY Project where, Ron Albue was a legal aid lawyer and he had come out of a background of working with southwestern United States with Native American tribes struggling over water. And we took the Board of Water Supply to court. GM: Was it in the quality of the water?

JR: Not enough water means the quality goes down. Not enough water means temperatures are higher. That court case started to bring that science forward, and the culture. Those who were involved in that court case, my brothers, haole hicky guys who wanted to farm taro, Clifford Wong, taro was growing in China, Sergey Nakaza, Bob Nakaza, Seper, Okolani, and Bob Hall, Hawaiians, and so on. So it was kind of a classic court case Hawaiian, Okinawan, Japanese, Chinese, and haole all coming together, bringing together the information, the drive to the table to push back on behalf of the needs for lo‘i. The focus was on that, on what the needs are for taro and I would say it probably wasn’t until later, building off of that case, the water code, water commission being set up, and cases like Wai‘ale‘ale started to evolve when we eventually started farming in Wai‘ale‘ale in the ’70s where stream ecosystems, riparian zones, estuaries, nearshore meets water quality starts to come into play. And again, during all of this time we’re learning civics, we’re learning about things like Class AA Waters, over which Department of Health has jurisdiction and responsibility. No such thing as rights without responsibilities. And in the water code, the commission, automatically the Department of Health sits on the water commission. For good reason, because they have this responsibility manka to makai water quality, which is directly correlated to water quantity, right?

Let me jump back a step. After the major flooding in the ’60s, the response was this massive, federally funded, congressionally-authorized Kahalu‘u Watershed Plan, which was a "watershed restoration" project but for so many of the years that I was involved, we always referred
GRL: Can I pass you there?

RM: Sorry, I can't hear you. I must have been talking through the fish to the right.

GRL: Ah, I know. I was really trying to get into it, but I think it's important to get it right. It's not just about the fish, it's about the whole ecosystem.

RM: Yeah, I see what you mean. It's all interconnected. We need to be careful not to disturb anything.

GRL: Right. I think we should start by mapping out the area and identifying all the different species. Then we can start implementing the conservation measures.

RM: I agree. And we should also involve the local community in the process. They have a lot of knowledge about the area.

GRL: Absolutely. We need to work together to ensure that we're doing what's best for the ecosystem as a whole.

RM: Let's get started. I've already done some preliminary research and I think we have a good idea of where to begin.

GRL: Sounds good. I'm excited to see what we can achieve together.
fire. Literally, just burned the whole hillsides to set off the ordnance. Yeah, Larry would be interesting to talk to. He's very koloholo, has a crazy sense of humor. He's gonna bend your ear but he knows the history and the families. He grew up in Waikane, and here, he's worth talking to. Just him remembering that there was taro being farmed. Harder to find that knowledge in the Hawaiian families. People like Randy Kalakihi and others have gone, they're no longer with us. Have you folk's spoken to Shelly Young?

GM: No.

JR: So Shelly is Rachel's granddaughter. And she continues to farm where my brothers farm, up here in Waie'e, in the wetland just beyond Kahalu'u Fire Station. Shelly's next generation but she would at least be able to speak to what her grandmother remembers and has some of that history. She, with my brothers, they continue to access mauka Waie'e and make sure water is flowing in the 'auwai. The 'auwai that Paul Chun documented is important. There are still, we're not just looking at mauka. With that Riparian Learning Center, it's just one station on a stream ecosystem. There are other stations, those have to relate. Those can't exist alone, has to be connected to where lo'i is still being cultivated. Also Kahalu'u Regional Park goes up against Waie'e Stream. The back part of Kahalu'u Regional Park probably, maybe one day, the City and County of Honolulu will have a department of a different form of recreation. There's baseball fields and soccer fields and football and all that. There's also re-creation. Lo'i, places where whole farms go. That's a different form of recreation that's probably far more important. Every football player should be in the lo'i but not everybody in the lo'i needs to go play football. So the back part of Kahalu'u Regional Park is a long stretch where lo'i used to be. Used to be a nice mill, just at the top part of the lagoon. Used to have 'auwai where Kahalu'u Fire Station is, used to be lo'i. And all along that stretch above it, that 'auwai used to go across and feed other wetland areas. So there's Waie'e wetland down here, where Waie'e and Ka'ula'au start to come together. The center up mauka might be somewhere we convene to have certain types of discussions, but whoever comes there will inevitably come here by the stream, down here in the wetland, in the nearshore, and same thing, anyone who convenes here is going to mauka. The Riparian Learning Center is just going to be one touch point. I think. They're a network of outdoor learning sites. And then KEY Project, which I see as being part of a whole network. There's one mele that stands out. Ka'U Po'ai Hale or Pe'ai Hale, both are used. That has to do with a pain that swivels around the hale or the hala grove. And Waie'e, Kahalu'u are known for its hala groves. I remember that because I heard that from one of the staff members here at KEY, who was involved in hala and we traced it back to Puakea who was very familiar with that particular mele. So there's this network of rains that come in certain ways around Waie'e and Kahalu'u that are important to bring forward.

GM: So, other than kalo farming, especially in this valley, are there any other cultural harvesting, gathering, and practices around the project area?

JR: Absolutely. So Board of Water Supply engaged the Bishop Museum in a study of the flora and fauna of the back of the valley. Really extensive study not too long ago. But all kinds of plants that, whether it's things like musakai or things that hilaus would use. I think that's important to bring forward. Jeff Preble, part-time staff here at KEY, he's very interested in this whole Waie'e Ahupua'a initiative that we have going, very knowledgeable about different plants we have hilaus. Rick Barboza with Papahana is aware of what we're trying to push here, he'd probably be a good person to talk to. But it's a huge battle to deal with the invasives. So much else that's going on up there. There were all kinds of sites where lo'i used to exist that really need to be mapped out, that's where we need you guys. We need archaeologists, we need people to literally comb through the bushes and look where lo'i used to be. Some of that can be recreated, some of that has to be done by instinct. The 'auwai systems that still exist, the one going up past the gate, is the one that my brothers and Shelly and others continue to maintain.

GM: You mentioned changes in the stream levels and quality and invasive species, are there any other changes that you've seen in the project area you could talk to?

JR: Luckily Waie'e Stream has very few obstructions in the stream. One of them is the fish ladder, that was a USGS gaging station and we considered taking it out and then thinking about what the real issue was, the aquatic life being able to get past that. So we did the fish ladder project. The other obstruction, mammade is the crossing of what used to be the Nakata's farm. A number of houses down from the gate there's a driveway that goes across Waie'e Stream. It goes to the farm that Bob Nakata's father, where Bob grew up on. The Nakata's farm, used to be absolutely beautiful lo'i, rock walls, terraces, all maintained with a sickle. He would do it all with a sickle. I think some of that's been bulldozed by the person who came in after. But that would be a really important site to go look at. I think it was briefly on the State Register of Historic Sites and then got taken off because it hadn't gone through the proper procedures. That would be worth looking at, to go back through State Registers to see which sites were on, were taken off, and re-identify sites. That would be important. There was a ford in the stream, the access to the Nakata site, the stream flowed over it. Then you get down to Alihana Road, where Waie'e Stream comes under the bridge there, that's been altered but the water's still running through there.

