

FINAL

Update and Evaluation of Site 50-80-07-3998, Including Documentation of Petroglyphs, Pililaau Army Recreation Center (PARC), Wai‘anae Ahupua‘a, Wai‘anae Moku, O‘ahu Island, Hawai‘i TMK (4) 8-5-001:009

Project CRS-16-142

Cultural Resources Management Program
Environmental Division
Directorate of Public Works
U.S. Army Garrison, Hawaii



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INTRODUCTION

This report presents the results of archaeological recordation of petroglyphs identified at the Pīlilaau Army Recreation Center (PARC), and a determination of eligibility of State Inventory of Historic Places (SIHP) # 50-80-07-3998 (formerly 50-0a-C3-23) for inclusion on the National Register of Historic Places (NRHP). The cultural resources found within the PARC property are considered part of a single archaeological site due to the homogeneity of the features identified there (Riford 1984:3). Site -3998 consists of identified subsurface archaeological features. The only intermittent surface remains present are the recently identified prehistoric petroglyphs.

This report was prepared by USAG-HI Directorate of Public Works (DPW) Cultural Resources Section (CRS), which consists of Army civilian archaeologists and internal contractors from the Pacific International Center for High Technology Research (PICHTR).

The PARC project area occupies about 4.45 ha (11 ac) of land located on Pōkaʻī Bay in Waiʻanae Ahupuaʻa, Waiʻanae District, Oʻahu Island, Hawaiʻi and within the Tax Map Key 8-5-001:009. PARC is located along the Neneʻu Beach, near Pōkaʻī Bay (Figure 1).

This report was prepared following the July 2016 observation of petroglyphs by two guests staying at PARC, Lonnie Watson and Mark Louviere, who were walking along the coastline at Pōkaʻī Bay. The guests contacted representatives of the State Historic Preservation Division (SHPD), who then contacted USAG-HI DPW CRS. On July 29, 2016, personnel from USAG-HI DPW CRS and the SHPD visited PARC to record the petroglyph field exposed along the shoreline. In July 2017, beach sands once again shifted and re-exposed the engraved images and provided an opportunity for archaeologists to verify, refine, and expand recordings made during the previous year. Review of additional background research revealed extensive sub-surface archaeological deposits had been previously documented at PARC, and designated site -3998. However, archaeologists had not previously recorded any petroglyphs in this location. Before a determination of eligibility for the National Register of Historic Places could be effected, USAG-HI DPW CRS determined a site update was needed to properly document the petroglyphs, along with synthesizing existing data from previous archaeological reports on site -3998. Additionally, USAG-HI DPW CRS conducted an ethnographic interview with Mr. Glen Kila, a consultant to the Army and Waianae resident, who has ancestral connection to Pōkaʻī Bay and Neneʻu Beach and is a recognized expert on the local culture and history.

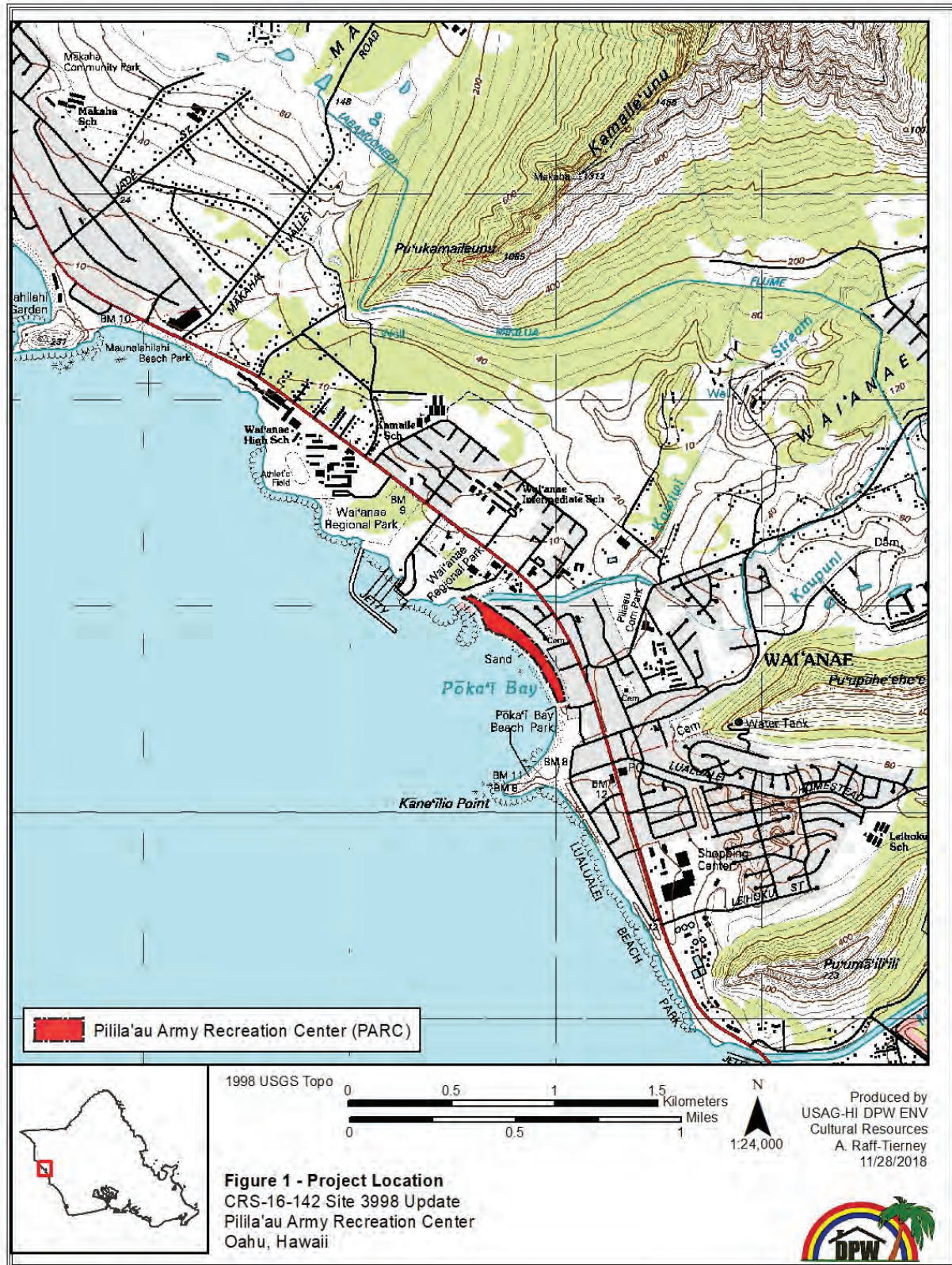


Figure 1. Location of PARC depicted on the USGS 7.5-minute series quadrangle map of Wai'anāe (USGS 1998).

PHYSICAL ENVIRONMENT

Pililaau Army Recreation Center (PARC) is located on the west side of O‘ahu along the coast of Wai‘anae Valley, in front of Pōka‘ī Bay. The recreation center sits atop the inland dunes covering about 4.45 ha (11 ac).

Geology

PARC is situated along the shoreline of Nene‘u, the traditional name of the beach along Pōka‘ī Bay, in the *ahupua‘a* (traditional land division) of Wai‘anae. Kāne‘ilio Point marks the southern boundary of Pōka‘ī Bay. Kaupuni Stream, which empties into the ocean near the northern boundary of Pōka‘ī Bay, was one of the few waterways on leeward O‘ahu that regularly flowed from the upper valley to the sea (Cordy 2002:45).

Sediment

Situated atop sand dunes, PARC contains little terrigenous soil. Most of the sediment across PARC is beach sand (BS), especially the *makai* (seaward) portion of PARC. However, Pulehu clay loam (PsA), a well-drained soil formed by alluvial processes is only within the *mauka* (inland) portion of PARC (NRCS 2016). With only an occasional tendency to flood and no tendency to pond, Pulehu clay loam has a moderate water capacity of approximately 21.33 cm (8.4 in) (NRCS 2016). Table 1 lists the Soil Mapping Units (SMUs) identified within PARC.

Table 1. Soil Mapping Units (SMU) at PARC.

Soil Mapping Unit	Description
Beach Sand (BS)	Medium to fine grain sand.
Pulehu clay loam (PsA)	Silty clay loam and clay loam.

Elevations within PARC range from approximately 3.1 m (10 ft) above Mean Tide Level (aMTL) in areas where previous grading and filling activities have leveled the surface to sea level at the shoreline (USGS 1998). In the vicinity of PARC, eustatic sea-level changes have resulted in fossiliferous lithified beach sand overlaying reef limestone that, in some places, extends up to 26.8 m (88 ft) aMTL (Hammatt et al. 1985:17).

Directly *makai* of the built structures at PARC is the *kālawa kahaone* or “curve of beach” (Kamakau 1976:11), which predominantly consists of calcareous sand (Aecos 1981:1, 2, 63). Beaches form as temporary accumulations of coarse rock fragments ranging in size from 0.00635 to 1.524 mm (0.00025 to 0.06 in) in diameter that remain onshore after being separated from the finer debris (e.g., silt and clay) by wave and current action (Macdonald et al. 1983:271). Though some coarse fragments are the product of eroded volcanic rocks, white or cream-colored beaches consist largely of organic material, such as fragments of coral and mollusk shells torn by waves from offshore reefs and of the limy shells of tiny marine animals, especially single-celled foraminifera (Macdonald et al. 1983:272).

“Beachrock” is found in intertidal and spray zones of mainly tropical coasts and is formed when calcareous sand becomes lithified through either or a combination of two processes: the deposition of cement, e.g., silica (SiO₂), calcite or aragonite (CaCO₃), iron oxide, or clay, between its grains; or the compaction from the weight of accumulated overlying sediment (Macdonald et

al. 1983:293-294). Unlike reef rock, beachrock has stratified layers and slopes at approximately the same angle as that of surrounding loose sand (Hazlett and Hyndman 1996:44-45).

Climate

Located on the leeward side of O‘ahu Island, the climate of Wai‘anae Coast is characterized by its aridity. Mean temperatures at PARC range from 21.7 degrees Celsius (71.1 degrees Fahrenheit) in January, to 25.7 degrees Celsius (78.3 degrees Fahrenheit) in August, with an annual mean of 23.8 degrees Celsius (74.8 degrees Fahrenheit) (Giambelluca et al. 2014). PARC gets an average of 55.4 cm (21.8 in) of rainfall per year (Giambelluca et al. 2014), with rainfall peaking in December and January. Kaupuni Stream (also known as Wai‘anae Stream) flows perennially and serves as the main drainage for Wai‘anae Valley (Hammatt et al. 1985:18).

The beach at PARC fluctuates in size and profile annually. Low-pressure weather systems that form in the eastern Pacific between May and November cause ocean swells that generate local waves cutting away loose sand from shores and redeposited it further out (Macdonald et al. 1983:273). These waves are referred to by Kamakau (1976:12) as “nalu‘a‘ai,” and is likely what causes the temporary exposure of the petroglyphs. The seasonal movement of beach sand is known as longshore sediment transport (Eversole and Fletcher 2003). Between November and May, calmer weather produces gentler waves that help to restore displaced sand to the shoreline (Macdonald et al. 1983:273). Empirical models for shorelines in the Hawaiian Islands suggest that beach sand volume reaches annual lows in August and highs in January (Eversole and Fletcher 2003: Figure 6). Historical evidence suggest that the southern part of Pōka‘i Bay has accreted sand at a rate of 1.7 ± 0.6 m/year since the construction of a breakwater in the 1950s (Fletcher et al. 2012:39).

Vegetation

Extensive landscape modifications have altered the vegetation at PARC over time to its current condition. With the exception of a single hau tree (*Hibiscus tiliaceus*), PARC is landscaped with ornamental species including: false kamani (*Terminalia catappa*), coconut (*Cocos nucifera*), plumeria (*Plumeria* sp.), and monkeypod (*Samanea saman*) (Riford 1984). The hau tree remains an important historical landmark to Glen Kila, a *kupuna* (elder) with ancestral ties to the area. Mr. Kila said that the hau tree is significant because it was planted to honor the birth of a family member (Appendix A:128) as well as serve as a burial marker, which was a common practice for family members to plant a tree over a burial to mark where their *iwi kūpuna* (human remains) were laid to rest. Additionally, Mr. Kila explained the practical uses of the hau:

Our family took care of the hau for medicinal purposes. So wherever my family went.... Nene‘u has the hau, the same hau. Also at Pōka‘i, I mean, across, where we have a home there, kuleana land there. There were hau trees.... It was an important tree for our family because of its ability to shade because we were fishing people.... Our tūtū(s) usually they wanted a trunk. They wanted to form it so it goes straight up and then branches out so ... it was like a hale [house] for them. (May 5, 2012) [Kila in Gollin et al. 2013:134].

Table 2 presents common and scientific names of vegetation at PARC). In addition to the ornamental vegetation, the presence of various grasses contributes to the setting at PARC.

Table 2. Vegetation at PARC.

Common Name	Scientific Name
False kamani	<i>Terminalia catappa</i>
Hau	<i>Hibiscus tiliaceus</i>
Coconut	<i>Cocos nucifera</i>
Plumeria	<i>Plumeria</i> spp.
Monkey pod	<i>Samanea saman</i>

LAND USE AND HISTORY

This section briefly discusses the pre- and post-contact land use of PARC and surrounding locations within Waiʻanae. Relevant materials are summarized and synthesized, including legendary accounts, early historical journals and narratives, historic maps, land records (e.g., Land Commission Awards, Royal Patent Grants, and Boundary Commission records), and previous archaeological reports. The following discussion gives an overview of the traditional Hawaiian cultural context before focusing on the island of Oʻahu, the *moku* (district), *ahupuaʻa*, and valley of Waiʻanae, where PARC is situated. Glen Kila, a *kupuna* and native Hawaiian of Waiʻanae, proved an invaluable source for information. The full interview with him is in Appendix A, and the USAG-HI DPW CRS interview consent form is in Appendix B.

Traditional Hawaiian Cultural Context

Hawaiian territories were politically divided into *moku* and sub-divided into *ahupuaʻa*, *ʻili*, and *moʻo* (Kirch 1985:2). Originally, independent chiefs probably ruled over *moku*, which were the largest land divisions and encompassed large portions of islands or whole islands (Bayman and Dye 2013:27-28; Kirch 1985:2-3). *Moku* were sub-divided into *ahupuaʻa*, which were radial land sections that ideally stretched from reef to mountain ridge and were controlled by lesser chiefs.). *ʻili* and *moʻo* were the smallest land divisions within each *ahupuaʻa* and were associated with family groups and individual households, respectively (Ladefoged et al. 2005:264).

At contact, there was more social stratification in Hawaiʻi than anywhere else in Polynesia, with three macro-scale social strata: *aliʻi* (chiefs), including priests, *makaʻāinana* (commoners), and *kauwa* (outcasts). High-ranking *aliʻi* were considered *kapu* (taboo, or sacred), and outcasts *noa* (Buck 1993:40, 52-53). Elite demonstration of *mana* often occurred at the household-level. For example, McCoy and Codlin observed large numbers of petroglyphs adjacent to an elite household compound, which may have demonstrated elite *mana* (supernatural power) (McCoy and Codlin 2015). Figure 2 documents the development of Hawaiian petroglyphs in a well-developed anthropomorphic petroglyph sequence for the Hawaiian Islands. Early Hawaiian settlers created a petroglyph form known as a stick figure, then, around 1400 AD, the torso evolved into a triangular form, and finally, around 1600 AD, “muscled” triangular figures appeared (Cox 1970; Lee and Stasack 1999:11).

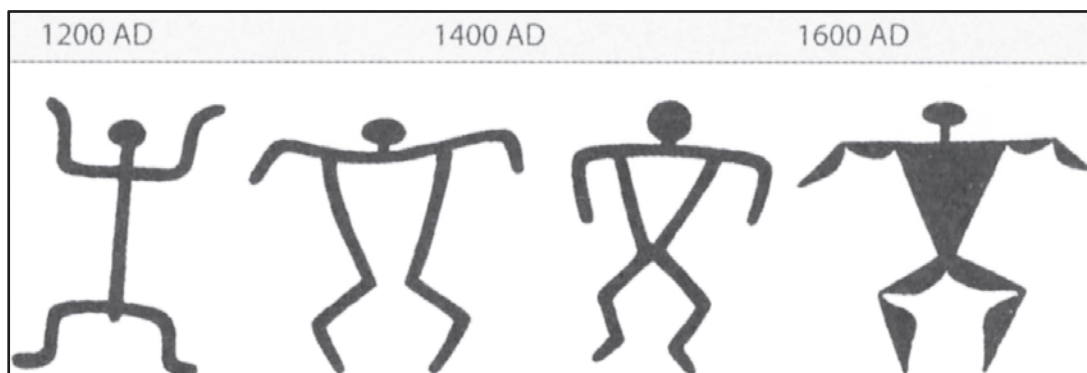


Figure 2: Hawaiian anthropomorphic petroglyph seriation, depicting progression from stick figures to triangular torsos with “muscled” bodies (from Egan and Burley 2009:Figure 12, based on Cox 1970:61)

Pre-Contact Era (Pre-1778) in Wai‘anae

PARC, located in the *moku* of Wai‘anae and the *ahupua‘a* of Wai‘anae Kai, spans three traditional *‘ili*: Leihanoiki, Pōka‘ī, and Pāhoa (Cordy 2002:48), of which Pōka‘ī and Pāhoa “held some of the most important places within the entire *moku* of Wai‘anae” (Cordy 2002:50). Wai‘anae was known to the Hawaiians as a pleasant locale, with gentle breezes known as Kaiāulu (Pukui 1983: 273, Pukui and Elbert 1986:115), as well as the stronger Pakai‘elelū trade wind (Andrews and Parker 1922:514). The name Wai‘anae, which translates as “mullet waters,” refers to the fish that was once farmed in the area (Pukui et al. 1974:220). It is important to note that the *ahupua‘a* of Wai‘anae was originally called Wai‘anae Kai (seaward Wai‘anae) to differentiate from the adjacent *ahupua‘a* of Wai‘anae Uka (upland Wai‘anae). Stretching from the Wai‘anae mountains to the Ko‘olau mountains, Wai‘anae Uka “represents an extension of the hegemony of the Wai‘anae chiefs into the plateau area on which Schofield Barracks stands, and perhaps control over the ‘Birthplace of Ali‘i at Kūkaniloko and its adjacent temple” (Hammatt et al. 1985:21).

There is a general consensus among archaeologists on the settlement of the Hawaiian archipelago between 950 and 1100 AD (Athens, et al. 2014; Bayman and Dye 2013:23; Dye 2011, 2015, 2016:7), by Polynesians from the Society, Marquesan, and Samoan islands (Cachola-Abad 1993; Kirch 2000:245). The culture historical model presented in Table 3 is modified from Kirch’s synthesis of the pre-contact culture history (Kirch 2010:127, Table 4.1). During the foundation period, settlement focused on the windward shoreline areas, with drier leeward areas such as Wai‘anae used for intermittent resource procurement (Cordy 2002:14-15). Permanent settlement in Wai‘anae and other leeward areas occurred later; Cordy hypothesized that the presence of Kaupuni stream would have made Pōka‘ī Bay an attractive site for the earliest permanent settlement in Wai‘anae (Cordy 2002:18).

Table 3. Pre-Contact Culture Historical Outline (after Kirch 2010, Table 4.1).

Date Range	Period	Characteristics
ca. A.D. 1000-1200	Foundation	Initial discovery and settlement by Polynesian colonists from central Eastern Polynesia. Small founding population; settlements in a few ecologically favorable locations, primarily on O‘ahu and Kaua‘i Islands.
A.D. 1200-1400	Early Expansion	Exponential increase in population. Adaptation of technology and subsistence economy to local conditions. Development of significant taro irrigation systems on O‘ahu, Kaua‘i, and Moloka‘i islands.
A.D. 1400-1650	Late Expansion	Population growth peaks and begins to stabilize. Expansion into leeward and marginal zones. Initial formation of large-scale dryland field systems on Maui and Hawai‘i. Monumental architecture. Emergence of primary states. Decline in long-distance voyaging.
A.D. 1650-1778	Late Pre-Contact	High-density, stable population. Island-wide settlement. Intensification of dryland field system. Conquest warfare endemic.

Archaeological data and oral traditions suggest that the Wai'anae *moku* remained politically independent until about AD 1300. After about AD 1300 political authority on the Island of O'ahu became increasingly centralized and social organization shifted from a kin-based organization and direct rule from local chiefs towards a state-based organization with indirect rule from paramount chiefs. Around this time, oral traditions record that Kūkaniloko was constructed in Wai'anae Uka, a significant place where *ali'i* were born (Cordy 2002:19).

Place Names and Mo'olelo (traditions, histories and legends) in Wai'anae

Several places within and around PARC have traditional stories attached to them (Table 4). However, because of a contentious history, many place names and stories have not been recorded, or have different names than are commonly known:

Glen [Kila] explained why many of the place names and stories have been lost or gone unrecorded. When the army first occupied Wai'anae and his relatives were forced out of Nene'u (now known as Pōka'i Bay) after the electricity and other amenities were cut off, the Wai'anae families "refused to share our stories." Place names and precise locations of heiau and other cultural resources were kept vague or were changed. "The reason for this is that we believe this is the land of creation. In the 1890s, during the occupation, they forced us to share our stories (army and plantations), often we would not give a location" [Kila in Gollin et al. 2013:114].

While there are many traditional stories that mention and take place in Wai'anae, few have direct ties to the early history of the PARC project area. Stories of places such as Pu'u Kāhea, the *'ili* of and Pāhoa and Pōka'i Bay provide an insight into the history of the project area. While *mo'olelo* centering on the demigod Kamapua'a are associated with the *'ili* of Pāhoa and seem to provide reasoning for the place name. Pu'u Kāhea and the surrounding coconut grove at the base of Pu'u Kāhea played a larger role in the overall political geography. The following is a collection of *Mo'olelo* that have a name or geographic associations to the PARC.

Pōka'i Bay is named after Pōka'i, an early voyaging chief from Tahiti, who planted the first Hawaiian coconut grove at the "back of the beach near the mouth of the Wai'anae Stream" (Hammatt 1985:22; McGrath et al. 1973:9; Sterling and Summers 1978:70). This is likely the grove, Ka Ulu Niu o Pōka'i (Cordy 2002:54), depicted in Bingham's sketch from the early 1800's (Figure 3). Chief Pōka'i's famous grove was located at the base of Pu'u Kāhea, about 500 m (1640 ft) inland along Kaupuni Stream (Hammatt et al. 1985:22). Pōka'i can also be glossed as "night of the supreme one." Pōka'i Bay is also referred as a launching place for canoes, especially for travel to Kaua'i. However, Mr. Kila provides other names for the Bay:

Nene'u is the name of the sandy beach, which is now called Pōka'i Bay. The original name of Pōka'i was Marae bay or Maraea... It's the same bay written with different spellings. The reason why it was called Marae and Maraea was because there was a marae center for training kahunas (priests) on navigation, genealogy, astronomy, et cetera, at the bay. Later the marae was called Kane'ilio heiau [Glen Kila, (Appendix A:121)].

The word *marae*, and cognates of it, is commonly applied to temple sites in the Society Islands and Central Eastern Polynesia (Kirch 2000:215). Jay Landis called it Mā'alaea, and recounts a saying for the bay, "*Leo o Mā'alaea, i ka nani o Kaalo, ke ho'i oe ika niu o Pōka'i*," which means the breaking of the waves at Mā'alaea and behold the beautiful coconut trees at Pōka'i," Wai'anae

Table 4. Select place names in the vicinity of PARC, derived from Pukui and Elbert (1986)

Traditional Place Name	Translation	Location
Kamaile'unu	The stripped <i>maile</i>	Ridge separating Wai'anae and Mākaha
Kāne'ilio	Kāne [of the] dog form	Point marking southern boundary of Pōka'i Bay, and alternative name for Kū'ilioloa <i>heiau</i>
Kaupuni	Place around	Stream bordering PARC on north
Keaupuni	The government/kingdom	<i>Heiau</i> once located near north boundary of PARC
Leihanoiki	Faint voice	'// in Wai'anae
Loko Puehu	Scattered; dispersed	Fishpond (LCA 7713) located on or near PARC, also known as Loko Lupoko.
Nene'u	Derived from the word <i>nenelu</i> – marshy, swampy*	Traditional name of PARC area
Malaea (Marae)	Derived from the word <i>marae</i> – kahuna (priest) training location*	Original name for Pōka'i Bay*
Pāhe'ehe'e	Slippery	Ridge between Wai'anae and Lualualei
Pāhoa	Dagger	'// in Wai'anae
Pōka'i	Night of the supreme one Named for Pōka'i, chief from Tahiti*	'// in Wai'anae, beach section
Pu'u Kāhea	Calling Hill	where the <i>heiau</i> Hā'ua and <i>ali'i</i> lived*
Wai'anae	Mullet water	Moku in which the <i>ahupua'a</i> of Wai'anae Kai is located.

*Derived from Interview with Glen Kila, (Appendix A)



Figure 3. Historic illustration of the Wai'anae coast by Bingham, ca. 1821-1830 (Cordy 2002).

Coast Culture and Arts Society [WCCAS] 1985:85. Kamakau (1961:134) similarly refers to this bay as the sea of Malae in Wai'anae, where Kahulupue drowns himself on his father's behest.

There are many other *mo'olelo* associated with the bay, including of the legendary Kamapua'a. He is a figure depicted in Hawaiian mythology who has the ability to become a pig with exceptional power. Although he is most noted for his pig form, Kamapua'a can shapeshift into various plants and animals. These shapeshifting abilities are commonly referred to as *kinolau*. The legend of Kamapua'a is featured in many local traditional stories, essentially tying together many regions of O'ahu as well as other islands through stories of his adventures (Beckwith 1970:201).

Two events involving Kamapua'a influenced the names of places in Wai'anae. One story tells of his interactions with 'Olopana, the *ali'i nui* (ruler) of the island of O'ahu. 'Olopana discovered Kamapua'a was eating his chickens and ordered his men to capture and retrieve him. After making many attempts, 'Olopana men were devoured by Kamapua'a in his pig form. Unable to capture and retrieve Kamapua'a, 'Olopana tracked him to Wai'anae where he was living. Following the instructions of a *kahuna*, 'Olopana placed several items as a sacrifice before Kamapua'a, making him very weak. Kamapua'a was captured in his weakened state and taken back to Pāhoa in Wai'anae. A *kahuna* named Lonoaohi made a deal with Kamapua'a and prevented him from being slaughtered several times. This important point of the story varies between sources. The main point is that weapons were used to either threaten or actually cut Kamapua'a. Kamapua'a was brought to Pu'u Kāhea to be sacrificed. Kamapua'a regained his strength through prayer and slaughtered everyone including 'Olopana (Sterling and Summers 1978:72).

This story explains why the location in Wai'anae would be known as Pāhoa going forward (Fornander 1916:326): "Pāhoa is the name of [an] instrument. The same name is given to a weapon of wood as also stone, which is described as a short sword" (Fornander 1916:680). Presumably the place Pāhoa derives from the several attempts to slaughter Kamapua'a with *pāhoa*. Pāhoa is described as being "at the head of the Wai'anae valley wherein is situated the sugar mill of the Wai'anae Co., the shore section of which is Pōka'i" (Fornander 1916:324). Thomas Thrum (Bordner 2006: Vol 33:47,55) similarly described a "temple" at Pōka'i located at the head of Wai'anae Valley. The platform temple was located in a network of rocks and stone-paved terraces with no defined shape of the *heiau* left. The Kamohoali'i (Kahoali'i) and Haua Heiau were both documented at Pu'u Kāhea where the Wai'anae Plantation manager's house and a barn were later built (Sterling and Summers 1978:72). Hammatt states that these two names refer to the same *heiau* located on Pu'u Kāhea (Hammatt et al 1985:37). Cordy interprets Pu'u Kāhea as a complex of three important *heiau*; Kamohoali'i, Kunaiwa, and Haua. Kamohoali'i was the *kuakini heiau* that Kamapua'a was brought to be sacrificed (Cordy 2002:50).

There is a similar story involving Kamapua'a stealing from taro fields in Wai'anae. The people of Wai'anae became aware of the taro thief and caught Kamapua'a while he was in his pig form. They tied him to a rock while they prepared an *imu* (underground oven) to cook him. Kamapua'a managed to escape by altering the shape of the stone but returns to the taro patch only to be caught again. He is returned to the site of the *imu* in Pu'u Kāhea to be cooked. Kamapua'a used his *kinolau* to escape and devour the men of Wai'anae (Sterling and Summers 1978:72).

The similarity to the previous Kamapua'a story suggests it is a variation of the same tale. The stone Kamapua'a was tied to would become known as the Pāhoa Stone, described as being thin with a ridge around it (Sterling and Summers 1978:72). The Pāhoa stone is presumably part of the temple at the head of the Wai'anae valley described by Thrum. It is possible that Pāhoa stone

refers to the Haua Heiau, which translates to, “rain trough”. You can image the Pāhoa stone holding rain water in its thin ridge. The Kamohoali’i Heiau was later restored by Kahāhana (Cordy 2002:50), which might account for the multitude of *heiau* said to have been built at Pu’u Kāhea.

The story of Kawelo, who was born on Kaua’i and later became the *ali’i nui* on O’ahu, takes place at Puehu, where a fishpond was once located. Kawelo attempted to voyage from Wai’anae to Kaua’i to wage war. When Kawelo’s god did not consent to the voyage, Kawelo smashed the god into pieces in anger (Sterling and Summers 1978:70). S. M. Kamakau says Kawelo put a “taboo on the Puehu Heiau and at the end of the sacrifice ordered that the wood of the *paehumu*, both the fence and the images themselves, be used for firewood for the expedition to Kaua’i” (Kamakau 1961:203). The place where this happened became known as Puehu, meaning “dispersion” or “scattering”. This site is presumed to be in the area of the Puehu Fishpond on the west side of the foot of the Wai’anae stream (Cordy 2002:51). Hammatt suggests the idol that Kawelo smashed could have been on the Kaupuni Heiau, located on the small point to the Mākaha side of Pōka’i Bay (Hammatt 1985:35). Puehu fishpond

Post-Contact Era (Post-1778)

Beginning with the arrival of Capt. James Cook in 1778, the first well-documented European to visit the Hawaiian Archipelago, the traditional lifestyle and landscape of Wai’anae experienced many changes including a drastic decrease in population, the construction of O’ahu’s first sugar plantation, and leasing of lands to the military. For heuristic purposes, the following discussion of the post-contact era is divided into several sub-periods (Table 5). The adopted scheme emphasizes changes in historical Hawaiian political economy specific to Wai’anae. The following sections reviews documentary evidence testifying to some of the land use changes in Wai’anae.

Table 5: Post-Contact Culture Historical Outline

Date Range	Period	Characteristics
A.D. 1778-1812	Conquest	Massive depopulation, warfare peaks leading up to the political unification of the archipelago.
A.D. 1812-1847	Sandalwood and Whaling	Entrance of Hawai’i into the global economic system, decline of traditional Hawaiian religion, widespread adoption of Christianity, decline of gardening during sandalwood trade, increase of gardening during whaling, settlement pattern shifts from hinterlands to locales adjacent to roads, rivers, and urbanizing areas.
A.D. 1847-1914	Māhele, Plantation, and Ranching	Infrastructure improvements, immigration, household complex walls become enlarged, creation of total institutions, usurpation of political authority, annexation to United States.
A.D. 1914-present	World War I and After	Increasing influence of American culture, industrialization, growth of tourist industry

Conquest Period (1778-1812) in Wai’anae

In addition to the *mo’olelo* of Kawelo’s attempt at conquest of Kauai, there are a few other *mo’olelo* that take place at Pōka’i Bay relating to rulers’ attempts at conquest.

There are several accounts of a story involving the *ali'i nui* of Maui, Kahekili, who in 1782 wanted certain lands and ivory (whale teeth) from the *ali'i nui* of O'ahu, Kahāhana. The *kahuna* Ka'ōpulupulu was an advisor to the *ali'i nui* Kahāhana. Ka'ōpulupulu advised him not give into Kahekili's requests. He believed granting them would essentially lead to the surrender of O'ahu. Kahekili despised Ka'ōpulupulu for this. He devised a plan to deceive Kahāhana into believing the Ka'ōpulupulu tried to offer O'ahu to him behind Kahāhana's back. In reaction to his betrayal, Kahāhana ordered Ka'ōpulupulu to join him in a journey around the island to consecrate certain temples. A messenger was sent to retrieve Ka'ōpulupulu and meet with him at the coconut grove at Pu'u Kāhea. Ka'ōpulupulu knew what would happen upon his arrival and warned his son, Kahulupue, in advance of Kahāhana plans. Ka'ōpulupulu and Kahulupue traveled back to Wai'anae and upon reaching Pōka'i Bay, saw Kahāhana servants approaching them. Sources vary in the details of Kahulupue's death but all include Ka'ōpulupulu advising him to drown himself in the sea. Kamakau quotes him as saying "Take a deep breath and give your body to the sea; the land is the sea's" (Kamakau 1961:134). While Fornander quotes him as saying "It is far better to sleep in the sea; for from the sea [comes] life, or the means of living" (Fornander 1916:287). Kahulupue follows his father's orders, drowning himself "in the sea of Malae" (Kamakau 1961:134). Some descriptions say he was forced into the bay and drowned by Kahāhana's servants. Ka'ōpulupulu was spared briefly but later laid on the sacrificial alter at Helumoa (Pukui 1983:44).

Ka'ōpulupulu's message to Kahulupue was called out from Haua Heiau atop Pu'u Kāhea (Sterling and Summers 1978:72). The message has been described as a prophecy for several events to come.

"Those who heard it and reported it found the fulfillment of the prophecy when Kahekili, coming over the sea from Maui, conquered O'ahu and caused Kahāhana to be slain. Others sought the fulfillment in the conquest of the group by Kamehameha coming from Hawai'i; others found it in the arrival of the foreigners, coming over the ocean with new ideas, knowledge, and arts" (Fornander 1916:287).

In 1796, Kamehameha the Great came to Wai'anae before an attempting to raid Kaua'i. Upon landing at Wai'anae with a fleet of 80 double hulled canoes, the war god Kūka'ilimoku was carried ashore (Hammatt et al. 1985:23). Before setting off to Kaua'i, Kamehameha rededicated Kamohoali'i Heiau to his war god (Cordy 2002:50). This act angered the Wai'anae gods to the extent that a storm was sent to interfere with Kamehameha's raid. At around midnight they were overcome by the storm while crossing Ka'ie'iewaho channel. Several of their canoes capsized, and the war party was forced to return to Wai'anae for shelter (Kamakau 1961:173).

Besides warfare, the conquest period was punctuated by visits from the first voyages by foreign explorers, since the end of trade with southern Polynesia. For these voyagers, Pōka'i's famous coconut grove located at the base of Pu'u Kāhea became a point of interest. The prominence of Ka Ulu Niu o Pōka'i and accompanying village contrasted with the otherwise dry landscape of leeward side of O'ahu. For example, when British Captain George Vancouver made contact with the community at Pōka'i Bay in March of 1793, it was the largest community on the leeward side of O'ahu (McGrath et al. 1973:17). Vancouver's report of the leeward O'ahu coast was the first foreigner account that provided a description of Wai'anae's landscape:

From the commencement of the high land to the westward of Opooroah (Puuloa) was ...one barren rocky waste, nearly destitute of verdure, civilization or inhabitants, with little variation all the way to the west point of the island. Not far

from the S.W. point is a small grove of shabby cocoanut trees, and along those shores are a few straggling fishermen's huts. Nearly in the middle of this side of the island is the only village we had seen westward from Opooroah. In its neighbourhood (sic) the bases of the mountains retire further from the sea-shore, and a narrow valley, presenting a fertile cultivated aspect, seemed to separate and wind some distance through the hills. The shore here forms a small sandy bay. On its southern side, between the two high rocky precipices, in a grove of cocoanut and other trees, is situated the village, and in the center of the bay, about a mile to the north of the village, is a high rock (Mauna Lahilahi), remarkable for its projecting from a sandy beach. At a distance it appears to be detached from the land...

The few inhabitants who visited us from the village, earnestly intreated our anchoring, and told us, that if we would stay until morning, their chief would be on board with a number of hogs, and a great quantity of vegetables; but that he could not visit us then because the day was taboo poorly. The face of the country did not however promise an abundant supply; the situation was exposed (McAllister 1933:112-113).

Vancouver's initial interaction was the beginning of several events that changed the community and the landscape. The population of Waianae at this time is estimated to be between 4,600 and 6,000 residents (McGrath et al 1973:14, Cordy 2007: Table 7.1). The most immediate effect was an epidemic of foreign disease that reached Wai'anae in 1804. The epidemic is most commonly referred to as the *Oku'u*. Most sources have identified the disease to have been Asiatic Cholera, but it is likely that the ensuing death was not the result of any single illness, rather a multitude of infectious diseases occurring in different waves (Schmitt 1970:359-363). While the majority of people struck by the disease died within twenty-four hours, chances of survival were drastically higher for those who survived the first twenty-four hours of symptoms (Kamakau 1961:189). Although the death toll varies, Schmitt (1970:359) estimates are around half the population.

Sandalwood and Whaling Period (1812-1847) in Wai'anae

Stimulating the spread of disease was a newly established economy of trade between voyaging ships and native communities. Ships would anchor along the Wai'anae coast and invite local chiefs on board to buy various goods. In return for payment, chiefs would supply sandalwood from the local mountain areas. Commoners, on orders from local chiefs, neglected their own agricultural crops to gather sandalwood (McGrath et al 1973:18). Wai'anae's local economy changed permanently as a result of the sandalwood trade.

