

Appendix M-1

Archaeological Inventory Survey 2006

By Haun & Associates

**ARCHAEOLOGICAL INVENTORY SURVEY
KONA KAI OLA PROJECT
LANDS OF KEALAKEHE AND KEAHUOLU,
NORTH KONA DISTRICT
ISLAND OF HAWAII'**

(TMK: [3] 7-4-008:por. 2, por. 3, 71 and por. 72)

By:

Alan E. Haun, Ph.D.
and
Dave Henry, B.S.

Prepared for:

Oceanit Laboratories, Inc., Oceanit Center
828 Fort Street Mall, Suite 600
Honolulu, Hawaii 96813

August 2006

Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keaau, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

SUMMARY

At the request of Oceanit Laboratories, Inc., Haun & Associates conducted an archaeological inventory survey of the proposed Kona Kai Ola project, comprised of two parcels in the Land of Kealahou, North Kona District, island of Hawaii (TMK: 3- 7-4-008:por 3 and 71) and a corridor that extends through TMK: 3-7-4-008:por 2 in Keahouli and TMK: 3- 7-4-008:por 72 in Kealahou. The project area encompasses a total of c. 370.5 acres. The objective of the survey was to satisfy historic preservation regulatory review inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules.

A total of 127 sites with 432 features have been documented within the project area. The sites consist of 23 sites that were identified during previous archaeological studies within the area, and 104 that were newly identified during the current project. One of the previously documented sites could not be relocated. The 432 features consist of 170 pahoehoe excavations, 80 cairns, 34 alignments, 26 overhangs, 23 lava blisters, 22 enclosures, 14 terraces, 10 platforms, 8 trails, 8 walls, 7 pavements, 5 midden scatters, 4 mounds, 4 sand areas, 3 filled cracks, 3 lava tubes, 2 C-shapes, 2 petroglyphs, 2 walled terraces, and one each of the following: artifact scatter, fiat slab, L-shape, metal tower and upright. Feature function includes resource procurement, marker, temporary habitation, permanent habitation, ceremonial, ceremonial/possible burial, transportation, habitation, burial, probable burial, temporary habitation/burial, rock art, canoe shed, livestock control and indeterminate.

The identified site and component features conform to the traditional Hawaiian site/feature types expected in the Coastal and Middle Zones as defined by Cordy et al. (1991). As expected, permanent habitation sites, ritual architecture, and burials are present along the coast. Permanent habitation features interpreted to be the foundations for dwellings are clustered in two areas. One cluster consisting of four sites is situated on the southern coast of Kealahou just north of the boundary with Keahouli. The cluster includes one feature interpreted as a possible *hewa*. The other cluster is situated on the northern coast surrounding a small beach and cluster of bracketed water pools. The cluster includes seven dwelling foundations at three sites. The cluster includes a possible canoe shed and Makaopio Heiau. The remaining coastal permanent habitation sites are scattered along the coast between these two clusters. Five ritual sites, including Hale o Kane Heiau, and five sites with burials also are scattered in this intervening area.

As expected, temporary habitation sites and trails were present in the Middle Zone. Pahoehoe excavations area the most numerous feature type documented. The majority of the excavations are interpreted as the remains of efforts to extract seabird nestlings from crevices in the lava surface. The remaining excavations are interpreted to be the result of quarrying activity to obtain vesicular lava for the manufacture of abraders.

All 126 sites are assessed as significant for the site's information content. The sites have yielded information important for understanding prehistoric to historic land use in the project area. Three sites are also assessed as significant as good site type examples. Four sites that include ceremonial features have associations with traditional Hawaiian beliefs important to Hawaiian history and cultural identity and are additionally assessed as culturally significant. Five sites are additionally assessed as culturally significant because probable pre-contact burials are present.

The mapping, written descriptions, photography, and test excavations at fifty-four sites adequately documents them and no further work or preservation is recommended. Forty-seven sites are recommended for mitigation through data recovery. The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval. Twenty-five sites are recommended for preservation in accordance with a Site Preservation Plan prepared for DLNR-SHPD review and approval. These preservation sites include thirteen sites within the legislative boundary of Kaloko-Honokohau National Landmark that the developer intends to preserve. The specific plans for preservation and maintenance of the burial features at five sites would be detailed in a Burial Treatment Plan prepared for DLNR-SHPD and the Hawaii Island Burial Council (HIBC) review and approval.

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INTRODUCTION

At the request of Oceanit Laboratories, Inc., Hann & Associates conducted an archaeological inventory survey of the proposed Kona Kai Ola project, comprised of two parcels in the Land of Kealakēhe, North Kona District, Island of Hawai'i (TMK: 3-7-4-008:por 3 and 71) and a corridor that extends through TMK: 3-7-4-008:por 2 in Keahuolu and TMK: 3-7-4-008:por 72 in Kealakēhe (Figure 1). The project area encompasses a total of c. 370.5 acres. The objective of the survey was to satisfy historic preservation regulatory review requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules (DLNR.2003).

Scope of Work

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity—including examination of Land Commission Awards, *ahupua'a* records, historic maps, archival materials, archaeological reports, and other historical sources;
2. Consult with informants regarding culturally significant sites or places in the project area;
3. Conduct 100% pedestrian coverage of a c. 370 ac project area;
4. Conduct detailed recording of all potentially significant sites including scaled plan drawings, written descriptions, and photographs, as appropriate;
5. Conduct limited subsurface testing (manual excavation) at selected sites to determine function;
6. Analyze background research and field data; and
7. Prepare and submit Final Report.

Project Area Description

The project area is comprised two parcels located in the Land of Kealakēhe and the proposed Kealakēhe Parkway Extension corridor that extends through the Lands of Kealakēhe and Keahuolu. The project area encompasses a total area of c. 370.5-acres. The two survey areas in Kealakēhe consists of a c. 275 acre parcel in the seaward portion and a c. 17-acre parcel situated just seaward of the Queen Ka'ahumanu Highway. The larger parcel is irregularly-shaped and extends from the shoreline to c. 43 ft elevation. It is bordered by the Pacific Ocean to the west, by the Land of Keahuolu to the south, by the Honokohau Small Boat Harbor and harbor facilities to the north, and by undeveloped land and the Kailua Sewage Treatment plant to the east. A large spoil pile of boulders, cobbles and soil deposited during the dredging of the harbor is situated south of the inland end of the harbor, occupying an area of c. 50-acres (Figure 2). The inland boundary of this parcel extends across the surface of the spoil pile. Two buildings and a network of roads are present on the level surface of the spoil pile.

There are a series of brackish water pools located in the northern portion of this parcel, south of the harbor and areas of isolated coastal sand are present along the coastline. The vegetation in this portion of the project area is sparse, with the majority comprised of bare lava. There are scattered *kiawe* (*Prosopis pallida*), and coconuts (*Cocos nucifera*) along the coast, with *koa haole* (*Leucaena glauca*, now *Morinda citrifolia*), *panini* cactus (*Opuntia megacantha* Salin-Dyck) and low grasses in the inland portion. Mangrove (*Rhizophora* sp.) is present in the northern portion of the parcel, within and adjacent to the brackish water pools. Figure 3 depicts the vegetation in this portion of the project area.

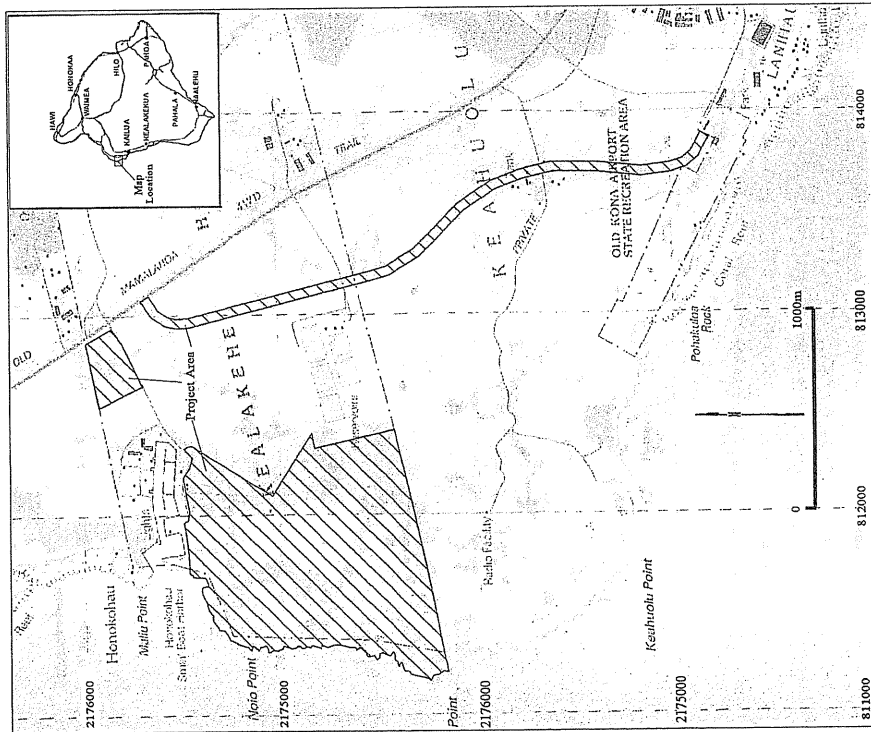


Figure 1. Portion of 1996 Keahole Point Quadrangle showing Project Area

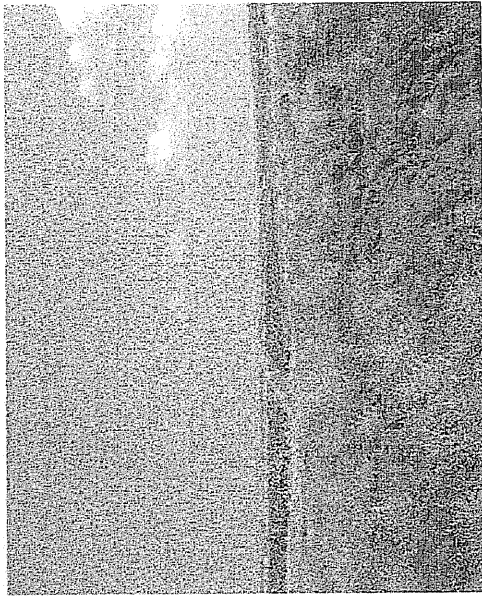


Figure 2. Project Area Overview, view to north

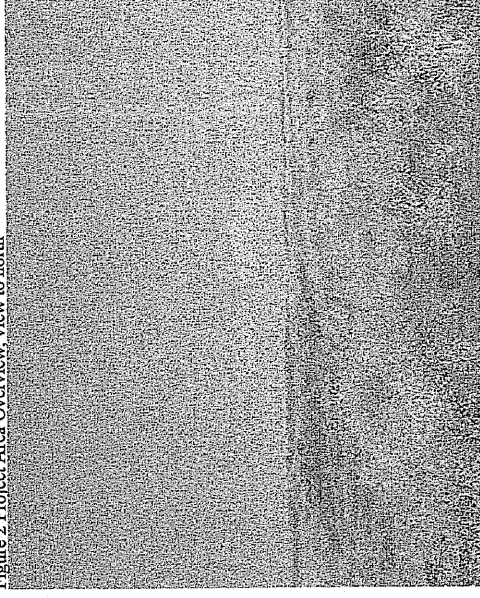


Figure 3. Project Area Overview, view to west

The c. 17-acre parcel is bordered by the Land of Honokōhau 2 to the north, by a boat storage facility to the east, by the harbor access road to the south and by a bulldozed strip of land seaward of the Queen Ka'ahumanu Highway along the eastern side. Wire fences border the north and west side of this parcel. The inland portion of this area is comprised of bare a'a lava with no vegetation, with the seaward portion containing low *koa hiale* (*Leucaena glauca*), Christmas-berry (*Schinus terebinthifolius* Raddi.) and grasses. Coconut (*Cocos nucifera*) trees have been planted along the north side of the harbor access road.