I would be very concerned if we did things to channelize the stream. But there may need to be some kind of shortening of certain banks as you come down into the food control lagoon. There is a major project that the City, back to the Kahalu'u Watershed Work Plan, it's maybe the most important project for us to be talking about. That project went on for quite a long time. It involved State, County, and Federal levels. The State helped to acquire lands with the County around the project area including where KEY is located and the County was left having to maintain the stream channel and dredge the lagoon, which, in my mind, is a big mistake. The really important thing is that's still an open project, it was never closed. And so maybe we go to Congress and we get funding to look at this 30, 40 year-old project to look at mitigation we can do and also look multiple ways to mitigate. One is the church and the development out of the heart of the lowlands here, leave it as a park, gathering place. When it floods it floods, to keep dredging the lagoon. Crazy to keep dredging. The dredged material would fill up 14 acres 12 feet high with material. That's what a Learning Center will help: where is all that material coming from? And well, we know where it's coming from. Is it coming too fast? I'm pretty sure that the majority of that material is coming down the channelized streams. It comes from mauka, hits the channelized streams, hits the bottom at a high speed, instead of spilling out and over into wetlands and meandering and so on. So there's all this hydrology involved. It would become a delta. Right? Why are we trying to stop nature from building a delta? That's why these areas were so rich with lo'i in the past, this area is so rich with nutrient rich soil, coming down, spreading out. If anything those lo'i should be thriving. The 'auwai that took water to those areas and then back into the stream should still be intact.

GM: Two questions, kind of tied together. Talking about this project area, would this development impact access to any cultural sites or practices? And the flip side of that, is there anything the project can do to minimize their impact?

JR: So we had some conversation with some folks at G70. There's this Ginger Patch, which kind of bridges between County and Board of Water Supply jurisdiction. Rick and I now and I in agreement... so I'm going to go back a little bit. This area controlled by Parks & Recreation, they don't have the foggiest idea what they're doing there. They probably don't even know how to get through the gate. And the only reason why they're there is when the City settled with Lewers & Cook out of court, they sued the City for recommended for down-zoning and the City settled out of
court and immediately Frank Fasi proposed building a golf course in Waile‘e. And suddenly the community and the Board of Water Supply, which had been fighting each other, found themselves down at the planning commission meeting, saying no golf course. Land’s, City acquired these lands. Board of Water Supply wanted the mauka areas for their systems up there, they didn’t want all of this because it wasn’t above their water sources. We’ve been pushing very hard. Ernie Lau, head of Water Supply, Bryan Andaya, is the chair of the Board of directors of Board of Water Supply. We’re trying to pitch to BWS, take it all the way down to the gate. At one point under former Mayor Peter Carlisle, they were going to divest themselves of a lot of property. The City was trying to dump property that they owned. Probably trying to raise money for rail. But they did go around all the different agencies first: “are you interested in this property?” And I remember seeing the letter that Ernie Lau wrote, saying that BWS was not not interested. We’re trying to convince them otherwise; they should be interested all the way down to the gate.

Because if we have one land owner, and honestly don’t think of them as owners, I think of them as stewards, better to have one agency, better to turn this all into watershed, down to the gate. Because there’s this portion of Waile‘e Nature Reserve that’s under Parks & Recreation, there’s this implication that there’s this recreational resource up there. Thousands of people going up there, literally thousands. And they’re going up there thinking it’s a destination, it’s a recreation area. I’m not against a lot of people going up, but if they’re going up for a purpose, if it’s managed access, and they’re going to help with fighting invasives and restoring lo‘i, and they’re going in learning groups by permit or arrangement, which the Board of Water Supply does anyway. It’s better for it to be a managed access watershed area, including inviting in learning groups at certain times to quell the riot of feral pigs. Right now there’s not hunting allowed, guys go anyway. Because there’s so many pigs up there. That’s been our pitch. This is a fairly recent conversation where we’re trying to get BWS to take this all on, so then we don’t have to deal with a phase one, phase two. Getting vehicles, small vans, 15 passenger vans. There’s a parking area, it’s adjacent to the land that Nick Towell owns. Let’s give a gate-area, kind of like what Holomua has, so anybody going up there is passing by some kind of a facility. Have a checking point. Parking area up here, I’m generally in favor of that. There’s a logistical bus turn around area, and a bus coming up and dropping off kids in a program. And if they drive right in with parking there and a turn-around up there makes sense. The very first issue for me is, first of all they’re doing an environmental assessment. Because the City is not there and probably shouldn’t be there, down here is Kahalu‘u Regional Park. They have so much on their plate down here, they can’t possibly take this on, they don’t have the ability or interest.

GM: The Parks & Rec side?

JR: Yeah. So if we start looking at this as what it is, a watershed, cultural restoration area, let’s call it what it should be. As opposed to a recreation area. So we have to wrestle with that issue because even when they do that environmental assessment, they still don’t know who the accepting authority would be. Because this is Board of Water Supply up mauka, talking about City parks lands. So it’s like we’re only going to be able to go so far in this discussion before we run into that problem. Like why is BWS doing an EA for City parks? ‘Cause City’s busy picking up rubbish in the parks. Trying to accommodate soccer teams. They don’t want to be up mauka. And we don’t really want them up mauka. I don’t. They can barely keep up with the park. If we invite them to go mauka, we’re going to lose it.

*Joined by KIHEI NAHALE‘A (KN)

KN: That’s the struggle though with the uplands. The uplands historically is not meant for people to gather resources and bring down and not have a lot of that traffic in there. Because culturally speaking, you leave it in that state. The challenge is, about people going up into that space, even guys that say they’re hunters and stuff, I think the perspective of what it’s supposed to do for the people that live in these more inhabited areas, is a challenge of how you manage that. About who should have access and when and how. And I’m not trying to limit the access, but it’s definitely a challenge on understanding what is its primary role to sustaining the water that we all need to survive and the secondary resources it provides: medicine, food. For me, recreation is very low on the list in some ways. But it still has its recreation value. It’s a challenge.

JR: I mean, that is the problem.

GM: Something that’s been talked about is the limit to the community going up to the valley in the effort to exclude hikers.

JR: By bringing this all under one jurisdiction. BWS also acknowledging that they are guests in this. We are all guests in this. They have their straw in the cup, we have our straw in the stream ecosystem. But there’s so much to do just in terms of restoration and management, that there are tons of opportunity for community. There’s work for this community to do. Ideally nobody in this ahupua‘a misses out on that opportunity. It’s not just an opportunity or a right. It’s a responsibility. Every family, everyone in this ahupua‘a should be cognizant of the work to do in this area. If we do it right, then we create opportunities for other people to come in.

KN: I was going to say to that, it is important. That is the whole community’s responsibility: the viability of the ahupua‘a, I’m one that thinks it’s important for people to have access but there’s levels of access. Also requires a sense of reciprocity. Traditionally, ahupua‘a meant if you like eat, or you like water, then you goin’ come help clean. And if that’s happening, then there’s opportunities for other to come and see that. You have to celebrate that kind of relationship that people have with their place. Which I think is a good thing to share. It requires an organization or a family, like John guys, they keep that responsibility of keeping it with integrity. It requires some type of management or konoikihi that allows the community to come and speak to their concerns and the community to enforce or mitigate those concerns. There has to be some kind of community-based residence that resides in that space. Like a KEY Project, like a family that understands the responsibility. They should have the opportunity to subsidize themselves, be supported by… to model the relationship that is very Hawaiian.

JR: You leave it all alone, it gets totally overgrown and you lose it. You allow anybody to go, you lose it. We’ve talked a lot about that. We know how to restore a fishpond, we know how to restore lo‘i, we know how to get the ‘auwai flowing, we know how to plant, how to harvest. But we don’t know how that konoikihi-relationship works, how to interface with the community. The idea is to have a space with some cabins on it and we have interest, a business intern, a cultural intern, a poet, you know, kumu hula, those interns are cycling through, they work with you on your farms, with your kids, so we’re constantly enriching ourselves, we’re constantly learning. The land that KEY is sitting on, we have a certain footprint, but there’s a line that goes from the kuku tree up there, right up there, above which is a parcel of land that belongs to the City, they don’t know what to do with. That’s where our iru is. Up to the fence, is an area we pushed the City to acquire. Same over here, between us and Kahalu‘u Regional Park. What if we have the ability to have a poet of residence, what if we’re building into the system.