After surviving the *Oku'u*, Kamehameha became involved in the sandalwood trade. Sandalwood was declared to be property of the government. Due to the famine caused by neglected agricultural practices, people were restricted to devote only a portion of their time to harvesting sandalwood (Kamakau 1961:204). Large amounts of debt began to build as a result of the sandalwood trade. Between 1816 and 1818 the people of Wai'anae harvested sandalwood to pay for a ship priced at twice the load of the ships haul (McGrath et al 1976:18).

During Kamehameha's illness and before his death in 1819, several chiefs were summoned back to Hawai'i. In their absence, Boki Ka'ma'ule'ule was appointed governor of O'ahu and chief of Wai'anae (Kamakau 1961:210). Boki was the son to one of Kamehameha's advisors and nephew to Queen Ka'ahumanu. In the 1820's, Boki lived in the house lot at Pu'u Kāhea. This residence had a history of being used by positions of power. It was previously the home of the O'ahu ruler Kahāhana and of the resident *konohiki*. Boki's charismatic personality influenced local opinions

and was often times at odds with the newly introduced Protestant missionaries that filled the void left by the national religion when Kamehameha died (Cordy 2002:42,52).

In 1819, Boki was baptized as a Catholic aboard a ship and in subsequent years he commissioned English Catholic missionaries to travel to the Hawaiian Islands (Schilz 1994:12). However, the Protestant missionaries characterized their Catholic counterparts as idolaters and successfully lobbied the Hawaiian government to deport the Catholic missionaries. Between their arrival in 1827 and their expulsion in 1831, the Catholic missionaries had baptized around 180 people in the Hawaiian Islands. After the deportation notice was issued, Catholic missionaries and Hawaiian Catholic converts fled to Wai'anae, including some of the descendants of Don Francisco de Paula Marin, a Spanish catholic who was an advisor to Kamehameha I (Schilz 1994:12-13). Glen Kila, a *kupuna* from Wai'anae, relates his own family's involvement with this history:

The people in Waianae were Catholic because Governor Boki and Liliha who lived in Wai'anae were converted to Catholicism. They fought against the Protestants and Queen Ka'ahumanu. My family was part of Liliha and Boki's regime and became Catholics. They were buried at the Nene'u sites that were disinterred by the Army in the 1980s [Glen Kila, (Appendix A:124)].

Other Catholics continued to view Wai'anae as a haven and settled there until The Declaration of Religious Tolerance established religious liberty in 1839 (Schilz 1994:13).

In 1826, the protestant missionary Reverend Hiram Bingham visited Wai'anae with Queen Ka'ahumanu in a self-professed effort to encourage people to obey the Ten Commandments. Bingham's visit involved discussions with local residents who still followed the traditional Hawaiian religion. One discussion with the traditional keeper of the knowledge of Kamapua'a suggests that the people of Wai'anae were resistant to these new ideas (McGrath et al 1973:22). In June and July of that year, the protestant missionary Levi Chamberlain arrived in Wai'anae. Chamberlain established four schools in Wai'anae but they would be short lived due to increased sandalwood collection efforts to pay rising debts.

In 1829, Boki's debt had grown so high that the governor assembled a fleet of two ships to harvest sandalwood from a newly discovered island of New Hebrides in the south pacific. (McGrath et al 1973:24). While on their voyage, the two ships lost contact with each other. Except for portions of his ship, Boki and his crew were never recovered. The second ship was struck with an illness and only a few survivors remained months later when they returned (Kamakau 1961:295-296).

In 1830, after Boki's disappearance, his wife Liliha became the governor of O'ahu and chiefess of Wai'anae with the prominent position of care taker of the young king Kauikeaouli (Kamehameha III). During Liliha's short term in power, she was at odds with the missionaries and Ka'ahumanu. The main points of contention were Liliha's relaxed stances on alcohol and her Catholicism against the protestant religious teachings of the missionaries. In an attempt to encourage people to learn to read and write, Ka'ahumanu put into law new regulations to protect and foster teachers. The new regulations loosely resembled the Ten Commandments with additional regulations on liquor manufacturing (Kamakau 1961:298). Liliha eventually was relieved of her position by Ka'ahumanu because of their contentions (Kamakau 1961:303).

In 1832, Queen Kīna'u came into power after the death of Ka'ahumanu. Kīna'u carried on Ka'ahumanu's stance on eliminating alcohol use and furthering the missionaries' agendas. In 1835, there were 1,654 residents of Wai'anae according to a missionary census (Hammatt et al. 1985:27). The population was steadily declining due to disease and migration to bigger cities.

After Liliha's death in 1839, Wai'anae residents began to embrace missionaries' teachings (McGrath et al 1976:25, 27). In 1842, a Protestant chapel was built in Wai'anae. Catholic and Mormon missions were also established by the 1850's (Schilz 1994:14).

In 1840, a written constitution was published ending the tradition chief system. In the following years several drastic changes to the government system would have profound changes to the Wai'anae coast. The Māhele changed the organization of land ownership. While land claims were open to residents of Wai'anae, few people understood the concept of owning land. As a result much of the land was claimed by chiefs and sold to foreigners. They contracted labor out to the Wai'anae residents (McGrath et al 1973:28). Few land claims were made in coastal Wai'anae.

The Māhele, Plantations, and Ranching Period (1847-WWI)

After the whaling provision trade declined, Hawaiians increasingly relied on wage labor. Merchants and missionaries eventually forced Kamehameha III to establish laws that transformed the traditional Hawaiian economy into a capitalist market and to institute private land ownership (Sahlins 1992:24). This is referred to as the Māhele, which surveyed and parceled all the land in the islands. Almost all of the parceled land went to the king, the government, and the *ali'i*, while commoners, or *maka'āinana* could apply for smaller Land Claim Awards (LCA).

While LCAs were open to the *maka'āinana* of Wai'anae, few land claims were made in coastal Wai'anae, including only three within the current boundary of PARC (Table 6 and Figure 4). These LCA's consist of two small house lots (LCA 843.2 and LCA 3091.2) at the south end of PARC, and Loko Lupoko fishpond (LCA 7713 along the *mauka* boundary of PARC). A description of each Land Claim Award within PARC is presented in Appendix C, and summarized below.

In 1847, Punahoa made land claim 843, comprised of four *apana* (pieces of land) in Wai'anae: Apana 2 within the current PARC boundaries (Appendix C:130-131), one in Wailele 'ili, one in Lehano 'ili and two house lots in Pāhoa 'ili. Punahoa describes his first house lot claim as "bounded on the north by the government road, on the east by the house lot of Luahiwa, on the south by the stream, on the west by the house lot of Hauna" and the second as bounded "on the north by the stream, on the east by the houses of Kamokuwaiole, on the south by the shore, on the west by the house of Kuakahi". Two witness testimonies state Punahoa received the land from Boki in the time of Liholiho. He had previously held it until 1846 when it was taken by the *konohiki* (Appendix C:131).

In 1848, Kuaana made land claim 3091, which included two *apana* in Wai'anae. Apana 2 was within the current PARC boundaries (Appendix C:132-133). Apana 1, is a *mo'o 'aina* (a small land strip) called Pohakoi in Lehanonui 'ili. While Apana 2, is a *kahua hale* (house lot) in Pāhoa 'ili. Kuaana died in 1849 and his widow, Kamakalauhiwa, appealed for his claim. The boundaries of Apana 2 are described as "mauka by the Loko Lopoko, ewa by the house of Kauakahi, makai by the sea shore, and waialua by the house of Kahi" (Appendix C:132). Kuaana received his land from Kaapuiki in the time of Liliha and it in quiet passion.

Table 6. Land Claim Awards within PARC.

Claim Number	Claimant	Land Use
843 Apana 2	Punahoa	House lot
3091 Apana 2	Kuaana (Deceased 1849) Kamakalauhiwa (Widow)	House lot
7713	Kamamalu, Victoria	Coconut and Wauke grove, fish pond (Puehu)

In 1854, Victoria Kamamalu made land claim 7713 with 18 different *apana* (Appendix C:134-142). One small *apana* in Wai'anae was located within the 'ili of Pāhoa, which is adjacent to the *mauka* end of the current PARC boundary. The LCA documents provide several testimonies regarding the disputed boundaries between the *ahupua'a* of Wai'anae and the 'ili of Pāhoa. Several statements reference a coconut grove, a fish pond and a stone wall with Hau trees as boundary markers. The coconut grove is likely the same one described at the base of Pu'u Kāhea, flanking the Kaupuni Stream. One witness identified the northwest portion to be a former *wauke* (paper mulberry) patch. Kulepe, the former tax officer in 1841, identified the land to be formerly used by the *konohiki* for the *ahupua'a* of Wai'anae (Appendix C:142).

Plantation Era

By the 1870's, ranching had become the predominant industry in Wai'anae. During this time the population reached an all-time low of about 500 residents in Wai'anae (Hammatt et al. 1985:28). The United States passed a treaty of reciprocity in 1876, which added a two cent profit to every pound of sugar produced in the Islands. Hermann A. Widemann, a retired Hawaii Supreme Court justice founded O'ahu's first sugar plantation in 1878. The Wai'anae Sugar Plantation, which was located 183 m (600 ft) *mauka* from PARC, prompted lasting economic and social changes and community of Wai'anae, (Hammatt et al. 1985:29). The company's presence immediately resulted in development and population expansion. By 1884, the plantation's stock reached \$170,000 with 475 acres under cultivation manufacturing 1,200 tons of sugar that year (McGrath et al 1973:42).

The success of the sugar industry brought further development to Wai'anae Kai. In 1895, the O'ahu Railway and Land Co. (OR&L) extended the railroad to transport crops and livestock from the leeward coast to Honolulu (Schilz 1994:21). Remnants of the former rail line are present along Farrington Highway. Hired laborers constructed houses, a reservoir, a tramway, and warehouses and toiled in plantation. By this time, Wai'anae was one of the largest settlements on O'ahu with 1,846 people in 1910 (Hammatt et al. 1985:30). With two churches, two schools, a clubhouse, and several stores, the population was second only to Honolulu (Hammatt et al. 1985:29). With the influx of the many Japanese laborers living on the plantation, Wai'anae Plantation subsidized the construction of a Buddhist temple (Koda 2006:245).

The plantation manager, Julius R. Richardson, built his house on the spot of the Kahoali'i Heiau (Figure 5). The stones from the *heiau* were used to build the enclosure for Richardson's mansion (Sterling and Summers 1978:71). Jay Landis, a resident of Wai'anae since the 1930's recalled the story about Richardson's destruction of the *heiau* and the ensuing events:

"The first plantation manager was Richardson. According to the story, Richardson destroyed a *heiau* when he built his home at Ka'ahea. The Hawaiian people were very disturbed so they put a curse on him and told him he would makē. One year later, as Richardson was coming home... his horse suddenly jumped up and huli over, dead and Richardson died there too" (Wai'anae Coast Cultural and Art Society 1985:85).

By 1910, Widemann had died and Frederick Meyer took charge of the sugar plantation. Meyer tore down Richardson's house in Pu'u Kāhea and constructed his own mansion with distinct German overtones, reflecting his heritage (Figure 6). Meyer treated the plantation like an independent entity and did not even allow police to enter the plantation without his permission.



Figure 5: Original Plantation Mangers House in 1885. Note enclosure built from a deconstructed *heiau* (Hawai'i State Archives 1969).



Figure 6: Meyers Mansion Built in 1910 (Hawai'i State Archives 1969).

The sugar plantation employed a substantial portion of the local community with 750 day-laborers. Although Wai'anae was developing quickly, daily life was not easy. The plantation workers were almost entirely dependent on the plantation which provided a monthly salary, housing, utilities and medical care when needed (McGrath et al 1973:75).

In 1919, Meyer died on the down swing of the Wai'anae Sugar Co.'s prosperity. Several factors would bring about an end to the plantation economy. The Wai'anae Sugar Co. became involved in several battles over water rights on the dry Leeward side of O'ahu. In addition, World War II called many plantation workers into service overseas (McGrath et al 1973).

By 1944, the Sugar Co. was desperate for water following several years of drought. Crop yields were low and a loss of \$123,918 that year put the company in danger of shutting down. Tied in to the plantation economy was the O.R. & L. Co. who was experiencing the same financial hardships due to the decline in tonnage. In 1945, plantation employees voted to join the International Longshoremen's and Warehousemen's union and demanded increase wages and benefits. In 1946, O.R. & L. Co. announced they were discontinuing rail services. The Wai'anae Sugar Co. voted to liquidate a month later (McGrath et al 1973:140).

Military Activities in Wai'anae (WWI to present)

On July 2nd, 1918, Woodrow Wilson signed Executive Order 2900, setting aside certain sections of lands in Wai'anae Kai, District of Wai'anae, Island of O'ahu, Territory of Hawai'i for Military purposes. This action marked the first time the Military took control of the area known as the Wai'anae Kai Military Reservation (Roosevelt 1939). Along with the current foot print of PARC, the executive order claimed coastal lands from Kāne'ilio Point up to Mākaha. Land was divided in tracts with the current area of PARC being labeled Tract 4 (Figure 7, Eisenhower 1956).

The process of moving people off the land took several years. Major General C.G. Morton requested the Wai'anae Sugar Plantation manager, Fred H. Meyer's, lease on Wai'anae Kai Military reservation be cancelled. Hawai'i governor C.J. McCarthy complied and instructed the Commissioner of Public Lands, C.T. Bailey, to send a notice of cancellation of license. J.M. Dowsett Co. Ltd. was notified on December 12th, 1920 that the lease on the 153 acres of land in the Wai'anae Kai Military Reservation was cancelled (Bailey 1920).

In 1930, Herbert Hoover signed Executive Order 5414, which increased the level of military activity on the coast of Wai'anae. This action brought the 21st and 22nd Brigade from Schofield Barracks to Wai'anae for training (Hammatt et al 1985:31). The increased military presence significantly affected the local families who made their homes on the beach. Some of the families evicted from this land included Glover, Kupihea, Keawakane, and Kaaihue (Glen Kila, Appendix A:123).

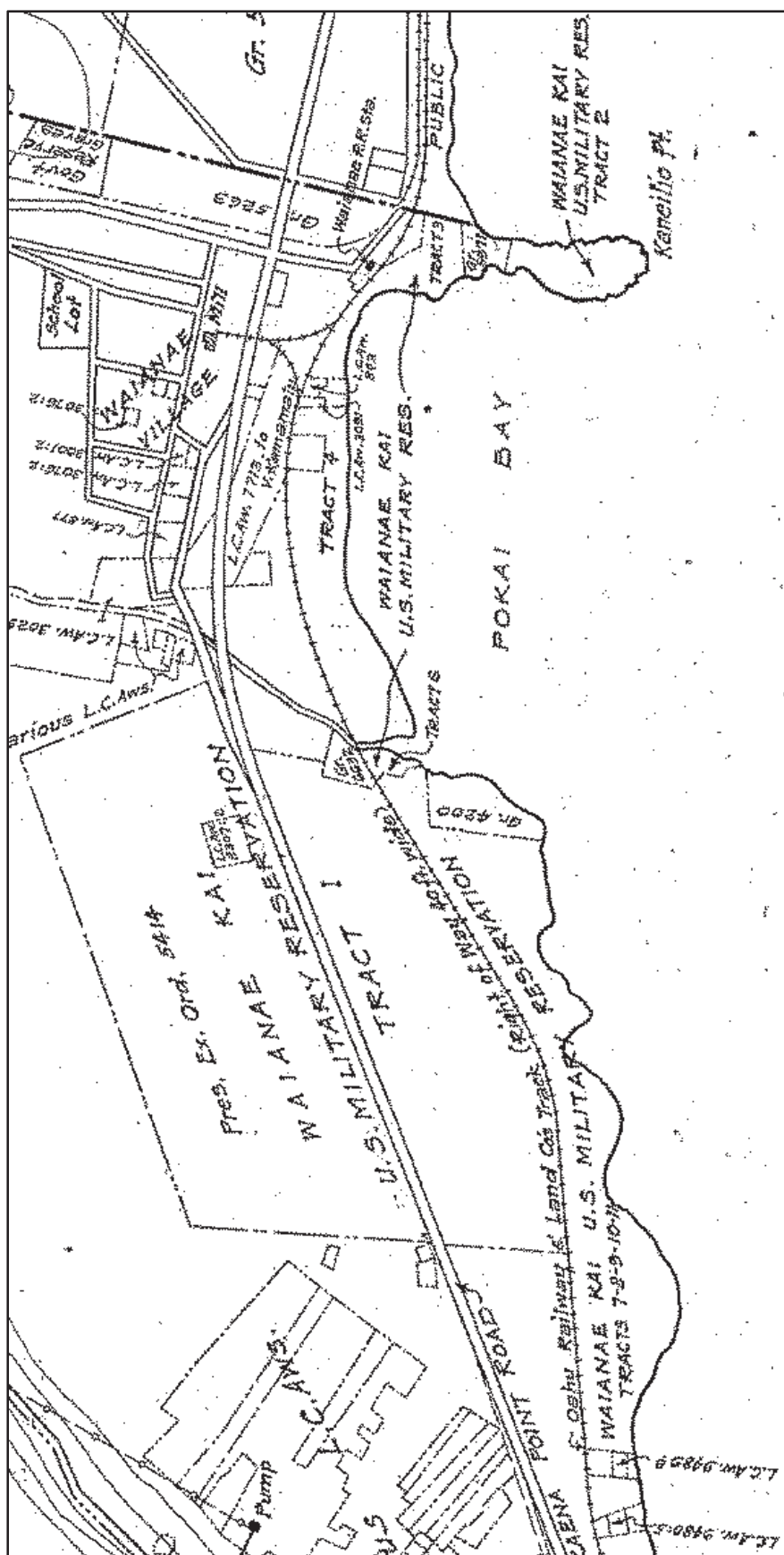


Figure 7. Portion of Hawai'i Territory survey showing tract subdivisions, federal reservations, territorial lands, and other details compiled from other government surveys and records (Whitehouse 1938).

Born and raised in Wai'anae, Emma Leihulu Elizabeth Sheldon Rio shared her experience of having to move from the beach where she and her family lived:

About 1939 or 1940, just before the war started, Mr. Fredrick Meyers, the plantation manager, came down the beach to tell all the families that they had to move, the Army was going to take the place over. My mother really loved the place so she wrote to Mr. Samuel King, who was then the delegate to Congress in Washington. Mr. King wrote back to Mama saying that there wasn't anything he could do. So the families started moving one by one. We were the last family to move off the beach because Mama fought so hard (WCCAS 1985:148).

Jay Landis, also raised in Wai'anae during the 1930's, shared a similar account of events:

Wai'anae was the town and at Pōka'i Bay, we would go swimming all the time... There was so much love, people just sitting down and sharing whatever they had as most of the Hawaiians lived along the shores of Pōka'i until the Presidents executive orders came through saying that the people had to be moved from the beach area. What a sad day it was. Some people were given land in Ma'ili in exchange for what they had lost....I think all this took place either in 1937 or 1938 (WCCAS 1985:85-86).

Glen Kila recounted the experience of Auntie Josephine (Phina) Simmons, and gives more details of the relocation process:

She described the eviction by the plantation first turning off the electricity then the water. Without water [it] made life difficult for they had to go to the streams for water to gather water for their plants. All of their crops started to die. That was in the 1930s. At that time, Auntie Phina said they came with the large Navy trailers to pick up the families and started bulldozing the houses down. One story is that the military gave us two houses as compensation for moving us off the land. They're almost a hundred years old, I guess. Auntie Phina mentioned that she and the other families were put on trailers and taken to Mā'ili Point. At Mā'ili Point, they dropped them off to fend for themselves with no support... [Glen Kila, Appendix A].

A third executive order (8109) was signed by Franklin D. Roosevelt on May 3rd, 1939. The Governor of the Territory of Hawai'i had requested that the 40-foot right-of-way road be extended 60 feet in width through the Tract No. 1 of the Wai'anae Kai Military Reservation. A new survey of the Wai'anae Kai Military Reservation had revealed inaccuracies in the description. In response Roosevelt called for a correction of the description of Wai'anae Kai Military Reservation (Roosevelt 1939).

In the 1930's the Army supplied beach trips for the Schofield Barracks soldiers to the North Shore and the west side of O'ahu. It seems Wai'anae was a favored destination "...water at Haleiwa beach is frequently muddy that swimming at Waianae is becoming increasingly popular for those who have transportation..." (Ganoë 1939:64). The soldiers who visited the beach at Wai'anae added to the built environment in order to improve the recreation potential. For example, one group of soldiers acquired and installed "a very large metal charcoal grill which had been made in the depot shops" (Olsmith 1963:224).

By January of 1941, Camp Malakole was established just west of Barbers Point. The bombing of Pearl Harbor on December 7, 1941 and America's subsequent entry into World War II intensified

military actions in Waiʻanae and Pōkaʻī Bay. Under the command at Camp Malakole, eight divisions with a total of 201,000 men were training in Waiʻanae at the Waiʻanae Amphibious Training Center. Troops would land on the shores of Waiʻanae and travel along the coast to Makua, where they carried out realistic assaults upon replicas of Japanese beach defenses at Tarawa (Allen 1950:225-226).

The war brought many changes to the way of life in Waiʻanae. Martial law was declared, which restricted the civilian residents' freedom of movement (McGrath et al. 1973:135). Charles Hanohano recounted how life in Waiʻanae changed after December 7, 1941:

Then after December 7, 1941 we couldn't go to the beach like before. The Military had strung out barbed wire coils and angle irons all along the beach. We had to keep away. There was also a blackout. We had to paint our windows black and we couldn't turn our lights on if we didn't have blackout windows or curtains (WCCAS 1985:34).

In 1942, after several boats were beached due to strong Kona winds, the U.S. Army established an amphibious base with a wharf and derrick at Pōkaʻī Bay (Figure 8). This wharf was constructed to lift boats for repair and to escape bad weather. Being the first of four amphibious training centers in Hawaiʻi, the project suffered several setbacks. The wharf's poor construction led to a variety of problems. The original 25-ton stiffleg derrick failed while trying to hoist a 35-ton tank, causing damage to the wharf. It was later replaced by a 30-ton stiffleg derrick. Upgraded amphibious boat trailers were also brought in to replace out dated models. Despite setbacks, the amphibious training base would later become integral to combat readiness in the Pacific theater (ACOE 1946:331).

In 1949, Operation Miki, a joint Army-Navy exercise, brought thousands of troops to the Waiʻanae coast to simulate recapturing an enemy occupied Oʻahu (Figure 9). Two aircraft carriers and 40 major amphibious ships were used during the operation (Boose 2008:73). Training halted on October 25th, after wave surges beached 20 landing craft. Seven crafts retreated and eight were lost (Lockhart 2002:1-3-24).

Throughout the 1950's, the U.S. military continuously used the bay as an amphibious training center (Figure 8 through Figure 11). In 1951, during a Hawaii Territory legislature session, \$100,000 was appropriated for harbor development in Pōkaʻī Bay. The community proposed a breakwater to protect fishing boats in the bay. Waiʻanae post master Larry Kamada appointed himself in charge of granting the funds to start the project. The harbor project ran into additional delays after the Army halted it, citing possible beach erosion in front of the Army rest camp. The first portion of the breakwater was eventually constructed in 1954 (McGrath et al. 1973:156).

In 1956, Dwight D. Eisenhower signed Executive Orders 10664 and 10688 restoring portions of the Waiʻanae Kai Military Reservation to the jurisdiction of the Territory of Hawaiʻi. The order stated "parcels of such lands are no longer needed for Military purposes, and it is deemed advisable and in the public interest that they be restored to the possession, use, and control of the Territory of Hawaiʻi." Restored lands included coastal areas, such as Kāneʻilio Point, and several tracts north of the Kaupuni Stream. While the military held on to Tract 4, the current footprint of PARC (Eisenhower 1956). Soon thereafter, many publications began to refer to Waiʻanae Kai Military Reservation as Waianae Army Recreation Center (WARC), however it is unclear when the change took place, because both names were used during the same time period.



Figure 8. Pōka'i Bay Amphibious Training Center 1943; note: newly constructed wharf and derrick (NARA 1943).



Figure 9. Operation Miki, Officers observe Marines landing on Pōka'i Beach October 1949 (Huggins 1970).



Figure 10. 1st wave of LCVs hit the beach, Wai'anae Beach, O'ahu, T.H., in 1956 (NARA 1956).



Figure 11. 2nd wave of the 1st contingent 25th ID Division troops approach the beach, Wai'anae Beach, O'ahu, T.H., in 1956; note: Kane'ilio Point in distance (NARA 1956).

By the 1960s, the WARC had become a popular vacation spot for soldiers, veterans, and their families. Head (1965) extolled the virtues of this location for recreation in his book, *Going native in Hawaii: A poor man's guide to paradise*:

A third vacation paradise on O'ahu is Waianae Army Rest Camp at Pokai Bay on leeward Oahu. This is the "country," some 26 miles from Honolulu. The camp is perfect for families or those interested in sunning and surfing. One- and two-bedroom housekeeping beach cabins are completely equipped for two to eight persons at \$3 minimum or \$5 maximum per day for officers and \$2 or \$3 for enlisted men. Bring your own food, towels, and toilet articles [Head 1965:143].

In 1965, the Soil Conservation Service in cooperation with the City and County of Honolulu channelized the Kaupuni Stream flood canal located on the northern border of Wai'anae Kai Military Reservation. The stream's drainage area occupies approximately 21 km² (8.02 mi²) of PARC. To mitigate flooding in the area, the channel was designed to handle discharges with the exception of a 500-year event. Due to the large discharge capacity of the channel, a floodway was not necessary (ACOE 1983:3). With the addition of the canal and a small breakwater, the bay had quickly become crowded with structures (Figure 12 and Figure 13). This area was originally taro patch lands owned by Hawaiians, before being condemned for the channel (Glen Kila, Appendix A).

The River and Harbor Act of 1965 authorized Army Corps of Engineers to construct the Wai'anae Small Boat Harbor's in Pōka'i Bay (Figure 14). The federal and state funded project was a 12-acre (5 ha) harbor capable of accommodating 300 boats at the south end of the Wai'anae Regional Park. The construction consisted of an entrance channel, a main access channel, a turning basin, a main breakwater, and a stub breakwater. The construction required significant dredging and alterations to the coral reef, shoreline, and coastal areas. The Army Corps of Engineers started construction in 1977; the harbor was completed in January 1979, costing approximately \$3.7 million (Thompson 1981:331,408).

In the 1980s, the Army began to renovate the WARC. In 1984, the Army repaired and replaced sewer lines, demolished cabins, removed sidewalks and trees, and excavated structural footing trenches (Hammatt et al. 1985:1-2; Riford 1984:1). Between 1988 and 1990, the Army demolished additional outdated visitor facilities and constructed new facilities (Schilz 1994:1-2).

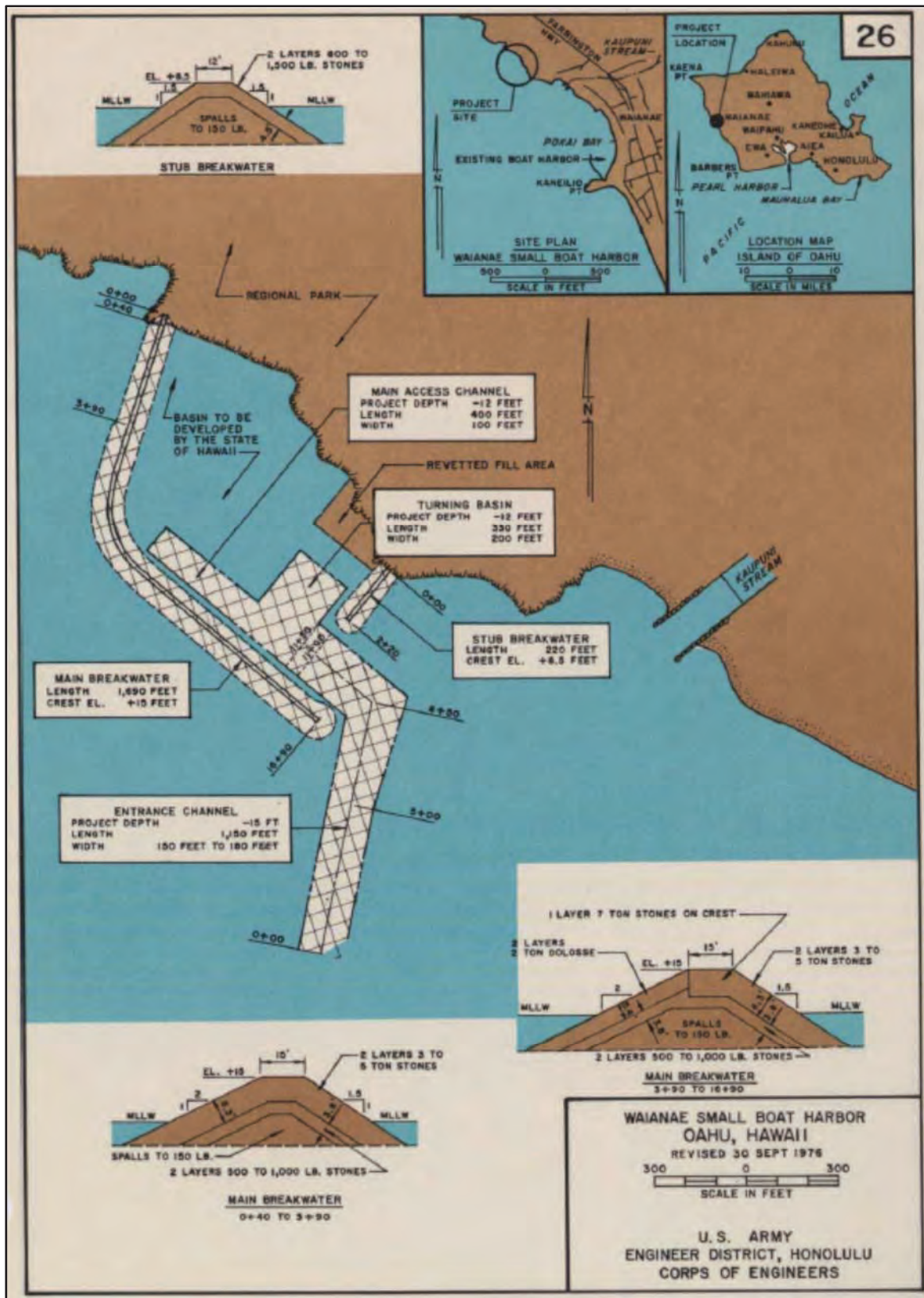
On December 12th, 2003, WARC was renamed Pililaau Army Recreation Center (PARC) in honor of Herbert K. Pilila'au. PARC currently functions as a Family and Morale, Welfare and Recreation (FMWR) facility (Wiers 2009) offering 39 beachfront cabins, a club facility, and cove pavilion area for group outings. PARC is open to all active and retired Military, members of the Reserve and National Guard, and active and retired Department of Defense civilian employees, including Coast Guard, family members and sponsored guests (Robbins 2009).



Figure 12: Pōka'i Bay 1960's. Note harbor off of Kane'ilio Point (Hawai'i State Archives 1969).



Figure 13: December 18th, 1969. Note Kane'ilio Harbor, the Kaupuni Stream flood canal, and two small jetties (Hawai'i State Archives 1969).



PREVIOUS ARCHAEOLOGY

Between the 1930s and 2009, archaeologists conducted four field studies within or adjacent to PARC (i.e., Desilets 2009; Hammatt et al. 1985; Riford 1984; Schilz 1994); and two studies that encompass all of O‘ahu island in scope (McAllister 1933; Sterling and Summers 1978). This section discusses each of these studies individually. Most of these studies consider all archaeological deposits recovered from within the boundaries of PARC and south of Kaupuni Stream as belonging to one site: SIHP 50-80-07-3998 (site 3998). All the features documented by these studies are summarized in Appendix D and their locations are depicted in Figure 15 through Figure 19, including the petroglyphs documented in the current study. Appendix E provides a site description for Site 3998 that summarizes all previous work, including the current petroglyph study.

Early Archaeology

McAllister (1933) conducted a survey of O‘ahu in the early 1930’s that documented several sites in Wai‘anae Ahupua‘a (McAllister Sites 153-168). Of these, only one site Lupoko (Puehu) fishpond (McAllister’s Site 154; LCA 7713) was observed in the vicinity of what is now PARC. Site 154 has not been inventoried as a historic property on the NRHP, seeing as no determination of eligibility work has been done to the potential historic property. Riford (1984) documented possible features associated with the infill of a fishpond outside of the PARC installation boundaries, but not Site 154 itself. This site corresponds to LCA 7713 and is depicted on a 1902 map (Figure 4). At the time McAllister (1933:114) visited the fishpond, it contained one to two feet of standing water. When Sterling and Summers revisited the site in 1954, the pond was “almost completely filled in—very little standing water remaining” (Sterling and Summers 1978:70).

McAllister (1933) describes two *heiau* within the vicinity of what is now PARC: Keaupuni and Kū‘īlioloa, which is also referred to as Kāne‘ilio (Glen Kila interview in Appendix A). Keaupuni *heiau* was a large enclosure, measuring more than 2,000 sq. m (21,528 sq. ft), located near the mouth of Kaupuni Stream, and immediately adjacent to the northern boundary of PARC. Cordy described Keaupuni as “among the largest of the kingdom” (Cordy 2002:36). McAllister described the *heiau* as:

“Site 155. Keaupuni, said to be the name of a *heiau* which was once located on the small point on the Makaha Side of Pokai Bay where the J.M. Dowsett home is now located. Nothing remains of this old temple” (McAllister 1933: 113).

Kū‘īlioloa Heiau is located at the southern end of Pōka‘ī Bay and is depicted on a 1902 map as “Koneilio” (Figure 4). According to Mary Pukui the name is a legendary dog traditionally known as a protector of travelers (Sterling and Summers 1978:69). This large *heiau* has three platforms and is surrounded by water on three sides. The *heiau* was partially destroyed by the Army during WWII (Sterling and Summers 1978:69). During restoration of the *heiau* in the 1970s, a questionably old radiocarbon sample was obtained and assayed at 1110±50 B.P. (uncorrected) (Riford 1984:11). When considering the observations made by Sterling and Summers (1978) and observations documented by Riford (1984), Pōka‘ī Bay, was an important place for the enactment of religio-political power through the construction and use of major *heiau* sites.

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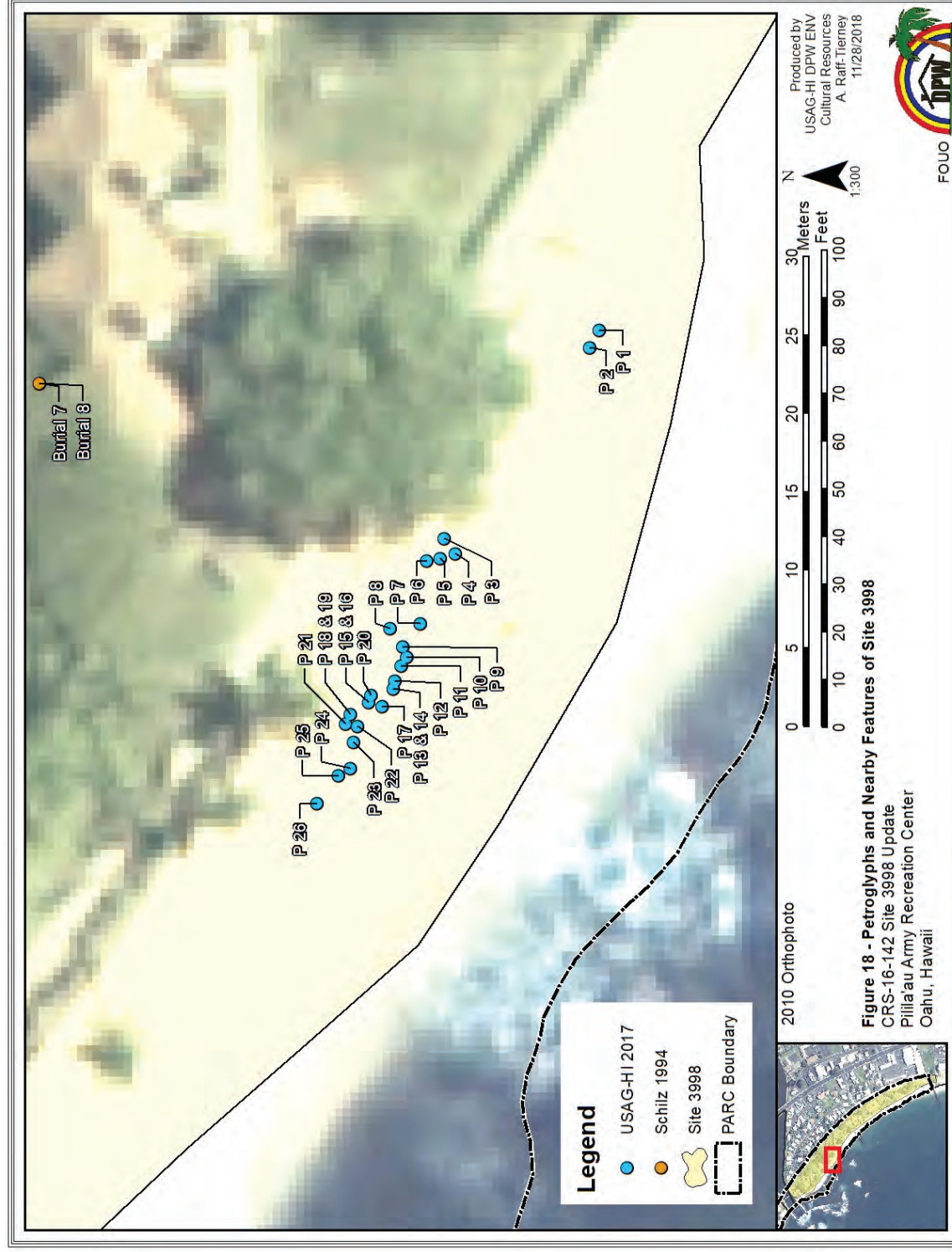


Figure 19. Petroglyph features recorded during the current project (USAG-HI 2017) and nearby features in PARC; depicted on 2010 satellite imagery.