The proposed Kealahou Parkway Extension corridor originates in the Land of Keahuolu at the northern terminus of the Kuakini Highway, adjacent to the Old Kona airport. The proposed corridor is 150 ft (c. 50 m) wide though a c. 300 ft wide (c. 100 m) wide swath was surveyed during the present project. The corridor is curvilinear and evidences an overall length of 3,177 m (10,417.28 ft), with this portion of the project area encompassing c. 78.5 acres. The corridor enters the Land of Kealahou c. 2,026 m north-northwest of its southern end, passing along the inland side of the Kailua Sewage Treatment Plant. It continues past the treatment plant in this direction, then makes a broad sweeping turn to the northeast where it terminates along the seaward side of the Queen Ka'ahumanu Highway.

The ground surface visibility within the project area was excellent due to the sparse vegetation. Sato et al. indicates that the majority of the project area is comprised of pahoehoe lava with isolated pockets of a'a lava (1973: Sheet Number 66). According to Sato et al. the pahoehoe lava is dominated by a smooth surface with periodic hummocks and pressure domes (1973:34). The a'a lava is characterized as rough land comprised of a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps" (1973:34). Wolfe and Morris (2001) indicate that the lava flows within the project area originated from Hualalai Volcano with the majority having been deposited 1,500 to 3,000 years ago. The lava in the inland parcel in Kealahou is older, with the inland portion of this area dating to 3,000 to 5,000 years and the seaward portion dating to 5,000 to 10,000 years ago. The latter likely represents the a'a flow noted in this area. The rainfall in the vicinity of the project area ranges from 10 to 20 inches per year (Juvik and Juvik 1998:66)

Field Methods

The two parcels in Kealahou and the portion of the corridor in Keahuolu were subjected to a 100% surface examination with surveyors spaced at 10-15 m intervals. The portion of the corridor within Kealahou was recently surveyed by Haun and Henry (2001). The transects in the larger Kealahou parcel were oriented in an inland-seaward direction, perpendicular to the shoreline, while the transects in the smaller Kealahou parcel were oriented in a north-northwesterly direction, parallel to the Queen Ka'ahumanu Highway. The examination of the Keahuolu portion of the parkway corridor was guided by a land surveyor provided by the client who walked the corridor centerline as the survey progressed. The identified sites/features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map with the aid of Garmin Global Positioning System (GPS) III+ using the World Geodetic Survey (WGS) 1984 datum. The accuracy of the GPS device for a single point is +/- 15 m. This accuracy is increased to less than c. 3-5 meters by taking multiple points including property corners and overlying the plotted points on a scaled map using AutoCAD software.

Numerous pahoehoe excavations were identified during the study. The physical characteristics of these features were recorded and photographs were taken. The remaining sites and features were subjected to detailed recording consisting of the preparation of scaled plan maps, the completion of standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the scaled plan maps.

Subsurface testing during the excavation consisted of the excavation of 17 test units at 13 sites and within two non-cultural sand areas. The excavation units were dug in arbitrary levels within stratigraphic layers and were terminated on bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. The soil removed during the excavations was screened through 1/4" mesh. Portable remains were transported to Haun & Associates laboratory for analysis. Following the excavation of the test units, a section drawing depicting the stratigraphy was prepared, and post-excavation photographs were taken.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

The project area is located within the *āhupua'a* of Kealahou and Keahuolu, in the district of North Kona (Figure 4). The *āhupua'a* are situated at the southern end of the lava-covered land north of Kailua called *Kekaha*, which "describes a dry, sun-baked land" (Kelly 1971:2).

Several references to Kealahou and Keahuolu are contained in Maly's (1996) translation of portions of *Ka 'ao Ho onia Pi iwa'i No Ka-Miki* (The Heart Stirring Story of *Ka-Miki*) a legendary account of two supernatural brothers, *Ka-Miki* and *Maka - iole*, who traveled around the island of Hawaii. The account was published in serial form between 1914 and 1917 in a Hawaiian newspaper, *Ka Hoku o Hawaii*. According to Maly, the account was recorded by Hawaiian historians John Wise and J.W.J. Kīhe. Pertinent excerpts from Maly's translation follow:

...Within the lands of Keahuolu you saw Hale-pa'u (Interpretive translation: Sooty [soot covered] house) which is also near Ka-pa-wai (The water enclosure). Kapa'iwai is also known as Makā'ō (Look with anger), and a coconut grove encircled those places. Further on, between the lands of Keahuolu and Kealahou was the *āhina* (hillock-plantation mound) of Lae-oniau... (April 2 and 9, 1914)

...The priest who officiated over rituals of Keahuolu and Kealahou was named Kaha'ōlapauia. He was the priest of the temple Kalihī, which is also called Kaha'ōlapauia. This temple is in the coastal area along the border of Keahuolu and Kealahou, near the old road into Kailua... (April 30, 1914)

...The district of Keahuolu and divisions of Lanīhau (1 and 2) were under the rule of Ka-pohukū'imaie (Keane) and Papaliū (wahine), and Papaumama was their warrior champion. When Papaumama competed with Ka-Miki at the contest site 'Iwa'awa'a (at Kōhina-iki) he was defeated. Papaumama was honorable, and he greatly admired the superior skills of Ka-Miki and asked to turn his status and land rights over to Ka-Miki, but Ka-Miki declined... (May 21, 1914)

Ka-noeoe (The mist, foginess) - The mound-hill called Pu'u-o-Ka'oa sits upon the plain of Kanoenoe which is associated with both Keahuolu and Kealahou. The settling of mists upon Pu'u-o-Ka'oa was a sign of pending rains; thus the traditional farmers of this area would prepare their fields. This plain was referenced by Pili when he described to Ka-Miki the extent of the lands which Ka-Miki would see upon marrying the aged chiefess Paehala of Honokōhau. The inheritance lands included everything from the uplands of Hīkaha above Nāpu'u and the lands of the waterless Kekaha, which spanned from the rocky plain of Kanika (Keahuolono) to the plain of Kanoenoe at Pu'uokaloa. (October: 25, 1917)

Pu'u-o-kaloa (Mound, or hill of Kaloa) - The narratives in Ka-Miki identify Pu'uokaloa as "Pu'uokaloa i ka malo o Ka'ēha e waiho'āia..." Pu'uokaloa where Ka'ēha's loin cloth (symbolic of the mists) was spread out. (October 25, 1917; Maly 1996:12-13)

The origin of Kaiwi, the place name for a point of land at the ocean on the boundary of Keahuolu and Kealahou is described in the following account:

Ka-iwi (The bone) is also called Ka-lae-o-Ka-iwi (The point of Ka-iwi) and is the name of a shark shaped stone near 'Ieiau of Kaha'ōlapauia. The priest Kaha'ōlapauia had two body forms, one human, as the priest, and the other body form as a shark in which he swam along the shore of Kealahou and Keahuolu, attacking people. The shark form was named Kaiwi, and the point Ka-lae-o-Ka-iwi is named for him (Maly 1996:14).

Another account translated by Maly titled "Ma Ho 'omanua o ka Manawa, Ke'āhihi mau Wahi Pana o Ke'āhaha ma Kona" in the same newspaper written by J.W.I. Kille describes agricultural practices:

Pu'u-o-kaloa is a mound-hill site in the lands of Keahuolu - Kealahē, not far from the shore of Ka'awi and Hi'ākanohole. During periods of dry weather (*ka lā ma'o o*) when planted crops, from the grassy plains to the 'āna'ūna'ū (fern forest zone) zone, and even the ponds (*ki'o wai*) were dry, people would watch this hill for signs of coming rains. When the liliha (light dew mists) sat atop the hill of Pu'u-o-kaloa, rains were on the way. Planters of the districts agricultural fields watched for omens at Pu'uokaloa, and it was from keen observation and diligent work that people prospered on the land. If a native of the land was hungry, and came asking for food, the person would be asked:

Ua ka na i Pu'uokaloa, ihea 'oe?
When rains fell at Pu'uokaloa, where were you? [If the answer was...]

I Kona nei no!
In Kona (there would be no sweet potatoes for this person.)

[But, if the answer was:]

I Kohala nei no!
In Kohala! (The person would be given food to eat for they had been away, thus unable to accomplish the planting.) [May 19, 1914; 1996:13]

One of the few early historic descriptions of the area comes from Ellis (1963) who reported the observations of the Reverends Thurston and Bishop during a walk along the coast north from Kailua in 1823. They described houses along the coast built on lava and small gardens in the lava where sweet potatoes, watermelon, and tobacco were grown.

During the Great Malhele, Kealahē was retained as government land, but preserved the rights of native tenants. These Land Commission Award (LCA) *kūleana* awards are listed in *Table 1*. The locations of the awarded parcels in Kealahē are shown in *Figure 4*. None of the awarded *kūleana* parcels in Keahuolu appear on current tax maps. The entire *ohi'a* of Keahuolu was awarded to the mother of King Kāiulani and Queen Lili'uokalani, Chiefess of Kā'awaloa, Ane Keohokalei (LCA 8452). The Waiohona 'Aina (2000) Malhele Database, which is a compilation of data from the Indices of Awards (Indices 1979), Native Register (NR n.d.), Native Testimony (NT n.d.), Foreign Register (FR n.d.) and Foreign Testimony (FT n.d.); lists seventeen awarded LCA claims for twenty-three parcels within Kealahē and Keahuolu. A total of sixty-two parcels were claimed. The *kūleana* parcels range from 0.6 to 5.25 acres in area with an average of 3.41 acres. All, except six awards, consist of a single awarded parcel. The remaining awards consisted of two awarded parcels.

The awarded parcels in Kealahē are all situated inland between approximately 900 ft and 1,900 ft elevation. All except one of the awarded claims in Keahuolu were probably inland based on testimony references to various crops. LCA 10303 claimed a salt land that would have been at the coast. Land use described in the LCA claim testimony consists of house lots and cultivated plots. Eight claims included house lots with at least eight houses. Enclosing walls are described for two house lots. The testimonies refer to 176 *kūlapai* and cultivated parcels. Four *kūlapai* are described as uncultivated. LCA 7483 describes the inland boundary of one claimed parcel as being a mountain banana patch. The northern and southern boundaries of a second parcel are described as being *ka'iwi*. Specific crops referenced include taro (31 plots), sweet potato (15), bananas (2) and coffee (1). Seven *loa'i'a* palms and a coconut grove also are mentioned.