KN: That’s an interesting point you make. That’s definitely a model that should be adopted here, before we lose a lot of the connections that have been here for a long time.

JR: Your question started with what else G70 could do, like in terms of facilities... and maybe we talk about the pavilion, the parking area, but shouldn’t we also talk about building in this opportunity to stay, work, live here even if it’s for a period of time?
KN: Cultural residency.

JR: Cultural residency. Yeah. It will take some work to design that in, but it's doable. And the great thing is, in this alupua'a, or any one. He'eia has all kinds of opportunities. But you can do some of that mauka, you can do some of that here. Every time I go up in our attic here, I see 30 potential doors that could be laid out. Let's create a window in the attic and somebody could stay here. So we've gotta build that in. Getting beyond the day trip. A day trip to me is like somebody diving with a snorkel and a mask as opposed to going with an Aquarium. So some way of being in these spaces, not only mauka, here, the wetland area. Creating those spaces where people go and stay for a longer moment.

KN: Immerse. Re-cultivate. The thing about the cultural residency, there's a sense of immersing. You're going in to let go of whatever you have and accept what's there. That's kind of an important thing. So if we talk about infrastructure, or support systems that do that, I think that's very helpful. Having people that can stay there that can train people and accept people in a way that spiritual, emotional management is happening. It's never about the physical. It's dependent upon your attitude and your emotions. People don't realize those things aren't in check, people are going to get hurt. Physical infrastructure or support systems allow people to become calibrated into a space.

JR: Before Thanksgiving there was a watershed group up mauka, they were getting ready to do a project right by the tunnel. Had maybe 20 people. Volunteers, people from the watershed partnership. So I went up, because I thought, captive audience. I got them in the stream to help collect imu rocks. And it was a really nice break from what they had been doing, a shift. Now they're in a line, they're passing rocks, they're identifying porous ones from the non-porous ones. And then they were paying attention to the imu they were getting ready down here. So suddenly they were connected to the community in a different way. The opportunity to have those kinds of experiences is enhanced if we have the facility that can engage them. We can propose that early on and try to assess the environmental impact of that and go through the whole process, which could be pretty laborious.

KN: K, you guys. I gotta run.

GM: Mahalo nui Uncle!

JR: We could try to take this idea of a cultural residency through an environmental assessment process, which could be pretty challenging. 'Cause you gotta answer so many... But if our approach, and this is where G70 could be very helpful, because G70's been around a really long time, if we don't try some pilot projects, being something we could back off from. A pilot project just in order to scare up the questions we could be asking, would be really awesome. This property, mauka, being adjacent to the property that Rick Towill owns is kind of a unique opportunity for a variety of reasons. One, Rick is passionate about doing the right thing by mauka Waihe'e, he has a deep background having grown up under the guidance of Richard Towill Corporation, all of what he's learned having his own engineering background, his passion about culture and connections to folks, his wife now being a Bishop Estate trustee, there are all kinds of resources that we could gather together pretty quickly, the watershed partnership... we could pilot some things here to learn. We need to learn quickly. And we need to be able to share that learning among alupua'a at a higher rate than we have before. Which would in turn allow us to connect to the regular, charter, and private schools. That's what this is, it's one piece of a larger puzzle. We're not trying to invent something new, we're trying to put together the pieces.

GM: Yeah, for sure. Well, thank you so much for your time, Uncle, I really appreciate it.
TALKING STORY WITH
STEVEN SPRINGEL (SS)
October 3, 2019 / 6:00 PM / Starbucks, Käne‘ohe
Interview by Gina McGuire (GM)

GM: Today is Thursday, October 3rd, I’m here with Uncle Steven Springel talking story about Waite‘e in Kahalu‘u on the Island of O‘ahu. We’re talking about the Waite‘e Riparian Learning Center project. Can we start with your name, where you were born, where you grew up, and where you went to school?

SS: My name is Steven Springel. I was born in the Territory of Hawai‘i and grew up in Kailua. And I’ve lived in Waite‘e since 1986.

GM: And you went to school in Kailua?

SS: Kailua.

GM: Could you share a little bit about your family background?

SS: My parents moved to Hawai‘i in 1951 shortly after the war. My father ran the Omega Communications station in Hau‘ula Valley until his retirement. And my mother received her doctorate from the University of Hawai‘i, PhD in Psychology. And my father is passed away now. And my mother and my sister live in the UK now.

GM: You’ve lived in Waite‘e for a long time, would you be able to talk a little bit about your experience with the project area?

SS: Personally, I’ve done a lot of hiking throughout the valley. I’ve done a lot of photography throughout the valley. For a while I had a company called Pictures of Hawai‘i where I would sell my photography and I used to do a lot of hiking with some friends of mine. We did a lot of little investigating and just learning the valley. It’s always been a place for me to take my dogs and exercise. I tell people that I don’t need to go to the gym, the valley is my gym.

GM: Do you have any personal anecdotes about the Project’s specific area or nearby? This can include your personal stories but also any mo‘olelo, oli, or zeke you know of surrounding the area

SS: Well, I’ve come across several ancient sites in the valley. The back right side of the valley there’s a trail, a pig hunting trail that circles the valley for the most part, through the back of the valley. There’s some terraced areas back there with some interesting wall structures for food storage and if you do the research and the history of the valley, one time the valley was pretty clear and there was a lot of cattle grazing and now all the vegetation is overgrown in the valley again. There’s a lot of invasive species in the valley, a lot of invasive species that I’ve seen change the flora of the whole valley over the last several decades. That’s one of the things that really depresses me about the valley as well as the foot traffic as well.

GM: The foot traffic has been increasing?

SS: Since the internet, social media, the foot traffic is off the charts. It’s, I mean, for the most part people stick to the jeep trail, the main road, there are people that go off on other trails and create new trails. So, it’s just, you know, most of the people there are conscientious, good people for the most part, but there’s a you know, people that have no regard, no respect for the valley. When I was young in my 20s and 30s I spent a lot of time up there, my friend Glen and I camped up by the second waterfall, which is actually Waite‘e waterfall, the first waterfall is Hānauma Waterfall. And we camped at Waite‘e waterfall for three, four days, and we built a pole square and retaining walls to make ponds. It was quite an interesting time to be in the valley.

GM: Around when was this?

SS: It was back in the ’80s. Late 80s I would say, maybe early 90s. But there’s a lot of historical sites in the valley that are overgrown, you don’t even know are there until you stumble upon. What I wanted to bring up that’s important, is that this whole valley at one point was Kalalauiki land. Belonged to the Kalalauiki family. I forgot when it was that it was taken from them because they didn’t pay their taxes. But, there’s burial sites, there’s Kalalauiki family burial sites up there. I’ve spoken with people, second hand, about it. There’s also Ho‘okano family members buried up there.