Bernice Pauahi Bishop Museum

In 1984, archaeologists from the Bernice Pauahi Bishop Museum (BPBM) monitored sewer line repairs and reconstruction at the WARC (Riford 1984). All features that were exposed in the backhoe trenches were excavated. This study documented the presence of a total of 34 cultural features, including five human burials, one formal dog burial, fire pits, and the remains of a water tower base (Riford 1984:11-12) (see Figure 15 through Figure 18). All of the documented features were reported as a single site regardless of the distance between features or their associations. This single site was designated BPBM site number 50-Oa-C3-23, which was incorporated into the SIHP numbering system as SIHP 50-80-07-3998.

The BPBM focused their excavations on the identification of pre-contact features and deposits. Layer VIII, a clay-rich layer, was interpreted as the remains of a fishpond documented on a late-nineteenth century map (Riford 1984:21), this is likely Loko Lupoko (LCA 7713). Layer V, interpreted as a pre-contact cultural layer and underlain by sterile sand, contained a layer of water worn basalt cobbles and “numerous charcoal lenses and possibly overlapping small prehistoric firepits” (Riford 1984:25). The location of the water worn basalt cobbles appeared to correspond to a house site that also appeared on a late-nineteenth century map (Riford 1984:25). Layer V was generally encountered between 30 and 140 cm below surface (Riford 1984:21). Four features were initially thought to date to the pre-contact era, but these features also yielded small fragments of foreign artifacts, including metal and glass. Riford places the use of site 3998 back to the 1300s, based on a radiocarbon date with no clear association to cultural activities. Sample HRC 681 yielded a corrected radiocarbon date of 1370 ± 50 A.D. The charcoal sample was not identified to species, and is from a charcoal lens in Layer V (prehistoric cultural layer) near, but not associated to, Feature 3 (cranium burial 4) (Riford 1984:23). However, without identifying the species and type of the charcoal sample, it is unknown how much inborn age is built into this date.

The BPBM excavations also documented extensive post-contact deposits and features. Artifacts dating to the post-contact period, such as glass bottles, children’s toys, metal fragments, jewelry, pipe stems, miscellaneous hardware, and other items were commonly recovered (Riford 1984:17). The post-contact features originated at the top of Layer V and were cut into it. Based on artifact manufacture dates, most post-contact features appear to predate World War II, mostly between 1915 and 1920. Ceramic vessels made in the United States, England, and Japan were used for serving and consuming foods. Midden samples included both wild and domesticated animal taxa. While some species, such as fishes, pigs, and dogs may date to the pre-contact period, other faunal specimens, such as cow were introduced after European contact. Most of the post-contact features appear to represent short term use, possibly individual events (Riford 1984:25-26, 28-30). Based on these data, Riford concluded that “the shoreline was used by Waianae Sugar Plantation employees” for waste disposal (Riford 1984:28).

Based on fieldwork and laboratory analysis Riford (1984) was able to draw some preliminary conclusions about site 3998 structure, function, and chronology. Soil profiles suggested that World War II-era construction activities truncated, but did not completely obliterate pre-contact and earlier post-contact era deposits. Material culture analysis suggested that pre-contact activities included lithic work, and fishing. The Layer VIII clay deposit and the Layer V basalt cobble deposit appeared to respectively correspond to a fishpond and house site recorded in nineteenth century documents. In the first few decades of the twentieth century, circular pit features were excavated and used to dump, and sometimes burn, trash. Due to the early to mid-twentieth century manufacture dates of many of the artifacts, people associated with the nearby Waianae Sugar Plantation likely dumped the trash. The burials appear to date to the nineteenth

century, based on the extended burial position and lack of organic artifacts that were recovered from the twentieth-century features (Riford 1984:36-37).

Riford considered the pre-contact deposits to be potentially significant, but thought that the post-contact deposits were not significant. Riford (1984:33) suggested that additional “controlled excavations need to be performed before a determination can be made on the eligibility of... [the] prehistoric component for nomination to the state or national register.” The research questions that could be addressed through this proposed additional fieldwork included better description of site function and site chronology in support of the development of “a broader research design for shoreline use by early Hawaiians” (Riford 1984:33). Despite the recovery of a “large collection of artifacts and midden representing the material possessions of and food resources available to Waianae Sugar Plantation employees,” Riford (1984:37) concluded that the “historic component of the site is not significant enough to warrant nomination to the state or national register.” No threshold of what would be considered “significant enough” was provided. However, in order to gain a better “understanding of patterns of early-twentieth [sic] century material consumption and methods of trash disposal by plantation employees,” Riford outlined three avenues for additional research, including documentary research to determine whether or not the bottles and ceramics were purchased in Wai‘anae, dating of artifacts other than bottles, and the “analysis of collections from specific features to answer questions, such as whether feature depositions represent one or several families” (Riford 1984:39).

Cultural Surveys Hawai‘i

In 1984 and 1985, Cultural Surveys Hawai‘i (CSH) conducted extensive excavations at site 3998 and subsequently monitored ground disturbing construction activities (Hammatt et al. 1985). Archaeologists hand excavated a total of 44 “trenches” that measured 1 m² (3.3 ft²) for a total of 44 m², as part of an archaeological inventory survey. In addition, CSH both hand and mechanically excavated 114 m² (1227 ft²) during the data recovery phase. Finally, CSH monitored construction backhoe activity of an estimated 1,538 m² during the monitoring portion of the data recovery phase. CSH employed this intensive excavation sampling strategy “based on the premise that there would be extensive historic disturbance or a widespread subsurface prehistoric cultural layer” (Hammatt et al. 1985:136). The CSH field effort identified 96 additional features, including 10 human burials, *imu* features, midden deposits, lithic workshops, and historic trash and barbecue pits (see Figure 15, Figure 16 and Figure 17). Pit features were generally shallow and unlined (Hammatt et al. 1985:97-104).

The CSH investigation focused on the pre-contact component of the site. Pre-contact deposits were primarily recovered from “Stratum II,” which was characterized as an *in situ* prehistoric deposit and apparently corresponded to the deposit that Riford (1984) previously referred to as Layer V. This intact cultural layer generally occurred at depths of 30 cm below surface or greater (Hammatt et al. 1985:58). Stratum II soils were also identified in burial and pit features. Forty features were identified as dating to the pre-contact period, many of which contained paleo-ethnobotanical deposits that could be radiometrically dated (Hammatt et al. 1985:138-139).

CSH recovered a total of 791 “indigenous artifacts,” including primarily lithics, consisting of mostly volcanic glass debitage (n=595) and smaller quantities of basalt flakes, cores, and other lithic tools. CSH also found fishing tackle, including hooks and sinkers, as well as the tools used to make these objects (i.e., files, abraders). Most of the fishhooks that CSH recovered were made of shell, rather than the more common bone fishhooks (Hammatt et al. 1985:139). Personal ornaments (i.e., shell beads and one basalt bead) and worked shell were less commonly recovered. Midden analysis revealed the presence of pig bones, fish bones, invertebrate shells,

an absence of dog bone, and trace amounts of bird bone. Marine resources were apparently obtained from near-shore environments, with no deep water species present. Despite the proximity of the historically documented in the vicinity fish ponds, they recovered no bones of fish species likely to have been kept in the fish ponds (Hammatt et al. 1985:123-124). Because no pre-contact structural remains were observed and because a relatively small amount of midden materials were recovered, Hammatt et al. (1985:137) characterized the site “as a communal area rather than a place of habitation.” The paucity of faunal remains was attributed to off-site transport: “In all probability, fish and shellfish were carried to inland habitation areas for consumption” (Hammatt et al. 1985:127). CSH’s estimate of biomass, based on allometric analyses of bone weight, suggested that terrestrial mammalian fauna, and not marine resources, made up the largest proportion of the protein consumed on site. These data suggested that “consumption on the site may have been by particularly high status individuals or on special occasions” (Hammatt et al. 1985:127).

While not a focus of their investigation, CSH also identified a large post-contact period deposit that included glass bottles, glass fragments, coins, nails, buttons, and miscellaneous metal fragments. Most of the post-contact period artifacts were manufactured between the 1930s and the late-1940s, and appear to be associated with military land use, and with smaller quantities of materials apparently associated with sugar cane plantation workers and their families. Most of the post-contact period deposits came from pit features interpreted as *imu*. Fifty-six features were identified as dating to the post-contact period (Hammatt et al. 1985:70-90, 138-139).

Pietrusewsky and Ikehara (1985) analyzed the human remains uncovered by Hammatt et al. (1985), and concluded that no fewer than 10 people were interred, seven of which were identified as biologically mature at the time of death. Four of the adults were identifiable as female and three as male. Skeletal morphology suggested that three of the adults were of Polynesian ancestry. Based on the presence of an unusual pathology—an osteoma (i.e., a type of benign bone tumor)—in three sets of skeletal remains, Pietrusewsky and Ikehara suggested that a familial relationship was likely (1985:1-14).

Hammatt et al. (1985) obtained radiocarbon dates from six samples of organic materials, yielding calibrated date ranges that spanned A.D. 1270 to 1950 (Hammatt et al. 1985:129). The samples came from four prehistoric features (Burial 1, Burial D-3, Feature 7 and Feature 27), and two lenses in Trench 16. Of the four samples with a context directly associated with a pre-contact cultural feature, two were discarded by CSH as dating to post-1810, and therefore thought contaminated. The two remaining are from a pit feature in Trench 27, with calibrated dates between 1270 and 1410 A.D., and from pit Feature 7, dating between 1500 and 1950 A.D (Hammatt et al. 1985:129). However, the species and type of the charcoal were not identified so there could be significant inborn age in these samples.

CSH argued that site 3998 “contains a wide variety of data of significance to the prehistory of ancient Hawaii and deserves the appropriate recognition and protection” (Hammatt et al. 1985:146). This is a tacit statement that CSH did not consider the post-contact period site component as containing significant data.

U.S. Army

In 1986, the U.S. Army performed a surface and subsurface investigation at PARC in advance of a proposed new seawall construction (Streck 1986). Subsurface investigations included the excavation of 14 auger samples and two 1 m² (3.3 ft²) “stratigraphic pit” or “SP” excavations. About 20 to 25 percent of the excavated material was screened through 1/4” and 1/8” mesh

(Streck 1986:10). This testing recovered charcoal, marine gastropod shells, basalt flakes, as well as artifacts dating to the post-contact period, including ceramic, glass, and metal artifacts. Although much of the soil matrix appeared to have been previously disturbed, the southern-most deposits that were examined were relatively intact. No cultural features were identified (Streck 1986:12-13). Streck concurred with Riford's conclusions about the pre-contact site functions and noted that "[r]ather than being a place for village settlement, this property appears to have been used for preparing fishing implements, storing and readying canoes, and possibly for feasting" (Streck 1986:8).

Ogden Environmental, Inc.

From 1988-1990, Ogden Environmental and Energy Services Co., Inc. (Ogden) conducted archaeological fieldwork at the WARC in preparation for the paving and landscaping of areas surrounding the cabins. Excavations included 8 50² cm (20 in²) shovel test pits, 40, 1 m² (3.3 ft²) units, and backhoe trenches (Schilz 1994:28-29). Seventeen features were recorded during this excavation, including four historic trash pits, charcoal lenses and stains, and fire pits (Schilz 1994:31-33) (see Figure 15 and Figure 19).

Human burial features uncovered by Ogden contained the remains of at least 18 people. Six burials dated to the post-contact period, 11 dated to the pre-contact period; the remainder were of unknown temporal context (Schilz 1994:56). Pre-contact burials are typically flexed and lack foreign artifacts. The post-contact burials were found in a cluster, suggesting a kinship relationship (Schilz 1994:114). Mortuary remains recovered from the post-contact burials include buttons, a metal crucifix, and cobalt-blue "Russian" trade bead (Schilz 1994:56). Schilz (1994:55) concluded that the mortuary evidence indicated a "complex system of burial practices" that reflect the growing influence of Christianity and the role that Waianae played in providing refuge to marginalized Catholics (Schilz 1994:55).

Ogden recovered both pre-contact and post-contact material culture from PARC. Artifacts found during this excavation include:

...[S]tone tools (49), sea urchin and coral tools (19); modified stone flakes and angular waste (1,787); bone and shell fishhooks/fishhook [sic] waste (84); early-historic trade beads (4,234); glass bottles and sherds (990); ceramic tableware bowls and sherds (99); metal fragments, nails, hardware, coins, and cartridge shells (1,197) and a variety of historic buttons and miscellaneous artifacts (376)" (Schilz 1994:57).

Ogden obtained seven radiocarbon dates from materials that they excavated. According to Schilz 1994, "...using the highest probability for a true age the date[s] resulting from the current study include AD 1150-1332, AD 1294-1375, AD 1491-1708, AD 1618-1896, AD 1715-1887, and AD 1635-1955" (Schilz 1994:39). Schilz (1994) interpreted this radiocarbon data as that the site was "used continuously from the late 12th or early 13th century AD, with a possible visit as early as AD 637-780 (Schilz 1994:112). However, Schilz (1994:110) states that this early date should be viewed with caution. Like previous investigators, Schilz (1994) concluded that although there was evidence of the PARC area being used for tool manufacture and maintenance, there was little evidence to indicate that permanent habitation occurred at PARC. Rather, activities at PARC focused around fishing and support activities for permanent settlements in the nearby surrounding areas.

Garcia and Associates

In preparation for a seawall repair project, Garcia and Associates conducted a ground-penetrating radar study (Desilets 2009). They found no indications of significant cultural deposits or human remains. However, a few anomalies having the possibility of being culturally noteworthy were observed.

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USAG-HI DPW CRS staff archaeologist Alton Exzabe (2019) monitored pit excavation to install 18 Photo Voltaic light fixtures. The pits were approximately 1 m in depth by 70 centimeters (cm) wide, along the mauka edge of the seawall. Exzabe (2019:18-19), recorded a disturbed culturally enriched sand deposit (Layer II), with an undulating upper boundary an average of 15 cm below surface. This layer is likely the same culturally enriched deposit recorded by Hammatt et al (1985) as Stratum II and by Riford (1984) as Layer V, beginning at 30 cm below surface. Although Hammatt et al (1985) and Riford (1984) identified the stratum as deeper, Exzabe (2019) doesn't separate the disturbed portions from the intact portions of the cultural deposit.

Summary of Previous Archaeological Results

As described in previous archaeological documentation, site 3998 is comprised of a late pre-Contact to early post-Contact component used for burial, lithic work, and refuse disposal, and an early twentieth-century component comprised of pits for refuse disposal. While there have been previous efforts to determine the age of the site through radiocarbon dating, the methods employed do not hold up to modern accepted radiocarbon dating practices (Allen 2014). There is little to no evidence of habitation, and earlier pre-Contact use of the site from archaeological documentation is not substantiated. There is no previous mention of petroglyphs associated with the site.

Most of the previously documented features associated with site 3998 are contained within the PARC boundaries, with a concentration of features along the *mauka* and northern edges (Figure 15). There are only three features found outside of PARC boundaries. Riford (1984) reported three of their 34 total documented features (Features 24, 25, and 26) and are over 30 meters *mauka* of all the other features, with no reported intervening cultural deposits (see Figure 18). These three features are all of relatively recent historic or modern origin. A "subsurface clay (fishpond)" (Riford 1984: Figure 1) underlies both Feature 24 and 25, which was verified by reviewing the field notes. This refers to Puehu fishpond, which was filled in sometime after McAllister's (1933) visit. Feature 24 contains "historic glass and metal fragments" (Riford 1984: 25), while Feature 25 contained large chunks of burned kiawe tree and being "of recent construction" (Riford 1984:29). Feature 26 is also likely of recent origin, with the field notes describing it as a filled trench for a pipe, with a plastic fragment within the feature. Based on the significant distance between these three features and the rest of site 3998, the Features 24, 25, and 26 should not be considered part of site 3998.

METHODS

Field activities designed to record the petroglyph field occurred in 2016 and 2017. On July 29, 2016, personnel from USAG-HI DPW CRS and the SHPD visited PARC to record the petroglyph field exposed along the shoreline. In July 2017, beach sands once again shifted and re-exposed the engraved images and provided an opportunity for archaeologists to verify, refine, and expand recordings made during the previous year. The sections below detail the methods employed during the July 2016 and 2017 fieldwork efforts.

2016 Fieldwork

During the July 29, 2016 field effort, personnel from USAG-HI DPW CRS and the SHPD visited PARC for a site visit and to record the petroglyph field exposed along the shoreline. Personnel from USAG-HI DPW CRS included Laura Gilda and Stacy Lundgren, while personnel from the SHPD included Michael Wahl and Kimi Matsushima. Each petroglyph was assigned a sequential number in the order that they were documented. Due to intermittent inundation of the petroglyphs from waves and sand accumulation, precise measurements were difficult to obtain without foreseen tidal mitigation measures. DPW CRS personnel photographed all petroglyph features with scale. This allowed for an approximate estimate of dimensions when precise measurements were not feasible. The provenience of each petroglyph feature was documented with a sub-meter accurate handheld GEO XT Trimble unit, and three distinct datums were offset along the seawall for elevation and distance measurements. The provenience of these datums were documented by sub-meter accurate GPS points and marked with pink flagging.

2017 Fieldwork

Throughout the month of July 2017, USAG-HI DPW CRS personnel revisited site 3998 for the purposes of a site update, and a more intensive form of documentation regarding the petroglyph features that had been previously identified during the 2016 field efforts. Before and during this fieldwork effort, erosion of both sand and the overlying calcareous sandstone layer revealed even more petroglyphs than seen the previous year. Following the 2016 field methods, the provenience of each petroglyph feature was documented with a sub-meter accurate handheld GEO XT Trimble unit, and three distinct datums were offset along the seawall for elevation and distance measurements. The provenience of these datums were documented by sub-meter accurate GPS points and marked with pink flagging. Depth of inscription for the petroglyphs was recorded for some, but not all petroglyphs, due to time constraints.

Following the USAG-HI/PICHTR July 2017 field effort described above, Mark and Lisa Louviere returned to PARC and observed additional petroglyphs. The Louviers took digital photographs of the glyphs that they observed and emailed DPW CRS personnel their pictures. DPW CRS archaeologists determined that the pictures included petroglyphs not observed by archaeologists. They are included in the results section below.

Tidal Abatement

The methods used to record the petroglyphs were adapted to the environmental and time constraints. Due to wave action, the petroglyphs were exposed only intermittently. In an attempt to mitigate the challenge posed by wave action, DPW CRS personnel occasionally employed environmental socks as temporary shoring. These flexible, polymer fabric enclosed tubes, which often contain mulch, charcoal, or other absorbent filler, are designed for worksite erosion control. By anchoring the environmental socks with sand-filled five gallon buckets and beach rocks, DPW

CRS personnel constructed temporary shoring around otherwise partially exposed petroglyphs. With the shoring in place, personnel could clear sand and temporarily prevent its re-deposition, thereby affording time and clarity necessary to make and record observations including photography, measurements, and renderings.

Petroglyph Recording

Personnel assigned each petroglyph a sequential number, beginning with Petroglyph 1 (P1), and increasing with P1 in the northwestern portion and continuing to P17 in the southeastern portion. Personnel recorded 17 petroglyphs during the 2016 fieldwork, and 26 petroglyphs in the 2017 field season. Because of the increased number of observed petroglyphs, they decided to re-number all petroglyphs. To accommodate the recording of any more petroglyphs exposed by future erosion in the northwest, numbering began in the southeastern portion of the field and moved northwesterly. This was because the southeasterly portion of the field was clear of sand that obscured the petroglyphs, while sand accretion obscuring petroglyphs increased to the northwestern portion of the petroglyph field. Table 7 correlates the site 3998 petroglyphs numbers between the 2016 and 2017 field seasons.

Table 7. Site 3998 Petroglyph correlations.

2016 Petroglyph Number	2017 Petroglyph Number
17	1
16	2
N/A	3
N/A	4
N/A	5
15	6
14	7
13	8
12	9
11	10
10	11
9	12
8	13
7	14
N/A	15
6	16
5	17
4	18
N/A	19
N/A	20
3b	21
3a	22
2	23
1	24
N/A	25
N/A	26

Personnel drafted renderings of several petroglyphs. The drafting method required a team of two to three to execute this procedure. A crew member placed and held a protractor with its origin on a reproducible point on or adjacent to the petroglyph; the origin point this establishes becomes the glyph datum. The recorder then affixed a second protractor to the graph paper. Second, the other crew member measures angle distance from glyph datum; the recorder marks the position as angle and scale-adjusted distance from datum on the graph paper (Figure 20). Teams repeated this operation for all significant facets of the petroglyph (e.g. elbow, knee, intersection, chip or damage, etc.). Once enough points were collected, the recorder completed the drawing by filling in the rest based on personal observations.



Figure 20. Depiction of petroglyph drafting method. Note crew measuring from petroglyph datum and recording on graph paper, view at 85 degrees.

DPW CRS staff photographed each petroglyph with a scale, allowing for an approximate estimate of dimensions. They also used an expedient method of manually infilling some of the more difficult to discern petroglyphs with darker beach sand to enhance the contrast in photographs. This non-invasive technique has several advantages, including being inexpensive, quick, and resulting in no lasting impacts. Among the limitations of this process is that it temporarily obscures the petroglyph's manufacture marks, and the sand does not perfectly remain constrained to the petroglyph's perimeter. Images produced using this technique are considered approximations of the original. Application of this technique is best suited for expedient photography in which the purpose is a capture a record of the general form, motif, and variations thereupon of the subject; it is not a replacement for hand drawn renderings.

Typological Classification

We supplement typological classification with detailed descriptions of each petroglyph feature facilitated by a uniformly applied terminology. All descriptions of line orientation were based upon a plan view of the petroglyph facing north. Thus, wherever a line is described as "vertical," this means that it was observed running approximately north/south, while a line described as

“horizontal” appeared to trend east/west. By this same orientation, “left” referred to west, while “right” referred to east. Therefore, if petroglyph X was described as being “left” of petroglyph Y, then petroglyph X was on the west side of petroglyph Y. Finally, “above” referred to the north, while “below” referred to the south. Therefore, if petroglyph X was “above” petroglyph Y, then petroglyph X was north of petroglyph Y.

For anthropomorphic figures, all use of the terms “left” and “right” is based on the viewer’s left and right, when viewed from the base of the figure’s feet or legs. Thus, if the “left” hand is described in the text, this refers to the hand on the west side of the figure, i.e., the hand on the left side of the photograph frame. To avoid confusion, this report has the cardinal direction in parentheses and refer to the figures’ left or right. For example, for a figure with a head towards the north, the right arm would be referred to as “the right (east) arm.”

Additional terms were borrowed from familiar examples. The term “bisect” is used in its geometrical sense, meaning to divide (a line, angle, shape, etc.) into two equal parts. In this terminology, a line was “approximately bisected,” when the two sides appeared to be nearly equal, but slightly asymmetrical. A “bracket shape” refers to a glyph with one long side and two shorter sides that are perpendicular to the long side.

Each petroglyph was examined for evidence of manufacturing, following the typology created by Cox (1970:38-40). Hawaiian petroglyphs were made using four different methods: either pecked or incised with a sharp tool, or bruised or abraded with a blunt tool. However, this typology of tools and techniques is probably most applicable to, or easily identified for, petroglyphs on basalt. Although most Hawaiian petroglyphs are found on basalt, the petroglyphs at PARC were made on much softer sandstone. Nevertheless, Cox (1970:39) was undoubtedly correct when he indicated that “[f]or applying energy to the rock surface only two actions are possible: pounding or rubbing.” However, these actions are not mutually exclusive—a glyph may have been both pounded and rubbed—and the action of one may have obliterated evidence of the other.

Following measurement and a physical description, DPW CRS staff classified each petroglyph with reference to a Hawaiian petroglyph typology developed by Lee and Stasack (1999:173-179). This typology was supplemented with terminology from Kwiatkowski (1991). Per this protocol, individual petroglyphs in this report are attributed to defined motif types with type modifiers. For example, a petroglyph assigned to the anthropomorphic stick figure motif may be modified by adding descriptors, such as “arms up,” or with “digits” (Lee and Stasack (1999:177). Petroglyphs were divided into two major groups: anthropomorphic (Types 1100 to 1700) and non-anthropomorphic. Anthropomorphic types included “T” shapes, stick figures, triangular, muscular, special, and other.

Artifact Sample Collection

Artifact sample collection was not a goal of this field effort. However, in accordance with the USAG-HI “DRAFT Artifact Field Collection Standard Operating Procedures,” if traditional/historic artifacts were observed that were “in danger of being damaged or stolen,” then the artifacts were collected. The proveniences of collected items were documented on plan view maps and/or Trimble GPS receivers. Collected items were placed in re sealable plastic bags and labeled with provenience, date, and Bag Number, based on the USAG-HI numbering system. The bag number consists of the abbreviation for the installation where the sample was collected from, the last two digits of the year the sample was collected in, and the sequential number of the sample collected from that installation in that year. For example, the first artifact bag made for PARC in 2017 is PARC-17-01.

Ethnographic Methods

On 17 February 2017, in an effort to garner additional information about the history and cultural practices relevant to, and cultural significance of, site 3998, PICHTR and USAG-HI personnel conducted an ethnographic interview with Mr. Glen Kila. Mr. Kila has ancestral connection to Pōkaʻī Bay and Neneʻu Beach and is a recognized expert on the local culture and history. In preparation for this event, PICHTR and USAG-HI personnel drafted interview consent form (Appendix B) and a list of questions concerning several categories, including: bibliographical information, information about ancestors, *moʻolelo* and *wahi pana* (sacred places), Harvey Hale, petroglyphs, and questions about specific historical events. Additional unplanned questions were also asked that arose organically. All the questions that were asked are presented in Appendix A.

RESULTS

The cultural resources within and extending south of the PARC property has been assigned a single site number, SIHP # 50-80-07-3998 (formerly 50-0a-C3-23) due to the homogeneity of the features identified there (Riford 1984:3). Site -3998 consists of identified subsurface archaeological features. The only historic or prehistoric surface remains present are the petroglyphs.

Ethnography

During the ethnographic interview that DPW CRS personnel conducted on 17 February 2017, Mr. Glen Kila revealed oral historical information encompassing several generations, including information from both the pre- and post-contact periods. Mr. Kila's *kupuna* were here long before Kamehameha's conquest, so he uses older Hawaiian names for some sacred locations that are less common today. Portions of this interview were gleaned for information which was incorporated into the section on Land Use and History within this report. The full interview transcript is presented, in Appendix A.

During the interview Glen Kila shared oral histories and *mo'olelo* from his *'ohana* (extended family) that show the religious and cultural significance they ascribe to the area. Mr. Kila regards site 3998 as a part of Nene'u (Nene'u), and the Wai'anae *wahi pana*. His ancestors worshiped Kāne (and related forms), who is tied to the many *heiau* and other sacred locations in the area. These *heiau* include Kane'ilio, (Kū'ililoa), Kamoali'i, Pah'ehe'e and Kaneikapualena. The most important responsibility of his ancestors was to *mālama* (take care and protect) these *heiau*.

Mr. Kila sees the petroglyphs as further evidence of the religious significance of the site. He describes petroglyphs as religious symbols. He interprets the biggest anthropomorph as Maui the demigod, and as very significant religious symbol. He explains this interpretation due to the petroglyphs large size, and positioning of the fingers pointed in the direction of the rising and setting sun (east to west). Maui is known for his large size and for his role in a *mo'olelo* where he steals the sun. He also notes that the abundance of human figures in a procession is similar to petroglyphs at nearby Kea'au.

The religious significance of the site for Mr. Kila extends into the historic period. He shared how during the 1830's his ancestors were Catholic and part of Governor Boki and Liliha's regime at Wai'anae. In the 1980s he worked with archaeologists who unearthed catholic burials in site 3998, including those of his ancestors. While Catholics are generally strict about where they can be buried, Mr. Kila attests that early 19th century Hawaiian Catholic families buried at their home.

The area is also important for cultural subsistence practices such as the *hukilau*, and many of Mr. Kila's ancestors were fishermen. During this ceremony, the community gathered to selectively harvest fish in Malaea (Pō'ka'i) bay, and in the fishpond before it was destroyed. They focus on harvesting fish that are destructive to the reef, and keeping a stock to multiply. The *hukilau* continues to be practiced in the bay by Mr. Kila and other cultural descendants to the present as a significant cultural tradition connecting them to Nene'u.

When taken together, these *mo'olelo* and oral histories they show that Mr. Kila and his *'ohana* ascribe religious and cultural significance to site 3998 as part of Nene'u and the Waianae *wahi pana*.

Pedestrian Survey

The immediate area surrounding the petroglyphs was surveyed for additional archaeological cultural resources, however no surface features other than the petroglyphs were observed (Figure 21). While it is likely that additional petroglyphs exist on the beachrock, waves and tides had cleared sand from only a portion of the beachrock.



Figure 21. Overview of surveyed site 3998 petroglyph panel and surrounding area, view at 310 degrees (Northwest).

Petroglyph Recording

The petroglyph field at site 3998 is situated along a section of northwest/southeast oriented shoreline at PARC (Figure 22 and see Figure 16). The field is southwest and *makai* of a stone seawall and visitor cabins, *makai* of a narrow, shallow channel. Petroglyph P26 (the northwest-most glyph) is situated west of Cabin #11, and about 40 m (131 ft) distant from the southeastern-most glyph (i.e., Petroglyph P1).

Archaeologists identified a total of 26 petroglyphs, of varying typologies, carved into a layer of beach rock. Table 8, while Table 9 through Table 11 tabulates the petroglyph's motif typology and nomenclature adapted from a model by Lee and Stasack (1999:175-176). None of the petroglyphs appear to be superimposed over each other. The presence of wave deposited sand and algae suggest that additional unrecorded glyphs may exist, especially to the northwest of, Petroglyphs P25 and P26. Full documentation was completed on 21 of 26 known petroglyphs, which ranged in size from 15 centimeters to over two meters. Only descriptive notes or photos without scales are available for P3, P15, P19, P20, and P26. Evidence of water erosion was observed, especially at P1 and P2. In addition, P6 may have been damaged from debris from the crumbling seawall.

Of the 26 petroglyphs, 18 are anthropomorphic petroglyphs, including stick-figure (Type 1200) anthropomorphs (n=16) and flexed (Type 1600) figures (n=2). Eight of the stick-figure anthropomorphs were depicted with possible male genitalia (i.e., P4, P5, P6, P7, P8, P10, P14, P21); the remainder (i.e., P1, P2, P12, P13, P20, P22, P24, and P25) were undetermined gender. One stick-figure anthropomorph glyph had legs in an "action" pose (P20). The arms of P20 are asymmetrical, with the lowered left arm extending further than the right. The two largest anthropomorphs (i.e., P12 and P22) both have digits on their hands. P12 possesses five fingers per hand, while P22 has five fingers on the right hand, and six on the left. Both of these large anthropomorphs with digits are also accompanied by a smaller and shallower flexed figure depicted in profile to their right side (P11 and P18). All but one of the anthropomorphic petroglyphs was oriented with heads *mauka* of the feet; the head of P20 was *makai* of the feet.

Of the 26 petroglyphs, eight are non-anthropomorphic petroglyphs, including geometric/abstract (n=5), material culture (n=2), and zoomorphic motifs (n=1). Two petroglyphs resemble hook-shaped motifs (i.e., P16 and P17). The other petroglyphs (i.e., P3, P9, P15, P16, P19, and P23) are more abstract. P9 is a bracket-shape, which may be an incomplete anthropomorph. P26 appears to be a zoomorph, specifically either an owl or turtle design.

The methods used to manufacture the petroglyphs was most often pecking. However, many of the lines are smoothed either deliberately or naturally through erosion. Some of the petroglyphs were worked much deeper and wider than others. The pattern of smoothed lines of various depths is a phenomenon in need of an explanation. It is possible that some petroglyphs were retouched at some point after their initial creation.

The age of the petroglyphs remains unknown. The "simple lineal angular" anthropomorph is considered to be an early form, but one that was also used throughout the period of Hawaiian petroglyph production (cf. Cox 1970:59; Lee and Stasack 1999: 187). A layer of beachrock has formed over the lower *makai* portions of P22, P23, P24, P25, and P26, and if the deposition of this layer of laminating beachrock was dated using absolute dating techniques, then a *terminus ante quem* for the creation of the petroglyphs could be determined.

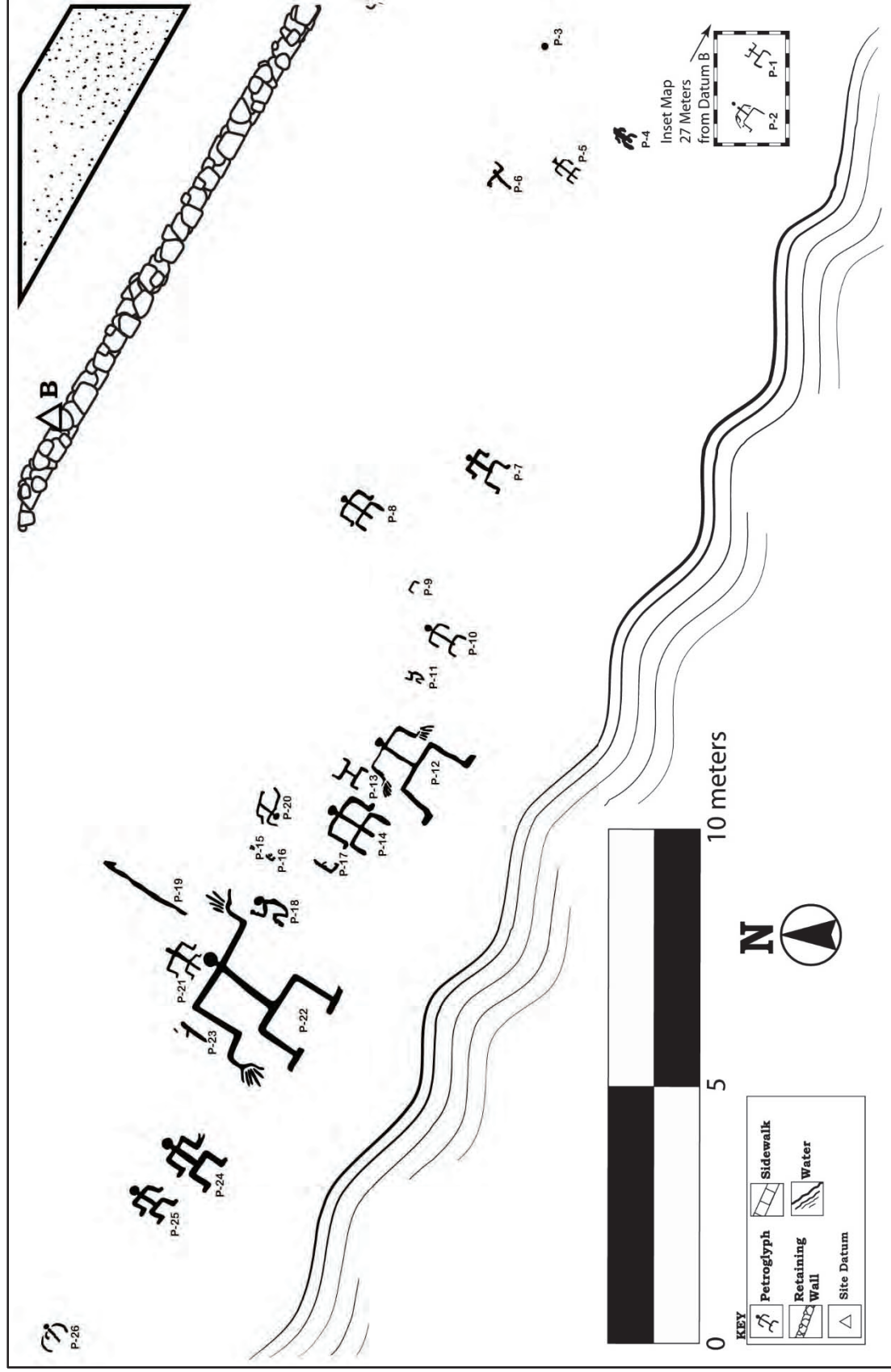


Figure 22. Sketch map of petroglyph field

Table 8. Site 3998 Petroglyph Summary.