The awarded parcels in Kealahē are situated within the upper *kūli'iwi* zone and 'āpa'ā zone of the Kona Field System, SHP Site 6601 (Newman 1970, Kelly 1983, Schitt 1984, Corry 1995). This site extends north to Kau Ahupua'a, south to Honaunau, and from the coastline to the forested slopes of Huala-

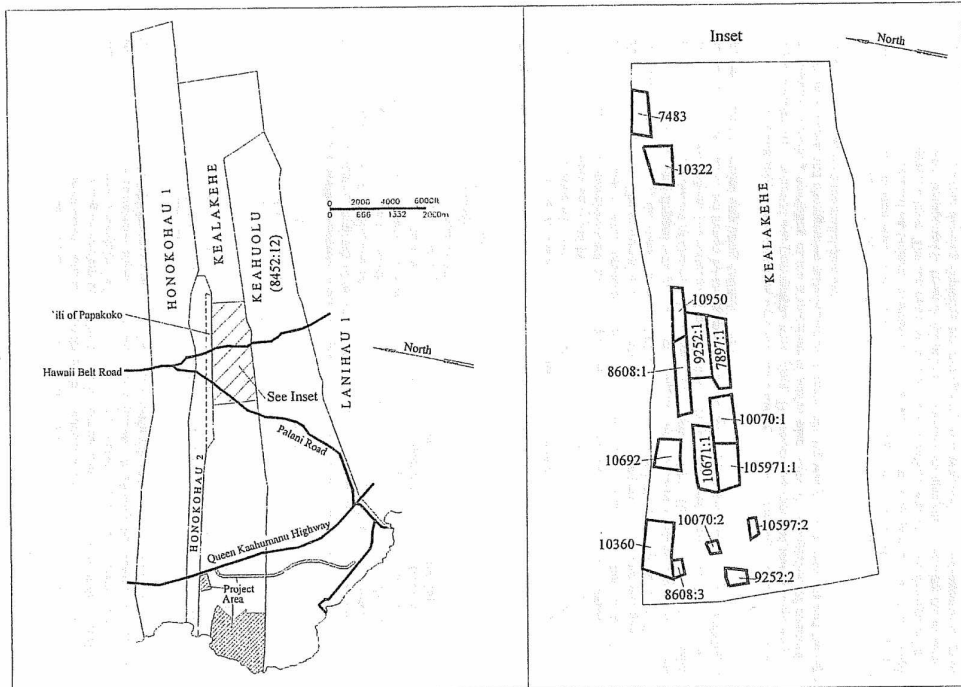


Figure 4. Ahupua'a Boundaries and Land Commission Awards

Table 1. Land Commission Awards in Kealakehe and Keahuolu (cont.)

LCA	Claimant	Apana claimed	Apana awarded	Section No.	Ahupuaa	Ili	Land Use	Boundary Mauka	Boundary Kau	Boundary Makai	Boundary Kohala	Date Rec'd	Giver	Acres	Royal Patent	Sources	Comment	
				7		Kukuiohina	N/D	N/D	N/D	N/D	N/D		grandparents					
				8		Ilioa	house lot	konohiki	Kahuenui	Pepe	Keawe	N/D						
10188	Mallewalewa	2	1		Keahuolu	Uluale	11 taro maia	Aki	konohiki	Nahaalulu	konohiki	1836	parents	1.30	3986	NR 474v8, NT 525v4		
				1			cultivated land	Nahaalulu	Lanihau 1	Apiki	idle land							
				2														
10303	Mea	4	1		Keahuolu	Maiii	11 taro kihapai, 10 sweet potato kihapai, coconut grove, 2 breadfruit trees, 7 loua palms, eel land									2.25	3981	NR 477v8, NT 526v4
				1				Papuaa Ili	Lanihau 1	Honu Ili	N/D							
				2				Papuaa Ili	Lanihau 1	Honu Ili	Papuaa Ili							
				3				Pupule	Mahu	Kala	Keahuolu							
				4			potato patch	Papuaa Ili	Kahuaiiki	Kealamela's foot path	Papuaa Ili							
10306	Nuole	1	1		Kelakehe	Kaniohale	cultivated	N/D	N/D	N/D	N/D	Kam. I time	grandparents	5.25	4405	NR 478v8, NT 542v4		
10345	Nahaalulu	4	1		Keahuolu							Kam. I time	N/D	2.00	3983	NR 479v8, NT 527v4		
				1			cultivated section	konohiki	Kaawa	Hailawalewa	idle land							
				2			4 cultivated kihapai	Apiki	Kina	Kahuenui	Luluika & Papaua							
				3			1 cultivated kihapai	Hailawalewa	Papaua	Lolo	idle land							
				4			4 cultivated kihapai	konohiki	Maa	Aki	konohiki							
10322	Nuhii	6	1		Kelakehe	Makakiloia, Kaulu, Kaali, Keakaha, Kama, Kamaia	house lot, 20 cultivated plots	N/D	N/D	N/D	N/D	1844	Keahu	4.75	8054	NR 479v8, 543v4		
10587	Puuu	2	2		Kelakehe							Kam. I time	Keahu	4.12	6235	NR 484v8, NT 542v8	awarded 2 apana	
						Kukuiohina	6 kihapai	N/D	N/D	N/D	N/D							
						Kukuiohina	house lot, 4 kihapai	N/D	N/D	N/D	N/D							
10571	Pepe	5	2		Kelakehe										4.96	4007	NR 484v8, 544v4	awarded 2 apana
						Ilioa	2 kihapai					1844	Keawe					
						Halelono	5 kihapai					1844	Keawe					
						Kukuiohina	1 kihapai					1844	Keawe					
						Kaniohale	2 kihapai					1844	Keawe					
						N/D	house lot (enclosed) 2 houses					1846	Keahu					
10892	Paal	3	1		Kelakehe							1843	Keahu	2.80	4004	NR 485v8, NT 544v4		
						Puchu	10 kihapai	N/D	N/D	N/D	N/D							

Table 1. Land Commission Awards in Kealakehe and Keahuolu

LCA	Claimant	Apana claimed	Apana awarded	Section No.	Ahupuaa	Ili	Land Use	Boundary Mauka	Boundary Kau	Boundary Makai	Boundary Kohala	Date Rec'd	Giver	Acres	Royal Patent	Sources	Comment	
7483	Kulua	3	1		Kelakehe		moaka banana patch, north & south boundaries are kuahiwi					1843	Piko	2.60	4040	NR 443v8, NT 541v4		
				1		Kaohina	cultivated kihapai	idle land	Puho	Keahu	Makakiloia Ili							
				2		Makakiloia	cultivated kihapai	Kahui	Puho	Paal	konohiki							
				3		Makakiloia	1 house, cultivated kihapai	Nuhu	Keahie	konohiki	Ilioa							
7887	Kahuenui 2	5	2		Kelakehe		house lot, partially cultivated	N/D	N/D	N/D	N/D	Kam. I time	parents	4.90	4002	NR 451v8, NT 545v4	awarded 2 apana	
8452	A. Keohokaloia	1	1		Keahuolu		-	N/D	N/D	N/D	N/D			4071.00	4386	NR 587v5, FT 573v3, NT 328v10	awarded entire ahupuaa	
8508	Keahu	5	2		Kelakehe		4 taro and 3 potato kihapai, 2 house lots					Kam. I time	Kapau	3.90	5228	NR 482v8, NT 540v4	awarded 2 apana	
				2		Puho	1 partially cultivated kihapai	konohiki	Halelono Ili	konohiki	Kaohia Ili							
				3		Kukuiohina	1 cultivated kihapai	konohiki	Hiapoole	Kahuenui	Kanihale Ili							
				4		Kailu	1 cultivated kihapai	konohiki	konohiki	konohiki	Kanihale Ili							
				5		Ilioa	1 cultivated kihapai	Keawe	Makakiloia	Mioi	Keawe							
				6		Kaohia	house lot (partially enclosed, no house)	idle land	idle land	idle land	idle land							
9252	Kauhal	3	2		Kelakehe		house lot, 9 cultivated kihapai	N/D	N/D	N/D	N/D	Kam. I time	Keahu	5.78	4005	NR 465v8, 545v4	awarded 2 apana	
				1		Puho, Kaohia, Keneohele	4 partially cultivated kihapai	idle land	Nakapalaohulu	Kaleheana	Wahi							
				2			cultivated	idle land	idle land	Nakapalaohulu	Kamuku							
				3			2 cultivated kihapai	konohiki	Nakapalaohulu	konohiki	Kamuku							
				4			2 cultivated kihapai	konohiki	Nakapalaohulu	konohiki	Auwemala							
10070	Mioi	8	2		Kelakehe										4.40	4003	NR 473v8, NT 547v4	awarded 2 apana
				1		Ilioa	2 cultivated section	Keawe	idle land	Keawe	Papaakohu	N/D	N/D					
				2			1 uncultivated kihapai	Pepe	Nuhii	Keawe	Pepe	N/D	N/D					
				3		Kaniohale	2 cultivated kihapai	Nuole	Kahuenui	Pepe	Pepe	N/D	Nuole					
				4		Kaniohale	1 cultivated kihapai	konohiki	konohiki	konohiki	konohiki	N/D	Nuole					
				5		Kaniohale	1 cultivated kihapai	Nuole	Kukuiohina Ili	konohiki	Halelono	N/D	Nuole					
				6		Kukuiohina	1 cultivated kihapai	konohiki	Pepe	konohiki	Puoa	N/D	grandparents					

lai. The area was intensively cultivated and served as the resource base for the large number of chiefs and retainers that occupied the Kailua-Keolu coast. The characteristics and general locations of the elevation zones of the system described by Newman (1970) have been confirmed and elaborated on by subsequent ethnohistorical investigations (Kelly 1983). Much of the *kali'u'ui'u* zone and lower *kali'u* zone of the field system did not extend into Kealahē and Keahuolu based on Newman's map of the system (1970; Map 12).

The *kali'u'ui'u* zone extends from 500 to 1,000 ft elevation. The zone was used for cultivating sweet potatoes, paper mulberry, and especially breadfruit. Archaeologically, this zone is not distinguishable from the adjacent *'ana'a* zone (Cordy 1995). The *'ana'a* zone is situated between 1,000 and 2,500 ft elevation. This zone traditionally was used for dryland cultivation of taro, sugar cane, sweet potato, and ti. Permanent habitations were present in the *'ana'a* zone, but were infrequent (Cordy 1995; Burchard 1995). Dwellings were observed by early historic chroniclers, but most were probably for temporary use in conjunction with agriculture, bird hunting, and collecting of plant resources. Burials and ritual sites are rare in the upper elevation zones (Kavachi 1989).

Kali'u'ivi'i are prominent agricultural features of the *kali'u'ui'u* and *'ana'a* zones (Cordy 1995; Newman 1970). These are broad, linear piles of rocks built from stones cleared from the adjacent slopes that also served as field boundaries. *Kali'u'ivi'i* are oriented inland-seaward often interconnected with perpendicular, soil-retaining walls and terraces forming rectangular grid pattern of fields. *Kali'u'ivi'i* also served to control rainfall runoff (Kirch 1985). These formal fields contrast with more informal garden areas characterized by scattered agricultural features in very rocky areas, such as young lava flows, and much of the *kali'u* zone.