When I first moved to the Valley, my first experience was riding on horseback up there with the Estacado family. Dennis took me and my girlfriend up there horseback-riding. There was a squatter up there. There used to be houses up there on both sides of the entrance to the valley after the gate. There were probably about five or six houses and they were all run-down and derelict and abandoned by the time I moved there but there was a squatter up there with a shotgun and he used to chase people out. That was my first experience in the valley. I have some pictures of how it used to look with the koa trees. The koa trees were affected by a blight in the late 90s and that’s when the right hillside was overtaken by invasive species. Used to be maile. The very back corner, almost to the back corner, used to be a whole ravine of rosy apples. But the valley, you know, if you study the history, the valley originally had eight waterfalls until the Board of Water Supply came in there started taking the water. Now two remain. The third waterfall, it runs pretty prevalent when it rains hard. I’ve been caught up there in flash floods on a couple of occasions, it’s the real deal. You don’t really want to be stuck up there in a flash flood because you cannot really get back out, just trapped up there, you gotta find high ground. Everything turns into a river everywhere. Centipedes come out of the woodworks.

GM: [laughs]

SS: It’s really crazy.

GM: Yeah.

SS: I would be most concerned where they want to do the development in the lower part of the valley here [pointing to location on project site map]. This is the gate, on both sides of the road here there were houses. And I’m not sure where the burials and all the family members are buried, I would assume close in this area here. This place right here, this is an ancient lo‘i. You can tell by the way the land is laid and the way the river can be diverted and exit over here. It is an ancient lo‘i. Guarantee. Over here, before the bridge on the right over here, there is an old wall site you need to be aware of. The other sites that I know about are way back in the valley. Not even near this area [points toward main development location]. Up in this area right here, there’s old military remains up here. The army used to come in up here and they used to practice maneuvers. Old Man Higa told me when he first moved to the valley back in the ‘40s that there’s tanks coming up the road and doing military practice. And if you go up in this area here, there’s an old concrete bunker. Near that concrete bunker we used to find hazardous waste in the dirt: a lot of old Jeeps that were abandoned up there and by hazardous waste I mean we would find medical vials, stuff like that. And all kind of different things. That’s the right side of the valley here, there’s old military history up there. I would
GM: Is there anyone you would recommend talking to from those families?

SS: I would say talk to someone like John Reppun who grew up, born and raised in the area who knows the families, Bob Nakata. He’s born and raised in the area and he’s been in the valley with me on a few occasions hiking. And he knows the families better than I do. Keith Ryder would be the most knowledgeable about the family history and the valley in general.

GM: Thank you so much for that, that’s good to know about.

SS: I mean, if you realize back in the ‘20s and ‘30s that Kalahiki land, Kalahiki family up in that area. Back in those days people didn’t bury their family in grave yards like we do now, they buried them in the mountain. You know? So, it’s only normal for there to be people buried there, guaranteed.

GM: You talked a little bit about how you’ve seen the valley change over time with invasive species and more foot traffic. Is there anything you’d like to add to that change that you’ve seen?

SS: You know, as far as the community’s concerned, back in the old days, everybody grew up as kids. They would go up there as kids and swim. It would be the community playground. It would be, I’m sure it would be the same like you growing up Big Island, you guys go up to the pond, you go swim. It was that way for the community. And it got overrun and now it’s restricted to everybody and so, this is one of the things that my neighbor, he mentioned, he cannot go up there to visit his relatives that are buried up there. Ken Higa. He mentioned that to me. And I feel the same way, you know. I’ve always raised dogs. I have two dogs buried up there on the hillside. I can’t go, I can’t take my dog I have right now running and exercising like I used to up there. It’s taken away something precious from the community, from the people who live there. It’s taken away from us. We cannot take our children and our grandchildren up there to swimming in the pond like we used to. I have pictures of my daughters when they are just babies, two, three years old, and my father in law and I carried them up there to the pond to swim. That’s all gone. We can’t do that now.

GM: It’s gated?

SS: Not the fact that it’s gated. I mean, it’s always been gated. Now, it’s, you get cited by the police. It’s restricted area now. And I mean, it’s always been No Trespassing signs, Board of Water Supply but still everybody would go. The social media and the masses have ruined it for everyone now. Especially the people of the community. It’s been taken away from us. The parking on the street and everything, was a big concern and everyone was upset about that. But now, it’s not too bad ‘cause a lot of people not coming now. So, the police have done their job and it’s been working. But, nevertheless we cannot go up there either. I used to go up there two, three times a week. I get off, take my dog and can go for a run. I can’t do that anymore. I kind of miss that. Hawai’i’s changed a lot. And it’s not just the valley. I don’t know how the Big Island is, but this island changed a lot.

GM: Big Island’s changed a lot too.

SS: Yeah.

GM: Could you talk about how the project would affect cultural significance or access to the sites you’ve discussed?

SS: Personally, I feel this is the prime spot, right here [pointing to map]. This is the secondary right now, this is the primary [pointing to upper and lower proposed lo‘i restoration sites]. I understand why, because they have the diversion ditch which makes it easier.

GM: But traditionally this [pointing at lower lo‘i] would have been the main field?

SS: Yeah. If you look at the lay of the land and how it is and you survey it, you can see it right off the bat. It used to be, well they have it marked “Ginger Patch”, so it’s still there. But to me, that’s the perfect spot. I would concentrate here first. This area up in here [pointing to upper lo‘i restoration site]. This is where the houses were. So, I would tread lightly in this area over here [pointing to areas surrounding upper lo‘i restoration site]. I mean John Reppun and Bob Nakata, they would remember when there was houses up there. Especially Bob Nakata, he grew up right here. His family’s home was right here. He spent a lot of time up there in his youth. The idea of moving the gate back and creating a parking lot, I’m totally against that. Because then you’re going to have people coming up there at night to drink in that vacant parking lot. And that’s going to create more problems for the neighborhood.

GM: Can you think of a better spot for that parking lot?

SS: The parking lot would be, it’s not the location of the parking lot that’s the matter. It’s the gate. The gate has to keep people from even getting in there. Where the gate is located now, close to the homes, they can’t really park there. If they do, people call the cops ‘cause it’s right by their house. But if they’re further back in the valley, where they can manifest at midnight, making trouble, nobody’s gonna know they back there. Then they come down the road at 50 miles an hour in the middle of the night, it’s a problem. That’s a concern.

GM: Could you think of anything the project could give back to lessen adverse effects on the community and cultural practices?

SS: I understand the proposal perfectly, it’s all geared around the youth. And it’s partnered with Waihe’e Elementary. I think that’s a great idea. I think that the people, the families that have taro ponds, the Wongas and the other families, they should be involved more. They should be given the opportunity to be involved more. I know that Peter, Peter, I forget his last name. He grew up in the valley as well. He’s all onboard to go ahead and start already without the impact statement or any of that, he just wants to start bulldozing and get it going already, ‘cause he’s all for building a lo‘i right at the school for the kids, you know? Which there used to be. But I don’t know if they want to do that or keep on doing it up here. The other thing that was brought up at the Neighborhood Board Meeting was that there’s two entities, the Board of Water Supply and Parks & Recreation. It seems Parks & Recreation, they have a thousand and one things to do already so they’re not really, you know, concerned about this area. And if it was put all under Board of Water Supply under one entity, then there would be better management. Right now, you have two entities that are trying to be consolidated, whereas if had just one entity it would be a lot easier and faster.

GM: I think we’ve covered it, unless there’s anything you want to add about the area.