Petroglyph Number	Type of Petroglyph	Gestural characteristics	Overlying beachrock	Other notes	Documentation Level
P1	Anthropomorphic	Both arms raised	No	Observed in 2016 and 2017.	Photos, sketch
P2	Anthropomorphic	Arms and legs down at sides	No	Machine scarring runs through the petroglyph; algae growth also slightly obscures glyph; possible paddle to left side. Observed in 2016 and 2017.	Photos, sketch
P3	Geometric/Abstract	N/A	No	Single bar or line segment. Observed in 2017.	Descriptive notes only
P4	Anthropomorphic	Arms and legs down at sides	No	Erosion and machine damage. Observed in 2017.	Photos, sketch
P5	Anthropomorphic	Arms and legs down at sides	No	Either erosional or mechanical damage obliterated head	Photos, sketch
P6	Anthropomorphic	Arms opposed with right raised	No	Erosional damage worsened between July 2016 and July 2017	Photos, sketch
P7	Anthropomorphic	Arms and legs down at sides	No	Has horizontal hands	Photos
P8	Anthropomorphic	Arms and legs down at sides	No	Has horizontal hands	Photos
P9	Geometric/Abstract	N/A	No	Bracket-shaped figure; possible anthropomorph	Photos
P10	Anthropomorphic	Arms and legs down at sides	No		Photos
P11	Kneeling or seated figure	Curved spine, arm curved upward, knee bent, with leg down in mirror image of arm	No	Anthropomorph in profile, facing west. See Kikuchi (1994:31)	Photos
P12	Anthropomorphic	Arms and legs down at sides	No	Fingers more shallowly pecked than the rest of the figure	Photos
P13	Anthropomorphic	Both arms raised	No	Figure is headless, and a design consisting of a long vertical line and 4 dots is located a few cm below and to the right (east) of the figure's right (east) lower leg	Photos
P14	Anthropomorphic	Arms and legs down at sides	No		Photos

Petroglyph Number	Type of Petroglyph	Gestural characteristics	Overlying beachrock	Other notes	Documentation Level
P15	Geometric/Abstract	N/A	No	Abstract element with two horizontal bars over two vertical bars; may be eroded	Photos, only approximate measurements
P16	Geometric or Material Culture	N/A	No	One larger hook-shaped figure with a second smaller hook inside	Photos
P17	Geometric or Material Culture	N/A	No	L-shaped or hook-figure with a somewhat square notch on the top	Photos
P18	Kneeling or seated figure	Curved spine, arm curved upward, knee bent, with leg down in mirror image of arm	No	Anthropomorph in profile, facing west. See Kikuchi (1994:31)	Photos
P19	Geometric/Abstract	N/A	No	Vertical bar or line segment	No photos, no measurements
P20	Anthropomorph	Arms and legs opposed, with right (west) limbs up	No	Lower portions obscured by sand, water, and erosion	Photos only, no accurate measurements
P21	Anthropomorphic	Arms and legs down at sides	No		Photos, sketch
P22	Anthropomorphic	"wavy" type arms opposed, with right (east) arm raised	Yes	Six fingers present on left hand, five on the right	Photos, sketch
P23	Geometric/Abstract	N/A	Yes	One thick, rounded line intersected at a right angle by a small, thin line	Photos, sketch
P24	Anthropomorphic	Arms and legs down at sides	Yes	Claw-like or forked right hand	Photos, sketch
P25	Anthropomorphic	Arms and legs down at sides	Yes	Horizontal hands	Photos, sketch
P26	Transitional or zoomorphic	Two arcs may invoke arms, round body, or wings	Yes	Ambiguously exhibits both human and animal traits	Photos, no accurate measurements

Table 9. Site 3998 Petroglyph Motif Summary Table (modified from Lee and Stasack 1999:175-176).

Petroglyph Number	ANTHROPOMORPH					NON-ANTHROPOMORPH			
	Male genitalia	Arms down	Both arms raised	Right hand raised	Fingered hand(s)	Flexed figure	Zoomorphic	Hook-shaped	Geometric or Abstract
P1			X						
P2		X							
P3									X
P4	X	X							
P5	X	X							
P6	X			X					
P7	X	X							
P8	X	X							
P9									X
P10	X	X							
P11						X			
P12		X			X				
P13			X						
P14	X	X							
P15									X
P16								X	
P17								X	
P18						X			
P19									X
P20				X					
P21	X	X							
P22				X	X				
P23									X
P24		X							
P25		X							
P26							X		
TOTALS	8	10	2	3	2	2	1	2	5

Table 10. Hawaiian Petroglyph Motif Typology and Nomenclature (adapted from Lee and Stasack 1999:175-179).

Petroglyph	Motif type number	Head	Arms	Legs	Gender	Notes and other treatment
P1	1200	R	U	R	N	
P2	1200	R	D	R	N	
P3	7120	N/A	N/A	N/A	N/A	Bar or straight line segment
P4	1200	A	D	R	M?	
P5	1200	O	D	R	M	Head is continuation of spine
P6	1200	O	O	R	M	Head is continuation of spine
P7	1200	R	D	R	M	
P8	1200	R	D	R	M	
P9	1204 8000	N/A	N/A	N?	N/A	Either abstract geometric form, or incomplete anthropomorph
P10	1200	R	D	R	M	
P11	1600	R	N/A	N/A	N	Profile seated human figure
P12	1200	R	D, G	R	N	Five digits on each hand
P13	1200	A	U	R	N	No head, adjacent to line segment
P14	1200	R	D	R	M or N	Recorded genitals may be erosion
P15	5210 or 8000	N/A	N/A	N/A	N/A	Abstract arrangement of lines
P16	5200	N/A	N/A	N/A	N/A	Two fish hooks, nested
P17	5200	N/A	N/A	N/A	N/A	Fish hook
P18	1600	R	N/A	N/A	N	Profile seated human figure
P19	7120	N/A	N/A	N/A	N/A	Bar or straight line segment
P20	1200	R	O	A	N	
P21	1200	O	D	R	M	Head is continuation of spine
P22	1200	R	O, G, W	R	N	Opposed wavy arms, with digits
P23	8000 or 5000	N/A	N/A	N/A	N/A	Abstract or unknown material culture
P24	1200	R	D	R	N	Forked or claw-like right hand
P25	1200	R	D	R	N	Not fully exposed
P26	1204, 1700, 3420, or 4100	R	N/A	N	N	Transitional, resembles owl or turtle

Table 11. Hawaiian Petroglyph Motif Typology and Nomenclature Key (adapted from Lee and Stasack 1999:175-179).

Motif type number - description	Type Modifiers			
	Head	Arms	Legs	Gender
1200 – Stick figure anthropomorph	A – absent	D – down	A – action	F – Female
1204 – partial anthropomorph	O – other	I – “wing-like”	N – none	M – Male
1600 – profile flexed* human figure	R – regular (round)	G – digits	R – regular	N – no indication
1700 – Other anthropomorph		O – opposed		
3420 – Zoomorph: owl		W – wavy		
4100 – Sea form: turtle		U – up		
5000 – Material culture				
5200 – Hook-shape*				
5210 – “Fish trap”				
7120 – Strait line(s)				
8000 – unidentified motif				

Feature Descriptions

Petroglyph P1

Archaeologists observed P1 in 2016 and 2017. P1 is an anthropomorphic stick figure, measuring 37 cm (14.6 in) in length by 26 cm (10.2 in) in width (Figure 23 through Figure 25). P1 matches Lee and Stasack's (1999:175) Type 1200 with both arms raised and legs in the "regular," or astraddle position. The width of the incising is about 3 cm (1.2 in). The head, spine, and torso of the figure are represented by a 22 cm (8.7 in) vertical line. About 4 cm (1.6 in) below the northern terminus of the head/spine line, a wide U-shape intersects at roughly the midpoint of the "U". The bottom (southernmost part) of the "U" shape is nearly horizontal, and represents the shoulders and/or upper arms. The shoulder runs for about 26 cm (10.2 in) and then curves steeply to the north on both sides, forming two vertical segments that are each about 22 cm (8.7 in) long. The two vertical sides of this "U"-shape represent the lower arms. They are raised approximately 15 cm (5.9 in) above (north of) the head. At the southern end of the spine/torso line, a square bracket shape consisting of a long horizontal line and two short vertical segments intersects with the spine/torso approximately perpendicularly. The long horizontal segment is about 36 cm (14.2 in) long and signifies the hips and/or upper legs of the figure. The spine/torso line touches the hip line at approximately the midpoint of the hip line. At each end of the hip/upper leg, the line comes to a right angle and then continues south in two short, vertical line segments roughly 18 cm (7.1 in) in length. These two segments symbolize the lower legs of the figure.



Figure 23. Overview of P1, view at roughly 25 degrees.



Figure 24. Plan view of P1, approximate outline, view at roughly 25 degrees

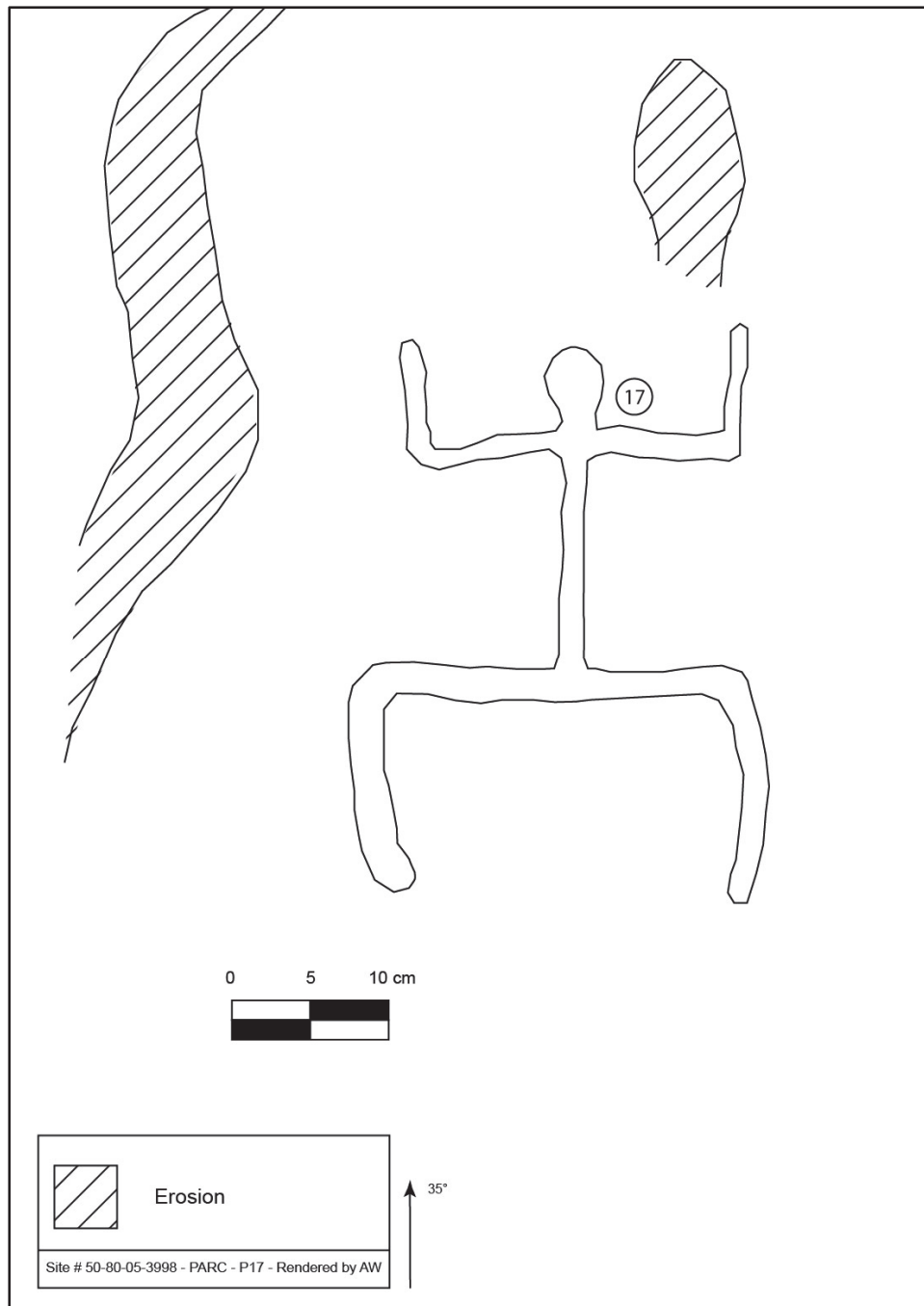


Figure 25. Sketch of petroglyph P1 (formerly P17).

Petroglyph P2

Archaeologists observed P2 in 2016 and 2017 and described it as an anthropomorphic stick figure, measuring 55 cm (21.7 in) in length by 49 cm (19.3 in) in width (Figure 26 through Figure 28). P2 matches what Lee and Stasack (1999:175) describe as a type 1200 stick figure anthropomorph, with both arms lowered, legs in the “regular,” or astraddle, position, and a round head. The anthropomorphic petroglyph includes an oval-shape, which apparently represents the figure’s head, measures 6x9 cm (2.4x3.5 in). A 3-cm (1.2-in) wide vertical line extends south from the head, for about 30 cm (12 in), which represents the spine and torso of the figure. A few centimeters below its northern terminus, the head/spine line is intersected by an approximately 2-cm (0.8-in) wide line, at roughly a right angle. This line, which appears to represent the shoulders and/or upper arms of the figure, extends about 15 cm (5.9 in) to the right (east) and 16.5 cm (6.5 in) to the left (west) of the spine, before both line segments angle downward (south). The left (west) and right (east) arm line segments, which appear to represent lowered arms, extend 20 cm (7.9 in) to the southwest and southeast, respectively. The left (west) arm line angles to the left (west) for another 6 cm (2.4 in), apparently forming the left hand. A second line intersects the southern end of the spine/torso approximately perpendicularly. This line, which appears to represent the hips and thighs, extends about 25 cm (10 in) to the right (east) and 19 cm (7.5 in) to the left (west) of the spine, before both line segments angle downward (south). The left (west) and right (east) arm line segments, which appear to represent the lower legs, extend 28 cm (11 in) to the southwest and southeast, respectively. The left (west) leg line angles to the left (west) for another 7 cm (2.8 in), apparently forming the left foot. A wide machine scar runs roughly NW/SE through the right (east) lower leg, the left (west) hip/upper leg and the left lower arm. The left (west) side of the glyph is partially obscured by algae. The anthropomorph is accompanied by a thin extra line parallel to the left arm, which curves and expands to the north. This linear element may represent an additional limb, or an object such as a paddle. This narrow, southern portion of the line element measures about 5x25 cm (2x10 in), but expands in width for the last 14 cm (5.5 in), to a maximum width of about 4 cm (1.6 in). Three small dots between 1 to 2 cm (0.4 to 0.8 in) in diameter, are west of the end of the right lower arm segment. Another 2x4 cm (.8 to 1.6 in) rectangular shape is located west of the bend of the left leg. An oval shape, measuring about 7x10 cm (2.8x3.9 in) is located about 10 cm (3.9 in) above the anthropomorphic figure’s head.



Figure 26. Overview of P1 (right) and P2 (left), view at 24 degrees



Figure 27. Overview of P1 (right) and P2 (left) showing machine scar, view at 24 degrees.

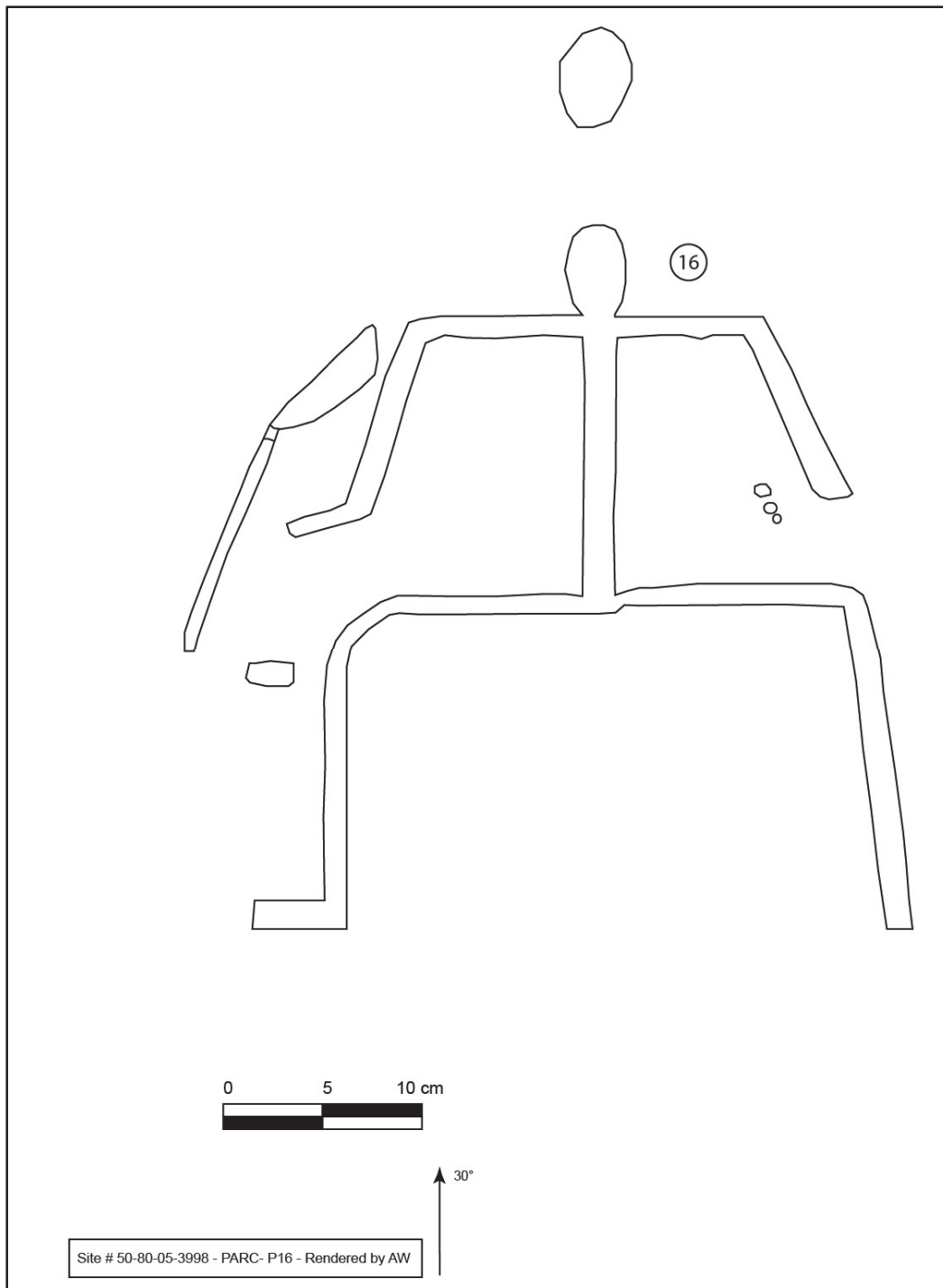


Figure 28. Sketch of petroglyph P2 (formerly P16).

Petroglyph P3

Archaeologists briefly observed P3 in 2017 and described it as a probably pecked geometric design comprised of a single linear bar or line. P3 best matches Lee and Stasack's (1999:177) type 7120. It was severely damaged, with machine scars intersecting both ends. Little data is available about this petroglyph and no clear photographs exist.

Petroglyph P4

Archaeologists observed P4 in 2017 and described it as a male anthropomorphic stick figure measuring 27 cm (10.6 in) in length and about 18 cm (7 in) in width (Figure 29 and Figure 30). P4 matches what Lee and Stasack (1999:175) describe as a type 1200 stick figure anthropomorph. This petroglyph has downturned arms, and legs in the "regular," or astraddle, position. It lacks a head, which was apparently obliterated by machine damage. This figure was most likely produced by pecking; however, it is shallower than many of the anthropomorphs to the northwest. The image may have been originally taller and wider, but the figure extent was likely reduced as a result of erosional impacts, specifically to the right (east) leg and head areas. The axial line segment comprising the spine and genitalia measures 19 cm (7.5 in) long, but erosion may have truncated the line at the intersection of the shoulder line. The line segment for the shoulders measures 15cm (5.9 in) across, and articulates at an angle of 99 degrees, diverging from perpendicular by declining to the left, and inclining to the right. From the west extent of the shoulder, the 10 cm (3.9 in) long left (west) arm segment extends outward and away from the body, forming a 55 degree angle with the shoulder. The 8 cm (3.1 in) right arm, by contrast, intersects and terminates with the east extent of the shoulder at an angle of 94 degrees. About 6 cm (2.4 in) up from the base of the axial line segment, a leg/hips line segment measuring 16 cm long (6.3 in) crosses and divides spine from genitalia at a 96 degree angle. A portion of the west side of the line is obfuscated by natural erosion. Two legs extend downward from the hip line. The right (east) leg is incomplete, apparently also due to natural erosion. The remaining observable portion of this right leg is 7 cm (2.8 in) long and meets with the hip/upper leg line segment at a slightly obtuse 98 degrees. The left (west) leg is 12 cm (4.7 in) long, and it intersects with the hip/upper leg line segment at an approximately perpendicular angle.



Figure 29. Plan view of P4, note erosion and machine scarring (left) and infilled with sand for visibility (right).

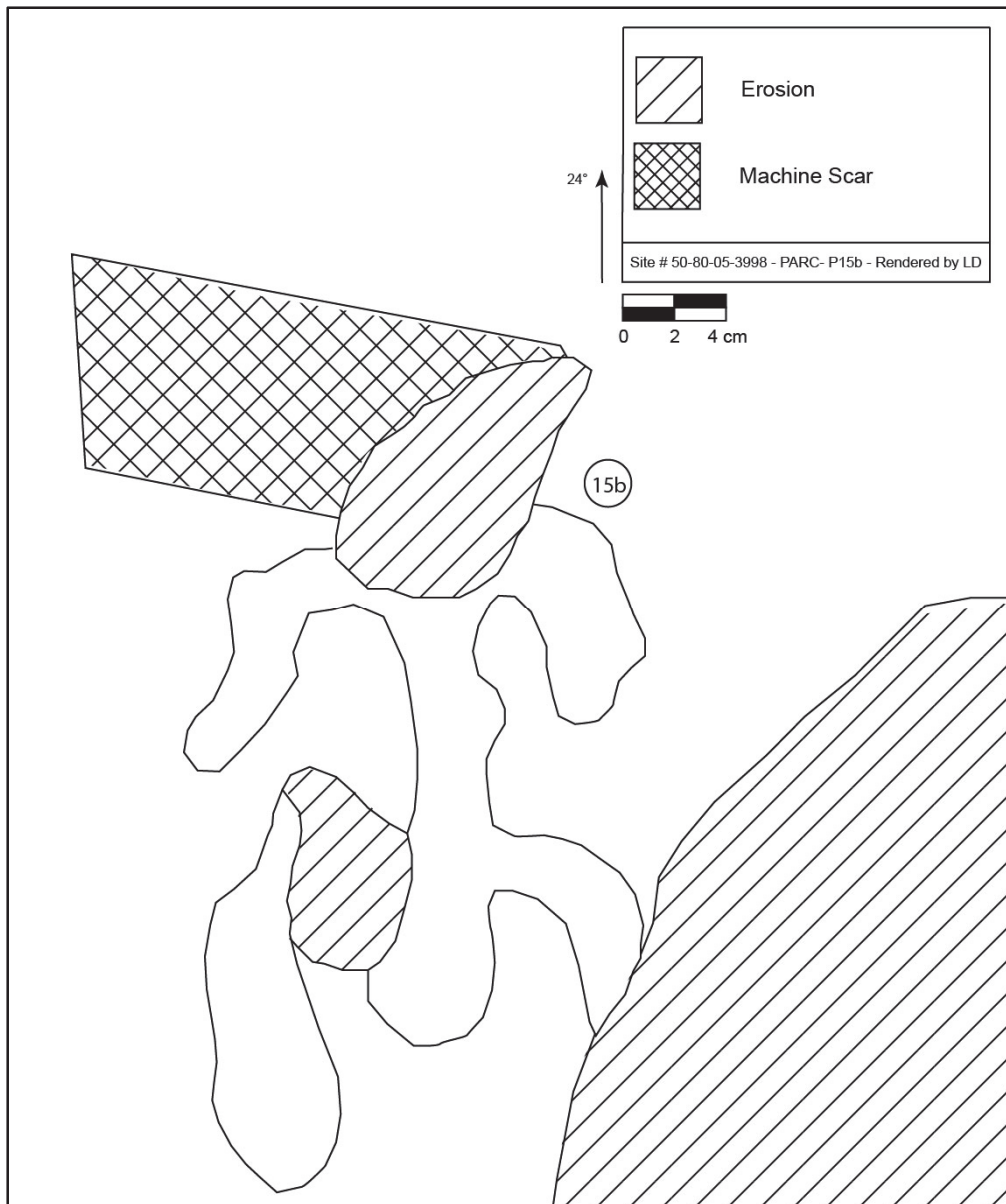


Figure 30. Sketch of petroglyph P4 (formerly P15b).

Petroglyph P5

Archaeologists observed P5 in 2017 and described it as is a relatively shallowly pecked male anthropomorphic stick figure measuring 25 cm (9.8 in) wide and 40 cm (15.7 in) tall (Figure 31 and Figure 32). P5 matches what Lee and Stasack (1999:175) describe as a type 1200 stick figure anthropomorph. This anthropomorph holds its hands in the downward position and legs in the “regular,” or astraddle, position. Its head and neck are a linear extension of the spine line segment. Erosion damage confounded measurement of the head and the right (east) shoulder. The figure’s central axis is a single bar/line segment covering the head, neck, spine, and genitals. Approximately 7 cm (2.8 in) below the estimated top of the head/neck, the axial line segment bisects a perpendicular 20 cm (7.9 in) long line segment comprising the shoulders. Extending *makai* from this shoulder line segment are two upper limbs. The left (west) arm is 14 cm (5.5 in) long and intersects the shoulder line at a slightly obtuse angle, while the right (east) arm is 15 cm (5.9 in) and meets the shoulder line at an approximately right angle. Approximately 10 cm (3.9 in) from the base of the axial line segment, the spine bisects another line segment, which forms the hips/upper legs. This intersection also implicitly separates the genital and spine components of the axial line segment. The hips/upper leg line segment measures 22 cm (8.7 in) long, and terminates at either end in lower leg line segments. The left (west) leg line segment is 12 cm (4.7 in) long, and meets the hip/upper leg at approximately 90 degrees. The right (east) leg line segment is noticeably shorter at 8 cm (3.1 in), and forms a much more obtuse angle of approximately 108 degrees.

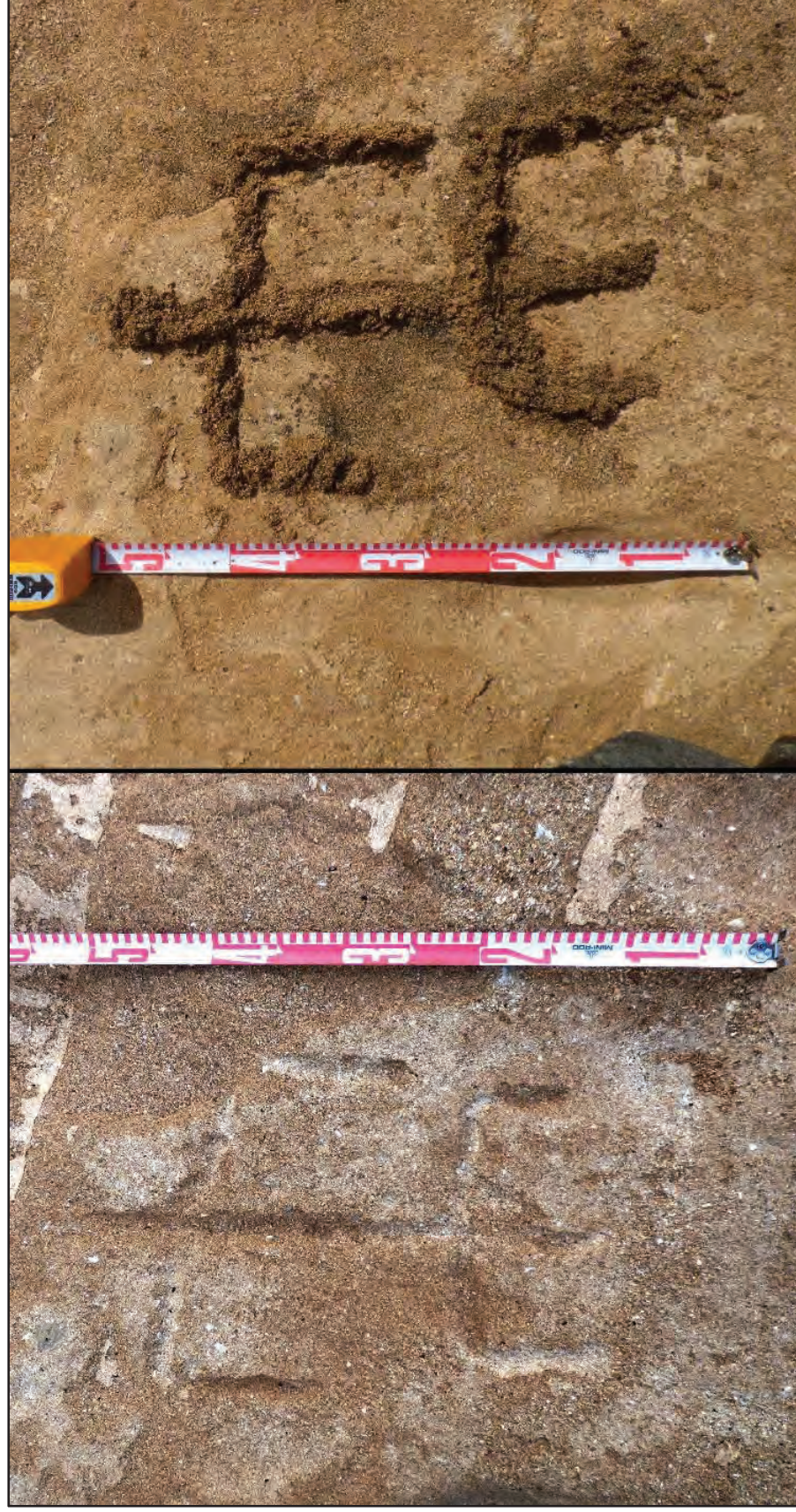


Figure 31. Plan view of P5; exposed (left), and infilled with sand for visibility (right)

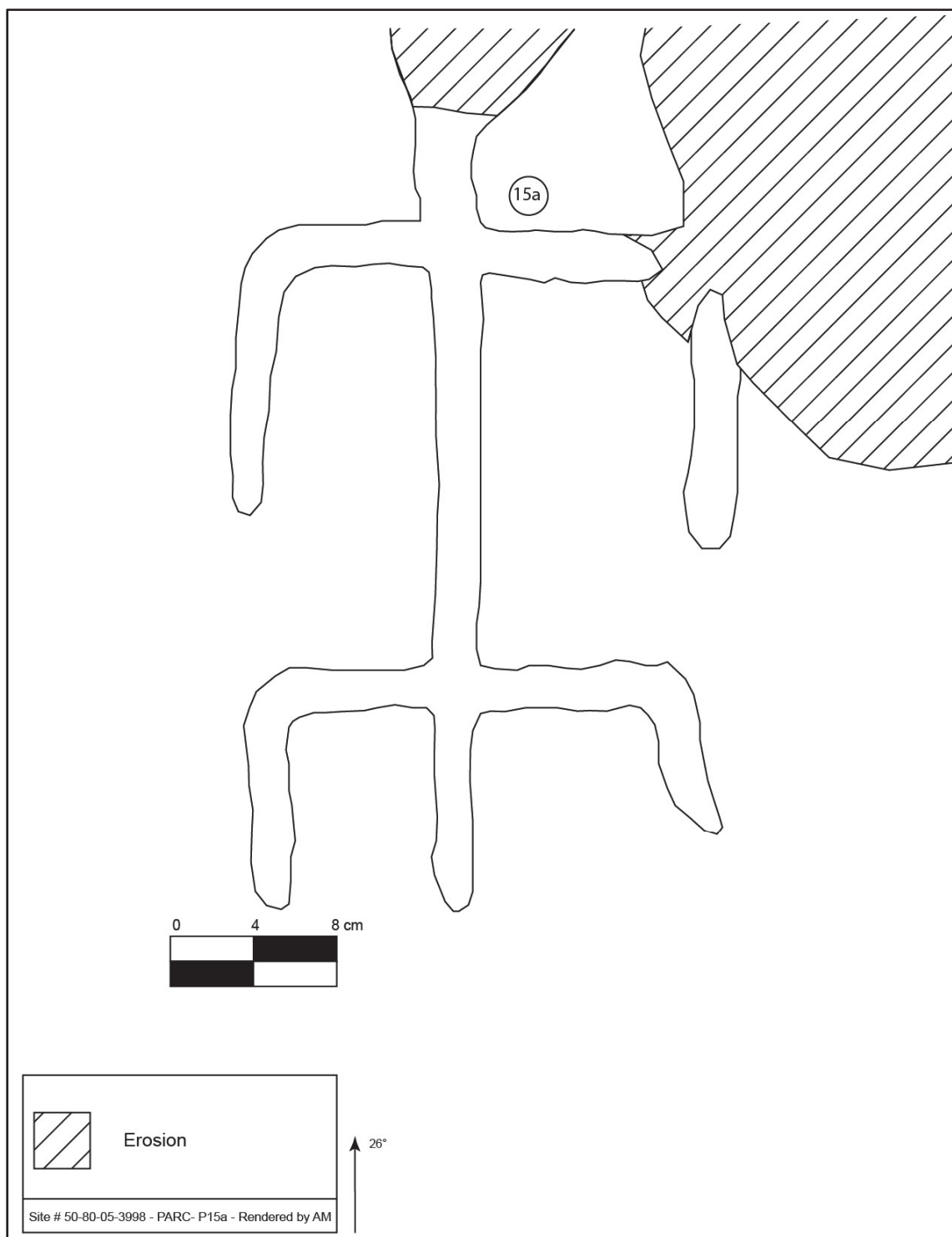


Figure 32. Sketch of petroglyph P5 (formerly P15a)

Petroglyph P6

Archaeologists observed P6 in 2016 and 2017 and described it as an anthropomorphic stick figure with one curved, raised arm, one lower arm, and legs in the “regular,” or astraddle, position. P6 measures 25 cm (9.8 in) wide and 40 cm (15.7 in) tall (Figure 33 through Figure 36). P6 matches what Lee and Stasack (1999:175) describe as a type 1200 stick figure anthropomorph. In 2017, crews took additional photographs and made a sketch, but they could not identify the figure’s legs. Between July 2016 and July 2017, a nearby section of the seawall collapsed. Stone debris from the collapse appears to have damaged P6, spalling the surface around the shoulders and arms, and either covering or obliterating the left leg. These new potential damages are in addition to significant machine marks (presumed modern or historic) previously observed in 2016. The measurements provided below are based on observations made in 2016. The glyph is approximately 45 cm (17.7 in) in length and 30 cm (11.8 in) in thickness with incising at a maximum of 5 cm (2 in) in width. The petroglyph consists of a vertical line about 32 cm (12.6 in) long running roughly north/south. A vertical line appears to represent the head, spine, torso, and male genitalia of the figure. About 7 cm (2.8 in) south of the northern terminus of the head/spine line, a horizontal line segment intersects the head/spine line perpendicularly. Presumably, the section of the vertical line above this intersection represents the head, while the horizontal segment represents the shoulders and/or upper arms of the figure. The shoulder line measures roughly 22 cm (8.7 in). The left shoulder line comes to a right angle and then continues south in a vertical line segment for about 17 cm (6.7 in). This represents the left (west) lower arm. The end of this segment is slightly arced, possibly signifying a hand. The right (east) shoulder continues in a steep, long arc shape that first curves to the northeast and then northwest, ending about 7 cm (2.8 in) north of the head in a tapered point. This curve presumably represents the right (east) lower arm and hand. Approximately 22 cm (8.7 in) below where the shoulder intersects the axial line, a bracket shape intersects the axial line perpendicularly. The line representing the hips and upper legs measures about 24 cm (9.5 in) and is approximately bisected by the spine/torso line. The hip line comes to a right angle at each end and then continues in two shorter, vertical line segments representing the lower legs. The left (west) and right (east) lower legs measures about 12 cm (4.7 in) and about 8 cm (3.1 in), respectively. The axial line extends about 12 cm (4.7 in) south of the hip/upper leg line, signifying the male genitalia.



Figure 33. Overview in 2016 of P6, view at 21 degrees.



Figure 34. Overview in 2016 of P6, approximate outline, view at 21 degrees.



Figure 35. Plan view of P6, temporarily infilled with sand for visibility. Note boulder in lower left corner.