The following summary of mid- to late 1800s developments is taken from Silva (in Hammett et al. 1987) and Smith (in Donham 1990a). Their research focused on Interior Department correspondence. In 1853, Kaahui, the claimant for LCA 8608, made a partial payment of \$15 for 153 acres of Kealahē. In 1874, Keeikolani paid \$51 for a one-year lease on land in Kealahē.

An Interior Department assessment of government lands dated September 5, 1865 describes Kealahē as follows:

Kealahē contains in all about 2000 acres, mauka of Gov't. Road some 400 Ac. covered with Aihii, firm [sic], & scattering Ohia. 2nd rate soil for this part of Kona. Makai of Gov't. Road 200 Ac. has been surveyed and sold to Kahenui, he bought this piece from Sheldon and says that he has payed him \$50, but got nothing for it. Kahenui has payed to me \$100, towards this land. Within this 200 Ac. piece, are 10 Kuleanas containing in all 43. Ac. Leaving 157 Ac. This land was valued at \$1. per Ac. Makai of this is about 1400 Ac. 300 of which will do for a goat pasture, balance nothing but rocks.

The Homestead Act of 1884 directed the Minister of the Interior to make land available for homesteads. The lots were to be no more than 20 acres in area and the homesteaders had five years to comply with conditions necessary for obtaining title to the parcels. In 1886, King Kalakaua executed a 20-year lease for lands in North Kona, including portions of Kealahē, to the Interior Department for homesteads. The homestead lands in Kealahē included two blocks (1st and 2nd series) situated between approximately 500 ft elevation and 1,400 ft elevation, seaward of the inland Government Road. A letter from the Minister of the Interior dated May 15, 1889 dispatched the surveyor Emerson to layout the homestead lots at Kealahē.

George McDougall submitted several offers to purchase lands in Kealahē. A March 9, 1893 application stated:

There is a remnant of Gov't. land in Kealahē, left unsold - Kealahē lies north of Kailua about 3 miles in North Kona, Hawaii. This unsold part that I refer to above, extends from the homesteads to the seashore and contains an area of 15 or 16 hundred acres, fully one half of that is pure pahohoe, almost without a crack, and is

Table 1. Land Commission Awards in Kealahē and Keahuolu (cont.)

LCA	Claimant	Apana claimed	Apana awarded	Section No.	Ahupuaa	ili	Land Use	Boundary Mauka	Boundary Kau	Boundary Makai	Boundary Kohala	Date Rec'd	Giver	Acres	Royal Patent	Sources	Comment
						Ililoa	1 kihapai	N/D	N/D	N/D	N/D						
						Kaohia	2 kihapai	N/D	N/D	N/D	N/D						
10950	Wahialele	2	1		Kealahē							Kam. I time	N/D	2.00	5123	NR 489v6, NT 545v4	
						Kaohia	4 cultivated sections	N/D	N/D	N/D	N/D						
						Pouhe	house lot (not enclosed)	N/D	N/D	N/D	N/D						
11074	Aki	7	1		Keahuolu	Pauaaki						Kam. I time	Kaen, Nahaualulu, Kealahē	0.60	3892	NR 490v6, NT 527v4	
				1			5 cultivated kihapai	Maa	Lan'hau 1	Apiki	Pauaaki III						
				2			1 uncultivated kihapai	Apiki	Lan'hau 1	Apiki	Pauaaki III						
				3			1 uncultivated kihapai	Apiki	Lan'hau 1	Hailawelawe	idle land						
				4			1 uncultivated kihapai	Kaen	Kaen	Kula	Keahuolu						
				5			1 cultivated kihapai	Mahu	Kaen	Mahu	IGA						
				6			4 cultivated kihapai	Pauaaki III	Mali	Kealahē	idle land						
				7			1 cultivated kihapai	Kaen	Maa	Kaunakahi	Kaen, Au'ili						

N/D=No Data

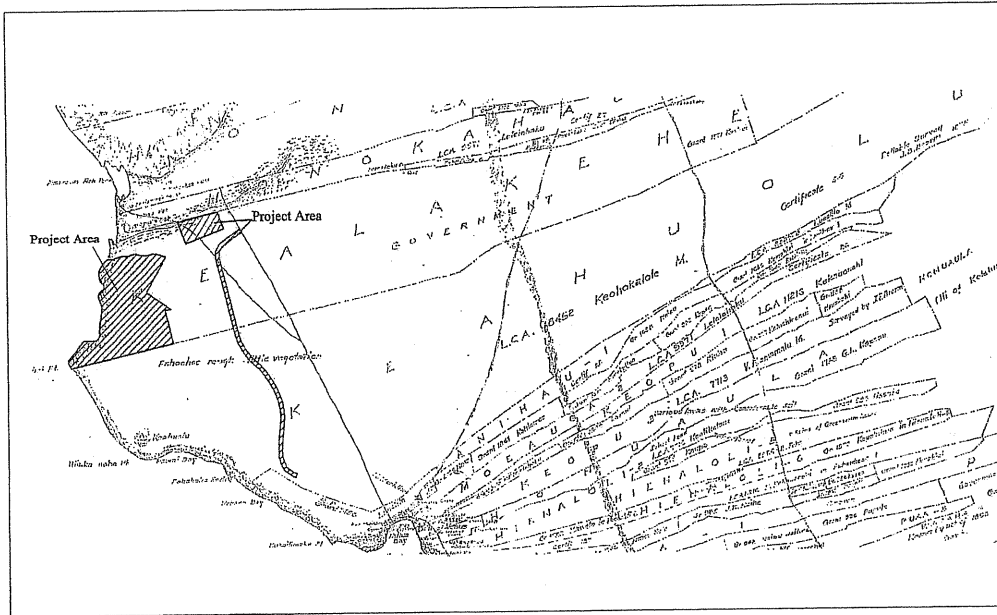


Figure 5. Portion of Emerson's 1880s Map of Kailua

worthless. The mauka half consists of large beds of black aa [sic], with a few bushes between and is of very little value, but what makes it valuable to me, my land is on both sides of it. I pay rent by the quarter at present to the Gov. agent.

I beg to offer \$300 – as an upset price if the Gov. will put it up for sale – more on account of its situation than its real value, as it would take more than all it is worth to fence it in.

The Government Surveyor recommended that the parcel not be sold for less than \$500. N.H. Greenwell owned land inland of the Government Road that was used for coffee cultivation in 1888. A letter to the Minister of the Interior dated December 29, 1894 from W.P. Fennell offered to purchase 400 to 500 acres of Kealahou for \$1.20 per acre.

Donham (1990b) quotes a letter from David Kaiakaua to his sister Liliu'okalani, dated July 8, 1869, that described Keahuolu as follows:

This land is situated in the District of North Kona, bounded by the ahupuaa of Laniihau (in Kailua) belonging to Prince Lunalilo on the Ka'u side, and on the Kohala side, by Kealahou, a government land and Honokohani belonging to Keelikouani. Keahuolu runs clear up to the mountains and includes a portion of nearly one half of Hualalai mountains. On the mountains the koa, kukui and ohia abound in vast quantities. The upper land or inland is arable, and suitable for growing coffee, oranges, taro, potatoes, bananas &c. Breadfruit trees grow wild as well as the Koli oil seed. The lower land is adapted for grazing cattle, sheep, goat, &c. The fishery is very extensive and a fine grove of coconut trees of about 200 to 300 grows on the beach. The flat land near the sea beach is composed chiefly of lava, but herbs and shrubbery grows on it and [it is] suitable for feed of sheep and goats. It is estimated at 15,000 to 20,000 acres or more (Donham 1990b:B-4-4-5)

Emerson's 1880s map of Kailua (Figure 5) shows the seaward boundary of the forest at approximately 750-900 ft elevation in Kealahou and Keahuolu. Emerson's field notebook describes the inland of the forest edge as "lava covered with scattering forest and dense masses of ki root" (Kelly 1983:58). The map indicates that the seaward portions of Kealahou and Keahuolu are rough pahoehoe with little vegetation. The map shows three roads or trails extending across Kealahou and Keahuolu. The inland road corresponds to the present Mamalaona Highway. The next road seaward follows the route of Palani Road. A third road or trail extends to the south towards Kailua. The road splits immediately south of the Kealahou boundary. One branch extends to the fishpond at Honokohau extending across a portion of the project area. The other branch extends to the northern boundary of Honokohau 2. The inland end of Kealahou above the upper road is labeled Grant 1571 to Kaahui. The grant is probably the 153 acre parcel Kaahui made a \$15 payment on in 1853.

A sisal (*Agave sisilana*) plantation and mill was established on the lower slopes of Keahuolu and Kealahou in the late 1890s (Perzinski et al. 2003). The mill, which operated until 1924, produced rope and fibers. The Honokohau Harbor is situated in Kealahou adjacent to the project area. The harbor was authorized by the River and Harbor Act of 1965. The harbor was completed in 1970. The facility was expanded between 1978 and 1980. Excess rock from the work was deposited in a large depression in the main portion of the project area.

Previous Archaeological Research

At least thirty-three archaeological survey and excavation projects have been conducted in Kealahou and Keahuolu. Figure 6 shows the locations of the projects and Table 2 summarizes the projects. Not included in the figure or table is the general study by Stokes (Stokes and Dye 1991), which focused on major sites, primarily *heiau*, throughout Hawaii Island. Stokes reported that Luapauwila Heiau was a "walled structure on the 'E'lemakule homestead. Grant No. 3765, 3.5 miles from the sea" (1991:40) in Kealahou; however, he apparently did not visit the site. Stokes described three *heiau* along the coast of Kea-