SS: [Looking at map again.] I think that, this site should be taken a look at [pointing to map]. Right before the bridge, the bridge is by the pond. Somewhere in this area. It’s real overgrown. Just take a look at this area. I can’t be sure if it’s an ancient Hawaiian site or not, there’s a lot of wall construction in that area. And how old it is, it could be within the last century for all I know. But the other site I
know about is way in the back here [pointing to map]. It’s old, I know it is real old. The other thing, to navigate this valley, what my friend and I found best, is follow the mango trees, ‘cause birds don’t drop mango seeds. They don’t grow at random. People planted those mango trees. For instance, if you come up the Jeep trail, before you get to the ponds, maybe about right here [pointing to map] there’s two mango trees like gates, like an entry gate into something. So people planted those mango trees for that purpose, yeah? And then if you get farther back up into the, by the waterfall, you can look across to the other side of the valley you can see the path to the trail that goes along here [pointing to map] and it’s all marked by mango trees. You just travel from mango tree to mango tree. If you go down here in this area [pointing to map] there’s a line of ‘ulu trees, six ‘ulu trees planted across like this, in a perfect line. From here to here [pointing to map]. So it’s like, somebody planted these trees like this for a purpose. The old trees can be like a map to the valley of old how people lived in the valley. ‘Cause like I said, birds don’t carry those kinds of trees and plant them like other stuff. I’m kind of, I don’t know. I can’t really get into a description of the invasive species.

GM: That’s ok.

SS: I know that Albizia hasn’t come into the valley yet like it is in Waialohi. Waialohi the Albizia took over already. Not so much, it’s just starting in this valley. There is a tree that grows very tall and has silver leaves and it has been growing since the late ‘90s and it’s all over. We used to cut ‘em down, my friend and I. There’s what’s called fiddle wood? And the fiddle wood used to be all invading on this side [pointing to map] but it’s gotten taken over by another invasive species. It’s kind of like a big leaf plant. And at one time, this was all strawberry guava, waiawi.

GM: But no more?

SS: There is a lot at the top. Not as much, the whole hillside used to be waiawi. Then this plant came in and took over, then another. The only hardy plant that survives is the hau bush. The hau bush, there’s nothing stopping that. I don’t know that trying to eradicate invasive species in this valley is monumental task. It’s not going to be that easy. This border outline here covers a lot of the hillside. I would be careful up in this area [pointing to map] ‘cause like I say, there used to be roads up in this area, there used to be Jeep trails in here. You can tell, one of them is pretty obvious when you go by the bamboo, then you get lost, can’t really follow it. But there’s several others up there as well. And that’s where the Jeeps used to be and stuff too. This area, I would watch up in here [pointing to map].

GM: That’s good to know.

SS: Other than that, there’s not too much more that I can think of.

GM: We really appreciate your time.

SS: No problem.

GM: Thank you so much Uncle Steven.
TALKING STORY WITH
RICK TOWILL (RT)

December 20, 2019 / 4:30 PM / Telephone
Interview by Gina McGuire (GM)

GM: I’m here with Uncle Rick Towill. It’s December 20th—we’re talking about the Waiehu Riparian Learning Center. Uncle, can you start by telling us a little bit about yourself, where your roots from and grew up?

RT: Okay so, I actually grew up on the adjacent property on the ridge on the Kahului side of the property. My parents bought 45 acres back when St. Charles Company sold off all of the land that was once in rice, then was pineapple, then in the ’50s they sold it all. I was born in ’58 and my parents built the house up there in 1960 and lived there ever since. Then I attended Punahou School and went on to Oregon State, studied ag-engineering after that. Then my folks sold the property but we had some remnant pieces of the property. There was a bad landslide that happened on the property between us and the ridge on the Waiehu side. A significant portion of the ridge came down. Roy Kinosita was the eldest of two sons of Satoko and Dora Kinosita. They had a farm up here, chicken farm, so the landslide happened at three in the morning and the boy lost his life. The material up here sticks to and by the time they dug him out. It just hit the corner of the house where he was sleeping. The whole side of the hill came down. Anyway, that’s neither here nor there. Then, we live below that property now on a two acre parcel that my wife and I built a house and we raised our two boys there.

GM: Wow. Do you want to talk a little bit more about your family background?

RT: So, my, I guess on my mom’s side, go all the way to the Rice family, which were a missionary family from the East Coast of the United States. On my dad’s side, my grandfather came from Virginia, came with the JD White Engineering Company in 1918, something like that, and was surveying for the fuel tanks that they were putting up on Kahului Highway adjacent to Pearl Harbor. And then my grandmother’s side, my great-grandfather came over from New Zealand; biologist with Rothschild expedition, they were seeking flora and fauna for the collection in England. He ended up managing the ranch, well he worked for the Robinsons on Kauai for many years and then my grandmother and her older brother were born and then they moved to Molokai and he managed the ranch there for a time and took the family all the way back to New Zealand. Through the grapevine, scuttlebutt, he found out about the management of the ranch on Lanai’s and that took on and came by himself for a year to make sure he secured the job before he brought the family over. And it worked, he brought the family back. And if you know anything about that island, there’s a great big, one of two Norfolk pine trees in Hawai’i. And that one is in Kuaweli, the ranch house, used to be a U-shaped house around that. And at night the fog would condense in the area and the water droplets would condense on the needles and drip, what he coined the term fog drip, which is a widely accepted term for the purpose for recharging. So later he planted a whole bunch of Cook Island pines on the top of the hill and restored the water table there quite significantly. They actually measured a 40-foot tree, they put tin roofing underneath the tree, and one 40-foot tree at the top of the hill will generate 100 gallons of water in 24 hours through fog drip.

GM: Wow.

RT: Anyway, that’s kind of the family background.

GM: Thank you for that. You have one of the longest backgrounds with this area that I’ve talked to. Could you share any personal anecdotes or any ma’o, olo, or place names that you know of for the area?

RT: When it was, a guy that you probably want to talk to is Kepi Maly. He actually was close with Ho’ohilo Kawelo who actually wrote a chant, a song for this area. So he’s quite familiar with some of the ’Aloha from way back. He actually helped us on our property here. We wanted to name our property. And he went back and got for us, retrieved from early maps that have a whole bunch of place names and our particular property and the one where the landslide happened, of which we own currently, it was ’Ho’okalania and it was dated from Kamemehaha the 5th to a man by the name of James Stewart. I want to go and find more information about him because it’s a name that’s always on a lot of land deeds but don’t know the background on him. But anyway, there’s a whole bunch of, there’s Na’aua’a‘eha, which is the spider on the ridge if you’re facing the ridge of the Ko‘olau’s it’s on the right hand side, half of the property I grew up on. I have the map I can share with you on that. Anyway, with Kepi’s help we named our property Ka‘uahina, sort of refresh life, kind of thing.

We used to go up there, I went up there as a kid, you couldn’t, the road only went up to the water tunnel, the Suburban Water Supply put in. The Suburban Water Supply was a company that handled all of the rural water systems around O‘ahu except for the City and County of Honolulu, which of course the Board of Water Supply. If you look at some of the water pumps in the area they still have Suburban Water Supply on them. Suburban Water Supply dug what is known as the Waiehu Tunnel, and it’s a quite a ways down, just mauka of the place where everybody goes, it’s called the Iche Pond. There’s a ford across the stream and then there’s a deep water place in the stream where people kind of like to go cool off. But at any rate this water tunnel was put in the late ’50s and then they ran a water line down the road and across the gulch on the Kahului side and pumped it up to a water tank, I can’t remember how many million gallons.

The area was fed before that, by an ‘auwai that was maintained by all of the farming communities. They would go once a month, Saturday once a month, and clear all the bushes and make sure the ‘auwai was unobstructed. The ‘auwai is actually recorded on the Land Court map, located on the original, what’s known as the plot on our property, it’s the Land Court Application 1133. Remnants of the ‘auwai exist but it’s no longer a functioning ‘auwai, down Waiehu’s Road because places in the road there was an elevated flame, passed through some piping going down Waiehu’s Road. Waiehu’s Road, so some of the issues that you probably know of this area, when I was a little kid, was all coral roads, all of the roads, the roads in the area were coralized with coral aggregate. I believe those roads were built during the war. You know, military operations. I think they used a portion of the ridge in Waiehu’s Valley, it’s kind of bare on one end, towards the front of the valley, I think they used that for target practice and that sort of thing.