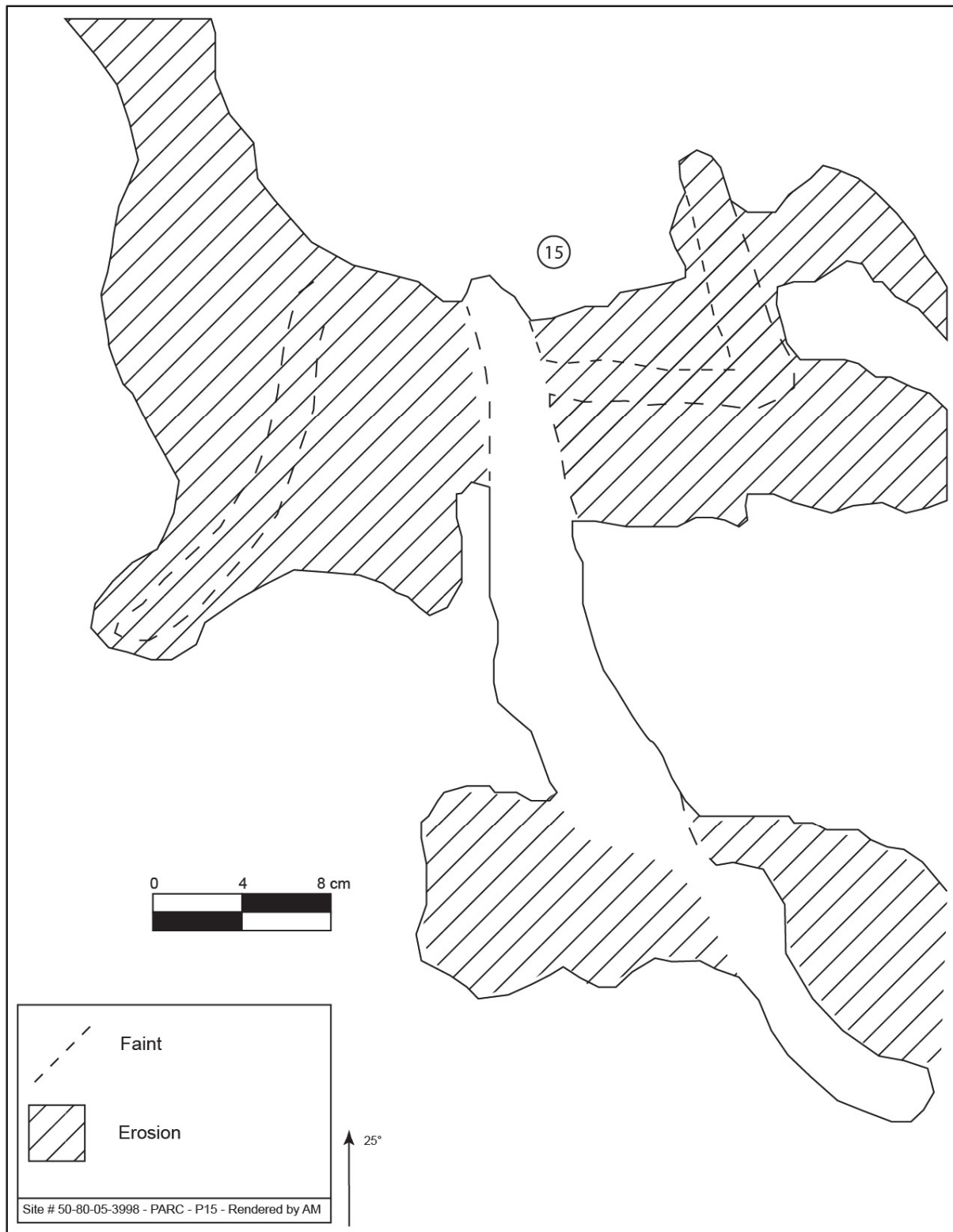


Figure 36. Sketch of petroglyph P6 (formerly P15).

Petroglyph P7

Archaeologists observed P7 in 2016 and 2017 and described it as a male anthropomorphic stick figure (Lee and Stasack [1999:175] type 1200) approximately 55 cm (21.7 in) in length and 48 cm (18.9 in) in width. The maximum width of the line incision is 10 cm (3.9 in) (Figure 37 through Figure 39). The figure is depicted with arms in the downward position, legs in the “regular,” or astraddle, position, and with hands and feet. The head of the petroglyph consists of a circle approximately 10 cm (3.9 in) in diameter. A vertical line representing the spine, torso, and male genitalia extends south from the head for approximately 33 cm (13 in). Just below the head, a slightly curved horizontal line, which might represent the shoulders and/or the upper arms, intersects the axial line approximately perpendicularly. This shoulder arm line is about 30 cm (11.8 in) long and is bisected by the axial line. At each end of the shoulder, a vertical line extends southward, representing the lower arms. The left (west) lower arm makes a slightly obtuse angle with the shoulder and measures about 15 cm (5.9 in). The right (east) lower arm does not make as sharp an angle with the shoulder, resulting in a more rounded joint of about 90 degrees. The right (east) lower arm is slightly longer than the left, measuring about 20 cm (7.9 in). At the end of each lower arm, the line makes a roughly right angle and then continues in a brief horizontal line segment measuring approximately 5 cm (2 in). These short horizontal segments represent hands, and point away from the body so that the left (west) hand points west while the right (east) hand points east. The left hand makes a more obtuse angle with the lower arm than does the right hand. Approximately 22 cm (8.7 in) south of where the shoulder line intersects with the spine/torso line, another horizontal line intersects the spine/torso line perpendicularly. This horizontal line segment represents the hips and/or upper legs of the figure, and measures approximately 32 cm (12.6 in) long. It is not quite bisected by the axial line, as the left (west) hip is slightly longer than the right (east) hip. At each end of the hip line, the line makes a right angle and then continues southward in vertical segments that are each about 22 cm (8.7 in) in length. These two vertical segments represent the lower legs. The end of each lower leg intersects perpendicularly with a horizontal line segment about 12 cm (4.7 in) long, representing the feet. The lower leg reaches the approximate midpoint of the right (east) foot, but the left (west) foot is slightly longer to the left of the lower leg than it is to the right. The spine/torso line extends approximately 3 cm (1.2 in) below the hip/upper leg line, which might represent male genitalia.



Figure 37. Overview of P7, view at 21 degrees.



Figure 38. Overview of P7, approximate outline, view at 21 degrees.



Figure 39. Overview of P8 (left) and P7 (right), view roughly north (Photo credit: M. Louviere, 29 July 2016).

Petroglyph P8

Archaeologists observed P8 in 2016 and 2017 and described it as a pecked male anthropomorphic stick figure (Lee and Stasack [1999:17] type 1200) measuring approximately 52 cm (20.5 in) in length and 44 cm (17.3 in) in width. The maximum width of incising is with about 10 cm (3.9 in) and averages about 6 cm (2.4 in) (Figure 39 through Figure 41). P8 has downward facing arms, legs in the “regular,” or astraddle, position, and hands. An approximately 10-cm (3.9-in) wide incised and rounded square represents the head. A vertical line about 6 cm (2.4 in) wide and 32 cm (12.6 in) long emanates south from the head, representing the spine, torso, and male genitalia. Just below the head, a square bracket-shape intersects the axial line perpendicularly. The long, horizontal (east/west) side of this “bracket” is approximately 28 cm (11 in) long and is bisected by the axial line. This long horizontal side represents the shoulders and/or upper arms of the anthropomorphic figure. At each end of the “shoulder,” the line comes to a right angle and then continues in a vertical 20-cm (7.9-in) line segment. These two short vertical line segments represent the lower arms of the figure. At the end of each lower arm line segment, the line segment comes to a near right angle and then continues in a short, horizontal line segment pointing away from the torso. These short horizontal segments are about 8 cm (3.1 in) long and represent hands. Approximately 16 cm (6.3 in) south of where the shoulder line intersects with the spine/torso line, a shape that resembles three quarters of a square (one horizontal and two vertical sides of nearly equal length) intersects with the axial line perpendicularly. The horizontal side measures about 30 cm (11.8 in) in length, and represents the hips and/or upper legs. The spine/torso intersects this hip/upper leg line so that the left (west) hip/leg measures about 20 cm (7.9 in) while the right (east) hip/leg measures only 10 cm (3.9 in). The hip/ leg comes to a right angle at each end and then continues south in a slightly shorter vertical line segment of about 25 cm (9.8 in). These two vertical line segments represent the lower legs and feet. The left (west) lower leg bends slightly east at the southern terminus, probably representing a foot. The right (east) leg does not mirror this shape, but ends in a tapered point. The spine/torso line continues below the hips/upper legs for about 18 cm (7.1 in), apparently representing the male genitalia.



Figure 40. Overview of P8, view roughly 20 degrees.

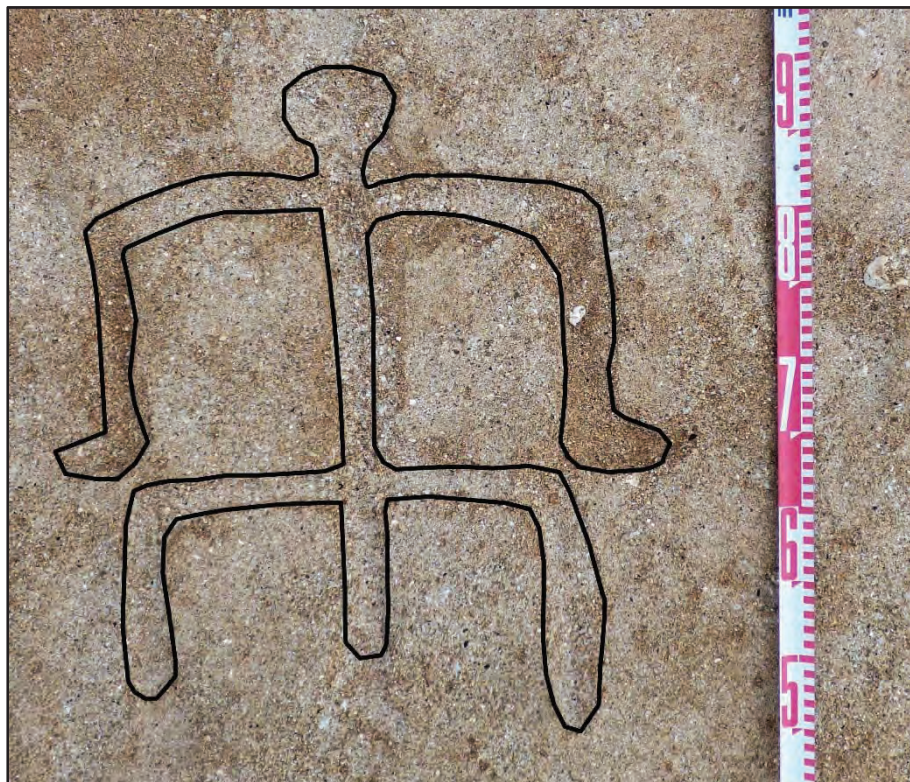


Figure 41. Plan view of P8, approximate outline.

Petroglyph P9

Archaeologists observed P9 in 2016 and 2017 and described it as a bracket-shaped figure (Figure 42 and Figure 43). This design may match either Lee and Stasack's (1999:175-177) motif type 1204 (incomplete anthropomorph), or type 8000 (other geometric/abstract). It measures approximately 25 cm (9.8 in) in length by 12 cm (4.7 in) in width, with incising of roughly 4 cm (1.6 in) wide at maximum thickness. The long horizontal side runs east/west and is approximately 22 cm (8.7 in) long with incising of 4 cm (1.6 in) at the thickest point. At both ends of this line segment, the line comes to approximately a right angle before continuing southward to make two shorter vertical line segments. Both of these vertical sides are roughly 10 cm (3.9 in) long. This petroglyph bears formal resemblance to part of an anthropomorph, specifically the shoulders/arms, or hips/legs; consequently, it could be considered an incomplete anthropomorph.



Figure 42. Overview of P9, view at 22 degrees.



Figure 43. Plan view of P9, approximate outline.

Petroglyph P10

Archaeologists observed P10 in 2016 and 2017 and described as a male anthropomorphic stick figure (Lee and Stasack [1999:175] motif type 1200) (Figure 44 and Figure 45). P10 measures approximately 62 cm (24.4 in) in length and 45 cm (17.7 in) in width, with a maximum thickness of 4 cm (1.6 in). This figure's arms are in the downward facing position, and the legs in the "regular," or astraddle, position. P10 lacks hands and feet. The northernmost portion of the petroglyph consists of an incised circle approximately 5 cm (2 in) in diameter representing the head. From the southernmost point of the head, a vertical line representing the spine, torso, and male genitalia runs north-south. This line measures approximately 42 cm (16.5 in) in length. About 2 cm (0.8 in) below the head, a rounded square bracket shape intersects the spine/torso perpendicularly. The long, horizontal segment of this bracket shape represents the shoulders and/or upper arms while the shorter vertical segments represent the lower arms. The "shoulder" (the long side of the bracket shape), which is a slightly curved horizontal line segment, measures roughly 30 cm (11.8 in) in length and is approximately bisected by the spine/torso line. At each end, the horizontal line segment curves southward at a rounded, slightly obtuse angle, and continues in a vertical line segment representing the lower arm (the short sides of the bracket shape). The lower arm segment on the left (west) continues for approximately 11 cm (4.3 in) then comes to a slightly obtuse angle and continues in a roughly horizontal line segment (at an angle of about 100 degrees to the lower arm) for approximately 3 cm (1.2 in). This short horizontal line segment represents a hand. The lower arm on the right (east) is longer than that on the left, about 22 cm (8.7 in). It is also more curved than the left side. This line comes to approximately a right angle, then continues in a very short horizontal line segment of about 2 cm (0.8 in) before making a second right angle and continuing in a vertical segment pointing north that is roughly 8 cm (3.1 in) long. The effect is an abrupt, square hook shape that appears to represent a hand. Approximately 25 cm (9.8 in) south of the shoulder line, an arch shape intersects the spine/torso line. This arch is roughly bisected by the spine/torso line. The arch shape clearly symbolizes the hips and legs of the figure, but the lower extremities were obscured by sand at the time of recording, and the southernmost terminus of each end of the arch was impossible to determine. The arch shape approximately mirrors the shoulder/arm shape above it, though the hips/legs are rounder than the shoulders and arms. In photographs, it appears that the leg on the right side is slightly higher than the leg on the left side, though the presence of wave deposited sand makes it difficult to be certain. The axial line continues for about 2 cm (0.8 in) south of the hip/upper leg line, apparently symbolizing male genitalia.



Figure 44. Overview of P10, view at 22 degrees.

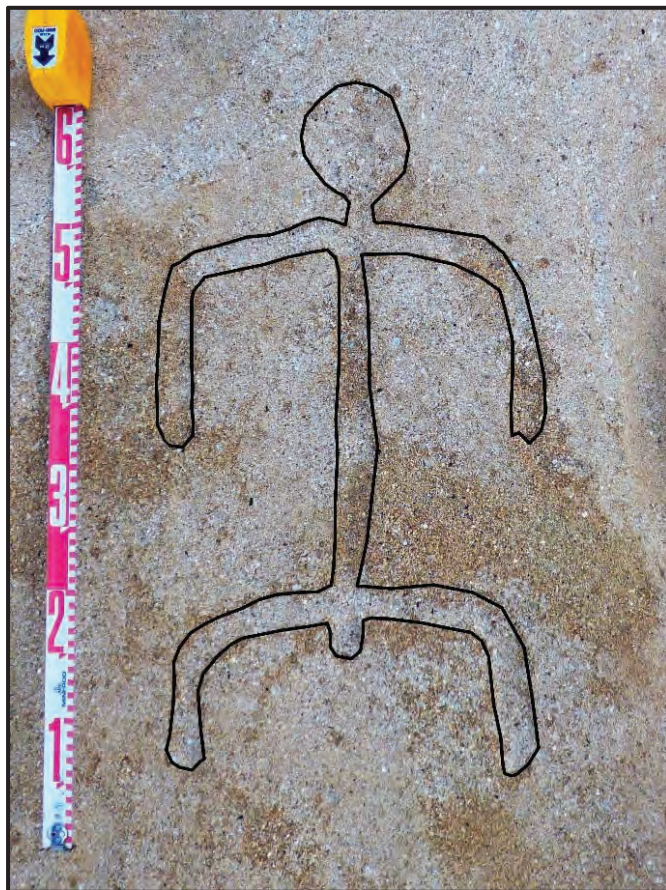


Figure 45. Plan view of P10, approximate outline.

Petroglyph P11

Archaeologists observed P11 in 2016 and 2017 and described it as a flexed anthropomorphic figure depicted in profile (Figure 46 and Figure 47). This petroglyph is consistent with Lee and Stasack's (1999:176) motif type 1600 profile figure. P11 measures 25 cm (9.8 in) in length and 20 cm (7.9 in) in width. The northernmost portion of the petroglyph consists of a "U"-shape. The right (east) side of the "U" is thicker than the left (west) side by about a centimeter and is slightly rounded, which may represent the head of the figure. The lower right (east) side of the "U" narrows slightly and continues south for approximately twice the length of the head. From here, it makes a sharp hook to the left (west) and continues west, making a small arch shape that then leads into another small "u" shape. This second "u" shape is similar to the northernmost part of the petroglyph but on a smaller scale and with a more acute angle. From the easternmost portion of the "arch" segment where the vertical (north/south) portion of the figure hooks eastward, a short, vertical line segment emanates from the bottom of this hook and makes a right angle, continuing east in an equilateral, backwards "L" shape, like the corner of a square. It is possible that this figure represents an anthropomorphic figure, with the "U" shape representing a head (right/east) and one or both arms pointed upward (left/west side). The curved line with the sharp hook at the bottom could represent a torso and/or spine, while the arch shape and second "u" and the backwards "L" shapes could represent the legs if they were bent in opposite directions at the knees.



Figure 46. Plan view of P11, approximate outline.



Figure 47. Overview of P11 circled at right and P12 center, view approximately 25 degrees.

Petroglyph P12

Archaeologists observed P12 in 2016 and 2017 and described it as an anthropomorphic stick figure with legs in the “regular,” or astraddle, position and two four- or five-fingered hands (Lee and Stasack [1999:175] motif type 1200) (Figure 47 through Figure 49). The hands measure approximately 1 m (3.3 ft) in length and 104 cm (41 in) in width, with incising at a maximum width of 8-10 cm (3.1-3.9 in). The head of the figure is represented by an incised ellipse about 4 cm (1.6 in) in maximum diameter. The long side runs approximately east/west, making the head slightly wider than it is long. From the southernmost point on the head, a vertical line representing the spine and/or torso approximately 45 cm (17.7 in) long emanates southward. About 3 cm (1.2 in) below the head, a bracket-shape intersects the spine/torso line perpendicularly. The long horizontal side of the bracket measures roughly 59 cm (23.2 in), and is approximately bisected by the axial line. This horizontal line segment represents the shoulders and/or upper arms of the figure. At each end, the shoulder/upper arm line comes to a slightly obtuse angle of about 100 degrees before continuing southward to make a vertical line segment. These two shorter vertical segments each measure about 24 cm (9.5 in) and represent the lower arms. At the end and to the right (east) of the right (east) lower arm, there are five crooked, vertical lines that connect tenuously at the top (north) and then point down (south) roughly parallel to each other, representing the fingers of a hand. The strokes are approximately in the same scale as human fingers so that the middle line is the longest while the rightmost (easternmost) line is the shortest. At the end and to the left of the left (westernmost) lower arm, there is a similar hand with crooked, roughly parallel vertical lines that connect at the north end, also with five fingers. Incising on the hands and fingers is about 2 cm (0.8 in) wide at maximum, and appear to be much shallower than the incising on the rest of the figure. At the southern end of the spine/torso line opposite the head, a second square bracket-shape intersects with the spine/torso perpendicularly. The long, horizontal side of the bracket is roughly 59 cm (23.2 in), with the spine intersecting at about the midpoint. This segment represents the hips and/or upper legs. The hip line segment comes to a right angle at each end and then continues into a vertical line segment going south. These two vertical line segments measure roughly 50 cm (19.7 in) and represent the lower legs.



Figure 48. Overview of P12, view at 26 degrees.



Figure 49. Close up of P12 left (west) hand and right (east) hand, approximate outline.

Petroglyph P13

Archaeologists observed P13 in 2016 and 2017 and described it as an apparently headless anthropomorphic stick figure with raised arms, legs in the “regular,” or astraddle position (Lee and Stasack [1999:175] motif type 1200 or 1204). There is also an associated design with one vertical line and four cupules (Figure 50). This deeply pecked petroglyph measures approximately 52 cm (20.5 in) in length and 55 cm (21.7 in) in width, with a maximum thickness of 8 cm (3.1 in) thick. The figure apparently does not have a head, although it is possible that the head was obscured by the heavy sand buildup that occurred just north of the figure. A vertical line representing the spine and torso of the figure runs north-south. At the northern terminus of this spine/torso line, a square bracket shape intersects the spine perpendicularly. The long, horizontal side of this “bracket,” which represents the shoulders and/or upper arms of the figure, is approximately bisected by the spine and measures roughly 35 cm (13.8 in) in total length. At each end of this horizontal line segment, the line makes a right angle and then continues north for roughly 5-6 cm (2.0-2.4 in) before ending completely. These short vertical line segments represent the hands or forearms of the figure. A second square bracket-shaped line intersects the spine at the end farthest from the head, also perpendicularly. This lower bracket is the mirror image of the bracket above, as the short sides point down (south) instead of up (north). This bracket is also slightly larger, with the long side measuring roughly 45 cm (17.7 in) and the short sides roughly 10 cm (3.9 in). The incising is thicker as well, measuring a maximum of 6 cm (2.4 in), while the incising on the upper bracket measures around 4 cm (1.6 in) at the thickest point. The long, horizontal side of this square bracket represents the hips and upper legs and the short, vertical sides represent the lower legs and feet. Approximately 10 cm (3.9 in) east and 20 cm (7.9 in) south of the lower right leg, there is a vertical (N/S) line or elongated oval of about 20 cm (7.9 in) long and 5 cm (2 in) wide. Running south from this line are four small roughly circular cupules, each about 2-4 cm (0.8-1.6 in) in diameter.



Figure 50. Plan view of P13, scale next to line and dot design.

Petroglyph P14

Archaeologists observed P14 in 2016 and 2017 and described it as a large, deeply pecked, anthropomorphic stick figure (Lee and Stasack [1999:175] motif type 1200) measuring approximately 1.3 meters (51.2 in) long and 55 cm (21.7 in) wide, with incising of 10 cm (3.9 in) at the thickest point (Figure 51 and Figure 52). This figure holds its arms downward and legs in the “regular” position, with hands and feet on each. What initially appeared to be male genitalia, archaeologists now believe to be a localized patch of erosion accelerated by the axial line segment channelizing and discharging seawater. The head consists of an incised circle roughly 5 cm (2 in) in diameter. Perpendicular to the bottom of the head is a horizontal line segment of about 42 cm (16.5 in) long, representing the shoulders and/or the upper arms. The shoulder line comes to a near right angle at each end and then continues south. The angle on the left is slightly obtuse, while the angle on the right appears close to 90 degrees. From these two near-right angles, two vertical line segments continue southward for about 15 cm (5.9 in), representing the lower arms. Each of these vertical segments comes to a right angle and then continues for about 5 cm (2 in) horizontally pointing away from the body. These small horizontal segments appear to represent hands, and point in opposite directions, with the left (west) hand pointing west and the right (east) hand pointing east. At the midpoint of the shoulder line, just below the head, a vertical line runs south representing the spine, torso, and male genitalia. The vertical line segment from below the head to the bottom of the genitals is about 45 or 50 cm (18 or 20 in). A horizontal line intersects the axial line about five centimeters north of the southernmost point of the vertical line, representing the hips and/or the upper legs. This hip line is nearly perpendicular to the spine/torso line, but these lines intersect so that the angle made on the left (west) is slightly obtuse, while the angle on the right is slightly acute. This hip line comes to roughly a right angle at each end and then continues south. This creates two vertical segments of approximately 42 cm (16.5 in) each, representing the lower legs. From here, both vertical segments make right angles and then continue in short horizontal line segments that face away from the body, the same direction as the hands. These segments are approximately 8 cm (3.1 in) long and clearly represent feet.



Figure 51. Overview of P14, view at 26 degrees



Figure 52. Plan view of P14.

Petroglyph P15

Archaeologists observed P15 in 2017 and described it as is an abstract, geometric design estimated to be approximately 10 cm (3.9 in) wide by 12 cm (4.7 in) tall. The petroglyph is composed of two sets of parallel line segments, with one pair intersecting the second pair at an approximate right angle. The design is slightly isolated on a small knob (type 7630), surrounded by an arching short and shallow channel. As the lines comprising this petroglyph extend to the edge of the knob, it has the appearance of being the eroded remains of a larger petroglyph. The remaining design shares some characteristics with Lee and Stasack's (1999:177) type 5210 "fishtrap" design.

Petroglyph P16

Archaeologists observed P16 in 2016 and 2017 and described it as two hook-shaped figures (Lee and Stasack's [1999:175-177] type 5200 motif) (Figure 53 and Figure 54). Together, they measure approximately 25 cm (9.8 in) long and 20 cm (7.9 in) in wide, and the incising is approximately 8 cm (3.1 in) wide at the thickest point. Faint pitting suggests that this petroglyph was pecked. The hook-shaped figure on the left (west) is the larger of the two, measuring approximately 25 cm (9.8 in) long, 15 cm (5.9 in) wide, and the line has a maximum width of about 8 cm (3.1 in). The northernmost part of the figure juts out from the lower part at a slight angle, creating a stylized, triangular ornament at the top. From this triangular mark, the line goes south vertically for about 20 cm (7.9 in) and then makes a sharp angle, slightly less than 90 degrees. From here, the figure arcs to the right (east) and slightly north, like the tail of a backwards "J". This portion of the line from the vertex to the end of the hook is approximately 15 cm (5.9 in). The easternmost point of this figure has another stylized triangular ornament which juts south slightly, making a sort of point or barb. A smaller hook-shaped figure is located approximately 5 cm (2 in) to the right (east) of the larger figure. It is a more symmetrical version of the larger figure, because that the vertical line and horizontal arc of the hook are roughly the same size, each is approximately 8 cm (3.1 in) long, and neither end has any barb or ornament. The smaller figure is also not as thick as the larger one, and the incising is approximately 5 cm (2 in) wide at the widest point. The overall effect is of a smaller hook "inside" of a larger hook.



Figure 53. Plan view of P15 (top) and P16 (bottom)



Figure 54. Overview of P16, view at 27 degrees.

Petroglyph P17

Archaeologists observed P17 in 2016 and 2017 and described it as is an incised hook-shaped figure consisting of a subangular, generally rectangular shape on top of an “L”-shaped figure (Lee and Stasacks’s [1999:175-177] type 5200 motif) (Figure 55 and Figure 56). The figure is approximately 35 cm (13.8 in) long and 14 cm (5.5 in) in wide. The rounded rectangular shape is approximately 6 cm (2.4 in) in width and 11 cm (4.3 in) in length. A vertical line emanates southward from it for approximately 32 cm (12.6 in), then comes to a right angle and continues east in a horizontal line segment for approximately 16 cm (6.3 in).



Figure 55. Plan view of P17.



Figure 56. Plan view of P17, approximate outline, view at 27 degrees.

Petroglyph P18

Archaeologists observed P18 in 2016 and 2017 and described it as a flexed anthropomorphic figure viewed in profile, consistent with Lee and Stasack's (1999:176) type 1600 (Figure 57 and Figure 58). Dimensions were estimated at 47 cm (18.5 in) long and about 18 cm (7.1 in) wide. Maximum width of the lines could not be determined, but average width appeared to be about 3 cm (1.2 in). A small oval represents the anthropomorph's head. A line begins few centimeters above and to the left (northwest) of the head, runs downward (south) for a few centimeters, and then hooks sharply to the right and upwards (northeast) to intersect with the southernmost point of the head. This might symbolize an arm bent at the elbow. After intersecting with the head, the same line that delineates the arm makes another sharp hook and turns southward, creating a vertical line just below the head. This probably represents the torso and spine of the figure. Several centimeters south of the head, this spine makes sharp hook, then continues northwest, makes another sharp hook and then continues southward before ending altogether. These last two hooks and line segments most likely represent a leg bent at the knee. They are a mirror image of the arm, and the first hook (the "elbow") and the last hook (the "knee") in the line come within a centimeter of each other and nearly touch.



Figure 57. Plan view of P18, approximately southeast.



Figure 58. Site 3998, Petroglyph P18 close-up, view approximately northeast

Petroglyph P19

Archaeologists briefly observed P19 in 2017 and described it as a single bar-like line segment of indeterminate length (Lee and Stasack [1999:177] type 7120). It is located in the shallow channel slightly inland of the main line of petroglyphs, south of Petroglyph 20. Accurate measurements, photographs, and renderings were not made.

Petroglyph P20

Archaeologists observed P20 in 2017 and described it as a pecked anthropomorphic stick figure of indeterminate gender, with both the legs and arms in the opposed position (Lee and Stasack [1999:175] motif type 1200) (Figure 59 and Figure 60). Visible portions measured about 55 cm (21.7 in) wide by 34 cm (13.4 in) tall. However, because P20 was not been fully exposed, accurate measurements are not available. It is in a small, shallow channel, which runs inland of the majority of other figures. The head faces *makai* (southwest). Its upward-kicked right (west). It was observed directly inland (north northeast) of the larger petroglyph P22, which is the only other anthropomorph on site exhibiting opposed arms.



Figure 59. Plan View of P20 shallowly submerged, view approximately south.



Figure 60. Plan view of P20 shallowly submerged, view approximately 200 degrees.

Petroglyph P21

Archaeologists observed P21 in 2016 and 2017 and described it as a male anthropomorphic figure (Lee and Stasack [1999:175] motif type 1200) (Figure 61 through Figure 63). The right (east) foot of P21 is located approximately 5 cm (2 in) north of the head of P22. The dimensions of P21 are roughly 30 cm (11.8 in) by 50 cm (19.7 in), or approximately 1/3 the size of P22. Incising is about 3 cm (1.2 in) wide. The petroglyph consists of a small oval about 6 cm (2.4 in) in diameter at the long side and about 4 cm (1.6 in) at the short side, representing a head. The 6 cm (2.4 in) diameter runs on a north/south axis so that the oval is “vertical.” A vertical line extends from this head and continues southward for about 22 cm (8.7 in), presumably representing the spine, torso, and male genitalia. Just below the head, a horizontal line segment perpendicularly intersects the axial line. This horizontal line segment, which represents the shoulders and/or forearms of the figure, is about 35 cm (13.8 in) long. It intersects the axial line asymmetrically, so that the left (west) shoulder is about 21 cm (8.3 in) long while the right (east) shoulder is about 14 cm (5.5 in). At each end of the shoulder segment, the line forms right angles and continues southward in a shorter, vertical line segment. These two vertical line segments are each approximately 11 cm (4.3 in) long and apparently represent the lower arms of the figure. Each lower arm comes to a slightly obtuse angle of about 100 degrees and then continues in a short, horizontal segment that points away from the body, apparently representing the hands. The left (west) hand is about 5 cm (2 in) long and points to the west, while the right (east) hand is about 8.5 cm (3.4 in) long and points to the east. A similar bracket-like shape repeats itself, but at a smaller scale, about 11.5 cm (4.5 in) south of where the shoulder line intersects with the axial line. The long, horizontal line segment, which here represents the hip and upper legs of the figure, is approximately 23 cm (9.1 in) long. The right and left sides of the hip line are closer to equal than the right and left sides of the shoulder line, but as with the shoulder, the left (west) side is slightly longer than the right (east), about 13 cm (5.1 in) on the left and 10 cm (3.9 in) on the right. The two vertical segments here appear to represent the lower legs. The left (west) lower leg is slightly longer than the right (east), being about 9 cm (3.5 in) and 7 cm (2.8 in), respectively. As with the hands, the feet are represented as two short horizontal line segments that point away from the body. The left foot is about 7 cm (2.8 in) long, while the right foot is about 5 cm (2 in). The axial line segment continues approximately 10 cm (3.9 in) south of where the hip line intersects, representing male genitalia.



Figure 61. Plan view of P21.



Figure 62. Overview of P21 (top) and P22 (center) prior to complete erosion of calcareous lamination (bottom), view at 21 degrees

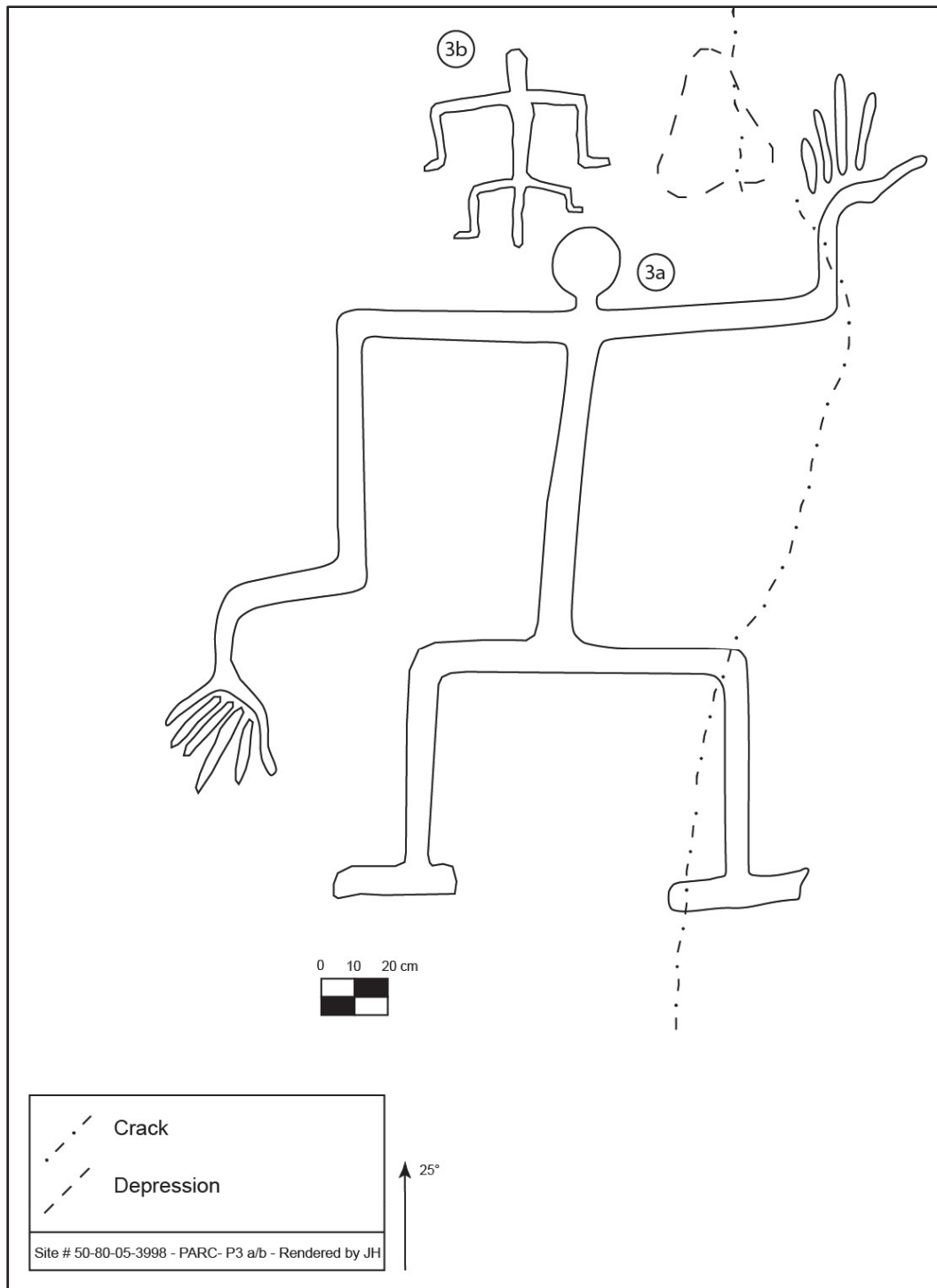


Figure 63. Sketch of petroglyphs P21 (formerly P3b) and P22 (formerly P3a).

Petroglyph P22

Archaeologists observed P22 in 2016 and 2017 and described it as a large, prominent anthropomorphic stick figure with arms opposed (Lee and Stasack [1999:175] motif type 1200) (Figure 62 through Figure 65). The raised arm features a five-fingered hand, and a lowered, six-fingered hand. During 2016 documentation, the southernmost portion of the figure was covered by a layer of calcareous sandstone; this was no longer the case when the petroglyphs became exposed again in 2017, as beach rock lamination eroded to fully reveal this anthropomorphic petroglyph. After this erosion, the petroglyph was shown to be complete standing stick figure with opposed arms. A crack in the bedrock, running through the east limbs is apparent in photos from 2016 and 2017, and does not appear to have grown significantly between field sessions.

In 2016, the visible portion of the petroglyph was initially roughly 75 cm (29.5 in) long by 162 cm (63.8 in) wide. Incising is 6-7 cm (2.4-2.8 in) wide on average. Once fully exposed in 2017, the large anthropomorph measured 263 cm (8.6 ft) tall (from the east foot to the east hand's fingertips), and 241 cm (7.9 ft) wide. The head is represented by a small, deep, incised circle of about 13 cm (5.1 in) in diameter. A wide vertical line representing the spine and torso of the figure emanates south from the head. This axial line is about 6 cm (2.4 in) wide, but widens to about 13 cm (5.1 in) wide at the southern end. From the base of the head to its termination at the hips, this axial line segment is approximately 107 cm (3.5 ft) long. Just south of the head of the figure, a horizontal line segment intersects the axial line perpendicularly, representing the shoulder and upper arms of the figure. The shoulder line is about 110 cm (3.6 ft) long, and is approximately bisected by the axial so that the left (west) and the right (east) shoulders are about the same length. At the left (west) end of the shoulder line, the shoulder comes to an obtuse angle of about 100 degrees and then continues to the southwest approximately 53 cm (20.9 in). This line segment apparently represents the left (west) forearm of the figure. Below this, the line arm line turns westward and continues for an additional 40cm (15.7), before arcing downward again to form the hand. The left hand contains 6 digits – 5 fingers and a thumb – ranging in orientation between 295 degrees to 180 degrees, and in length from 20 cm to 32 cm (7.9 to 12.6 in). The fingers, like the rest of the design, are pecked, but not as deeply. At the right (east) end of the shoulder line, the shoulder comes to a right angle and then continues north for about 28 cm (11 in). This vertical segment represents the forearm of the figure. At the northern end of the upper arm, the line comes to a right angle and continues in a thick, slightly curved horizontal line. This curved line continues for about 20 cm (7.9 in) at a maximum width of 8 cm (3.1 in) and then abruptly hooks to the northeast, making a line segment of about 9 cm (3.5 in) long and only 2 cm (0.8 in) wide before ending altogether. The thicker, horizontal line represents the hand of the figure, while the shorter, thinner line segment running northeast/southwest represents one of the fingers. The rest of the fingers are represented by four jagged, vertical lines that run nearly perpendicular to the hand but never intersect it (they are each about 1-2 cm [0.4-0.8 in] above the hand). These fingers are drawn approximately to the scale of a human hand so that the middle finger is the longest while the fingers at the east and west ends (i.e., the pinky and thumb) are the shortest. The longest finger is about 14 cm (5.5 in) long. Incising is roughly the same on all the fingers (about 2 cm [0.8 in] wide).