Table 2. Summary of Previous Archaeological Work

Author	Land	Study Type*	Elevation	Acres	No of sites	Sites/acre	No of Feas	Feas/acre	Hab Feas	Hab Feas/acre	Perm Hab Feas	Temp Hab Feas	Ag Feas	Ag Feas/acre	Burial Feas	Ritual Feas	Trail	Misc. & Indel. Feas.	Historic Feas.
Reinecke (1930), Emory and Soehren (1971), Sekido (1968)	Kaloko, Honokohau and Kealahke	RS	0-80	52	27	0.52	30	0.58	13	0.25					10	2		2	
Soehren (1981)	Kealahke	RS	0-40	43	3	0.07	4	0.09	2	0.05					1	1			
Bank (1987)	Kealahke	RS	0-70	1885															
Dorham (1990b)	Keahuolu	IN	9-650	1100	239	0.22	1810	1.65	78	0.07	22	56	1629	1.48	5	2	13	83	
Borthwick and Hammett (1992)	Kealahke and Keahuolu	AS	10-75	21.3	4	0.19	8	0.38	3	0.14		3	5	0.23					
O'Hare and Rosendahl (1993)	Keahuolu	IN	20-85	100	18	0.18	42	0.42	9	0.09			17	0.17	1	1	1	12	1
Sinoto (1975)	Kealahke	RS	30-60	100	3		4	0.04	1	0.01								1	2
Rechtman and Escott (2002)	Kealahke	IN	30-80	35	8	0.23	8	0.23	3	0.09		3					2	3	
Hau and Henry (2001)	Kealahke	IN	30-65	200	56	0.28	121	0.61	4	0.02		4	2	0.01		1	1	13	
Walsh and Hammett (1995)	Keahuolu to Kalaea 1-4	IN	40-140	120	17	0.14	29	0.24	6	0.05		6	4	0.03			8	9	2
Soehren (1980)	Kealahke	RS	40-80	70	1		1	0.01		0.00								1	
Borthwick et al. (1993)	Kalu'ulu and 'Ipa'ia	RS	50-90	66	2		2	0.03		0.00								2	
Sinoto (1977)	Kealahke	RS	60-180	223	4		4	0.02	3	0.01									1
Harry and Graves (1993)	Kalaea-Lanihau	IN	70-80	10	2		2	0.20		0.00								2	
Perzinski et al. (2004)	Keahuolu	IN	147-181	2.82	1	0.35	3	1.06	1	0.35		1	2	0.71					
Goodfellow and Walker (1993)	Keahuolu	FI	160-250	0.731	17	23.26	34	46.51	4	5.47		1	28	38.30		1		1	
O'Hare and Franklin (1994)	Keahuolu	IN	200-220	0.15	2	13.33	7	46.67	1	6.67			5		1				
Henry et al. (1998)	Keahuolu	IN	200-460	60	37	0.62	148	2.47	29	0.48	2	27	104	1.73				1	14
Wutzen and Goodfellow (1995), Wutzen et al. (1996)	Keahuolu and Lanihau	IN/EX	253-305	2.45	7	2.86	11	4.49	2	0.82		2	3	1.22					6
Dorham (1990a), Burgitt and Rosendahl (1992), O'Hare and Goodfellow (1994)	Kealahke and Keahuolu	IN/DR	540-680	950	126	0.13	1169	1.23	37	0.04			1015	1.07	32	5	24	45	10
Hammett (1984)	Kealahke	RS	640-740	24	0		0	0.00		0.00									
Hammett, Shidior and Borthwick (1987)	Kealahke	RS	700-800	15	16	1.20	32	2.13	4	0.27		4	27	1.80					1
Hammett (1987)	Kealahke	RS	700-900	15	18		43	2.87	4	0.27			29	1.93	6		1		3
Walker and Hau (1987), Walker and Rosendahl (1988)	Kealahke	IN/EX	1050-1100	2	1	0.50	10	5.00	5	2.50	5		5	2.50					
Rechtman et al. (2002)	Kealahke	IN	1220-1270	22	9	0.41	49	2.23		0.00			41	1.85					8
Rechtman and Dougherty (2002)	Kealahke	IN	1480-1600	16	1	0.06	79	4.94		0.00									79
Janson and Head (1995)	Keahuolu	IN	1670-1720	4.9	5	1.02	31	6.33	1	0.20		1	28	5.71				2	
Total/Average				5140.361	626	2.62	3680	6.02	210	0.69	29	107	2916	3.78	66	13	56	189	127

*N=Inventory Survey, RS=Reconnaissance Survey, AS = Assessment, FI=Field Inspection, DR=Data Recovery, EX=Excavations

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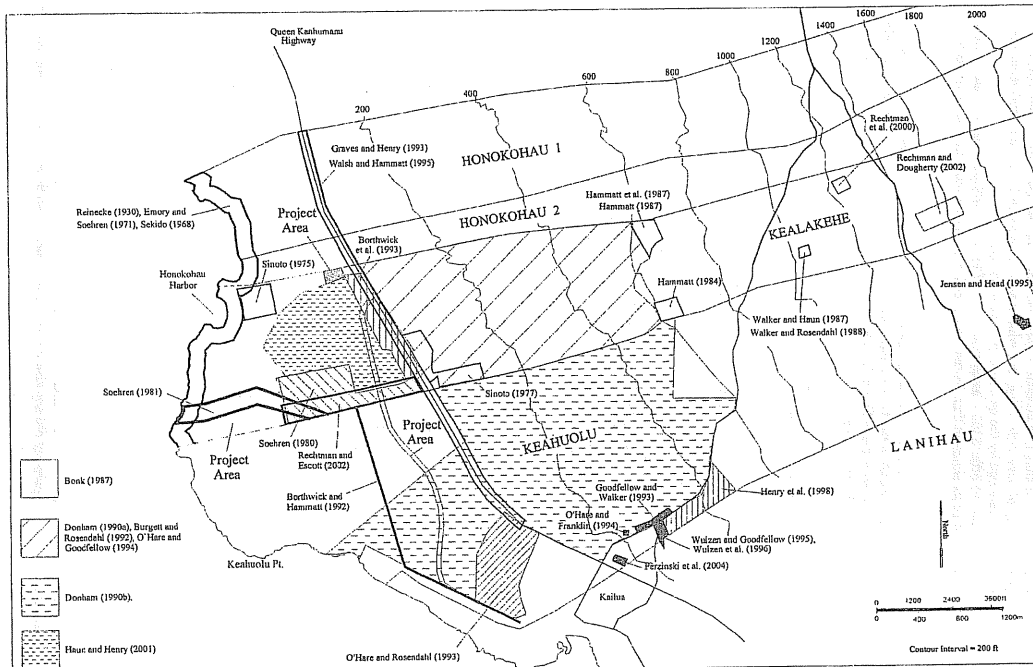


Figure 6. Previous Archaeological Work

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luolu: (a) Halepa'u Ko'a, described as "a small fishing heiau" in a coconut grove; (b) Kawaluna Heiau situated c. 400 m north of the boundary with Lanikai; and (c) Palihilo Heiau, reported to be a sacrificial heiau on the Lanihau-Keaholu boundary in a coconut grove Stokes and Dye 1991:40-41).

The surveys of Reinecke (1930), Emory and Soehren (1971), Sinoto (1975), Soehren (1980, 1981), Bank (1987), Donham (1990b), and Ham and Henry (2001) included portions of present project area. Ching (1978) conducted a reconnaissance survey of the seaward portion of Kealanui below the highway; however, a copy of the report could not be obtained for review. The surveys by Reinecke (1930) and Emory and Soehren (1971) focused on the shoreline, identifying three heiau, more than twenty habitation features, and several burial features. Sinoto (1975) identified a *popoani*, salt pans, and a habitation site during a survey of areas proposed for Honolulu Harbor expansion. Soehren (1980) conducted a survey of the sewage treatment plant. He identified a trail (Site 7704) extending perpendicular to the coast in a north-south orientation that extends through the project area. He described the trail as follows:

It is delineated by coral pebbles ranging in size from one inch to six inches and spaced five to ten feet apart...The trail appears to join the village and pond at Honokohau with the small settlement at Pawai in Keaholu...It was traced for 1600 ft across the natural basin in which the project is located; to the north it has been obliterated by the small boat harbor...The trail, or alignment of coral pebbles, is about as straight as a man on foot could make it, and pays little regard to irregularities in the terrain which make following it precisely rather difficult in places. In the absence of any abrasion of the lava surface, kerbstones, causeways over low places or other evidence of frequent use, it probably represents a "preliminary route selection" for a nineteenth century horse trail (Apple 1965) subsequently abandoned, perhaps in favor of the "Old Mamalahoa Trail" farther inland (1980:2).

Soehren (1981) identified two habitation features, a burial, and a possible shrine all near the coast. Bank (1987) conducted a "walk-through" survey of over 1,800 acres of Kealakoe including the current project area that did not identify any new sites. The survey of Donham (1990b) and Ham and Henry (2001) surveyed areas that included portions of the proposed Kealakoe Parkway extension road corridor.

The projects in Table 2 cover over 5,000 acres identifying 626 sites with nearly 3,700 features. To aid in reconstructing settlement patterns, features were quantified by probable age and function, and the studies are ordered by elevation. Traditional Hawaiian features were categorized as habitation, agricultural, burial (including possible burials), and ritual. Features not assignable to these categories were categorized as miscellaneous/indeterminate. Traditional sites in this category include *popoani*, palatotes excavations, petroglyphs, salt pans, and *ohia*. Habitation sites are further subdivided into temporary and permanent for studies making this distinction. Density values are given for sites, features, and habitation and agricultural features. Overall, the studies have identified more than 210 habitation features, 2,916 agricultural features, 56 burials (including possible burials), 56 trail segments, and 13 ritual features. Historic features were not segregated by function. The majority of the historic features are ranch walls.

Density values for the surveys do not show any consistent trends by elevation, except agricultural feature density is low near the coast and dramatically increases above 700 ft elevation. Overall feature density values, excluding surveys of less than 15 acres, range from 0 to 4.94 features per acre. Habitation feature density for areas larger than 14 acres ranges from 0 to 0.48 features per acre with an average of 0.1. Agricultural feature density ranges from 0 to 1.86 features per acre with an average of 0.98.

Forty-three radiocarbon dates are reported in the studies by Donham (1990a, 1990b), O'Hare and Goodfellow (1994), O'Hare and Franklin (1994), BURGERT and ROSENDAHL (1992), and Henry et al. (1998). Most of the age determination results produced multiple age ranges or long single age ranges between the 1600s and 1950. When all potential age ranges are examined only two span the AD 1200s, six span the 1300s, twenty-one include the 1400s, twenty-five include the 1500s, thirty-five span the 1600s, thirty include the 1700s, and twenty-eight span the 1800s. The results indicate initial use of the area in the 1200s to 1300s, followed by a gradual increase during the 15th and 16th centuries. The most intensive use dates from the 1600s to 1700s.

As mentioned previously, the seaward half of Kealakoe lies outside the boundaries of the Kona Field System and the field system land use model is not applicable to the area. Environmentally, the area is very similar to the neighboring *ahupua'a* of Honokohau and Kaloko. Cordy et al. (1991) describe their *ahupua'a*-wide study of Kaloko conducted in the early 1970s and summarize the work of Reinecke (1930) and Emory and Soehren (1971) in the coastal portion of Kaloko. The study included a survey of the entire *ahupua'a* seaward of the Queen Kaahumanu Highway and sample areas inland of the highway. Excavations were conducted at 20 sites near the coast, 11 sites between 98 ft and 800 ft elevation, and five upland sites. Cordy et al. (1991) utilized four environmental zones to characterize settlement patterns in Kaloko that are applicable to Kealakoe (a) the Coastal Zone from sea level to 15 ft elevation, (b) the Middle Zone from 15 ft to 800-900 ft elevation, (c) the Lower Upland Zone from 900 ft to 1500 ft elevation, and (d) the Upland-Forest Zone between 1,500 and 6,000 ft elevation.

Based on their data, the authors believe the *ahupua'a* was permanently settled between AD 900 and 1200. Most of the sites were presumed to have been occupied in late prehistory in the 1600s and 1700s and this period is used to generate the settlement pattern model. Many sites also had a historic component. A *heiau*, coastal trail, *ahupua'a* boundary shrine, and permanent habitation sites, including the residence of at least one chief and four men's houses, were clustered next to the shoreline and around a fishpond. Temporary habitation sites were also present in the coastal zone. Branch trails linked habitation sites with subsistence sites and water sources along the coast. Subsistence sites included the fishpond at the coast and animal enclosures and agricultural complexes in the lower portion of the middle zone. A series of *manalua-maka'i* trails extend from the coast inland. Burials were concentrated in a cemetery in the lower middle zone and individual burials were present at two coastal sites.