But then, a portion of the property in ‘Ahainanui that I believe was part of the Hygienic Dairy. It was a big diary operation after the pineapple ceased operations. I think the Hygienic store got its name from that somehow, as the supplier of milk for the community. I’m not quite sure about that. But Wendell Carlsmith, who was the main founder of the Carlsmith law firm in Honolulu, purchased the property and he got some finances in the early ’60s and actually the back of ‘Ahainanui Valley was going to be, it was chosen as one of two sites... the second site was in Campbell Industrial Park, to put the Chevron refinery. So, in the ’60s a lot of other companies purchased portions of the company, particularly on Waiehu Road. It was all in an effort, or with the thought that there would be heavy industry businesses for the refinery so at any rate... and how it impacts Waiehu’s Valley, is, one of the, the big five investors in the property and a lot of this back property, the 200 acres that the Parks Department has now, was purchased way back when Lewers & Cook. Waiehu’s Road coming up was, when it was put in, was built 60 feet wide with the intention that there was going to be hotels, big sewage treatment plant, I think even a golf course at the back of Waiehu’s Valley. Fortunately that didn’t happen. The refinery was placed in Campbell Industrial Park where it should be and so the rest is sort of history. The City ended up downsizing lots of the land in the area from what would have been maybe some residential, downsized it into ag. And so, that lessened the value of the Lewers & Cook portion and I think the property was purchased by the City in the mid-’70s.

Mayor Fasi was going to put a golf course in the back of the valley. John Reppan saw to it that didn’t happen. And so, that actually sat with Parks Department and then they somehow named it the Waiehu Nature Preserve, which is to the detriment of the community around here. ‘Cause when Facebook and all that kind of stuff came along, someone got the bright idea saying what a wonderful hike it is back there. And the community actually made enough fuss that there’s been rubbish and stuff left up there, defacement, they actually found for the second time trash in the water, so they’ve had to shut it down. So, this riparian zone, that is to happen that
you’re working towards, on this 200 acre parcel, which goes up to, and I don’t think it includes that ice pond area, which is the former Lewens & Cook property, I think it’s better served—John Reppan and I signed a memorandum of understanding with the Board of Water Supply back in the ’80s with the intent on creating such a riparian zone open, outside classroom that would be managed by KEY Project in Kahalu’u. And so, it still is the dream. But any rate, that’s sort of where we are with the community involvement with that property in the back. It’s one of the last, really, beautiful valleys. When you go in the back there, they actually put an inclined well, Board of Water Supply, at the base of Hāmāna Falls back in the ’80s and the Reppans and others had a contested case hearing because when that inclined well was put in at the time it drastically reduced the flow of water in Waie’e Stream, which limited the use of that water for taro patch purposes and so forth. Anyway, I don’t know what else I can tell you history-wise.

GM: No, that was super helpful.

RT: It’s really a beautiful valley. It reminds me, when you get up in the back of the valley there where the ice Pond is, you can see the rim of the amphitheater, and it reminds me a lot of Kalalau Valley on Kaua’i. I’ll tell you who might, the Higa family, Brian Higa, who’s probably in his late 70s, early 80s. He’s my neighbor right down here. His family owned a lot of that property up there before Lewens & Cook bought it. He could shed a lot of the early history from when they purchased the property in the early 50s, maybe even late 40s. I can give you his contact information. He might have some snippets of information I wasn’t able to fill in.

GM: Yeah, that’d be great! You talked a little about the ‘auwai system and I was wondering if you knew of any other cultural sites or structures, burials, or artifacts on the property.

RT: Not really. In the valley there, I know that in our property, the 45 acre piece that I grew up on, there’s a series of dikes. On the north side of Waie’e Valley comes down and then it breaks off into two ridges that forms kind of a triangle and we had the middle triangle. And then between those two ridges there were a lot of adzes, actually. I think there were two or three basaltic adze complexes, this is where the earth cracks open and the lava goes up and cools very slowly. And creates these rock, the lava cooling slowly, it turns into basalt. That’s where adzes, stone adzes were quarried. We actually found quite a number of them. I still have some adze blanks from our property. Adze blanks are sort of in the general shape of an adze but they’re kind of sanded off and the Hawaiians would carry them down or transfer them to whomever near the shore and that’s where they would sort of grind the ends down to create the point to be able to dig soil or whatever they were going to use the adze for.

GM: Cool. How do you think this project is going to affect places of cultural significance or access for the community for gathering or cultural practices in the area?

RT: Not really. That I know of other than the ‘auwai is active from I think probably halfway up the property that you’re working and the Reppans maintain that diversion from the stream through this ‘auwai that Rachel Hall. She was one of twelve kids from Kahalu’u. Her wife’s classmate was Rachel’s sister, I believe. It was a huge family. I’ve not really found any ‘ulu maikas or anything like that in Waie’e Valley but Larry Higa, on his property, which is down across from Kahalu’u Elementary School, they farmed that property in sweet potato in the 40s, late 30s. He found some adzes that he has, a foot long, maybe 14 inches long. Appropriately shaped with the cutting edges and so forth.

GM: Right on.

RT: Not too many ‘ulu maikas in the area. There were some of those, sort of slang shots. They look like a miniature, shrunken football kind of thing, like an inch or two long. I think I have one of those

GM: Are there any hula hıllau that are harvesting in the valley?

RT: Not that I know of. There’s a hillau that practices down at KEY project every Monday night. I’m not sure that they go up in the valley that much.

GM: Okay, no worries. Is there anything the project can do to lessen the effects on cultural practices and the community?

RT: Actually, by having something that’s, John and I envisioned through KEY project in the back of the valley, we could incorporate some in-vasives removal because there’s aflatox, there’s this other thing, it’s on the State noxious plant list, it has a yellow flower and it’s somehow been isolated to this valley. It migrated from the Kahalu’u side of the valley and it’s become a problem. By doing an outside classroom and some of those efforts we can eradicate some of those in-vasives which don’t help the land.

GM: That would be great.

RT: There’s actually a place, if you come up to visit. There’s a really good location, which we sort of called the Ginger Patch, the road kind of goes up the hill from the gate and it drops down and goes across a small tributary, sort of an intermittent stream, and then you reach this place which has a whole bunch of white and yellow ginger, which we actually harvest the ginger blossoms for KEY Project’s fundraisers and other things. It would be a really great location for a toko and there’s a place above it which could support a kind of like a big open pavilion, would really give people a sense of what the place is all about.

GM: Next question is if you’re aware of any cultural concerns the community might have about the project happening in the valley?

RT: No actually, the surrounding community is quite supportive of an effort like this because it would work towards limiting just the free for all access that’s been happening for the last five or six years. I think going forward, there needs to be an effort to make the visitors that visit Hawai’i understand that there’s a protocol and a respect that needs to happen. I think if something were added to the video that’s played on the incoming flight that talks about invasive species, declaring unwanted plants and animals. That if something like that were offered, that would be good. It’s gotten, I think we’re just beginning to see the signs, the industry has too many people coming here now. The State and County doesn’t manage access to open areas very well.

GM: My last question unless there’s anything else you wanted to add, other than Brian Higa and Kapal Maly, who you recommended earlier, is there anyone else you would recommend we talk to?