Figure 64. P22 partially exposed in 2016, view approximately 200 degrees.

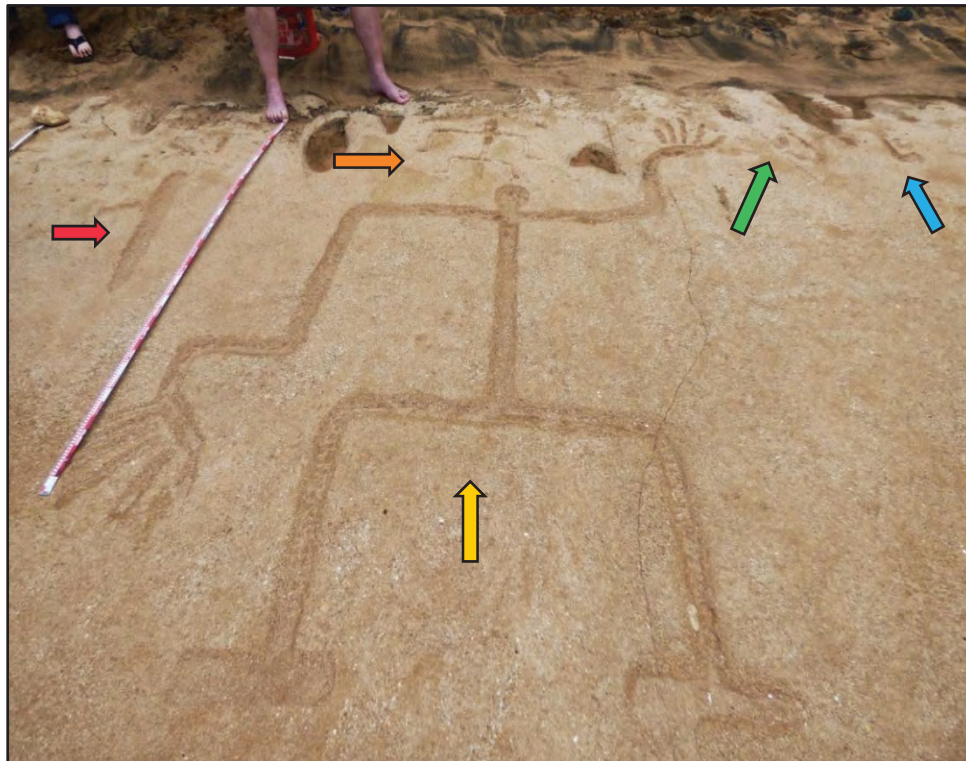


Figure 65. Overview in 2017 of P23 (red arrow), P21 (orange arrow), P22 (yellow arrow), P18 (green arrow), and P16 (blue arrow), view at 20 degrees

Petroglyph P23

Archaeologists observed P23 in 2016 and 2017 and described it as two lines, one a thick, vertical line and the other a shorter, thinner horizontal line that is nearly perpendicular to and intersects the first line (Figure 65 through Figure 67). While the intended subject matter is uncertain, it most closely resembles either a geometric form, or the upper half of a hook-shaped motif, as depicted by Kwiatkowski (1991:7, 42, 57). The vertical line is about 7 cm (2.8 in) wide and about 45 cm (17.7 in) in length from the northern end to where it is covered by a new layer of calcareous sandstone at the southern end. The northern end has a slightly rounded top. Approximately 20 cm (7.9 in) south of the northern terminus of the vertical line, a smaller line intersects or comes close to intersecting the vertical line on the western side of the petroglyph at an obtuse angle of approximately 110-120 degrees. This line is roughly 10 cm (3.9 in) long (though this was difficult to determine due to the high level of sand buildup) and 5 cm (2 in) wide. At the time of recording in 2016, the petroglyph was often obscured with sand and beach rock lamination; this was not the case in July 2017, when the petroglyph was fully exposed.

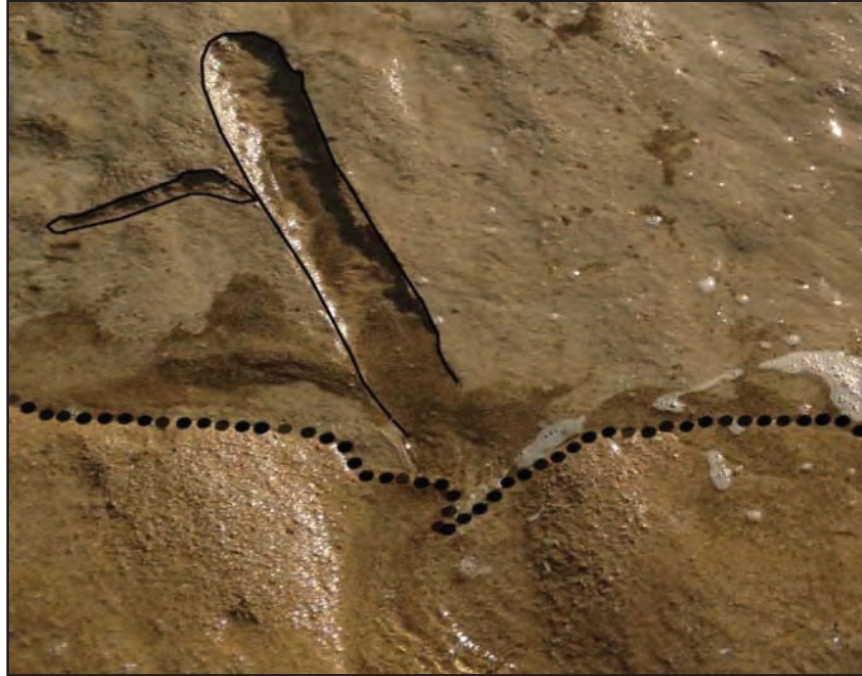


Figure 66. Overview of P23, approximate outline. Dotted line represents the limits of the overlying layer of beach rock.



Figure 67. Plan view of P23, view approximately northwest.

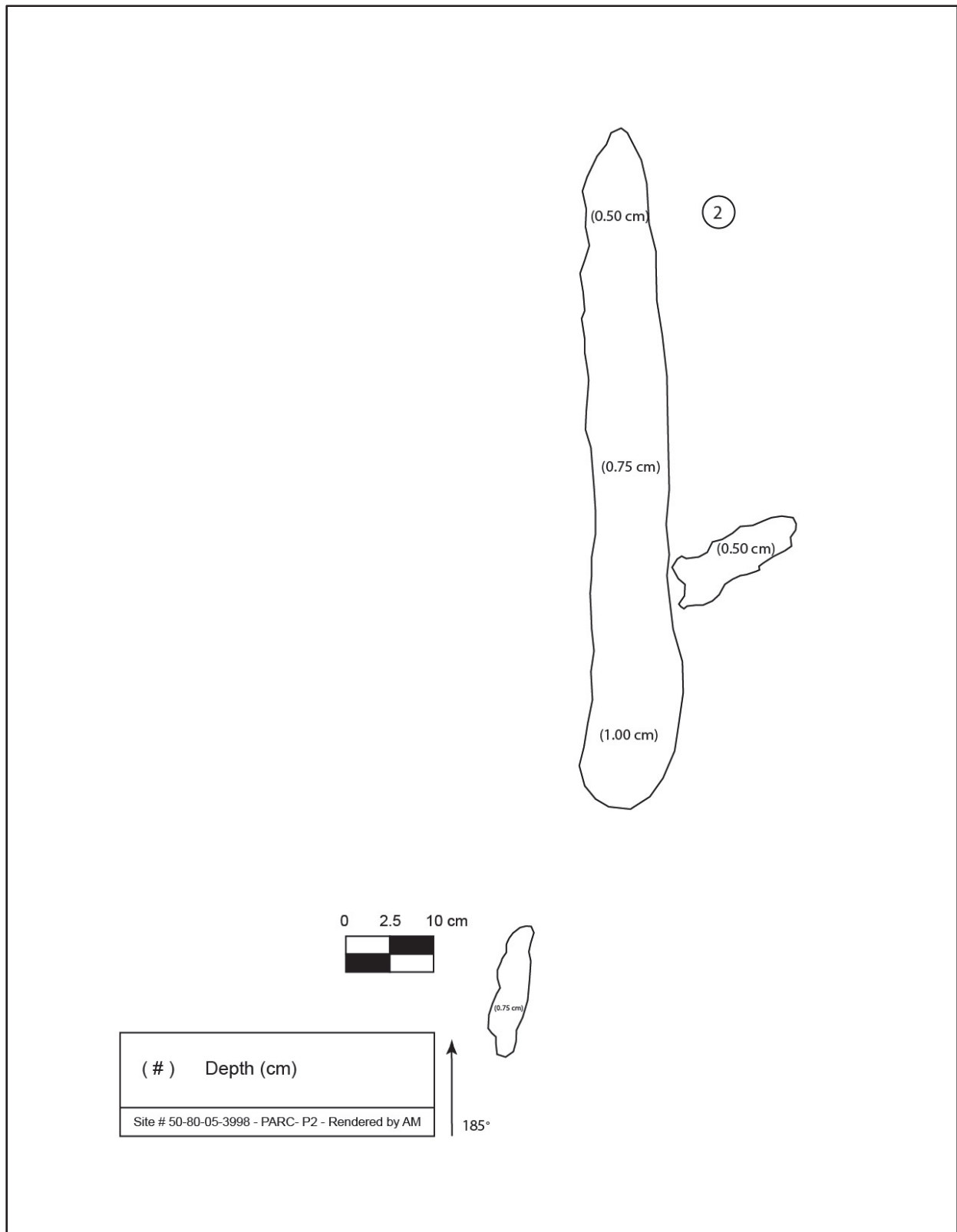


Figure 68. Sketch of petroglyph P23 (formerly P2)

Petroglyph P24

Archaeologists observed P24 in 2016 and 2017 and described it as an anthropomorphic stick figure (Lee and Stasack [1999:175] motif type 1200) (Figure 69 and Figure 70). Sand and tide partially covered P24 in 2016, preventing clear photography as well as precise measurements. Only an area approximately 55x68 cm (22x27 in) was exposed during 2016 field activities. Between the 2016 and 2017 site visits, both sand and beach rock lamination eroded further, and exposed the petroglyph in its entirety and provided an opportunity in 2017 for archaeology crews to complete recording of this petroglyph.

Using Lee and Stasack's (1999:175-177) typology for Hawaiian rock images, P24 can be classified as a type 1200 "simple stick figure," with head type R (regular), arm type D (down), leg type R (regular), and gender N (not indicated). The spine and torso are represented by a vertical line, about 10 cm (3.9 in) in width and 50 cm (19.7 in) in length. Two square brackets intersect perpendicularly with the spine/torso line—one at the northern end of the spine/torso line and the other at the southern end. The northern horizontal segment measures 53 cm (20.9 in) forms the shoulders and/or upper arms of the figure, while the southern horizontal line segment comprising the hips and/or upper legs measures 55 cm (21.7 in). At both ends of both the shoulder and hip line segments, the figure makes a right angle and continues southward in a shorter vertical line segment. The two vertical segments forming the arms measure 38 cm (15 in) long at a depth of 2.5 cm (1 in) on the left, and 37 cm (14.6 in) at a depth of 3 cm (1.2 in) on the right. Each arm terminates in a line segment hand. The left hand measures 21 cm (8.3 in); the right measures 30 cm (11.8 in), terminating with the last 10 cm (3.9 in) forked. Two vertical segments in the southern bracket represent the lower legs; the left leg measures 44 cm (17.3 in), and the right 43 cm (16.9 in). Both legs are pecked 2.5 cm (1 in) deep, and both terminate in a 20 cm (7.9 in) foot.



Figure 69. Plan view of P24 note residual beach rock deposits.

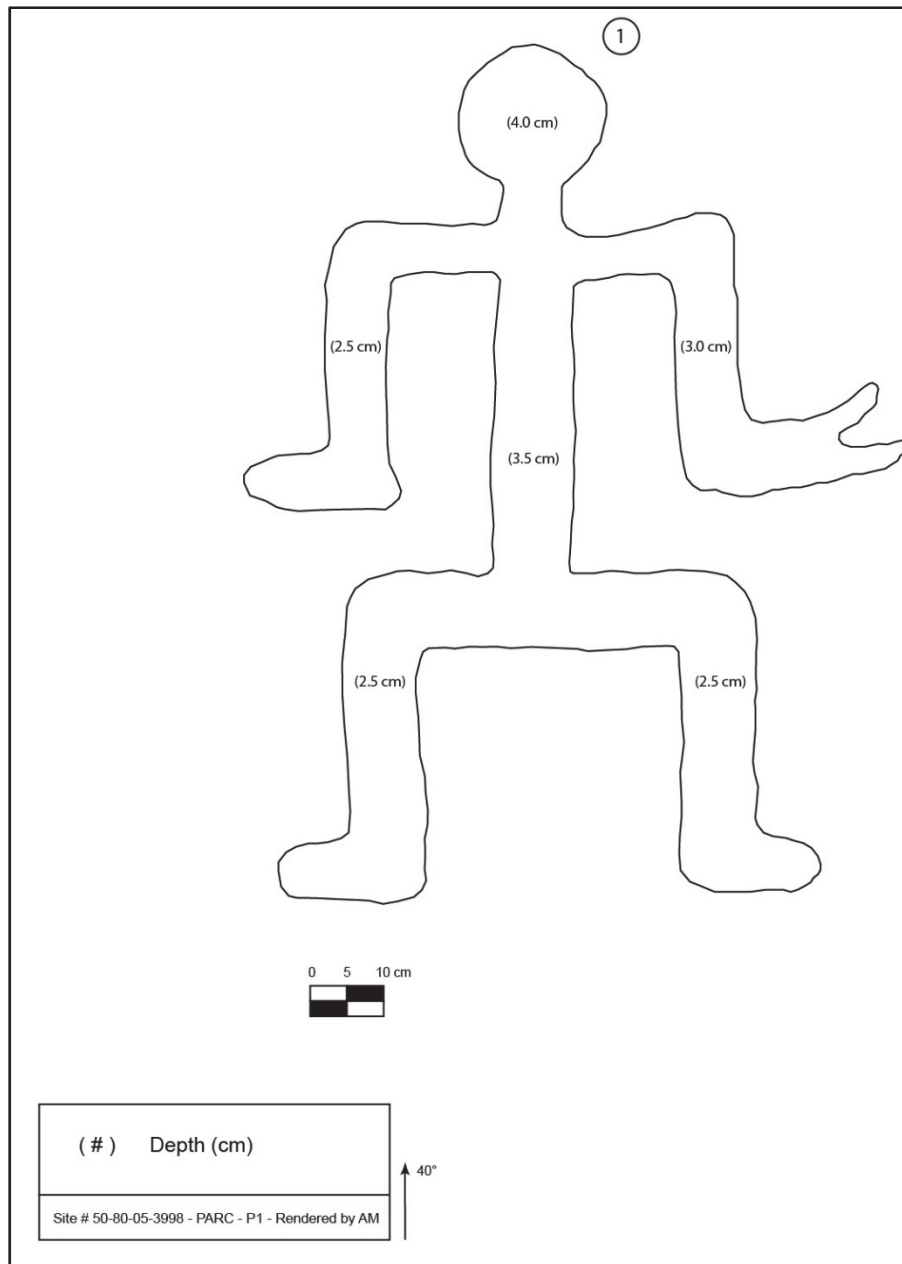


Figure 70. Sketch of petroglyph P24 (formerly P1).

Petroglyph P25

Archaeologists observed P25 in 2017 and described it as an anthropomorphic figure of indeterminate gender (Figure 71 and Figure 73). Portions of P25 were obscured by a layer beach rock, hence accurate measures of its full extent are not available. The exposed portions account for an area 88 cm (34.6 in) tall from the top of the head to where the termination of the feet is capped by lamination, and 70 cm (27.6 in) wide from the farthest extent of the left (west) hand to where the right (east) arm becomes obscured. A line segment comprising the spine and neck reaches 52 cm (20.5 in) from the base of the 5 cm (2 in) diameter head, to its termination under residual lamination at the hips. This axial line segment bisects the 54 cm (21.3 in) long shoulder line segment slightly east-trending of perpendicular, at an angle of 97 degrees. Arms extend *makai* from the termination points of the shoulder line segment at angles parallel with the axial torso line segment, for 32cm (12.6 in) on the left (west) side, and 24 cm (9.4 in) on the right (east). This discrepancy in length between the arms is a result of lamination obscuring the *makai* termination of the right limb. More fully exposed, the left limb ends in a slightly obtuse angle joint with a 20 cm (7.9 in) long hand; the hand is rendered parallel with the hips and shoulders.



Figure 71. Plan view of P25. Note degrading beachrock lamination (orange outline) and temporary shoring measures (green outline).

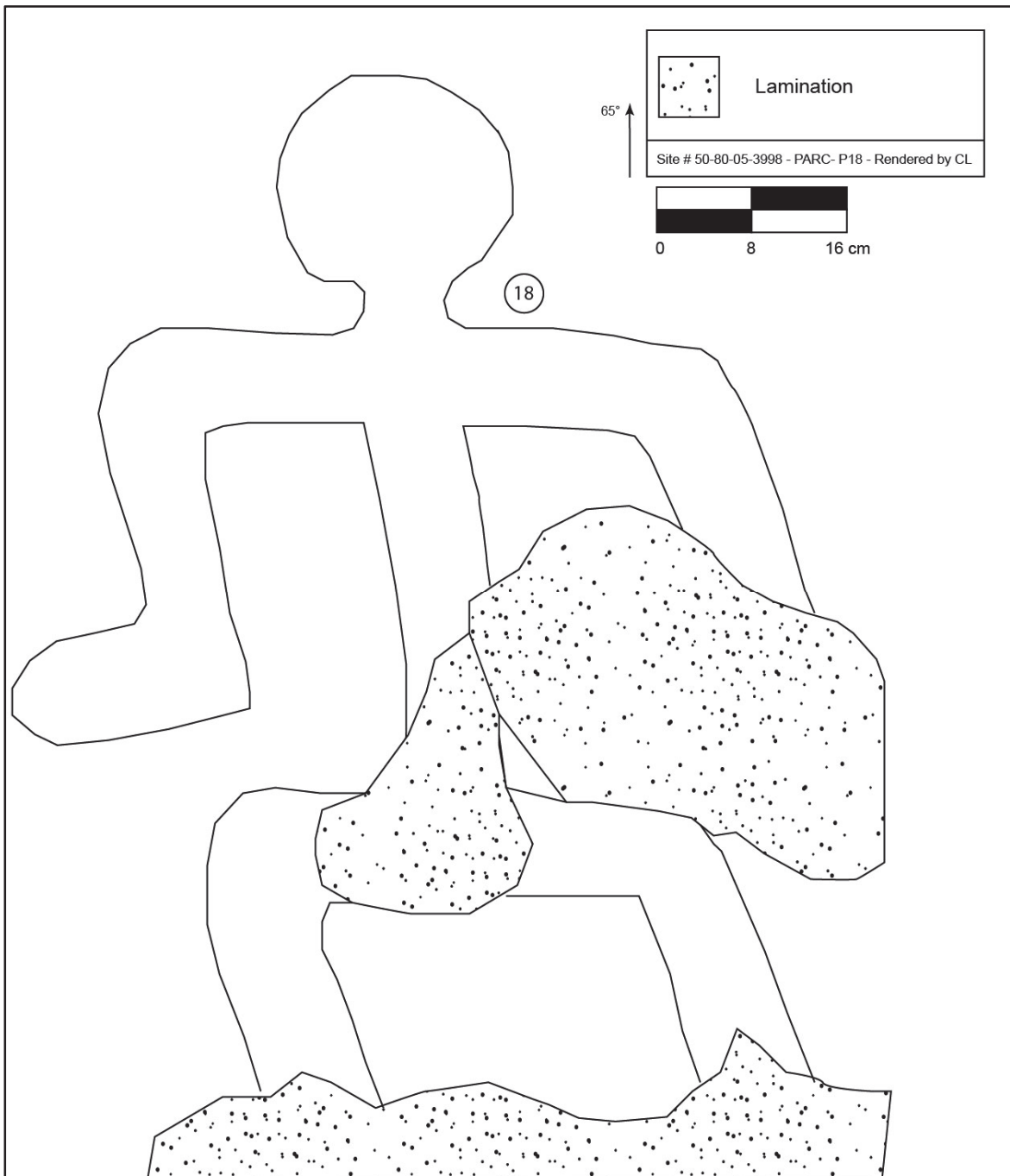


Figure 72. Sketch of petroglyph P25 (formerly P18).

Petroglyph P26

Archaeologists did not directly observe P26. However, in 2017 Mark and Lisa Louviere observed the glyph and provided photographs to PICHTR archaeologists. Although the figure was incompletely exposed, stylistically, P26 deviates from other figurative petroglyphs in the petroglyph field at site 3998 and is interpreted as a zoomorph (Figure 73 and Figure 74). However, visible portions included four non-intersecting marks: one central axial line segment, a round head above this segment, and two unequal lateral arcs, one on each side of the figure curving out and downward. A potential but unconfirmed third arc may exist to the outside of the left (west) arc. This incomplete depiction has zoomorphic characteristics (although the head and axial line segment are also similar to those found in anthropomorphic motifs). Specifically, it shows distinct similarities to the spine and curved shell of a turtle motif, or alternatively an “owl” motif (e.g. Kwiatkowski 1991:39, 56; Lee and Stasack 1999:72, 75, 77, 175-176, 178). It was exposed briefly on 27 July 2018, before being promptly obscured by freshly deposited sand. Consequently, no accurate measurements or renderings have yet been made.



Figure 73. Site 3998, overview of petroglyphs P25 (left) and P26 (right), view approximately southwest (Photo credit: M. Louviere and L. Louviere, 27 July 2017).



Figure 74. P26 close-up, view approximately southwest (Photo courtesy of M. Louviere and L. Louviere, 27 July 2017).

Artifact Sample Collection

USAG-HI DPW CRS personnel collected one artifact and one soil sample from site 3998. The artifact, a coral *ulu maika*, was recovered from the surface of the beach in the vicinity of the section of the seawall that had collapsed. DPW CRS personnel inferred that the artifact had eroded from the portion of the site formerly retained by the seawall given it's out of situ provenience. The *ulu maika*, which was assigned bag number PARC-17-01, weighed 8.6 g (0.3 oz), and measured 33 mm (1.2 in) in thickness and 69 mm (2.7 in) in width (Figure 75 and Figure 76). In addition to this artifact, DPW CRS personnel collected a sample of beach rock from the layer that overlies the layer containing the petroglyph field.



Figure 75. Oblique view of coral *ulu maika* (PARC-17-01) collected from site 3998.



Figure 76. Profile view of coral *ulu maika* (PARC-17-01) collected from site 3998.

Evaluation of Eligibility for the National Register of Historic Places

The criteria to evaluate properties for the National Register of Historic Places (NRHP) are listed in 36 CFR § 60.4 and the evaluation procedures are explained in National Register Bulletin 15 (U.S. Department of Interior 1997), and National Register Bulletin 38 (U.S. Department of Interior 1998). To be considered eligible for inclusion in the National Register of Historic Places, a property must meet at least one of the following criteria for significance:

- (a) associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) associated with the lives of persons significant in our past; or
- (c) embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) have yielded or may be likely to yield information important in prehistory or history

In addition to the four significance criteria, historic properties must retain sufficient integrity in order to convey the overall significance of the historic property. To retain historic integrity, a property will always possess several, and usually most of the aspects of integrity. There are seven aspects of integrity that must be considered:

- 1) Location – the place where the historic property was constructed or the place where the historic event took place.
- 2) Design – the combination of elements that create the form, plan, space, structure and style of the property.
- 3) Setting – the physical environment of the historic property; how a property is situated and its relationship to natural or manmade features within and surrounding the property.
- 4) Materials – the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
- 5) Workmanship – the physical evidence of the crafts of a particular culture or people during any given period in history.
- 6) Feeling – a property's expression of the aesthetic or historic sense of a particular period of time.
- 7) Association – the direct link between an important historic event or person and a historic property;

Site 3998 retains integrity of location, design, setting, materials, workmanship, feeling, and association, and is eligible under Criterion (c), as the petroglyphs are important representations of the traditional Hawaiian aesthetic, and under Criterion (d) as the site has yielded, and has potential to yield information important for prehistory, and history. Significant components of the site include the petroglyphs, and any still intact historic or pre-contact cultural deposits, particularly burials.

The assessment of significance under Criterion (c) comes solely from the presence of 26 known petroglyphs, which convey the traditional Hawaiian aesthetic sense. Many Hawaiians consider traditional Hawaiian petroglyphs such as these to be religious symbols. Mr. Kila attested that he

and his *‘ohana* consider these petroglyphs very significant, particularly petroglyph 22, in which he attributes a connection to the Polynesian demi-God Maui.

The petroglyphs also retain enough integrity. Although the shoreline of Pōka‘ī bay has been altered from development of the sand dunes and fishpond further inland, standing at the petroglyphs still gives a sense of what it was once like. Still visible and relatively unaltered are the sandy beach, ocean, and the nearby *heiau* (Setting, Feeling, and Association). They remain where they were created (Location). The petroglyphs still convey their construction method of pecking (Workmanship), and the sandstone bedrock they were pecked into (Materials), although we cannot identify the tools they used.

The assessment of significance under Criterion (d) comes from the important information that has been recovered from, and may still be present, within the entirety of the archaeological site. Site 3998 has yielded information important to history and prehistory, including information about: lithic production, resource procurement, pre-contact and post-contact Hawaiian burial practices, skeletal morphology and examples of petroglyph typology.

“For properties eligible under Criterion (d), integrity is based upon the property’s potential to yield specific data that address important research questions” (U.S. Department of Interior 1997:46). Based on the previous discoveries of intact buried cultural material, site 3998 likely still contains significant *in situ* buried cultural deposits with potentially datable material that could be found during future excavation or other ground disturbing activities. Accordingly, the site retains integrity of location, material, and design, and association. The extant petroglyphs at the site evidence integrity of workmanship and design. Changes to the surrounding area have diminished the integrities of setting and feeling, but the property retains sufficient integrity to convey the historical significance.

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APPENDIX A: Interview with Glen Makakauali'i Kila

Hālaulani Davan (HD), of PICHTR, and Alton Exzabe (AE), of USAG-HI, interviewed Glen Makakauali'i Kila (GK) on 17 February 2017.

HD: We're here today interviewing Uncle Glen Kila. I want to start by saying *mahalo* for spending the morning with us and for sharing your *mana'o*. Let's talk a little bit about growing up in Nene'u. Do you have any fond memories that you'd like to share?

GK: Nene'u is the name of the sandy beach, which is now called Pōka'i Bay. The original name of Pōka'i was Marae bay or Maraea. Because of the missionaries, they dropped the Rs and made it into an L, so it became Malaea. A lot of the songs that talk about Malaea is [referring to] Pōka'i. Growing up, we were reminded that the Harvey House was Minamina's house, the house my father was born in.

AE: Harvey.

GK: Harvey House. We call it "Minamina's house." That's my father's grandmother's house.

HD: *Mahalo*. How did your ancestors come to settle at Nene'u?

GK: One tradition is that our *tupuna* was Mo'iteha, or Mo'ikeha. Mo'ikeha was a chief that came from Ra'iātea. He landed here on the Wai'anae coast and he left two of his 'ohana, Chief Pōka'i and Chief Mo'ete, or Mo'eke. They loved the 'āina, as described in *mo'olelo* for its sweet water of Eku stream and its delicious taro. Originally the Kila family were from Nene'u. Then they migrated to the Big Island and eventually returned to Wai'anae. But that's only one side of the family. As I shared, our Wai'anae *kupuka'āina* family are lineal descendants of the aboriginal families.

HD: *Mahalo*. How far back in time did your ancestors reside at Nene'u?

GK: Legends and *mo'olelo* say they were here from the beginning of time and from the time of the first migration. The reason why we say we were the first people is because we called Pele a *malihini* goddess. Our families were worshippers of Kāne, Kānenuiakea, the first deity that resided on the Wai'anae coast. The deities, *heiau*, and sacred sites were always very important to our family on the Wai'anae coast – from Ka'ena Point, [also referred to as] Kalaeokala'au, to Pu'uloa. This coastline was part of the Wai'anae *moku*. Then it goes up to Wai'anae Uka, which is in Wāhiawa. Wai'anae Uka was part of the Wai'anae *moku*, which begins at [Pu'u] Ka'aumakua. Our *tutus* would always talk about the sun rising above [Pu'u] Ka'aumakua in the Ko'olaus. On the other side of the Ko'olau on the east is Waikāne. Again, you see all of these Kāne deities were worshipped by our ancestors, the *kupuka'āina* families that never left Wai'anae.

HD: What were the occupations of your ancestors while they lived here?

GK: I would assume they were fishermen. Primarily because there's a lot of stories, *mo'olelo* about the different *ko'a*, fishing places that our *tupunas* fished at. Especially at Malaea was famous for 'ōpelu and weke, and so forth. They did the traditional *hukilau*, which we continue 'til today. During the *hukilau* ceremony at Nene'u, we monitored and evaluated the different populations of species of fish in the area. We were granted the rights to *hukilau* because it is a

traditional way of fishing for our *kupuka'āina* families. Though we were fishermen, more importantly our families took care of, *mālama* the different *heiaus* in Wai'anae *moku*, especially at Kāne'ilio. Kāne'ilio *heiau* was the *heiau* of Kāne that was dedicated to the goddess or *kupua*, the spiritual guardian that protected travelers on both land and sea. We also took care of the other *heiaus*, which were connected to Kāne'ilio called Pahe'ehe'e and Kamohoali'i by Kānepūniu stream. The reason why I'm having problems sharing place names is because our names are very different from what is being recorded. The names of these area have changed because our names are very different from what is being recorded. The names of these areas have changed because of different *ali'i* coming over here like Kamehameha and the Americans.

AE: Uncle, can I ask a question now? Kāne'ilio is also known as Kū'ililoa?

GK: Yes, that is correct,

AE: Is one of the reasons because it's associated with somebody else?

GK: Yes. We are *kupuka'āina*, the original families, and how information was transferred to us from generation to generation was through our family's *marae*. Marae Ha'a Koa is name of our traditional learning center. In reference to Kāne'ilio, it's now known as Kū'ililoa, and that comes with Lonokaehu's migration to Wai'anae after Mo'iteha voyaged here. These different navigators and travelers from Ra'iātea, Tahiti came to Hawai'i, and O'ahu, Wai'anae. So you see the name changes. Today it's referred to as Kū'ililoa. But, if you ask Wai'anae lineal descendants, we always call it Kāne'ilio because that is the foundation for who we are and our place in time. That becomes a name problem. A lot of names in the area, like our sacred sea cave is called Halapo'e. *Hala* meaning passing and *po'e* for people. That sea cave was a place where we dedicated our ancestors leaping into pō. But then that same sea cave is called Pōhaku Lapalapa. That came during Kamehameha's time. The reason why there's two names to a lot of places in Wai'anae is because Kamehameha's people came and changed the names. Each *ali'i* brings their culture, their religion, their belief system that now suppresses ours. I'm sharing the deepest foundation of who we are in Nene'u. Nene'u comes from the word *nenelu*. Our *tutus* would use sometime the older names like Nenelu. Nenelu means marsh because over here was very marshy. The back of the sand dunes from the ocean was marshy and that's why you see petroglyphs all kinds. Pōka'i originally was named in Kamakau's book as Malae Bay.

Our *tupunas* always call the bay, Marae Bay or Maraea Bay. We use the R because that was our pronunciation. Then the missionaries wrote it as Malae. The missionaries changed the Rs to Ls and the Ts to Ks. We had a different way of speaking, but it's the same language. It means the same. That was a problem, people don't know where Marae Bay. We knew it because we used it in our songs and in our teaching from childhood. Our *tutus* took care of Kane'ilio, now known as Kū'ililoa. The other *heiau* is Kamoali'i. There were other *heiaus*, Pah'ehe'e and Kaneikapualena in Kamaile. Malaea Bay consisted of the *'āina* between Mauna Lahilahi and Kane'ilio Point. It was called Maraea, or Marae, or Malae Bay in the past. It's the same bay written with different spellings. The reason why it was called Marae and Maraea was because there was a *marae* center for training *kahunas* on navigation, genealogy, astronomy, et cetera, at the bay. Later the *marae* was called Kane'ilio *heiau*. I know, it gets confusing. At that time, our *tupunas* had two properties. One, *makai* at Nene'u where Minamina's house is and the other at a property in the valley called Lehanonui. Lehanonui is the property where our Marae Ha'a Koa originally was located at. It was in an area called Wailele. If you think of the word *wailele*, it means "jumping water." The reason was because of the artesian spring that our family grew taro

in. Marae Ha'a Koa was known as a *heiau*. In our family tradition, the *heiau* was a *marae* or community educational center for traditional skills training. Around 1933, our *tutu*, Minamina Elizabeth Pūko'oku Kila of the aboriginal families was put on notice to move because her home at Nene'u was being confiscated by the military through executive order of Franklin D. Roosevelt. Both Nene'u families resisted, those who owned kuleana lands and those who were tenants of crown lands.

One of our *kupunas* that was living at Nene'u during that time was Auntie Josephine (Phina) Simmons. She was from the Nu'uaniu family. According to her, at the age 16 she remembered my great-grandmother, Minamina and the Kila family being taken off their lands at Nene'u along with her and her child. She described the eviction by the plantation first turning off the electricity then the water. Without water [it] made life difficult for they had to go to the streams for water to gather water for their plants. All of their crops started to die. That was in the 1930s. At that time, Auntie Phina said they came with the large Navy trailers to pick up the families and started bulldozing the houses down. One story is that the military gave us two houses as compensation for moving us off the land. They're almost a hundred years old, I guess. Auntie Phina mentioned that she and the other families were put on trailers and taken to Mā'ili Point. At Mā'ili Point, they dropped them off to fend for themselves with no support. My great grandmother also owned land in Lehanonui, Waianae valley and was able to relocate there. Because she loved Nene'u and Kane'ilio *heiau*, she traded her *mauka* land with the Mākaha Coffee plantation lands across Kane'ilio *heiau*. Where I and some of our family still own.

Other *heiaus* next to the Wai'anae boat harbor were destroyed. The whole area was considered part of Nene'u or Maraea Bay. Maraea was very familiar with my dad who was a fisherman and a construction worker. As a child my father took me to these fishing areas called *ko'a* around Nene'u.

The homeless families now live on the crown lands near the harbor, like the families who were evicted from Nene'u.

Growing up across Nene'u, I used to play at Kanepuniu stream now called Kaupuni. This stream flowed into Maraea bay and was the source of the breeding grounds for the *anae*, *aholehole* and other fishes. This stream area was part of the Waianae-Poka'i village complex. It was also known as Pu'u Kāhea, a very important site for some of O'ahu kings, like Kahahahana. My grandmother, Julia from the Haulele family, shared about growing up by Pu'u Kāhea and the *heiau* called Haua or Hā'ua. She also talked about the shark *heiau* and Mauna Lahilahi, which was also a deity of the shark.

We have to understand that this Nene'u is not limited to Wai'anae Recreation Center or Poka'i. Traditionally, [it] extends from Kane'ilio Point, or Marae Point, to Mauna Lahilahi. Recently the rec. center was renamed after my uncle Herbert Pilila'au. Some of the families living at Nene'u during the time of the evictions were Glover, Kupihea, Keawakane and Kaaihue.

Growing up in Wai'anae, we didn't have TV, so the ocean and mountains were our playground. The Army rec. center was off limits to the public and the seawall was the barrier between the Native Hawaiians and the Military. They closed the area to us and if we walked on top of the walls we were clubbed and pushed off by the MPs. We were proud and knew where we came from, so we never fostered any hatred for the military because one day we believed that the land will eventually return to us. Look at Kane'ilio *heiau*, the military bulldozed and put up a lighthouse on top of the *heiau* but today it has been restored by the families. During the 60s there were

several houses being rented by the City or Army to military people near the *heiau*. Today it is only a beach park.

HD: *Mahalo*, Uncle. What types of subsistence activities did your ancestors do while living here? I know you mentioned fishing. Did they also gather fruits and other resources, gather aquatic resources, ranching, hunting?

GK: This place was rich with fish and marine life. Growing up here, the coral was alive with fish and seaweed before the big breakwater. My grandpa, John Kila talked about fishing in the fish ponds at Puehu next to Kanepuniu stream. He described the fish pond being shallow where they would collect fish during low tide. The *limu* we picked was called *ogo*.