Inland of the lower Middle Zone adjacent to the Coastal Zone, sites were widely scattered and primarily consisted of trails leading to the uplands associated with markers (caims) and temporary habitations, primarily in lava tubes. Settlement pattern data for the Upland Zone were derived from historic records. In the early to mid-1800s, the zone was used for agriculture and scattered habitations. This pattern is assumed to have prevailed in late prehistory as well. By the 1870s and 1880s, residential sites were more common and agricultural use continued as a small community developed near the upper road. This coincided with the near abandonment of the coastal habitations. In the late 1800s to early 1900s, the focus of land use shifted to large-scale ranching.

The Upland-Forest Zone was characterized by an extensive field system consisting of formal walled fields from 900 ft elevation up to approximately 2,500 ft, which was believed to be the lower limit of the late prehistoric forest edge. The major field boundary walls were perpendicular to the coast. Other agricultural features included terraces, depressions, mounds, and probable pigpens. Temporary habitation sites were scattered among the fields and at least one small shrine was present. Below 900 ft and above 2,500 ft elevation agricultural features were present, but were scattered and informal. By the mid-1800s, the forest edge was reported to be at the 1,700 ft elevation, leading the author's to conclude that much of the area was abandoned coincident with depopulation between European Contact and the 1850s.

PROJECT EXPECTATIONS

The project area is situated in the Coastal and lower Middle Zones as defined by Cordy et al. (1991). Prehistoric use of the project area is potentially represented by permanent habitations, burials and ceremonial sites along the coast with scattered temporary habitation sites associated with trails further inland. Chronologically, sites may have been used as early as the 1200s with the most extensive period of use occurring between the 1600s and 1700s.

In the early to mid-1800s, LCA claims indicate that settlement and cultivation was concentrated inland of the project area between 900 ft and 1,900 ft elevation. By the late 1800s to early 1900s, sites associated with ranching are expected, although this activity may have been limited to goats based on late 1800s descriptions of the area. Ranching activity would potentially be evidenced by stone walls and corals, and later, wire fencing.

Table 3. Summary of Identified Sites

SIHP Site No.	BPSM No.	H.A. Temp Field No.	Land	TMK	Type	Function	Resilient (0)	No. of Features	Feature Type																		ITTM Easting	ITTM Northing
									Possible excavation	Churn	Overhang	Lava Blower	Endowment	Ceremonial	Probable Burial	Stack	Well	Small Area	Small Crack	Small Hole	Platform	Platform	Platform	Platform	Platform	Platform		
1884	-	47	Kealahou	3-74-005-71	Complex	Temporary Habitation	16	2		1	1															Feb. A - 811285	2176233	
1885	D11-22, 24, 25, 26	34, 35	Kealahou	3-74-005-71	Complex	Ceremonial, Permanent Habitation	21-23	17		3	1	8	2	1												Feb. A1 - 811346	2176341	
1886	D11-21	349	Kealahou	3-74-005-71	Terrace	Permanent Habitation	15	1						1												811314	2176390	
1887	-	27, 28	Kealahou	3-74-005-71	Complex	Permanent Habitation	15	2				1				1										811382	2176591	
1888	-	-	Kealahou	3-74-005-71	Upehihi	Ceremonial	10	3																		Not identified		
1889	D11-20	136	Kealahou	3-74-005-71	Walled Terrace	Ceremonial	16	1																		811421	2176597	
1890	D11-19	179	Kealahou	3-74-005-71	Pitiform	Probable burial	18	1							1											811440	2176695	
1891	D11-18	176	Kealahou	3-74-005-71	Endowment	Permanent Habitation	20	1				1														811454	2176758	
1892	D11-17	303	Kealahou	3-74-005-71	Complex	Ceremonial	19-29	4			2															Feb. A - 811400	2177006	
1893	D-11-15, 16	302	Kealahou	3-74-005-71	Complex	Ceremonial, Probable Burial, Marker	17-18	7			1			2	2	2										Feb. A - 811400	2177173	
1894	D11-13	305, 309	Kealahou	3-74-005-71	Complex	Permanent Habitation, Rock art	8	5			1	1		1												Feb. A - 811417	2177239	
1895	D11-11	356	Kealahou	3-74-005-71	Platform	Possible Permanent Habitation	5	1																		811619	2177400	
1896	D11-12	356, 354	Kealahou	3-74-005-71	Complex	Ceremonial	7	2																		Feb. A - 811568	2177336	
1898	D11-7, 9, 10	334, 336, 338, 340, 343, 344	Kealahou	3-74-005-71	Complex	Ceremonial, Permanent Habitation, Transpiration	3-10	10			1				2	4	1							1		Feb. A - 812036	2177432	
1899	D11-8	342, 346, 347	Kealahou	3-74-005-71	Complex	Ceremonial, Temporary Habitation	10	3						2	1										1	Feb. A - 811761	2177411	
1900	D11-6	351	Kealahou	3-74-005-71	Complex	Permanent Habitation	5	4								3	1									Feb. A - 811758	2177512	
1904		4, 5, 6, 8, 2	Kealahou	3-74-005-71	Trail	Transpiration	36-42	27																		North East 812295	2176806	
19371		397, 388	Kaunolu	3-74-005-2	Complex	Indeterminate	23	2																	2	Feb. A - 812722	2175076	
22019	From Hana & Hana (2011)		Kealahou	3-74-005-71	Complex	Quarry	55	3		1															2	Feb. A - 812722	2177304	
23022	From Hana & Hana (2011)		Kealahou	3-74-005-71	Churn	Marker	58	1																		Feb. A - 812927	2177518	
23074	From Hana & Hana (2011)		Kealahou	3-74-005-71	Alignment	Indeterminate	62	1																	1	813035	2177203	
25053	From Hana & Hana (2011)		Kealahou	3-74-005-71	Overhang	Temporary Habitation	84	1				1														813094	2176945	
25049	199		Kealahou	3-74-005-3	Trail	Transpiration	43-44	1																		Jan Ind - 812865	2177554	
25550	194		Kealahou	3-74-005-3	Churn	Marker	39	1			1															812724	2177789	
25551	195		Kealahou	3-74-005-3	Alignment	Indeterminate	41	1																	1	812254	2177889	
25552	201		Kealahou	3-74-005-3	L-shape	Temporary Habitation	42	1																		812765	2177902	
25553	200		Kealahou	3-74-005-3	Churn	Marker	42	1			1															812764	2177889	
25554	197		Kealahou	3-74-005-3	Endowment	Permanent Habitation	41	1																		812731	2177581	
25555	196		Kealahou	3-74-005-3	Endowment	Permanent Habitation	42	1																		812698	2177923	
25556	2		Kealahou	3-74-005-71	Alignment	Indeterminate	39	1																		812335	2176667	
25557	1		Kealahou	3-74-005-71	Alignment	Indeterminate	38	1																		1	812379	2176666
25558	3		Kealahou	3-74-005-71	Alignment	Indeterminate	37	1																		1	812399	2176669
25559	7		Kealahou	3-74-005-71	Churn	Marker	41	1		1																1	812318	2176424

FINDINGS

A total of 127 sites with 432 features have been documented within the project area. The sites consist of 23 sites that were identified during previous archaeological studies within the area, and 104 that were newly identified during the current project. The previous investigations consist of work conducted by Emory and Soehren (1971), the Statewide Inventory of Historic Places survey by DLNR in 1973, Donnham (1990b), Soehren (1981) and Hann and Henry (2001). Of the 127 sites, 117 are situated within the Land of Kealahou and 10 are located in Keahuolu. The distribution of the 59 sites is presented in Figure 7 (in pocket at end) and the sites are summarized in Table 3.

Emory and Soehren (1971) identified 18 sites within the project area. These sites were assigned B.P. Bishop Museum site numbers D11-7-13, 15-22 and 24-26. Of these, 17 correspond to 13 sites that were documented during the 1973 statewide survey (Sites 1885-1886, 1889-1896 and 1898-1900). An additional three sites (Sites 1884, 1887 and 1888) were identified in 1973 that were not identified by Emory and Soehren (1971). One of these sites (1888) was not relocated during the current project. The remaining Emory and Soehren (1971) site (Site D11-13) was not noted in 1973 and was assigned its SIHP site designation during the present study (Site 25625).

The 432 features identified during the present study consist of 170 pahoehoe excavations, 80 cairns, 34 alignments, 26 overhangs, 23 lava blisters, 22 enclosures, 14 terraces, 10 platforms, 8 trails, 8 walls, 7 pavements, 5 midden scatters, 4 mounds, 4 sand areas, 3 filled cracks, 3 lava tubes, 2 C-shapes, 2 petroglyphs, 2 walled terraces, and one each of the following: artifact scatter, flat slab, L-shape, metal tower and upright. Functionally the 432 features are classified as resource procurement (n=170), marker (81), temporary habitation (63), permanent habitation (48), ceremonial (18), ceremonial/possible burial (1), transpiration (10), habitation (2), probable burial (2), temporary habitation/burial (10), rock art (2), canoe shed (1), livestock control (1) and indeterminate (29).

Subsurface testing was undertaken in 17 locations during the project (Table 4). The tested sites/features consist of a permanent habitation terrace (Site 25604, Feature A), a permanent habitation enclosure (Site 1885, Feature J), a permanent habitation filled crack (Site 1885, Feature G), a permanent habitation sand area (Site 1887, Feature B), three habitation sand areas (Sites 25610, 25611 and 25636), three temporary habitation lava blisters (Sites 1899, Feature B, 25587 and 25608, Feature A), two temporary habitation terraces (Sites 25583 and 25625, Feature C), a temporary habitation pavement (Site 25589), a ceremonial terrace (Site 1885, Feature E2), and a marker (Site 25588, Feature C). The two remaining test units (TUs 7 and 8) were excavated in non-cultural sand areas.

The two tested non-cultural sand areas are located near the coast in Kealahou (see Figure 7). The first (Sand Area 1) is 44.0 m long (northwest by southwest) and 19.0 m wide and is located at c. 12 ft elevation. It is surrounded by bare coastal pahoehoe lava with waterworn marine shells scattered across the surface. A 0.5 by 0.5 m test unit (TU-7) was excavated in the approximate center of the area, revealing two layers over bedrock (Figure 8). Layer 1 consisted of 0.07 m of a very pale brown (10YR 3/2) sand matrix with 50% cobble and pebble inclusions. This layer contained waterworn and fragmented marine shells (*Cornus* sp. [n=4, 2.9g], *Cypraea granulata* [n=4, 2.0g], *Cypraea* sp. [n=15, 126.6g], *Littoraria pinnata* [n=1, 0.1g], *Nerita picea* [n=1, 1.6g], *Cellana* sp. [n=4, 8.7g], *Thaididea* sp. [n=4, 20.7g], *Trachius inaequalis* [n=6, 2.8g], *Isognomon californicum* [n=1, 0.9g], *Spondylus* sp. [n=3, 2.4g], unidentified waterworn marine shell fragments [n=122, 34.2g]) and one waterworn coral pebble (0.1g).