RT: I would also reach out to, there’s a man by the name of Richard Pagliaran, who was quite knowledgeable about the area but he’s since passed away. I think Brian might be able to help you. Certainly Kapal Maly would be a good resources. He’s as haole as I am but he was raised by the Daniel Kaupu family on Lanai and was raised real traditional way, learned to speak Hawaiian the real traditional way and is quite knowledgeable about land manners and deeds, that kind of thing. And as I said, he knew Ho’ok thought Kawelo and knows about some of the mo’olelo of the area. He would certainly be one to reach out.

GM: Alright! Thank you so much for your time Uncle.
Appendix L

Preliminary Engineering Report
Preliminary Engineering Report
FOR
Waiheʻe Loʻi Restoration and Riparian Learning Center

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I. INTRODUCTION
The proposed project, Waiea Lo‘i Restoration and Riparian Learning Center (WRLRRC) is approximately 30 acres and is located within the larger 88 acre Waiea Valley Nature Park in Kane‘ohe, Oahu, Hawaii. There is also a small parcel located within the Waiea Valley Nature Park that in less than one acre and is owned by the Honolulu Board of Water Supply that is also included in the WRLRRC.

Waiea Valley Nature Park is owned by the City and County of Honolulu (CCH) Department of Parks and Recreation. A gated gravel road that runs through the property provides the Honolulu Board of Water Supply (BWS) access to the Waiea Tunnel and BWS building.

BWS’s vision for the proposed WRLRRC is to restore the traditional lo‘i systems that likely once existed on site and foster a sense of kuleana through educational and stewardship programming. The property will be leased to private groups that will be responsible to restore and maintain the area. This Preliminary Engineering Report (PER) has been prepared to provide recommendations for the improvements referred hereinafter as WRLRRC. This report evaluates the existing site conditions and defines requirements for roadway, drainage, water, and wastewater utilities.

II. EXISTING USE
The project property is zoned as General Agriculture and is located on TMKs: (1) 4-7-006:010 (por.) and (1) 4-7-006:018 as indicated in Figure 1 Location Map. BWS regularly visits the area to monitor the Waiea Tunnel resource and give educational tours. They also have a current agreement with the Ko‘olau Mountains Watershed Partnership to allow periodic access for the purpose of conducting forest conservation and restoration activities, including volunteer workdays on a hill side near the entrance to the dike tunnel.

The community adjacent to Waiea Valley is of rural-residential in character and with a mixture of private residences and farmland. The access to WRLRRC is through a gate at the end of the City and County owned Waiea Road.

Although there is a gate at the entrance, and “No Trespassing” signs, the area has become an increasingly popular recreational destination. It is frequently recommended to visitors on popular hiking and travel websites as a relatively easy hike with natural forested landscape, ice ponds, and waterfalls.

III. EXISTING INFRASTRUCTURE
Existing Roadways and Vehicular Site Access
The project site is accessed by Waiea Road via Kamehameha Highway in Kane‘ohe, Oahu. Waiea Road, owned and maintained by the City and County of Honolulu, terminates at a dead end where the BWS access road into the valley begins. There is a gate at the entrance to this road owned by the Department of Parks and Recreation. Legal access to Waiea Valley is currently restricted to BWS staff and those who have obtained a BWS permit to enter the area. The access roads are a gravel/dirt road which varies from 9’ to 12’ wide. BWS maintains the road by adding gravel as needed.

Existing Pedestrian Access
The nearest bus access to the site is via Route 60, which stops on Kamehameha Highway at Waiea’s Road. Pedestrian access is only provided to the end of Waiea’s road via a 4’ concrete sidewalk. Visitors can walk along the gravel/dirt road to visit the BWS Waiea Tunnel, but it is not compliant with the American with Disabilities Act (ADA).

Existing Topography and Drainage Systems
The existing topography of the project area is defined by a gently sloping valley floor and steep upland mountains. The project area ranges in elevation from about 80 feet to 350 feet. The Waiea Stream bisects the parcel running for a length of 2.9 miles. Waiea Stream originates in the Ko‘olau Mountains in the southern half of the Waiea ahupua‘a, is joined first by the Hāmāna Stream and waterfall, and then by the Kalia Stream and eventually terminates in Kāne‘ohe Bay.

The project area in Waiea Valley is situated within approximately 6.7 square miles comprising the Kahaluu Watershed. Kahaluu Watershed is described as medium-sized, with a steep upper watershed (maximum elevation of 2,762 feet). These watersheds tend to have relatively high chance of experiencing flash floods when local rainfall is concentrated over a short period of time. Stormwater from Waiea Valley generally overland flows east towards Kāne‘ohe Bay.

It was observed that there is an existing mānōwai (dam) which diverts water from Waiea Stream to the ‘auwai (irrigation ditch) within the project area which may have been used for traditional lo‘i farming.

Drainage infrastructure was also observed within the project area as roadway culverts associated with the Waiea Stream. Storm runoff comes down from the upland mountains and crosses the gravel road at various locations, through culverts, concrete swales, or by sheet flow until it enters the Waiea Stream. See Figure 3 Existing Drainage and Topography. Detailed boundary and topographic survey maps were completed by Control Point Surveying, Inc. in June 2019.

The project area generally lies within Flood Zone D, which is identified as a possible flood risk but underdetermined hazard and Zone X, which is outside of the 0.2% annual chance floodplain. Around the Waiea Stream is Flood Zone A, which is an area subject to inundation with no base flood elevation determined. Near the entrance of the property around the Waiea Stream is Flood Zone AE, which is a regulatory floodway. See Figure 4 Flood Designation Map.
Existing Soils

Waile'a Valley contains the following soils classified by the USDA Natural Resources Conservation Service:

- HnB (Hanalei silty clay, 2 to 6 percent silts) – This soil type is poorly drained with gentle slopes of 2-8%. Due to the gentle slopes, land comprised of this soil type exhibit slow runoff rates and low erosion hazards. These soils are derived from alluvial deposits and are generally more than 60 inches deep. This type of land is suitable for taro, sugarcane, and pastureland.

- LoB (Lolekua silty clay, 3 to 8 percent silts) – This soil type is well-drained with gentle slopes of 3-8%. Lands that consist of this soil type exhibit low runoff due to the gentle slopes. These soils are derived from the alluvial deposits of igneous rock and are more than 80 inches deep. They are considered prime farmland.

- TR (Typic Endoquepts mucky silt loam, 0 to 1 percent silts) – This soil type is poorly drained, and lands comprised of this soil type are not prone to runoff due to the negligible slope. These soils originate from the alluvial deposits derived from basalt.

- WpF (Waikane silty clay, 40 to 70 percent silts) – This soil type occurs on steep slopes of 40-70% and are not considered prime farmland. Soil type is characterized by rapid to very rapid runoff rates and severe erosion hazard. These soils are recommended for rangeland, woodland, or wildlife habitat.

- WpE (Waikane silty clay, 25 to 40 percent silts) – The properties of this soil type are similar to the WpF soils with the notable difference that they occur on moderate slopes of 25-40% instead of steep slopes of 40-70%. Soil type is characterized by medium runoff rates and is moderate to severe erosion hazard. The recommended use for this type of land is pastureland, rangeland, woodland, or wildlife habitat.

Existing Water Systems

There is an existing 24-inch BWS waterline that runs through the site, and provides potable water service to Waile'a Road and downstream. It was observed that there are water spigots and valves along the BWS access Road. The pipe is in a 20’ road and pipeline easement.

Existing Fire Protection Systems

There are currently no fire protection systems on the project property.

The private gravel/dirt driveway throughout the property ranges from 6’ to 12’ wide, which does not provide the minimum 20’ to allow for fire access.