At Marea we fished using the *hukilau* system. It was not only for catching fish but was used to monitor what kind of fish lived in the area. We would catch mostly the *malihini* fish that were destroying the *ko'a* grounds and return the rest to multiply. We also knew which seaweed was prevalent at that time. That indicated if the reef was healthy or not.

My great grandmother, during the 1930s, or 20s, allowed the Japanese plantation workers who were fired from the sugar plantation to park their canoes on the beach next to her house at Nene'u. These Japanese fishermen needed canoes to reach their *sampans* outside by Nene'u. The story is that they would give her fish in appreciation for parking their canoes at her home. They were always grateful. Many of the Hawaiians and Japanese living at Nene'u were very close and spoke both Hawaiian and Japanese with one another. The Kila family all spoke Japanese because of this close relationship.

HD: And why did they go on strike?

GK: I think because of poor pay. The Japanese were having problems with the pay and the abuse. During that time, Frederick was the manager. He was very cruel to the Japanese. According to our family he would beat the plantation workers. He hated them.

The story is that our families lived both in Wai'anae valley and at Maraea. They would come down to Wai'ane Kai during the fishing period or when there was lots of water. One of my *tutus* would talk about being carried by her grandparent, Tutu Pale, on her neck and walk down the valley to go fishing during the fishing period and live there for weeks. The families were very migratory because Waianae was very arid.

Nene'u played a big role in Hawaiian history during the eighteen-thirties. The people in Waianae were Catholic because Governor Boki and Liliha who lived in Wai'anae were converted to Catholicism. They fought against the Protestants and Queen Ka'ahumanu. My family was part of Liliha and Boki's regime and became Catholics. They were buried at the Nene'u sites that were disinterred by the Army in the 1980s.

AE: One of the things that came up, Catholics are very strict on where they can bury. Has to be Catholic grounds –

GK: Yes.

AE: We know that the Catholic cemetery that's right behind us here –

GK: Right.

AE: But the area that had rosary beads, is there a reason why they were buried outside of the church, or was that designated as something else?

GK: The early Hawaiian Catholic families buried at home. The church you see today was erected with the help of the plantation. Their graveyard is in the back by Kentucky Fried Chicken. If you look at their gravesites, you find Portuguese, Filipino, Spanish names. So during that period of time, they opened it up as a Catholic cemetery. I'm not sure where the Catholic church was though at the time in the Wai'anae. I do know that my grandparents and great grandparents were baptized at the Ewa Catholic church. At that time, the Catholic church for Wai'anae was in Ewa.

AE: I know where the current Catholic church is now. Right next to it used to have the smaller church that they tore down.

GK: Yes.

GK: You see, my Portuguese side of the family, they're all buried inside that Catholic –

AE: Catholic cemetery.

GK: But when we're talking about the royal family, it was in this area.

AE: Do you know if that was designated Catholic grounds as well, on that side where the cabins are on that side?

GK: It was just Catholic families when they buried. Being Hawaiian, they just buried on their *'āina*. I guess this was the beginning of the Catholic conversion. Prior to that our families were Protestants, the original Protestants, which is by the Catholic church on Mill Street. Wai'anae Elementary, Sunflower apartments –

AE: Yeah.

GK: So the town itself moved. The original town, according to my *tutus*, was Army Road. You know this Army Road?

HD: Yes.

GK: Army Road and that road, that Pōka'i Bay road that goes up to Wai'anae Drugstore and in the back there. What I'm describing is that a lot of taro farming of our *kupunas* was in an area called Lehanoiki. Lehanoiki is Wai'anae town on the mauka side and that place was where the dump is, the Wai'anae dump. Used to be all waterways. There was all ponds. We call it "Duck Ponds." When we were growing up we used to have our little canoes and going through these duck ponds. Uncle Joe Wong, one of the *Pākē kupunas* used to have thousands of ducks. You know, all inside the area. And that what became the rubbish dump. So they filled it up. But during our time it was a water way. It was beautiful water ponds. I think your family would know about that. Try ask them about the dump before it was filled. That whole area including Pu'u Kāhea was where the *heiau* Hā'ua and *ali'i* lived. Nearer the ocean were the fishermen and taro farmers. Later they condemned all of the taro patch lands and built a canal. So all the Hawaiians in that area lost their *'āina* through that development

AE: Is the name of the area, Pahoa? [Pointing to a location on a map.]

GK: It's called Pahoa, but actually it's a name of a family. Another name of the family was Ka'apuiki. That's why it's really hard because we call it Ka'apuiki, but we also call it Pahoa. Pahoa

is over here, Pahoa is over there, Pahoa is way up in the valley up here. Because that was the name of the *ali'i*. So they just said this Pahoa.

If you look over here where Nene'u beach is and you see Pu'u Kāhea, this whole area was where they had the coconut grove. The Uluniu o Pōka'i from the chief Pōka'i where he grew it. Kaupuni *heiau*, that was the Dowsett hotel. It was built over it. We don't call it Kaupuni, we call it Kamohoali'i *heiau*.

HD: Uncle, can you clarify on this map which fishpond is which?

GK: [Pointing to a location on a map.] This fish pond is Pu'ehu, according to my grandpa. I'm just telling you, my grandfather, John Kila said this was a fish pond. He been in there. Because of the water rise and fall they would collect all of this fish. Very simple. This old fish pond was Nene'u. This sandy beach was Nene'u, but that was also called Kaha loko. That also was the rise and fall of the water table over here. Parish House, Mill House, Mill Office? Okay, that's by Wai'anae Drugstore. The big tree.

What map is this? From what? 1884? Interesting. I don't remember the tracks going way up there. They went right through here. You can still feel their tracks. You know if we went over there, you going [Kupuna Kila made sounds resembling the sound of wheels going over train tracks]. I mean it's paved, but you can still feel underneath the tracks. Yeah, this was the old fishpond. This sandy area was called Nene'u, which the military now owns all the way from that area. The original, and we can walk over there. You know, I'm trying to present a place, but if I show you I can tell you where our *kupunas* were here, because it never changed. I mean, you had houses over there, but that road that you have, the main highway is still there. According to our *tutus*, just on the opposite side was the railroad tracks and that's how they knew where our family gravesites were. The road that goes out of Army Beach was also train track for the ship cargo loading. They would have these big boats out there and they would bring in things and take out sugar cane or something like that. In the back here was all the taro farms. The Kamalie and the Lehanonui *lo'is*. One thing about Lehanonui was that's where they were planning the pahi kaua war between the Catholics and the Protestants. Liliha went against Ka'ahumanu. When Kamehameha died, she was the most powerful *ali'i* on the island of O'ahu and she could have taken over the government. She said to Ka'ahumanu 'I don't respect your regime.' Liliha hid her guns in the taro patches of Lehanonui on the other side of Nene'u. To prevent the war, Ka'ahumanu used Hoapili, governor Liliha's father to *ho'oponopono* the situation.

AE: Let's take a look at the petroglyphs on the tablet before we walk over to the house.

GK: [Looking at pictures of the PARC petroglyphs on the tablet.] As I recall, there were a lot of human figures. It's similar to a lot of human figures of a procession. It was very common on the Wai'anae coast in the area called Kea'au. Kea'au has something similar to that where you have these human figures of men and women and all that. When I looked at the petroglyphs here, I seen a very significant petroglyph. That was with the one with the fingers going down. Or the one going up. My interpretation, just by looking at it was interpretation of Maui, the demigod, Maui. Because he played a big role in our mo'olelos over here. And the reason why I say that because the way the fingers are from the east is like the rising sun to the setting sun. So it's a religious symbol. Like what we have for Christianity, the cross or the other symbols. I didn't see too many female figures, which is very unusual. And because it's such a large figure, that's why I believe it is a symbol of Maui. You know, snaring the sun. As I stated the rising sun to the setting sun. There were other pictures, that one looks like a child in there, you remember?

HD: One thing that came up was that some people think that this one [pointing to picture of petroglyph on tablet] is in fetal position. Do you know what that may possibly mean?

GK: You know, I would have to think about it because is it really 'fetal?' Kind of makes me think that I don't want to call it fetal.

HD: Yes, yes.

GK: I'm trying to refer to any of the *mo'olelos* that talk about that. You know, the birth of the child. The way I see it, families that dwelled in this Nene'u because of their relationship to the stream, which was the water system. You know it was an all-year, annual waterway. Most of the other ones like Ma'ili'ili'i, Ma'ipalaoa, and Ulhawa were intermittent. Mākaha is also intermittent. But when you call Kanipuniu or Kaupuni stream, that was year-round, so it's very, very different. You had a settlement over here, the original families that could live year-round here. Although water was limited and the people from the valleys or in the Wahiawā area would come over here migrate. So we were migratory families according to our *kūpuna*. It wasn't like Wai'anae was only Wai'anae and Wahiawā was only Wahiawā. No, they moved back and forth. Our *kūpunas* also said that families from Mākua are related to the families of Wai'anae. There was a movement according to the fish migration or *kapus* and the availability of water.

I know that we were told from long ago that these stick figures are the oldest type of figures. They predate a thousand years. That's what were told to use by archaeologists at that time. I've seen similar petroglyphs like these stick figures at Piliokahe. Piliokahe were stick figures. The triangular figures are the ones that I seen at Kea'au, Kamaile, and Maunalahilahi. Those are the triangular ones. So those are they said from the 1600s or about 400 years old. Our *kūpunas* talked about living here during the time of pō, during the earliest time, before the coming out from the migrations from Ra'iātea. Like I said, our families were so arrogant that they would call Pele and Kamoali'i, *malihini* gods. Hi'iaka, too, was a *malihini* god, but yet Hi'iaka recorded our family ancestor Marae Ha'a Koa on Kaua'i. There's a Marae Ha'a Koa on Kaua'i, Maui, Big Island as well as in Lehanonui, Wai'anae.

In reference to that fetal stage, the reason why I don't want to say too much because I did see a fetal burial, and that was at 'Ohikilolo. I forgot who was the archaeologist that worked with us. The fetal burial had its legs and body bundled tightly together with a faint *tapa* lining that encased the body. So when I look at that, it does remind me of a fetal burial. I don't want to speculate until I can see the whole picture.

I want to just end by saying that just because we were off of the property since 1933 didn't mean that we were not familiar with the history over here. We still carried on our love for the *'āina*. Our grandparents took us to the sites over here when we were young and we carried on our stewardship of the property as best as we could. One of the major desecration over here was the canal. Because the canal destroyed a lot of the taro farms over here, up in the valley including the Wai'anae dump. That, too, destroyed a lot of our fish ponds and water ways that were once rich with natural resources for the community. The Fredrick Meyer's house, what we call the old plantation house, was built over the *heiau* called Hā'ua. He wasn't the one who destroyed the *heiau*. Do you know who he is?

AE: Not sure.

GK: Yeah, was one of the older plantation managers. Wasn't Fredrick Meyers. Fredrick Meyers was very sensitive because he was a German married to a Hawaiian woman. He kept a lot of the places preserved. Now they're finding a lot of the *iwi* in that area, including the Mormon church next door. There have been a lot of burials in that area, too. When you talk about burials, again, this was a high sand dune area, so this would have been, a lot of the *iwi* would have been taken out already. You know, removed. The only places would be where our families actually lived. That would be the reason why they found *iwi* there. Other than that you talking about maybe two, three feet higher sand area.

AE: That explains when they did the excavations in the eighties, some of them were only less than a foot beneath the surface. Because used to be in the dunes, but when the military came in and they first made the first rest camp, they had to flatten it.

GK: I see.

AE: Unfortunately I don't think we have any record of what they did with the sand when they flattened it the first time where [inaudible] disturbance could have [inaudible].

GK: During that time, like I said, they would mine the sand all in front of here. You know, at that time we weren't aware. For our families, we knew where our graves were, because we planted trees over them. That's why that hau tree is very important. I think if we dug around that area would find more family graves. This Army road was another original road, too. I think the railroad track was on this side of the fence, too. If you guys can check it out.

AE: Yeah, I think when we georeference some of this stuff we might be able to see an approximate, a better approximation [inaudible].

GK: Because some of our tutus said that the road, the railroad track went inside here. You know they started from that side and then swung that way for whatever reason. It could also be because of the sand dunes. As you look over here you can see that mountain tip. That side is part of the Wai'anae *wahi pana*. You know these place had Pō'kaī, the coconut grove, and also the settlement of the *ali'i*s all on this side. That would be the *holua* that goes to Pō'kaī. Then you can see right over there in front of us is Kuwale. So all of these significant mountains, Kawiwi and Ka'ala were all places of *mana* that gave the spiritual *mana* over here at Nene'u.

APPENDIX B: Interview Consent Form

United States Army Garrison, Hawaii
Directorate of Public Works
Environmental Division, Cultural Resources

347 Wright Avenue | Building 105, Wheeler Army Airfield | Schofield Barracks, HI 96857-5013 | Phone: (808) 655-2878

AUTHORIZATION TO RELEASE FORM

Interview Consent

Directorate of Public Works, Cultural Resources (DPW-CR) appreciates the generosity of the kūpuna and kama'āina who are sharing their knowledge of cultural and historic places, experiences of the past and present cultural practices for the Preliminary Documentation of Petroglyphs at Site 50-80-05-3998 at Pihila'au Army Recreation Center.

We understand our responsibility in respecting the wishes and concerns of the interviewees participating in this Project. Your participation is voluntary. You may choose to stop at any time if you feel comfortable. Keep in mind that your words may become public record and will become the property of the United States Army. Please let the researcher know if you are uncomfortable sharing any particular information before s/he writes it down or records it. Here are the procedures we promise to follow:

1. The interview will not be voice or video-recorded and you will not be photographed without your knowledge and explicit permission.
2. You will have the opportunity to review the written transcript or notes of our interview with you. At that time you may make any additions, deletions or corrections you wish.
3. You will be given a copy of this release form and the interview transcript or notes for your records

For your protection, we need your written confirmation that:

1. You consent to the use of the complete transcript and/or interview quotes for reports on cultural site and practices, historic documentation, and/or academic purposes.
2. You agree that the interview may be made available to the public.

I, Erin Kila (please print your name), agree to the procedures outlined above and, by my signature, give my consent and release for this interview and/or photograph to be used as specified.

Erin Kila
(Signature)

2/17/17
(Date)

APPENDIX C: Land Claims Awards

The following are LCA claims within PARC: LCA 843 Apana 2 a houselot claim by Punahoa, LCA 7713 Loko Lupoko, and LCA 3091 Apana 2 a houselot claim by Kamakaluhiwa, Widow of Kuaana.

Claim Number: 00843

Claimant: Punahoa

Island: O'ahu

District: Wai'anae

Ahupua'a: Wai'anae

'ili: Pāhoa, Wailele, Lehano

No. 843, Punahoa, Wai'anae, October 15, 1847

N.R. 470-471v2

To the Honorable Land Commissioners of the Hawaiian Islands, Greetings: I hereby tell you of my land claim at Wailele in Wai'anae, Island of O'ahu. It is bounded on the north by the land of Kauhiahwa, on the east by the land of Kaaiia and the land of Keonekapu, on the south by the land of the land of Kekio, on the west by the government road. The second of my claims is at Lehano in Wai'anae. It is bounded on the north by the land of Hauna, on the east by the land of Kanaloauoo, on the south by the stream, on the west by the land of Kahai. My house lot claim is at Pāhoa in Wai'anae and it is bounded on the north by the government road, on the east by the house lot of Luahiwa, on the south by the stream, on the west by the house lot of Hauna. The second of my house lot claims is founded [bounded] on the north by the stream, on the east by the houses of Kamokuwaiole, on the south by the shore, on the west by the house of Kuakahi.

PUNAHOA X

F.T. 297-298v9

No. 5236B, Punahoa

Claimant appeared & made oath that his claim was duly made out & presented by Maakuia. The same was therefore admitted to a hearing.

Kaapuiki, sworn says, the land of claimant is 1 loi and a kula called Pōka'i in the 'ili of Kualele, Wai'anae, O'ahu. One apana.

Bounded:

Mauka by the koele Kalia

Ewa by the 'ili Pāhoa

Makai by the paaina

Waialua by the kuleana of Kaapuiki.

Claimant received his land from Boki in the time of Liholiho & held it in quiet possession until A.D. 1846 when the konohiki took it away without any reason except of his own accord, after the manner of old times. Claimant appeals to the Land Commission for a title.

Kalama, sworn confirms the above testimony as true.

N.T. 410v9

No. 5236B, Punahoa (court action)

Claimant, sworn, Maokuia wrote his claim and have probably filed it in Honolulu, no objections.

Kaapuiki, sworn, he has seen his land of one patch and the greater part of Pōkaʻī which is a pasture in the ʻili of Kualele in Waiʻanae, Oʻahu - 1 section.

[It is bounded]:

Mauka by Kaliu, a koele

Ewa by Pāhoa, an ʻili

Makai by Land enclosure

Waiʻanae by Kaapuiki's interest.

Land from Boki at the time of Liholiho, no objections earlier, but in 1846 it was taken by the konohiki as it was done in the old days, earlier the place had been for the tenants, Punahoa appeals to the land commissioners.

Kalama, sworn, he has known in the same way as Kaapuiki. The konohiki had leased the place for himself, was another reason for his taking of the land. The place is for the konohiki.

[Award 843; R.P. 7221; Pāhoa Waiʻanae; 1 ap.; .293 Ac.]

Claim Number: 3091

Claimant: Kuaana

Other claimant: Kamakalauhiwa, widow; heir

Island: O'ahu

District: Wai'anae

Ahupua'a: Wai'anae

'ili: Pohakoi, Pāhoa

No. 3091, Kuaana, Wai'anae, January 8, 1848

N.R. 46-47v4

The Honorable Land Commissioners, Greetings: I hereby state my claim for land and house lot. This claim is at Pohakoi and is bounded on the north by a kula and the government road, on the east by the lo'is of Haa, on the south by a kula and the pali, on the west by a kula and the houses of Kakio ma. The claim for my houses is at Unuiki and is bounded on the north by the houses of Kahonu, on the east by the pond, on the south by the houses of Kauakahi, on the west by the sea. That is my claim for land and house, which are my own, from Kaapuiki.

I am, with thanks,
KUANA

F.T. 310v9

No. 3091, Kuaana, claimant, died in 1849

Present, his widow, Kamakalauhiwa, to prosecute the claim.

Akaloa, sworn says, the land of claimant is a moo aina called Pohakoi in the 'ili of Lehanonui, Wai'anae, O'ahu. It contains 6 lois & a kula in one apana & a kahuahale in another. It is bounded.

Apana 1:

Mauka by the moo aina of Haa

Ewa by the kahawai

Makai by the house of Kakio

Waialua by the public road.

Apana 2, Kahuahale:

Mauka by the loko Lopoko

Ewa by the house of Kauakahi

Makai by the sea shore

Waialua by the house of Kahi.

Claimant received his land from Kaapuiki in the time of Liliha & has held it in quiet until now.

Kapepe [sic], sworn says, the testimony as above is true & his own is like it.

N.T. 426v9

No. 3091, Kuaana, deceased in 1849

Kuaana's wife Kamakalauhiwa, has come to appeal for this claim.

Akaloa, sworn, he has seen his land, a moo land at Pohakoi in the 'ili of Lehanonui in Wai'anae, O'ahu - 5 patches and a pasture in 1 section. A house site is the second section.

Section 1:

Mauka, Haa's moo land
Ewa, A stream
Makai, Kakio's house
Wai'anae, Government road.

Section 2:

Mauka, Leepoko pond.
Ewa, Kanakahi's house
Makai, beaches
Wai'anae, Kahi's house.

Land from Kaapuiki at the time of Liliha , no disputes.

Kapela, sworn, he has known in the same way as Akaloa.

[Award 3091; R.P. 1061; Pohakoi Lehanonui Wai'anae; 1 ap.; 1.151 Acs; (Kuaana for Kamakalauhiwa); Pāhoa Wai'anae; 1 ap.; .1 Ac.]

Claim Number: 07713

Claimant: Kamamalu, Victoria

Island: O'ahu

District: Wai'anae, Kona, Ewa, Koolau &

Ahupua'a: Kaluanui, Kawaiiloa, Paalaa,

'ili: Opukaula, Kilauluna, Hananau, Kanenelu, Pohe, Kaulu,

Kapuna, Poupouwela, Kapaloa, Panio, Kuhialoko,

Kahoaiai, Papaa, Kaohai, Kalona, Kuhiawaho,

Kapuaihalulu, Haleaka, Piloaumo, Kionaole,

Hanakehau, Kapopou, Kalimukele, Kumuulu, Hapuna,

Waialua, Kalaepohaku

No. 7713, Victoria Kamamalu, Land Division

N.R. 440-444v5

1.

Opukaula, `ili, Waimano, Ewa, O'ahu

Kilauluna, `ili, Waimano, Ewa, O'ahu

Hananau, `ili, Waimano, Ewa, O'ahu

Kanenelu, `ili, Waimano, Ewa, O'ahu

Pohe, `ili, Waimano, Ewa, O'ahu

Kaulu, `ili, Waimano, Ewa, O'ahu

Kapuna, `ili, Waimano, Ewa, O'ahu

Poupouwela, `ili, Manaiki, Ewa, O'ahu

Kapaloa, `ili, Waiawa, Ewa, O'ahu

Panio, `ili, Waiawa, Ewa, O'ahu

Kuhialoko, `ili, Waiawa, Ewa, O'ahu

Kahoaiai, `ili, Waiawa, Ewa, O'ahu

Papaa, `ili, Waiawa, Ewa, O'ahu

Kaohai, `ili, Waiawa, Ewa, O'ahu

Kalona, `ili, Waiawa, Ewa, O'ahu

Kuhiawaho, `ili, Waiawa, Ewa, O'ahu

Kapuaihalulu, `ili, Waiawa, Ewa, O'ahu

2.

Haleaka, `ili, Waiawa, Ewa, O'ahu

Piloaumo, `ili, Waiawa, Ewa, O'ahu

Kionaole, `ili, Waiawa, Ewa, O'ahu

Hanakehau, `ili, Waiawa, Ewa, O'ahu

Kapopou, `ili, Waiawa, Ewa, O'ahu

Kalimukele, `ili, Waiawa, Ewa, O'ahu

Kumuulu, `ili, Waiau, Ewa, O'ahu

Hapuna, `ili, Kalihi, Kona, O'ahu

Waiaula, `ili, Kalihi, Kona, O'ahu

Kalaepohaku, `ili, Kapalama, O'ahu

Kauluwela, `ili, Honolulu land, O'ahu

Kanewai, `ili, Waikiki, O'ahu

Kapaakea, `ili, Waikiki, O'ahu

Komoawaa, `ili, Waikiki, O'ahu

Waialae, `ili, Waikiki, O'ahu

3.

Halawa, Ahupua`a, Koolau, Molokai

Kaa, Ahupua`a, Lanai

Kelaweia, Ahupua`a, Lahaina, Maui
Moalii, Ahupua`a, Lahaina, Maui
Aki, Ahupua`a, Lahaina, Maui
Paunau, Ahupua`a, Lahaina, Maui
Waihee, Ahupua`a, West Puali, Maui
Kalua, `ili, Wailuku, Maui
Haiku, Ahupua`a, Hamakualoa, Maui
Makapuu, Ahupua`a, Hana, Maui
Kawela, Ahupua`a, Hana, Maui
Onouli, Ahupua`a, Hana, Maui
Kaumanu, Ahupua`a, Hana, Maui
2 Kahaleh`ili, Ahupua`a, Hana, Maui
3 Kaeleku, Ahupua`a, Hana, Maui
Honokalani, Ahupua`a, Hana, Maui
Kawaipapa, Ahupua`a, Hana, Maui
5 Niumalu, Ahupua`a, Hana, Maui
2 Palemo, Ahupua`a, Hana, Maui
3 Pakakia, Ahupua`a, Hana, Maui
2 Kahuakamalii, Ahupua`a, Hana, Maui
Ihuula, Ahupua`a, Hana, Maui
Oloewa, Ahupua`a, Hana, Maui
4 Papalauhau, Ahupua`a, Hana, Maui
4 Mokae, Ahupua`a, Hana, Maui
Puekahi, Ahupua`a, Hana, Maui
Puuiki, Ahupua`a, Hana, Maui
3 Kapohoe, Ahupua`a, Hana, Maui
Pukuilua, Ahupua`a, Hana, Maui
2 Kaou, Ahupua`a, Hana, Maui
Halehana, Ahupua`a, Hana, Maui
Kaukuhalahala, Ahupua`a, Hana, Maui
2 Piapia, Ahupua`a, Hana, Maui
Koakapuna, Ahupua`a, Hana, Maui
Kawaalua, Ahupua`a, Hana, Maui
Pueokahi, Ahupua`a, Hana, Maui
Pueokauiki, Ahupua`a, Hana, Maui
Pohakanele, Ahupua`a, Hana, Maui
Ahuakaio, Ahupua`a, Hana, Maui
Kihapuhala, Ahupua`a, Hana, Maui
Papahawahawa, Ahupua`a, Hana, Maui
Muolea, Ahupua`a, Hana, Maui
Puuhaoa, Ahupua`a, Hana, Maui
Kahalawe, Ahupua`a, Hana, Maui
Ohia, Ahupua`a, Hana, Maui
Kolokole, Ahupua`a, Hana, Maui
Kapuumahuka, Ahupua`a, Hana, Maui
Mahulua, Ahupua`a, Hana, Maui

Poopoo, Ahupua`a, Hana, Maui
Lapalapaiki, Ahupua`a, Hana, Maui
Waieli, Ahupua`a, Hana, Maui
Paihala, Ahupua`a, Hana, Maui
Kalihi, Ahupua`a, Hana, Maui
Kakiweka, Ahupua`a, Hana, Maui
Ka'ilihakoko, Ahupua`a, Hana, Maui
Puukohola, Ahupua`a, Hana, Maui
Kahalawe, Ahupua`a, Hana, Maui
Puaaluu, Ahupua`a, Hana, Maui

Kahua, Ahupua`a, Kohala, Hawaii
Honokane, Ahupua`a, Kohala, Hawaii
Holualoa 1,2, Ahupua`a, Kona, Hawaii
Kahaluu, Ahupua`a, Kona, Hawaii
Keopunui, Ahupua`a, Kona, Hawaii
Keauhou, Ahupua`a, Kona, Hawaii
Honuaino, Ahupua`a, Kona, Hawaii
2 Honokua, Ahupua`a, Kona, Hawaii
Haukalua 1, 2, Ahupua`a, Kona, Hawaii
Pakini, Ahupua`a, Kau, Hawaii
Keauhou, `ili, KapapalaKau, Hawaii
Kahuai, Ahupua`a, Puna, Hawaii
Kauhaleau, Ahupua`a, Puna, Hawaii
Kauaea, Ahupua`a, Puna, Hawaii
Piopio, `ili in Waiakea, Puna, Hawaii
Kalalau, Ahupua`a, Puna, Hawaii
Honohononui, `ili in Waiakea, Puna, Hawaii
Pahoehoe, Ahupua`a, Puna, Hawaii
Onomea, Ahupua`a, Puna, Hawaii
Alae, Ahupua`a, Puna, Hawaii
Kekelani, `ili in Waimanu, Hamakua, Hawaii
Kuilei, Ahupua`a, Puna, Hawaii

N.R. 569v5

No. 7713, Victoria Kamamalu

Huleia, a district of Kauai, however, the Government cattle shall graze there.
Makaweli, Ahupua`a, Kona, Kauai
Places unsuitable for the soldiers and the fort
Maunalua, `ili, Waimanalo, Koolaupoko, O'ahu
Pāhoa, `ili, Wai'anae, Wai'anae, O'ahu
Kaluanui, Ahupua`a, Koolauloa, O'ahu
Kawailoa, Ahupua`a, Waialua, O'ahu
Paalaa, Ahupua`a, Waialua, O'ahu
Kaelepulu, `ili, Kailua, Koolaupoko, O'ahu
Kikiwelawela, `ili, Kaneohe, Koolaupoko, O'ahu

Victoria Kamamalu's lands in the Mahele by the Mo'i, in the month of January 1848, continued:

Huleia, a district of Kauai, however, the Government cattle shall graze there.

Makaweli Ahupua`a, Kona, Kauai.

F.T. 408-411v3

No. 7713, V. Kamamalu

No. 10474, N. Namauu

No. 7716, R. Keelikolani

No. 7714B, M. Kekuaiwa

No. 7712, M. Kekuanaoa [7714B]

A True Copy

(Sig). A. G. Thurston

Clerk Interior Dept.

Copy of the Division of Lands agreed upon in Privy Council August 27, 1850

Kekuanaoa and his children to receive fee simple titles for those lands here set off to them - they resigning to the Government all title to the other lands granted them in the Buke Mahele.

No. 7713, Ko Victoria Kamamalu mau aina ma ke ano Alodio

No. 7713, Ko Victoria Kamamalu mau aina ma ke ano Alodio

Honokane, Ahupua`a, Kohala, Hawaii

Kahua, Ahupua`a, Kohala, Hawaii

Keopu, Ahupua`a, Kona, Hawaii

2 Holualoa, Ahupua`a, Kona, Hawaii

Kahaluu, Ahupua`a, Kona, Hawaii

Keauhou, Ahupua`a, Kona, Hawaii

Honuaino, Ahupua`a, Kona, Hawaii

Honokua, Ahupua`a, Kona, Hawaii

Pakini, Ahupua`a, Kau, Hawaii

Keauhou, `ili is Kapapala, Kau, Hawaii

Kahuwai, Ahupua`a, Puna, Hawaii

Kauwalehau, Ahupua`a, Puna, Hawaii

Kauaea, Ahupua`a, Puna, Hawaii

Honohononui, `ili o Waiakea, Hilo, Puna, Hawaii

Piopio, `ili o Waiakea, Hilo, Puna, Hawaii

Kalalau, Ahupua`a, Puna, Hawaii

Pahoehoe, Ahupua`a, Hilo, Hawaii

Alae, Ahupua`a, Puna, Hawaii

Onomea, Ahupua`a, Puna, Hawaii

Kuilei, Ahupua`a, Hamakua, Hawaii

Kekelani, `ili no Waimanu, Hamakua, Hawaii

Kalua, Ahupua`a, Wailuku, Maui

Waihee, Ahupua`a, Puali, Kom. [Komohana]

Aki, Ahupua`a, Lahaina, Maui

Paunau, Ahupua`a, Lahaina, Maui

Kelawea, Ahupua`a, Lahaina, Maui

Halawa, Ahupua'a, Koolau, Molokai

Kaa, Ahupua, Kona, Lanai

Maunaloa, 'ili no Waimanalo, Koolaupoko, O'ahu
Kaelepulu, 'ili no Kailua, Koolaupoko, O'ahu
Kikiwelawela, Ahupua'a, Heeia, Koolaupoko, O'ahu
Kaluanui, Ahupua'a, Koolauola, O'ahu
Kawailoa, Ahupua'a, Waialua, O'ahu
Paalaa, Ahupua'a, Waialua, O'ahu
Waiawa, Ahupua'a, Ewa, O'ahu
Pāhoa, 'ili no Wai'anae, Wai'anae, O'ahu
He mau 'ili ma Waimano, Ewa, O'ahu
Poupouwela, 'ili in Mananaiki, Ewa, O'ahu
Kumuulu, no Waiau, Ewa, O'ahu
Kapuna no Kalihi, Kona, O'ahu
Waiaula no Kalihi, Kona, O'ahu
Kalaepohaku no Honolulu, Kona, O'ahu
Kauluwela no Honolulu, Kona, O'ahu
Kapaakia no Waikiki, Kona, O'ahu
Komowaa no Waikiki, Kona, O'ahu
Kanewai no Waikiki, Kona, O'ahu
Waialae no Waikiki, Kona, O'ahu
Makaweli, Ahupua'a, Kauai
Huleia, Puna, Kauai
Kikiaola, Waimea, Kauai

Ko ke Aupuni hapakolu loko o ko V. Kamamalu mau aina. Makapuu, Kawela, Oniuli, Kaumanu, 2 Kahaleh'ili, Kaeleku, Honokalani, Kawaipapa, 5 Niumalu, 2 Palemo, 2 Pakakea, Nahuakamii, Ihuuloi, Hoewaa, 2 Papauhau, Hamoa, 3 Mokae, Puekahi, Puuiki, 3 Pohue, Pukuilua, Haou, Halehana, Kaukuhalahala, Peapea, Koakupuna, Kawalua, Pueokauiki, Pohakanele, Ahuakaio, Kihapuhala, Papahawahawa, Muolea (The above Ahupua'a in Hana, Maui) Moalii Ahupua'a Lahaina Maui.

F.T. 538-539v3

No. 7713, M. Kekuanaoa (for Victoria), 1 April 1854, Counter the government

A. Paki, sworn, for the Government, Knows that the fish pond called "Kawa", in Honolulu, was broken up in the year 1847 & the materials of the wall taken to help to construct the wall or breakwater erected by the Government on the west side of the harbor. The Government got permission from M. Kekuanaoa to take the materials of the wall of "Kawa" to make the Breakwater. He did not give the Government any portion of the soil of "Kawa," or of "Kaakaukukui." The land on which now stands the Government slaughter House, occupied by John Meek, is a portion of the 'ili of "Kalui." [?] I do not know what title the Government has to that place, but I have heard that Kekualoa had given it to the Government - this I state as hearsay only.

G.P. Judd, sworn, for Government, says, I was the Hawaiian Minister of Finance in the year 1847, and remember when the wall was built from the present lime kiln House running over to the land of sea & Sumner, Known as Kohololoa." It was built to prevent the filling up of the Harbor of Honolulu. It was thought advisable to remove a part of the wall of a fish pond in "Kawa," which I supposed belonged to the Government. Finding, however, that it was claimed by M. Kekuanaoa,

for Victoria, Mr. Young and I applied to him for the privilege of removing it, which he granted to us, and accordingly it was removed under the direction of Piikoi and the stones put into the new wall first named, and my impression is that we built a new partition wall for the Governor's fishpond. I will not be certain however. Piikoi will know. Piikoi ran a plow through the fish pond to give direction to the stream and divert it from the harbor. I never knew of any definite cession of the fish pond or other land to the Government, but I think Kekuanaoa consented that the Government should divide the fish pond, in Privy Council. I didn't know that he claimed the land where the wall runs from the Lime Kiln, but I don't recollect that he said anything particular about it.

F.T. 548v3

No. 7713, M. Kekuanaoa (V. Kamamalu), April 19, 1854.

Keone Ana, sworn says, I have nothing to testify to in reference at the claim of M. Kekuanaoa in Kaakuukukui, pertaining to the wall built to protect the harbor from filling in, which wall runs from the Lime Kiln to Sea & Sumner's land.

I am sure he gave it to Government in 1847, but I will not swear anything about it until I have laid the matter before the Privy Council, as to "Kaliu," he said he had nothing to say.

F.T. 555-557v3

No. 7713, M. Kekuanaoa (for V. Kamamalu)

Keoni Ani, sworn, presents a plan which he says was made by Order of the King in Council, in the year 1848, perhaps, and placed in my charge, as minister of the Interior. The plan shows two rows of lots laid out from the Beach seaward. The Government built the wall or breakwater in the year 1847, I think. The Government claimed no more land as I understood the matter than what is shown on the plan. When the wall was built by the Government no opposition was made to its erection by any private party. The wall was erected by the Government to prevent the harbor from being filled up with the mud washed down by the Nuuanu River. When this wall was built the wall of the loko called "Kawa" was taken down and the size of the loko reduced. After the wall was built, this plan was made by the Government and laid before the Privy Council, who resolved to sell the lots as laid out for the benefit of the Treasury. Two of the lots were accordingly disposed of with the approval of the Privy Council, to Louis Gravier. After that, a proposition was made in Privy Council to sell some of the lots to a steam boat company, but at the suggestion of M. Kekuanaoa, the proposition was dropped. Kekuanaoa advising the Council that they were disposing of the Government property too fast. After the report of a committee appointed by the Privy Council on the subject of the filling up of the harbor, the Council resolved to remove the wall of the loko called "Kawa" and M. Kekuanaoa assented.

I do not know to whom the land really belonged. I have always seen this, that when the government wanted a piece of land for their purposes, the konohikis have always given their consent. A. Paki, who had charge of Kaliu, and M. Kekuanaoa, who had charge of Kaakaukukui were both in Privy Council at the time referred to. I consider that the place where this wall is built belonged to the Government previous to that time, because by law, the papakoa and the harbor belongs [sic] to the Government. All the chiefs were in Council at the time these things were transacted. The place where the wall is built is papa koa, perhaps, mud perhaps.

Iona Kapena, sworn, says the names of the land lying between the wall of the Government and the loko called "Kawa" are Kaakaukukui and Kaliu. I pointed out the boundary line between Kaakaukukui and Kaliu a few days ago to Messers Lee and Robertson. The boundary has been

well known to me ever since I was a boy. The breakwater or wall is built on the land of Kaakaukui.

M. Kekuanaoa states that he never understood before that the Government meant to take this place now in dispute. I have heard the testimony of Young, who says the Government took it. I gave my consent to the Government to remove the wall of Kawa and for the materials, but I did not intend that the Government should take away any part of Kaakaukui.

N.T. 598-599v3

No. 7713, V. Kamamalu – protest

M. Kekuanaoa and Mahuka were the persons who settled the land of V. Kamamalu with objections to C. Kanaina's rights to that property over which there was a dispute. Below are the statements of witnesses clarifying their rights.