Layer II was comprised of 0.2 to 0.6 m of a pinkish white (7.5YR 8/2) sand that contained waterworn and fragmented shells comprised of *Cornus* sp. (n=18, 17.0g), *Cypraea granulata* (n=2, 0.9g), *Cypraea* sp. (n=31, 70.5g), *Nerita picea* (n=25, 4.5g), *Cellana* sp. (n=15, 1.7g), *Phaeacolepeta granocostata* (n=195, 32.1g), *Cypraea* sp. (n=5, 1.6g), *Thaididea* sp. (n=63, 39.5g), *Trachius inaequalis* (n=18, 5.4g), *Barbatia divaricata* (n=2, 0.2g), *Isognomon* sp. (n=1, 0.2g), *Isognomon perna* (n=17, 2.4g), *Isognomon californicum* (n=1, 0.6g), *Littoraria pinnata* (n=1, 0.4g), *Tellina palatum* (n=2, 1.5g), *Spondylus* sp. (n=14, 11.1g), unidentified marine shell fragments (n=537, 108.9g), waterworn coral (n=1, 0.6g) and waterworn urchin body fragments (n=16, 1.9g).

probably functioned as site furniture such as tables, benches or drying racks. Large enclosures surrounding permanent habitation yards sites are also termed ancillary features, functioning to define the limits of enclosed yards.

The survey identified 16 permanent habitation sites with 48 features, all located within the Land of Kealahou. The distribution of the permanent habitation sites is presented in Figure 9. Permanent habitation features comprise 11.1% of the total features identified within the project area. Table 5 lists the permanent habitation features and summarizes the attributes utilized interpreting the features using Cordy's model (1981). Eight sites contain a single permanent habitation feature, two sites consist of two features, one has three features, one has four features, two have five features, one has six features and one has 13 permanent habitation features.

Twenty-three of the features represent the foundation for a roofed structure, with the remaining features consisting of ancillary features (n=19) and special purpose structures (6). The main permanent habitation structures (excluding special purpose structures) range in area from 12.5 to 118.7 sq m. There is only one of these features larger than 100 sq m and is atypical. Feature C of Site 1900 is a large platform with an area of 118.7 sq m. It is likely that a roofed residential structure was present on the surface of this feature, but the area of the foundation was much smaller with a portion of the surface functioning as a *lanai*. Two of the features are smaller than 16.0 sq m in area, both consisting of single feature sites. Sites 25554 (14.95 sq m) and 25596 (12.58 sq m) are rectangular enclosures with evidence of substantial construction.

Excluding the three features discussed above, the remaining 20 features interpreted to be foundations range in area from 16.1 to 89.7 sq m with an average area of 46.02 sq m. Sixteen of these features are less than 50 sq m in area with an average of 32.02 sq m, which is probably the average area of a typical residential structure. The five features with areas greater than 50 sq m are components of two sites (Sites 1885 and 1900) both of which are situated in coastal locations in Kealahou. Site 1885 contains a total of 17 features four of which are interpreted as ceremonial structures. Site 1900 contains three large permanent habitation structures and a wall. It is possible that the large permanent habitation structures at these sites are high status residences or men's houses. The locations of these complexes both have a broad view of the coast, which potentially provides further support for high status occupation.

The 19 ancillary features consist of 11 features interpreted as activity areas, four which potentially functioned as associated sleeping or storage areas, two features which may have facilitated bathing and two that partially defined the perimeter of a yard. The six remaining features are interpreted as special purpose structures. These features consist of five small enclosures and a terrace with areas that range from 6.8 to 11.9 sq m (averaging 8.6 m).

Morphologically, the permanent habitation features consist of 20 enclosures, 9 terraces, 4 platforms, 3 pavements, 3 alignments, 3 walls, 2 lava tubes, 1 lava blister, 1 filled crack, 1 overhang and 1 sand area. Petroglyphs were found in association with one of the permanent habitation sites (Site 1894) and associated ceremonial features were present at two sites (Sites 1885 and 1898).

The distribution of permanent habitation sites shows some patterning (see Figure 9). Nearly all of the permanent habitations (14 or 87.5 %) are located within 200 m of the shoreline below 25 ft elevation. The two remaining permanent habitation sites (Sites 25554 and 25555) are located in the inland portion of the project area in Kealahou at elevations that range from 41 to 42 ft.

Temporary Habitation

As defined by Cordy (1981), temporary habitations are (a) less than 16 sq m in external area, (b) insubstantial constructions, (c) contain numerous features of internal stratification (multiple firepits), and (d) have few or no associated structures. The temporary habitations identified during the project consist of 64 features at 49 sites. The distribution of the sites is presented in Figure 10 and the features are summarized in Table 6. Of the 64 features, 63 are located in Kealahou and one is within the Land of Keahuolu.

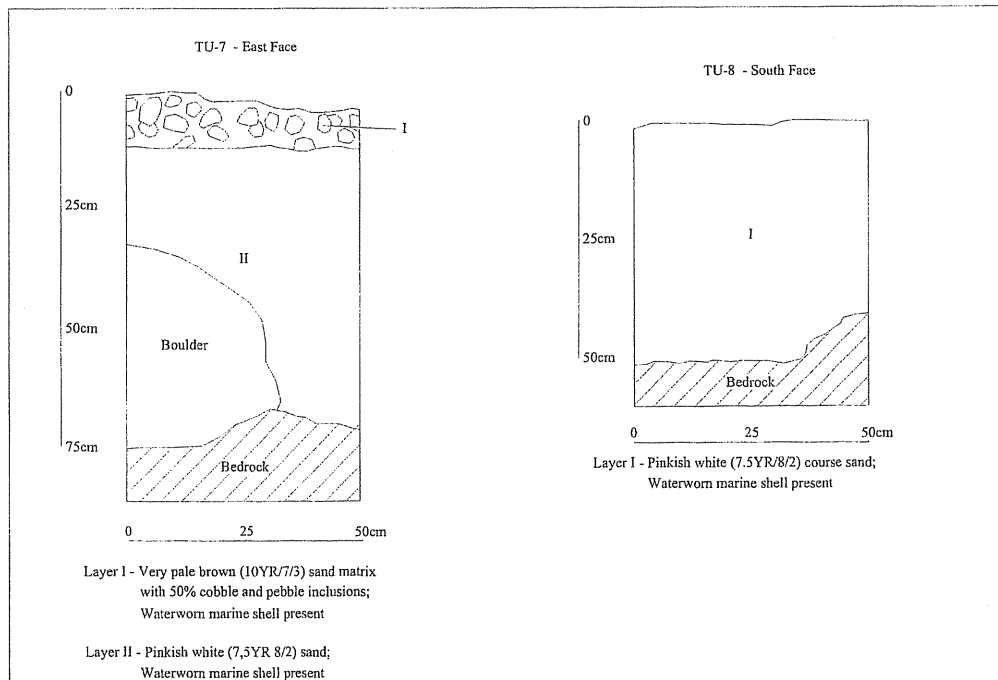


Figure 8. Profiles of TUs 7 and 8 Excavated in Sand Areas

Table 3. Permanent Habitation Sites

Site	Features	Formal Type	Shape	Substantial Construction	Area (sq. m)	Elevation (ft)	Comments
1885	A1	Enclosure	Square	None	43.80	22	Foundation for roofed structure
1885	A2	Enclosure	Linear	Paved surface	66.50	22	Foundation for roofed structure
1885	B1	Enclosure	Rectangular	Paved surface	8.65	22	Special Purpose Structure
1885	B2	Enclosure	Rectangular	Paved surface	7.40	22	Special Purpose Structure
1885	B3	Alignment	Linear	-	5.30	22	Auxiliary Feature - activity area
1885	B4	Alignment	Oval	-	1.22	22	Auxiliary Feature - activity area
1885	C	Alignment	Irregular	-	13.00	21	Auxiliary Feature - activity area
1885	O	Filled creek	Oval	-	6.00	22	Auxiliary Feature - activity area
1885	H	Enclosure	Rectangular	Paved surface	6.80	22	Special Purpose Structure
1885	I1	Enclosure	Rectangular	Vertical slabs, paved surface	89.70	22	Foundation for roofed structure
1885	I2	Enclosure	Square	-	11.90	22	Special Purpose Structure
1885	J	Enclosure	U-shaped	Paved surface	16.10	22	Foundation for roofed structure
1885	K	Lava blister	Oval	-	2.70	22	Auxiliary Feature - Sleeping or storage
1886	-	Terrace	Linear	Paved surface	31.30	15	Foundation for roofed structure
1887	A	Sand Area	Oval	-	511.00	15	Auxiliary Feature - activity area
1887	B	Enclosure	Irregular	Paved surface	24.60	15	Foundation for roofed structure
1891	-	Enclosure	Square	Paved surface	36.00	20	Foundation for roofed structure
1894	A	Enclosure	Rectangular	None	38.20	8	Foundation for roofed structure (2 associated platforms - I feature C)
1894	B	Terrace	Triangular	Paved surface	3.70	8	Auxiliary Feature - activity area
1894	D	Lava Tube	Irregular	Platform with stone wall and outside remnant	44.10	8	Auxiliary Feature - Sleeping or storage
1895	-	Platform remnant	Rectangular	Paved surface	24.90	5	Possible remnant of foundation for roofed structure
1898	B	Terrace	Rectangular	Paved surface	53.20	6	Auxiliary feature - building
1898	D	Terrace	Rectangular	Paved surface	11.50	8	Auxiliary feature - building
1898	E1	Terrace	Rectangular	Paved surface	43.80	7	Foundation for roofed structure
1898	E2	Enclosure	Rectangular	-	47.90	7	Foundation for roofed structure
1898	G	Terrace	Rectangular	Paved surface	37.80	6	Foundation for roofed structure
1898	I	Wall	Linear	-	15.4 m long	-	Auxiliary Feature - yard remnant
1900	A	Platform with enclosure	Rectangular	Stacked slabs with paved surface	78.70	5	Foundation for roofed structure
1900	B	Wall	L-shaped	Collared wall	32.9 m long	5	Auxiliary Feature - yard remnant
1900	C	Platform with enclosure	Rectangular	Stacked slabs with paved surface	118.70	5	Foundation for roofed structure
1900	D	Platform with enclosure	Rectangular	Stacked slabs with paved surface	88.90	5	Foundation for roofed structure
25554	-	Enclosure	Rectangular	Vertical slabs	14.85	41	Foundation for roofed structure
25555	-	Enclosure	Irregular	Paved surface	29.60	42	Foundation for roofed structure
25579	A	Enclosure	Oval	None	29.50	21	Possible remnant of foundation for roofed structure
25596	-	Enclosure	Rectangular	Paved surface	12.58	23	Foundation for roofed structure
25597	-	Enclosure	C-shaped	Vertical slabs	18.06	23	Foundation for roofed structure
25604	A	Terrace	Irregular	Paved surface	17.70	15	Foundation for roofed structure
25604	B	Wall	C-shaped	None	2.2 m long	15	Auxiliary Feature - activity area
25604	C	Platform	Oval	Paved surface	12.30	15	Auxiliary Feature - activity area
25604	D	Platform	Oval	Paved surface	4.10	15	Auxiliary Feature - activity area
25604	E	Platform	Irregular	Paved surface	49.70	21	Foundation for roofed structure
25614	A	Enclosure	Oval	None	69.70	31	Foundation for roofed structure
25614	B	Enclosure	C-shaped	None	23.60	21	Foundation for roofed structure
25632	A	Overhang	Irregular	None	34.70	12	Auxiliary Feature - Sleeping or storage
25632	B	Lava Tube	Irregular	None	36.80	12	Auxiliary Feature - Sleeping or storage
25632	C	Terrace	Rectangular	Aligned stones	2.50	12	Auxiliary Feature - activity area
25632	D	Enclosure	Rectangular	Paved surface	7.00	12	Special Purpose Structure
25632	F	Terrace	Rectangular	Paved surface	8.60	12	Special Purpose Structure