The closest BWS fire hydrant (W01673) is located along Waile'a Road approximately 560 linear feet away from the first gate. The static pressure provided by BWS for the fire hydrant is 68 pounds per square inch (psi) with a residual pressure of 52 psi and a flow of 1,000 gallons per minute (gpm).

Existing Wastewater Systems

There are no existing sewer connections on or near the project property. The closest City of Honolulu wastewater system is located makai on Kamehameha Highway.
compliance with the CCH Department of Planning and Permitting (DPP) Storm Drainage Standards, August 2017.

During the construction period, erosion will be minimized through compliance with the CCH’s Grading Ordinance and the applicable provisions of the DOH’s Water Quality Standards (Title 11, Chapter 54, HAR) and Water Pollution Control requirements (Title 11, Chapter 55, HAR). Additionally, standard Best Management Practices (BMPs) will be employed to minimize impacts, as detailed in subsequent construction plans. No direct storm drainage runoff from the project to coastal waters is anticipated.

Stormwater Quality
CCH DPP Rules Relating to Water Quality, December 2018 will require the implementation of Low Impact Development (LID) features and permanent BMPs. Since the project includes more than 5,000 sf of impervious area (pavilions, double stall composting toilets and gravel parking areas), this project is classified as a Priority B1 project and must incorporate Post-Construction BMPs into the design to the Maximum Extent Practicable (MEP). These BMPs include LID Site Design Strategies (i.e., identifying buildable areas and minimizing impervious surfaces based on a site’s natural drainage features), and Source Control BMPs (i.e., limit runoff from landscaped areas to impervious areas). Priority B1 projects require Treatment Control BMPs. Priority B1 projects must submit a Stormwater Quality Checklist (SWQC) prepared by a Certified Water Pollution Plan Preparer (CWPPP), which must be reviewed and approved by the Director prior to issuance of a grading permit. It may be possible to classify the project as a Priority B2 if the gravel parking areas are considered pervious.

Managing stormwater quality through LID features minimizes downstream stormwater impacts. Particularly, LID works to reduce runoff entering downstream systems which may already be at or above capacity, treat pollutants from frequent storm events, reduce erosion, protect habitats, recharge groundwater, and also, designed correctly, may reduce infrastructure costs with reduced installation of large traditional stormwater utility systems.

Site specific LID BMPs include the following which may be used in the parking areas or by buildings for polluted runoff. These potential LID techniques may also be used in conjunction or combination with other techniques to enhance the overall system and should be selected based on the different parameters and constraints at each specific site:

- **Landscaed Areas**
  Limit runoff from landscaped areas to impervious areas and protect slopes and channels

- **Parking Areas**
  Parking areas that have impermeable material must be graded to direct runoff towards vegetated/landscaped areas.

**Proposed Water Systems**
A new lateral is anticipated to connect to the existing 24-inch BWS waterline. Access to water will be needed for the proposed pavilions, double stall composting toilets and hose bibs so that volunteers can wash their hands and tools can be cleaned. Extensive water use is not expected.

**Proposed Fire Water Systems**
We assume that the pavilion use is similar to a Community Hall, which would make the pavilion an occupancy type A-3. According to the 2006 International Building Code (IBC), since the pavilions are less than 12,000 sf and have an occupancy load of less than 300, an automatic sprinkler system is not required.

Once the Occupancy type is determined the need for fire access and fire hydrants can be determined.

**Proposed Wastewater Systems**
Estimated usage:
- Year round operation
  - 20 volunteers/staff per week
  - 100 visitors one weekend per month
  - 100 visitors one weekday per month
  - 125 hikers per day

Based on the above estimated counts, we recommend using a Cibus Model M54 double stall composting toilet at each of the pavilions. Each stall has the capacity of 44,000 annual uses. Since this is a tank system, no significant impacts to the groundwater underlying the project site are anticipated. Humanure (human excreta and sawdust or other carbon source) will have to be pumped and removed from the composting toilets as needed. Ventilation requirements for power can come from an electrical source or an optional photo-voltaic system.

**Additional Development Considerations**
It was observed that there are existing overhead electrical lines along the BWS access road. There is a potential to connect to the overhead system.

There is no existing trash service. Trash will have to be collected and removed from the site.
V. CONCLUSION

Phase I of the project will focus on the first 13 acres of the project area which will consist of constructing a 1,200 square foot pavilion and a double stall composting toilet to hold workshops, meetings and presentations. A plant nursery may be built near the project site will provide native and other suitable plants for restoration and cultivation. Several areas will be designated as outdoor learning spaces. Two small parking areas will be developed ranging in size from 1,200 square feet to 5,000 square feet with the larger parking lot with a school bus turn around. A second gate installed past the proposed parking areas will help to prevent vehicle access to the rest of the valley.

Phase II of the project will facilitate the future expansion of Lo'i and other agricultural crops to the remaining 14 acres extending from the mid-northern to the “ginger patch” bordering BWS lands. In addition, another 1,200 square foot pavilion and double stall composting toilet will be constructed. A third gate will be installed to prevent further access into the property.

The existing access to the project site at Waile‘a Road via Kamehameha Highway will generally remain in its existing condition. The private gravel/dirt roads will remain with potholes to be filled when requested. Pedestrian access from the proposed parking lot will be provided to support the new pavilions and native plant nursery. The larger parking lot will have a concrete ADA parking stall and access aisle with a 6’ concrete sidewalk along the parking on the Pavillion side.

The proposed activities and facilities are not anticipated to significantly impact the existing hydrology and drainage around the project area. Impervious areas are limited to the pavilions, double stall composting toilets and gravel parking areas. The limited regrading in areas that are to be occupied by new structures and parking areas will be done in a manner that will retain the existing south-to-north flow of onsite surface runoff and preclude any runoff from flowing onto neighboring properties.

This project is classified as a Priority B1 project and must incorporate Post-Construction BMPs into the design to the Maximum Extent Practicable (MEP). These BMPs include LID Site Design Strategies (i.e. identifying buildable areas and minimizing impervious surfaces based on a site’s natural drainage features), and Source Control BMPs (i.e. limit runoff from landscaped areas to impervious areas). Priority B1 projects require Treatment Control BMPs. Priority B1 projects must submit a Stormwater Quality Checklist (SWQC) prepared by a Certified Water Pollution Plan Preparer (CWPPP), which must be reviewed and approved by the Director prior to issuance of a grading permit.

As discussed with BWS, a new lateral is anticipated to connect to the existing 24-inch BWS waterline. Access to water will be needed for the proposed pavilion, double stall composting toilets and hose bibs. Extensive water use is not expected. There are no proposed fire protection systems on the project site.

Double stall composting toilets have been recommended and since this is a tank system, no significant impacts to the groundwater underlying the project site are anticipated. Humanure (human excreta and sawdust or other carbon source) will have to be pumped and removed from the composting toilets as needed.

VI. REFERENCES

Topographic survey prepared in June 2019 by Control Point Surveying, Inc.
City and County of Honolulu Department of Planning and Permitting Storm Drainage Standards, August 2017
City and County of Honolulu Department of Planning and Permitting Rules Relating to Water Quality, December 2015
City and County of Honolulu Department of Planning and Permitting Storm Water BMP Guide for New and Redevelopment, July 2017
United States Department of Agriculture Natural Resources Conservation Services Web Soil Survey 2010 ADA Standards for Accessible Design
LUA Section 21-6.100 Off-street Loading Requirements
City and County of Honolulu’s Grading Ordinance
State of Hawaii Department of Health Water Quality Standards (Title 11, Chapter 54, HAR)
State of Hawaii Department of Health Water Pollution Control (Title 11, Chapter 55, HAR)