Kumuhonua, sworn, I have seen the place over which there is a dispute between C. Kanaina and V. Kamamalu, Kaanaenui is the name. I have seen that it is the center for Waialae. The boundaries as I have seen from Kaiahaki to Kauhaki, from there to Pohakuaumiumi, then to Kaananiau and run directly to Puukuaka; from there to Kalohupale; Kapahulu is on this side and from there run directly to Kupikipikio point.

Mt. Leahi is for Kapahulu.

The boundaries of the land Kekio: on the mauka direction of Makahuna road is the taro land, detached and following to the sea of Kapua and the coconut grove.

Poo wahine: I am a native of Waiale and since I was very young and at the time of Kahek'ili, I have known that place over which there is a dispute. Keanaenui is the name and it is the center of Waialae. I have known the boundaries as they are at Kuialauahi to Aumeume Rock, to Kaananiau, to Mount Kuaka and from there to Kalahu to the lae of Kupikipikio. Those are the boundaries which separate Waialae from Kapahulu. Mt Leahi is for Kapahulu.

The land Kekio runs from mauka of Makahuna Street, then separated to the extreme makai to the sea and the coconut grove.

Kuapuu, sworn, I am a land child of Waialae and I have seen the boundaries of Waialae as they were pointed out to me by my parents, from Kuahaki to Kauhaki, therefrom to Aueume Rock and so on just as Poo has related here.

The boundaries of Kekio run from mauka of Makahuna road, then it separates until the extreme makai of Kapua sea and a road called Kukii. The report given of this survey is imperfect because he had taken Waialae's pasture.

Kaula, sworn, I have not been a native very long, but I have heard the same thing from my older brother whose name is Hanakinau, as the reports given by those people above. I had heard these things after the death of Kaahumanu I.

Hehea, sworn, I am a land child of Waialae and have seen the boundaries of Waialae exactly as those witnesses have related above.

The boundaries of the land, Kekio by name, of Keekapu, are exactly as the statements given above. Its boundaries are the same.

N.T. 373-375v10

No. 7713, Victoria Kamamalu, Wai'anae, 17 August 1854

Testimony on the boundary between the Ahupua'a of Wai'anae and the 'ili of "Pāhoa."

Nahinu, sworn, says the 'ili of Pāhoa is but small. The loko, makai, belongs to this 'ili. The boundary of the piece in dispute runs along to the eastward of an enclosure belonging to Kaapuiki, and up through the coconut grove and along a stone wall to some hau trees, and then up mauka and across to the east corner of the land, and from thence running makai to the loko.

This 'ili consists of three pieces, first, the fish pond; second, the piece which I have tried to describe; third, the mauka piece undisputed.

I learned these boundaries from my ancestors who lived here from ancient times.

Cross examined. I accompanied Kekuanaoa and M. Hopkins when they suspected [inspected?] the boundary line in question. I saw the marks made at that time on the coconut trees by order of Kekuanaoa, in presence of M. Hopkins. The line marked out by them on the northwest side, runs farther mauka than that described by me in my testimony.

Ohule, sworn, says he knows the middle Mana of Pohao [sic?] about which the present dispute exists. It is only of late that I have heard that the boundary was disputed. This middle piece is bounded: Mauka by a stone wall. The western boundary runs up through the coconut grove and then runs to the southward, and then at the corner of what used to be a wauke patch, turns seaward and runs down to the hau trees and the stone wall. I was born on this land. The land on which stand the church and parsonage belongs to the ahupua'a of Wai'anae.

Kaapuiki, sworn, says when I came here to live, the boundaries of the middle piece of Pāhoa were nearly the same as have been described by the preceding witnesses. Afterwards, when the law was made to restore the ancient boundaries of all the lands, Kulepe, the then tax officer, gave to "Pāhoa" the land now claimed by Victoria, on the southeast side of the coconut grove, and disputed by the King. I was luna of Wai'anae when that arrangement was made by Kulepe. I was under Kekuanaoa. The people who live on the disputed land formerly went to the labor days on "Wai'anae," but of late they labor on "Pāhoa."

Kulepe, sworn, says, "Pāhoa" consists of two pieces; the fish pond forming the part of the mauka piece. I have lived here about 15 years. I was appointed tax officer of Wai'anae in 1841. In 1850, the boundaries of the makai piece of "Pāhoa" were pointed out to me by three kamaainas, who are all now dead. In the same year, Hopkins and Kekuanaoa came down here but I did not accompany them when they went round this land. I do not know anything myself of the true boundary, except what I heard from these kamaainas in 1850. About 1841, I restored a lihi of "Pāhoa," which lies between the fish pond and the stone wall, and was claimed for "Pāhoa," on account of some coconut trees. This was the only lihi of "Pohoa" restored by me. The people who formerly lived on the land now in dispute used to do konohiki labor for the Ahupua'a of "Wai'anae."

Molea, sworn, confirms in full, the testimony of Nahinu and Ohule.

[Award 7713; (O'ahu) R.P. 227 Kamoaaa, Waikiki; no R.P. for Kanewai Manoa; R.P. 4475, Waialaenui, Maunalua, Waiawa, Poupouwela, Mananaiki, Hapuna & Waialua Kalihi; Waimano, Waiau; R.P. 4475 & 7834, Kalaepohaku Kapalama; R.P. 4475 & 7805 Kaluanui; R.P. 4775 & 7793, Kauluwela; R.P. 4475 & 7789, Kapaakea; R.P. 4475, Kikiwelawela Heeia, Kawailoa Waialua, Paalaa Waialua, Kaelepulu Koolaupoko; (Lanai) R.P. 4475, Kaa; Ahupua'a; (Island of Hawaii) R.P. 4475; Keopu, Honuaino, Holualoa, Keauhou Kona and Keauhou Kau, Kuilei Hamakua, Honokane & Kahua Kohala, Honohononui, Piopio, Kalalau; Kekelani, R.P. 4475 & 6856, Kahaluu; R.P. 6857, Honokua; R.P. 6865, Haukalua; R.P. 4475, 6883 & 8220, Kauaea R.P. 6884, Kahuwai Puna; R.P. 4475 & 6887 Pakini nui Kau; R.P. 4475 & 8117 Onomea; R.P. 4475 & 8199 Kaueleau; R.P. 4475 & 6860 Pahohoe Hilo; R.P. 4475 & 6864 Alae Hilo; (Molokai) R.P. 4475 Halawa, Molokai 1 ap. Ahupua'a; (Maui) R.P. 4475 Kalua Wailuku, Puali Waihee, Paunau, Aki & Kelawea Lahaina; (Kauai) Kikiaola Waimea, R.P. 4476 Makaweli; R.P. 4477, Haiku, Naw'iliw'ili, Niumalu; R.P. 4480, Kalapaki, R.P. 4481, Hanamaulu; R.P. 4482 Kipu & Mahaulepu]

APPENDIX D: Site 3998 Update

State Site Number: 50-80-07-3998 (formerly 50-0a-C3-23)

Site Type: Multi-feature complex

Function: Burial, Cooking, Fishing, Lithic Production, Religious

Possible Age: Pre-contact to historic period

Number of Features: Archaeologists identified a total of 173 features to date. Riford (1984) identified 34, Hammatt et al. (1985) identified 96, Schilz (1994) identified 17, while the current project (USAG-HI 2017) resulted in 26 identified features.

Site Size: 37,597 square meters

Vegetation: Polynesian introduced Hau (*Hibiscus tiliaceus*), along with ornamental species including: false kamani (*Terminalia catappa*), coconut (*Cocos nucifera*), plumeria (*Plumeria sp.*), and monkeypod (*Samanea saman*)

Cultural Materials: Artifacts include volcanic glass debitage basalt flakes and cores, basalt tools, fishing tackle, hooks, sinkers, abraders, faunal bone, shell, bottles, ceramics and others.

Excavation Potential: Good. Previous subsurface archaeology studies identified large significant intact cultural deposits. While these previous studies and other ground disturbing work had impacted large sections of the site there are likely still large undisturbed sections of cultural deposits left.

Physical Condition/Integrity: Fair, much of the site has been previously disturbed including the entire surface, and a significant subsurface portion. However the petroglyphs are mostly intact and there are likely still intact subsurface cultural deposits.

Historic Context: Traditional Hawaiian, Historic Period

National Register Significance\Eligibility: Site 3998 retains integrity of location, design, setting, materials, workmanship, feeling, and association, and is eligible under Criterion (c). Site 3998 retains integrity under Criterion (d) based upon its potential to yield specific data that address important research questions (see Evaluation of Eligibility section).

Description: Site -3998 consists of subsurface historic and traditional Hawaiian archaeological features, and intermittently present surface remains consisting of traditional Hawaiian petroglyphs. Site 3998 is comprised of a late pre-Contact to early post-Contact component used for burial, lithic work, and refuse disposal, and an early twentieth-century component comprised of pits for refuse disposal. Features include human burials, dog burials, imu, fire pits, charcoal lenses, midden deposits, lithic workshops, historic trash pits, a water tower base, and petroglyphs (see Appendix E).

Site 3998 is situated on Nene'u beach by Pōka'i Bay along the coast of Wai'anae ahupua'a, on O'ahu island (see Figure 15). The site covers the majority of the land area of Pīlilaau Army Recreation Center (PARC). The site is bounded on the north by Kaupuni Stream, on the east by the eastern boundary of PARC, Kāne'ilio Point to the south, and on the west by Pōka'i Bay. Before development, the site originally consisted of barrier

beach sand dunes at the mouth of Kaupuni Stream and next to former wetlands (Puehu fishpond) at what is now the approximate eastern end of PARC.

Site 3998 was originally documented in 1984 by archaeologists from the Bernice Pauahi Bishop Museum (BPBM) during the monitoring of sewer line repairs and reconstruction (Riford 1984). They documented site 3998 as “an intact prehistoric cultural layer, human and animal burials, and historic material from trash pits” (Riford 1984:i). They recorded a total of 34 cultural features, including five human burials, one formal dog burial, fire pits, and the remains of a water tower base (Riford 1984:11-12). One radiocarbon date places the use of site 3998 to the 1300s. However the charcoal sample was not identified to species, so there could be significant inborn age. The sample (HRC 681) is not directly associated with any discrete feature, but rather from a charcoal lens within Layer V, a prehistoric cultural deposit (Riford 1984:23).

From 1984 to 1985, Cultural Surveys Hawai'i (CSH) conducted and monitored further excavations at site 3998 (Hammatt et al. 1985). During this archaeological effort, CSH identified 96 additional features, including 10 human burials, imu features, midden deposits, lithic workshops, and historic trash pits (Hammatt et al. 1985:97-104). In addition to historic period artifacts, CSH recovered a total of 791 traditional Hawaiian artifact. These consisted primarily of lithics, such as volcanic glass debitage (n=595) with a smaller quantity of basalt flakes, and cores. Hammatt et al. (1985) obtained radiocarbon dates from six samples. However, only two of these are both directly associated with pre-contact features and have date ranges that match their cultural context. The two remaining samples have calibrated dates between 1270 and 1410 A.D. and from between 1500 and 1950 A.D (Hammatt et al. 1985:129). However, the species and type of the charcoal were not identified so there could be significant inborn age.

In 1986, the U.S. Army conducted an archaeological investigation at PARC (Streck 1986). While they didn't identify any features, they recovered cultural material including charcoal, marine gastropod shells, basalt flakes, as well as historic period artifacts including ceramic, glass, and metal artifacts (Streck 1986:12-13).

From 1988-1990, Ogden Environmental and Energy Services Co., Inc. (Ogden) conducted archaeological fieldwork (Schilz 1994:28-29). Ogden recorded seventeen features consisting of historic trash pits, charcoal lenses and stains, and fire pits (Schilz 1994:31-33). Ogden uncovered human burial features containing the remains of at least 18 people, including six historic period and 11 traditional Hawaiian burials (Schilz 1994:56). Artifacts found during this excavation include traditional Hawaiian tools made of stone, sea urchin, coral, bone, and shell; and historic period trade beads, glass bottles, ceramic bowls, metal hardware, coins, and miscellaneous (Schilz 1994:57). Calibrated radiocarbon dates from six unidentified charcoal samples range from AD 1150 to 1955 A.D, with one anomalous early date range of 637-780 A.D. (Schilz 1994:112). Again, they did not identify wood species to help determine the inborn age of these samples.

During the current field effort, archaeologists documented 26 petroglyphs, of varying types, carved into a layer of beach rock. None of the petroglyphs appear to be superimposed over each other. The methods used to manufacture the petroglyphs was

most often pecking, but many lines are smoothed either deliberately, or naturally through erosion. Using typology derived from Lee and Stasack (1999:175-176), sixteen of the 18 anthropomorphic figures are simple lineal angular types. While a discreet date range for the use of this style has not been agreed upon, both Cox (1970:59) and Lee and Stasack (1999: 187) consider this style the earliest used form in Hawaii.

There is some evidence of the early use of site 3998 from previously obtained radiocarbon dates from subsurface cultural deposits. While Schilz (1994), Hammatt et al. (1985), and Riford (1984) obtained calibrated radiocarbon dates that range from 1150 to 1955 A.D, the methods employed do not hold up to modern accepted radiocarbon dating practices (Allen and Hubert 2014). Future work using controlled sampling and species identification during radiocarbon dating could better define the age of site 3998.

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APPENDIX E: Previously Identified Features of Site 3998

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
1	125-140 cm	90x50x15 cm	Yes	H	midden present	Riford 1984:14
2	86-145 cm	220x220x59 cm	Reverse triangular adze pg. 25,	H	Dating based on bottle analysis 1930-40 pg. 20, midden present	Riford 1984:14,20,25
3	42-77 cm Burial 4	40x140x35 cm	Pearl shell fishhook shank and head fragment pg. 25	H	Extended position, arms crossed over pelvis, 13 bone buttons pg. 31, midden present	Riford 1984:14,25,31
4	70-150 cm	120x100x80 cm	Yes	P	fire feature pg.25, midden present	Riford 1984:14,25
5	30-80 cm	35x50x50 cm	Yes	H	Complete articulated skeletal remains of an adult dog.	Riford 1984:14
6	35-65 cm	25x20x30 cm	Yes	H	Complete articulated skeletal remains of a juvenile dog.	Riford 1984:14
7	35-110 cm	100x80x75 cm	Largest number of traditional artifacts found - poi pounder base, sinkers, basalt flakes, volcanic glass pg. 25	H	Dating based on bottle analysis 1905-1930, pg. 20. Waterworn basalt cobbles at 30 cm BS may be associated with the central of three coastal houses drawn on Monserrat's 1878 map pg. 25, midden present	Riford 1984:14,20,25
8	45-70 cm	100x45x25 cm	Yes	H		Riford 1984:14
9	35-145 cm	420xN/Ax70 cm	No	H		Riford 1984:14
10	65-85 cm	100x150x20 cm	Yes	H	Prehistoric fire feature	Riford 1984:14,25
11	60-180 cm	200x250x120 cm	Yes	H	Remains of the base of a water tower pg. 29	Riford 1984:14,29
12	120-160 cm	120x100x40 cm	Yes	H	midden present	Riford 1984:14
13	85-120 cm	130x80x35 cm	Yes	H	midden present	Riford 1984:14
14	30-120 cm	130x80x90 cm	Yes	H	Dating based on bottle analysis 1915-40 pg.20, midden present	Riford 1984:14
15	40-65 cm	50x30x25 cm	Yes	H	Post WWII bottles pg.29, midden present	Riford 1984:14
16	12-50 cm	50x120x35 cm	Yes	H	midden present	Riford 1984:14
17	40-55 cm	200x200x15 cm	Yes	H	midden present	Riford 1984:14
18	57-80 cm Burial 5	50x60x23 cm	Yes	H?	midden present	Riford 1984:14
19	100-195 cm	195xN/Ax95 cm	Yes	H	midden present	Riford 1984:14
20	45-70 cm	140x40x25 cm	Yes	H	Dating based on bottle analysis 1915-20 pg.20, midden present	Riford 1984:14
21	75-100 cm	50x60x25 cm	Yes	P	Prehistoric fire feature pg. 25, midden present	Riford 1984:14,25
22	85-160 cm	180x140x75 cm	Yes	H	Dating based on bottle analysis 1905-15, midden present	Riford 1984:14,20
23	50-100 cm	30x30x50 cm	Yes	H	midden present	Riford 1984:14

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
24	50-75 cm	100x90x24 cm	Yes	P, H	Prehistoric fire feature with historic metal and glass pg. 25, midden present	Riford 1984:14, 25
25	65-80 cm	80x70x15 cm	No	H	Pit with cobbles appears to be of recent construction pg. 29	Riford 1984:14, 29
26	90-170 cm	130xN/Ax80 cm	Yes	H	Trench containing a wood and metal pipe, with plastic (from project notes)	Riford 1984:14 and project notes
27	60-110 cm	45x40x50 cm	Yes	H	midden present	Riford 1984:14
28	60-120 cm	115x80x60 cm	Yes	H	midden present	Riford 1984:14
29	20-45 cm	120x70x25 cm	Yes	H	midden present	Riford 1984:14
30	30-50 cm	230x40x20	Yes	H	midden present	Riford 1984:14
31	55-65 cm	25x25x10 cm	Yes	P	midden present	Riford 1984:14
32	30-60 cm	50x65x30 cm	Yes	H	midden present	Riford 1984:14
33	Burial 3		Yes	?	Discovered by construction crew and fully exposed	Riford 1984:14
34	Burials 1 and 2		Yes	?	Same location/feature, "excavated" by construction workers and taken by the Criminal Investigation Dept.	Riford 1984:14
5-1	Trench 5 Area 3 Stratum I	100x125 cm	WWII newspaper, pocket watch, vol. glass & basalt flakes	H, WWII		Hammatt et al. 1985:96A, 102
6-1	Trench 6 Area 3 Stratum I/II	45x60 cm	Volcanic glass & basalt flakes	H		Hammatt et al. 1985:96A
7, 7A-1	Trench 7&7A Area 3 Stratum II	100x110 cm	Volcanic glass cores/blades, coral file, basalt hammer stone	P	"... was an area for flaking of volcanic glass and probable shellfish preparation"	Hammatt et al. 1985:96A-102
8-1	Trench 8 Area 3 Stratum I	25x35 cm		H		Hammatt et al. 1985:96A
13-1	Trench 13 Area 3 Stratum I	55x60 cm		H		Hammatt et al. 1985:96A
13-2	Trench 13 Area 3 Stratum I	50x70 cm		H		Hammatt et al. 1985:96A
16-A	Trench 16 complex Area 3 Stratum I/II	350x400 cm		H	<i>Imu</i> -type feature	Hammatt et al. 1985:96A
16-B	Trench 16 complex Area 3 Stratum I/II	60x70 cm		H	Fire pit	Hammatt et al. 1985:96A
16-C	Trench 16 complex Area 3	75x150 cm	Volcanic glass flakes, ornament	P	Burial w/artifacts. Only this one burial was "recovered from an archaeological trench, with	Hammatt et al. 1985:96A, 71G, 105

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
	Stratum II				the remaining nine recovered from backhoe trenches during the monitoring phase" pg. 105	
16-D	Trench 16 complex Area 3 Stratum I/II	40x45 cm		P/H		Hammatt et al. 1985:96A
19-1	Trench 19 Area 3 Stratum I	70x80 cm		H, WWII		Hammatt et al. 1985:96A
20-1	Trench 20 Area 3 Stratum I	20x35 cm		H		Hammatt et al. 1985:96A
20-2	Trench 20 Area 3 Stratum II	45x50 cm		P		Hammatt et al. 1985:96A
21-1	Trench 21 Area 3 Stratum I/II	75x85 cm	Volcanic glass & basalt flakes	H		Hammatt et al. 1985:96A
23.1-1	Trench 23.1 Area 2 Stratum II	65x70 cm	Lots of echinoid parts	P		Hammatt et al. 1985:96A
24-1	Trench 24 Area 2 Stratum I	60x65 cm		H		Hammatt et al. 1985:96A
25, 25.1-1	Trench 25, 25.1 Area 2 Stratum II	60x115 cm	Chert & basalt flakes	P	"...was probably an area for the preparation of fish, for consumption elsewhere as the bones were disarticulated, uncharred..." pg 102	Hammatt et al. 1985:96A, 71G, 102
25-2	Trench 25 Area 2 Stratum II	40x45 cm		H		Hammatt et al. 1985:96A
25.1-2	Trench 25.1 Area 2 Stratum I/II	50x60 cm	Chert flake & coral file	H		Hammatt et al. 1985:96A
27-1	Trench 27 Area 3 Stratum II	100+ cm wide		P		Hammatt et al. 1985:96A
27-2	Trench 27 Area 3 Stratum II	100+ cm		P		Hammatt et al. 1985:96A
29-2	Trench 29 Area 2 Stratum I/II	38x60 cm	Volcanic glass	H		Hammatt et al. 1985:96A
30-1	Trench 30 Area 2 Stratum I	80x100+ cm		H		Hammatt et al. 1985:96A

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
36-1	Trench 36 Area 2 Stratum I	40x100+ cm		H		Hammatt et al. 1985:96A
39-1.2	Trench 39 Area 2 Stratum I	40x50 cm		H		Hammatt et al. 1985:96A
39-3	Trench 39 Area 2 Stratum I/II	50x90 cm	Basalt flake	H		Hammatt et al. 1985:96A
40-1	Trench 40 Area 2 Stratum I	200x70 cm		H		Hammatt et al. 1985:96A
41-1	Trench 41 Area 2 Stratum I	50x100+ cm		H		Hammatt et al. 1985:96A
41.13-1	Trench 41.13 Area 2 Stratum I/II	40x50 cm		H		Hammatt et al. 1985:96A
F.T. 42 1- 1	F.T. 42.1 Area 1 Stratum II	85x100 cm		P		Hammatt et al. 1985:96A
H27-1	Trench H27 Area 1 Stratum II	40x60 cm		P		Hammatt et al. 1985:96A
Burial #2	Sewer line trench Area 1 Stratum I			P?	Burial unearthed by a backhoe digging a sewer line, recovered from the back dirt pile	Hammatt et al. 1985:96A, 108
Burial #3	Surface Area 3			NA	Burial recovered on the surface near a re-excavated sewer line	Hammatt et al. 1985:96A, 108
Burial D-1	F.T. 3.2 Area 3 Stratum II	100x170 cm	w/artifacts, probable shell gourd stopper	P	Burial	Hammatt et al. 1985:96A, 108
Burial D-2	F.T. 3.11 Area 2 Stratum II	50x100 cm		P	Burial	Hammatt et al. 1985:96A, 108
Burial D-3	F.T. 3.12 Area 2 Stratum II	50x100 cm	Volcanic glass	P	Burial	Hammatt et al. 1985:96A, 110
Burial D-4	F.T. 3.7 Area 3 Stratum II	50x100 cm	Shark tooth, crab claw	P	Burial	Hammatt et al. 1985:96A, 110
Burial D-4.1	F.T. 3.7 Area 3 Stratum II	50x100 cm		P	Burial adjacent to burial D-4 within its own distinct pit	Hammatt et al. 1985:96A, 110

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
Burial D-5	F.T. 3.16 Area 3 Stratum II	100x150 cm	Fishhook, coral file, volcanic glass	P	Burial	Hammatt et al. 1985:96A, 110
Burial D-6	S.L. 2 Area 2 Stratum II			P	Burial	Hammatt et al. 1985:96A, 110-112
D3.1	F.T. 3.12 Area 2 Stratum II	50x100 cm		P		Hammatt et al. 1985:96A
F.1.3.1-A	F.T. 3.1 Area 2 Stratum II	85x100 cm		P		Hammatt et al. 1985:96A
F.T.3.1-B	F.T. 3.1 Area 2 Stratum II	35x45 cm		P		Hammatt et al. 1985:96A
F.T.3.1-C	F.T. 3.1 Area 2 Stratum II	40x50 cm		P		Hammatt et al. 1985:96A
F.T.3.1-D	F.T. 3.1 Area 2 Stratum I	50x60 cm		H		Hammatt et al. 1985:96A
F.T.3.1-E	F.T. 3.1 Area 2 Stratum ?	75x80 cm		?		Hammatt et al. 1985:96A
F.T.3.1-F	F.T. 3.1 Area 2 Stratum I?	100x120 cm		H?		Hammatt et al. 1985:96A
F.T.3.2-A	F.T. 3.2 Area 3 Stratum II	25x30 cm		P?		Hammatt et al. 1985:96B
F.T.3.2-B	F.T. 3.2 Area 3 Stratum II	120x140 cm		P		Hammatt et al. 1985:96B
F.T.3.3-A	F.T. 3.3 Area 3 Stratum I	90x100 cm		H		Hammatt et al. 1985:96B
F.T.3.3-B	F.T. 3.3 Area 3 Stratum II	60x70 cm		P		Hammatt et al. 1985:96B
F.T.3.4-A	F.T. 3.4 Area 3 Stratum I	100x130 cm		H		Hammatt et al. 1985:96B
F.T.3.4-B	F.T. 3.4 Area 3 Stratum II?	100x160 cm		P?		Hammatt et al. 1985:96B

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
F.T. 3.4-C	F.T. 3.4 Area 3 Stratum I	50x40 cm		H		Hammatt et al. 1985:96B
F.T. 3.4-D	F.T. 3.4 Area 3 Stratum I	100x160 cm		H		Hammatt et al. 1985:96B
F.T. 3.4-E	F.T. 3.4 Area 3 Stratum II?	110x120 cm		P?		Hammatt et al. 1985:96B
F.T. 3.5-A	F.T. 3.5 Area 3 Stratum I	100x180 cm		H		Hammatt et al. 1985:96B
F.T. 3.5-B	F.T. 3.5 Area 3 Stratum I	70x80 cm		H		Hammatt et al. 1985:96B
F.T. 3.5-C	F.T. 3.5 Area 3 Stratum I	50x70 cm		H		Hammatt et al. 1985:96B
F.T. 3.5-D	F.T. 3.5 Area 3 Stratum I?	100x150 cm		H?		Hammatt et al. 1985:96B
F.T. 3.6-A	F.T. 3.6 Area 3 Stratum I/II	100x110 cm	Volcanic glass	H		Hammatt et al. 1985:96B
F.T. 3.6-B	F.T. 3.6 Area 3 Stratum II	60x160 cm		P		Hammatt et al. 1985:96B
F.T. 3.7-A	F.T. 3.7 Area 3 Stratum II	50x60 cm		P		Hammatt et al. 1985:96B
F.T. 3.8-A	F.T. 3.8 Area 3 Stratum I/II	90x100 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.8-B	F.T. 3.8 Area 3 Stratum I/II	50x60 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.8-C	F.T. 3.8 Area 3 Stratum I/II	60x70 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.9-A	F.T. 3.9 Area 3 Stratum I	70x80 cm		H		Hammatt et al. 1985:96B
F.T. 3.10-A	F.T. 3.10 Area 3 Stratum I/II	85x100 cm		H/P		Hammatt et al. 1985:96B

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
F.T. 3.10-B	F.T. 3.10 Area 3 Stratum II?	50x55 cm		P?		Hammatt et al. 1985:96B
F.T. 3.10-C	F.T. 3.10 Area 3 Stratum I/II	30x50 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.11-A	F.T. 3.11 Area 3 Stratum I/II	100x160 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.11-B	F.T. 3.11 Area 3 Stratum I/II	70x85 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.11-C	F.T. 3.11 Area 3 Stratum II	50x55 cm		P		Hammatt et al. 1985:96B
F.T. 3.11-D	F.T. 3.11 Area 3 Stratum I	60x90 cm		H		Hammatt et al. 1985:96B
F.T. 3.12-A	F.T. 3.12 Area 3 Stratum II	60x75 cm		P		Hammatt et al. 1985:96B
F.T. 3.12-B	F.T. 3.12 Area 3 Stratum II?	100x120 cm		P?		Hammatt et al. 1985:96B
F.T. 3.12-C	F.T. 3.12 Area 3 Stratum I/II	80x100 cm		H/P		Hammatt et al. 1985:96B
F.T. 3.12-D	F.T. 3.12 Area 3 Stratum I	90x100 cm		H		Hammatt et al. 1985:96B
F.T. 3.12-E	F.T. 3.12 Area 3 Stratum II?	75x90 cm		P?		Hammatt et al. 1985:96B
F.T. 2.1-A	F.T. 2.1 Area 2 Stratum I?	80x90 cm		H?		Hammatt et al. 1985:96B
F.T. 2.1-B	F.T. 2.1 Area 2 Stratum II	30x40 cm		P		Hammatt et al. 1985:96B
F.T. 2.1-C	F.T. 2.1 Area 2 Stratum II	50x60 cm		P		Hammatt et al. 1985:96B
F.T. 2.1-D	F.T. 2.1 Area 2 Stratum II	45x50 cm		P		Hammatt et al. 1985:96B

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
F.T. 2.2-A	F.T. 2.2 Area 2 Stratum I/II	80x90 cm		P/H		Hammatt et al. 1985:96B
F.T. 2.2-B	F.T. 2.2 Area 2 Stratum II	75x90 cm		P		Hammatt et al. 1985:96B
F.T. 2.3-A	F.T. 2.3 Area 2 Stratum I/II	40x50 cm		P/H		Hammatt et al. 1985:96B
F.T. 2.3-B	F.T. 2.3 Area 2 Stratum I	40x52 cm		H		Hammatt et al. 1985:96B
F.T. 2.4-A	F.T. 2.4 Area 2 Stratum II	70x80 cm		P		Hammatt et al. 1985:96B
F.T. 2.5-A	F.T. 2.5 Area 2 Stratum I	30x36 cm		H		Hammatt et al. 1985:96B
F.T. 2.5-B	F.T. 2.5 Area 2 Stratum I	30x41 cm		H		Hammatt et al. 1985:96B
F.T. 2.6-A	F.T. 2.6 Area 2 Stratum II	50x74 cm		P		Hammatt et al. 1985:96B
F.T. 2.7-A	F.T. 2.7 Area 2 Stratum I	30x40 cm		H		Hammatt et al. 1985:96B
F.T. 2.7-B	F.T. 2.7 Area 2 Stratum I	45x60 cm		H		Hammatt et al. 1985:96B
SL2-A	SL2 Area 2 Stratum II	100x140 cm		P		Hammatt et al. 1985:96B
SL2-B	SL2 Area 2 Stratum II	50x60 cm		P		Hammatt et al. 1985:96B
1	Area A Unit A-6 Layer II 54 cm BD		No		Charcoal lens with basalt cobbles, SW corner of unit	Schilz et al. 1994:33
2	Area A Unit A-6 Layer III intruding into Layers IV, V, 464-104 cm BD.		Metal fragment, volcanic glass flakes, basalt flakes, bone, shell		Unit expanded 50 cm South; Compact charcoal stained soil	Schilz et al. 1994:33

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
3	Area A Unit A-6 Layer III intruding into Layers IV, V 42-72 cm BD		Basalt flakes, bone, Kukui shell fragments		Mottled grey sand with charcoal flakes	Schilz et al. 1994:33
A	Area A Unit A-7 Layer III 60-64 cm BD		Bone, shell		Charcoal concentration	Schilz et al. 1994:33
C	Area A Unit A-20 Layers III and IV 70-123 cm BD		Polished basalt and 29 basalt flakes		Dark grey sand, basalt and angular coral cobbles	Schilz et al. 1994:33
A	Area A Unit A-21 Layers II and III 61-91 cm BD		Basalt flakes, shell		Light brown sandy loam	Schilz et al. 1994:33
B	Area A Unit A-21 Layers II and III 62-92 cm BD		Shell fishhook waste, basalt flake, bone, shell		Ashy grey sand with charcoal chunks	Schilz et al. 1994:33
A	Area A Unit A-24 Layers II and III 42-62 cm BD				Charcoal lens In N/E corner, base of Layer I	Schilz et al. 1994:33
2	Area A Unit A-25 Layer IV 85-110 cm BD		Basalt flakes, bone, burial 3 intrudes into feature		Fire pit	Schilz et al. 1994:33
A	Area C Unit TU-4 Layer IV 61-66 cm BD				Rectangular shaped sand/charcoal fill; N/W corner of unit extending 33cm into unit.	Schilz et al. 1994:33
B	Area C Unit TU-4 Layer IV 61-116 cm BD				Circular sand/charcoal fill	Schilz et al. 1994:33
C	Area C Unit TU-4 Layer IV 61-66 cm BD				Circular sand/charcoal fill	Schilz et al. 1994:33
D	Area C Unit TU-4 Layer IV 61-90 cm BD		Tortoise shell hair-comb tooth		Brown clay-loam and charcoal	Schilz et al. 1994:33
Historic trash pit	Area A Unit A-9 40-90 cm BD		Bottle glass, button, glass bead, ceramics, metals, nails, basalt flakes, fish and mammal bone, shell, Kukui Nut, charcoal	H	Historic trash pit	Schilz et al. 1994:33

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
Historic trash pit	Area A Unit A-10 33-109 cm BD		Bottle glass, ceramics, beads, metals, mammal and fish bone, shell	H	Historic trash pit	Schilz et al. 1994:33
Historic trash pit	Area A Unit A-17 10-88 cm BD		Bottle glass, metals, basalt angular waste, fish and mammal bone, shell, charcoal	H	Historic trash pit	Schilz et al. 1994:33
Historic trash pit	Area B Unit B-18 38-91 cm BD		Bottle glass, wire nails, metal, basalt angular waste, fish and mammal bone, shell, charcoal	H	Historic trash pit; Capped with large boulder	Schilz et al. 1994:33
Burial 1	Area A Units A22, A23, A20, A24 Layer III		A small broken adze	P	Burial; Male 50-60 y.o. Found in an extended position facing upwards. 77-100 cm	Schilz et al. 1994:41
Burial 2	Area A Units A-25, A26		Coffin boards, metal nail fragments, an ear ornament, buttons with fabric, a ground vesicular basalt stone.	H	Burial with wood coffin; Male 45-50 y.o. buried in a wood coffin laying face upward in an extended position. 90-105 cm	Schilz et al. 1994:41
Burial 3	Area A		Metal nail fragments, Coffin boards, copper rod, various beads, cut bone comb, mirror, vial, catholic medal	H	Burial with wood coffin on top of burial 6 coffin, greatest number of burial goods; Child 4-6 y.o. Extended face upward in a wooden coffin with gilded matting. Found interred together with burial 4, 5 and 6 at 90 cm	Schilz et al. 1994:43
Burial 4	Area A		Buttons, cut bone discs, metal nail fragments, glass ornament, beads, coral abraders, sea-urchin spine abrader.	P	Burial in flexed position inside, and at the foot of burial 6 coffin; Male 25-30 buried in a flexed position. Found interred together with burial 3, 5 and 6 at 90 cm.	Schilz et al. 1994:48
Burial 5	Area A		Coffin boards, metal nail fragments, catholic rosary, beads, buttons	H	Burial with Coffin; Female 30-35 y.o. buried in an extended position face down. Found interred together with burial 3, 4 and 6 at 90 cm	Schilz et al. 1994:50
Burial 6	Area A		Copper-brass crucifix, bone disc, buttons, pear shell fish hook, coffin boards, metal nail fragments	H	Burial with Coffin; Female 30-35 buried in an extended position face up. Found interred together with 3, 4 and 5 at 90 cm	Schilz et al. 1994:50
Burial 7	Area C			P	Burial ; Incomplete remains of a female 18-24 y.o.	Schilz et al. 1994:53
Burial 8	Area C			P	Burial; Female 45-55 y.o. on right side in flexed position, could not identify outline of burial pit at 23 cm	Schilz et al. 1994:53
Burial 9	Area C		None	P	Burial; Male 40-45 y.o. buried in flexed position with head at the bottom of the pit found below water pipe at 33 cm	Schilz et al. 1994:53
Burial 10	Area A		None	P	Burial; Female 35-40 y.o.	Schilz et al. 1994:53
Burial 11	Area A		Fish, dog, and pig bones.	P	Burial; Male 45-50 y.o. Burials 10 and 13 were intrusive to burial 11	Schilz et al. 1994:53
Burial 11A	Area A		Fish, dog, and pig bones.	P	Burial; Incomplete remains of a child approx. 5 y.o. mixed with adult burial 11	Schilz et al. 1994:53

Feature Number	Provenience	Size	Artifacts	Temporal Association*	Notes	Reference
Burial 12	Area A		Beads, coffin	H	Female 40-50 y.o. buried in extended position face up	Schilz et al. 1994:53
Burial 12A	Area A		Beads, coffin	H	Burial; Adult male fragmented remains recovered with burial 12	Schilz et al. 1994:53
Burial 13	Area A		None	P	Burial; Female 35-40 at 30 cm	Schilz et al. 1994:54
Burial 14	Area B		Coral abrader	P	Burial; Adult male with poor preservation and weathering of skeletal remains	Schilz et al. 1994:54
Burial 14A	Area B		Coral abrader	P	Burial; Young adult female with poor preservation and weathering of skeletal remains	Schilz et al. 1994:54
Burial 15	Area A		Boar's tooth, basalt hammer stone, ground basalt slab fragment	P	Burial; Female 40-50 y.o. buried in an extended position with no coffin. Associated with remains from burial 11 and 13	Schilz et al. 1994:54
Burial 16	Area A				There is a burial no. 16 on the map, but not included in the report; the report states a total of 18 burials and the osteological study has a total of 19 individuals pg. 33	Schilz et al. 1994:42
Burial 17	Area A				There is a burial no. 17 on the map, but not included in the report; the report states a total of 18 burials and the osteological study has a total of 19 individuals pg. 33	Schilz et al. 1994:42
P= Prehistoric, H=Historic						