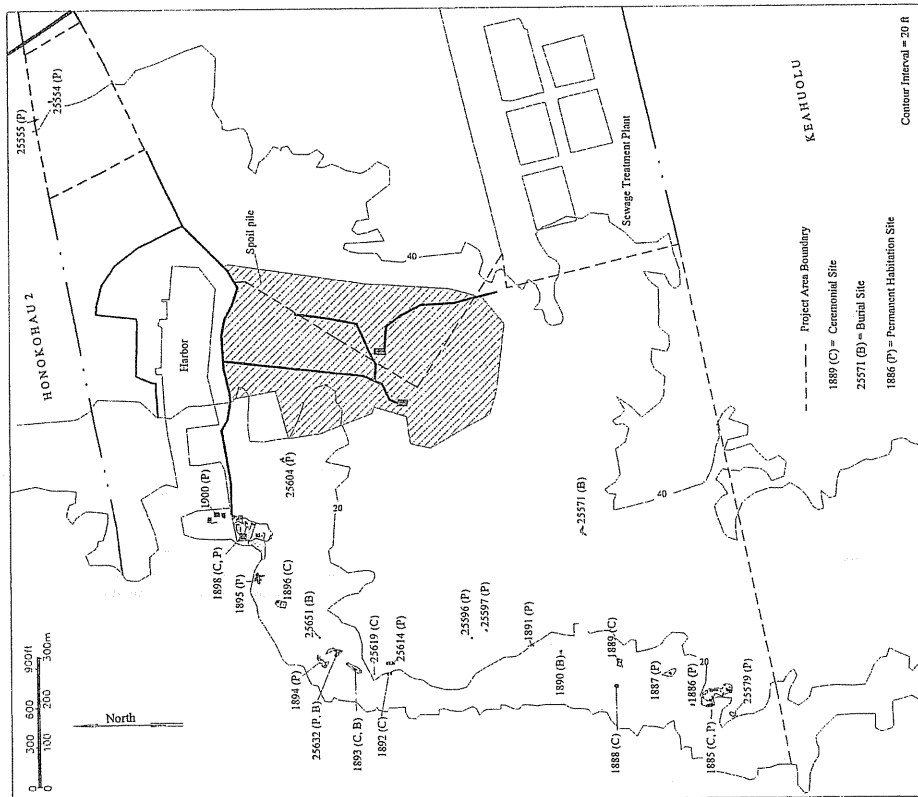


Figure 9. Permanent Habitations, Ceremonial sites and Burials

Table 6. Temporary Habitation Sites

Site	Feature	Formal Type	Shape	Construction	Area (sq m)	Elevation (ft)	Comments
1884	A	Lava Blister	Irregular	-	39.90	18	Marine shell and modern mesh
1884	B	Alignment	Irregular	Aligned cobbles and small boulders	9.36	18	Marine shell and charcoal
1899	B	Lava Blister	Oval	Crude terrace, rock ring, mound and alignment	46.80	10	Marine shells, waterworn coral, volcanic glass, abrasers, fishbones
1899	C	Lava Blister	Oval	-	18.80	10	Marine shell, waterworn coral, waterworn basalt
23033	-	Overhang	Oval	Crude pavement	6.80	81	No cultural remains
23552	-	Wall	L-shape	Stacked and piled cobbles and slabs	13.40	42	Marine shell
25571	-	Lava Tube	Irregular	-	54.00	35	Waterworn coral and <i>kukui</i> nut - Burial also present
25573	-	Lava Blister	Oval	-	17.20	33	Marine shell
25578	-	Lava Blister	Oval	-	26.60	21	Marine shell
25580	A	Enclosure	Oval	Stacked and piled cobbles and small boulders	12.60	4	Waterworn marine shells and coral
25580	B	Alignment	Linear	Aligned cobbles and small boulders	3.4 m long	4	No cultural remains
25583	-	Terrace	Oval	Stacked and piled cobbles and small boulders with rough paved surface	8.60	19	Marine shell, waterworn coral abrasers, fish bones, charcoal
25586	-	Lava Blister	Oval	Piled cobbles and boulder mound below entrance	50.02	26	No cultural remains
25587	-	Lava Blister	Oval	Piled cobbles and boulder mound below entrance	11.50	19	Waterworn basalt cobbles
25588	A	Overhang	Irregular	Stacked and piled walls at entrance	16.50	21	Marine shells, fish bone, waterworn coral and ash
25589	-	Pavement	Irregular	Rough pavement	7.50	19	Marine shells, waterworn coral, volcanic glass, small mammal bone
25590	A	Overhang	Irregular	-	23.60	24	Marine shells, waterworn coral and ash
25590	B	Overhang	Irregular	-	78.70	24	Marine shells, waterworn basalt cobbles
25592	-	Overhang	Irregular	Stacked wall at entrance	13.00	22	Modern debris
25593	-	Midden scatter	Irregular	Scattered cobbles and small boulders	36.10	19	Marine shell and waterworn coral
25594	-	Overhang	Irregular	-	33.70	23	Marine shells, <i>Echinoid</i> body fragments, fish bone and ash.
25595	-	Lava Blister	Irregular	-	52.00	24	Marine shells, <i>Echinoid</i> body fragments, waterworn coral
25598	-	Lava Blister	Irregular	-	24.90	26	Marine shells and <i>Echinoid</i> body fragments
25599	-	Overhang	Irregular	-	8.90	23	1 waterworn basalt pebble
25600	-	Overhang	Irregular	-	22.50	22	Possible hearth with marine shells, waterworn coral and ash and 2 waterworn basalt cobbles
25601	-	Overhang	Irregular	-	20.60	22	Waterworn coral fragment and ash deposit
25603	A	Overhang	Irregular	-	16.20	20	Branch and waterworn coral
25603	B	Overhang	Oval	-	3.51	20	Marine shells
25606	-	Overhang	Irregular	-	14.50	23	Marine shells
25608	A	Lava Blister	Oval	-	47.30	21	Waterworn basalt cobbles and waterworn coral
25609	-	Overhang	Linear	-	32.60	21	Waterworn basalt cobbles and Marine shells
25615	A	Overhang	Oval	-	23.60	22	Marine shells, <i>Echinoid</i> body fragments and spines and ash
25615	B	Alignment	Oval	Aligned slabs and cobbles	1.40	22	Marine shells
25615	C	Pavement	Oval	Rough pavement bordered by slabs	1.87	22	Marine shells and waterworn coral
25615	D	Flat slab	Oval	Slab supported by cobbles	1.78	22	Marine shells and waterworn coral
25616	-	Lava Blister	Oval	-	15.90	22	Possible table



Figure 10. Temporary Habitation Sites

Table 6. Temporary Habitation Sites (cont.)

Site	Feature	Formal Type	Shape	Construction	Area (sq m)	Elevation (ft)	Comments
25617	-	Midden scatter	Oval	-	8.0	21	Marine shell with waterworn basalt and coral
25618	-	Lava Blister	Oval	-	7.3	23	Marine shells
25620	-	Overhang	Irregular	-	26.00	21	Marine shell, ground fragments, ash and waterworn coral
25621	A	Wall	Linear	Stacked cobbles and small boulders	1.65 m long	21	No cultural remains
25621	B	Overhang	Oval	-	12.50	21	Marine shell, waterworn coral and seawall
25622	-	Overhang	Irregular	-	14.40	21	Waterworn coral
25623	-	Overhang	Irregular	-	22.20	21	Marine shells and waterworn coral
25625	A	Lava Blister	Oval	-	5.80	19	Shell fishhook, 3 fishhook blanks, basalt side, whitest bone, dog teeth, pig tusk, waterworn basalt pebbles
25625	B	Lava Blister	Oval	-	2.10	19	No cultural remains
25625	C	Terrace	Rectangular	Stacked sides, unpaved surfaces	3.95	19	Branch coral, waterworn coral, <i>Kuhai</i> nut shell
25626	A	Overhang	Oval	Piled cobbles and boulders at entrance	11.70	18	Waterworn basalt cobble, waterworn coral, <i>Merina</i> shell
25626	B	Midden scatter	Oval	-	3.63	18	Waterworn basalt pebbles, waterworn coral, <i>Merina</i> shell
25627	-	Lava Blister	Oval	-	46.80	16	Marine shell, Echinoid, <i>Kuhai</i> nut shells, waterworn coral, waterworn basalt cobble, ash deposits and wooden bottom
25628	A	Overhang	Oval	-	14.60	13	Marine shell, Echinoid, <i>Kuhai</i> nut shells, waterworn coral, waterworn basalt cobble, ash deposits, charcoal
25629	-	Enclosure	Oval	Roughly stacked and piled cobbles and small boulders	12.00	18	Marine shell and Echinoid
25633	A	Overhang	Irregular	-	20.30	19	Marine shell and Echinoid, <i>Kuhai</i> nuts, ash, waterworn coral and waterworn basalt cobbles
25634	-	Overhang	Irregular	-	17.5	15	Marine shells, waterworn coral and waterworn basalt cobbles and pebbles
25635	A	Lava Blister	Oval	-	10.2	12	<i>Cypraea</i> sp. shells, waterworn coral and waterworn basalt cobble
25635	B	Overhang	Irregular	-	6.2	12	<i>Cypraea</i> sp. and <i>Callana</i> sp. shells and waterworn coral
25637	-	Midden scatter	Oval	-	2.9	10	<i>Cypraea</i> sp. and <i>Callana</i> sp. shells and waterworn coral
25638	-	Lava Blister	Irregular	-	16.10	10	Unidentified marine shell, <i>Kuhai</i> nuts, waterworn coral and waterworn basalt cobbles
25639	A	Lava Blister	Oval	-	91.70	8	Waterworn coral and waterworn basalt cobbles
25639	B	Midden scatter	Irregular	-	10.40	8	Waterworn coral and <i>Cypraea</i> sp. shells and <i>Callana</i> sp. shells
25640	-	Lava Blister	Oval	-	46.40	10	<i>Cypraea</i> sp. shells, nuts and waterworn coral
25641	A	Lava Blister	Oval	-	22.60	12	<i>Cypraea</i> sp. shells, <i>Kuhai</i> nuts and waterworn coral
25641	B	Lava Blister	Oval	-	25.80	12	<i>Cypraea</i> sp. shell, Ash and waterworn coral
25642	-	Overhang	Irregular	-	24.40	10	<i>Cypraea</i> sp., and <i>Merina</i> sp. shells and waterworn coral
25644	-	Lava Blister	Oval	Piled cobble and boulder roof fall	42.9	32	<i>Cypraea</i> sp. shells and <i>Kuhai</i> nuts

The temporary habitations within the project area consist of 24 overhangs, 22 lava blisters, five midden scatters, three alignments, 2 enclosures, 2 terraces, 2 walls, a lava tube and a flat slab. The majority of these sites contain only one temporary habitation feature (n=37 or 75.5 %). The 12 remaining sites are complexes that contain either two features (10), with one containing three features and one containing four features.

The temporary habitation sites are present at all elevations within the project area although most are located below c. 30 ft elevation. The majority of the temporary habitation features are comprised of natural formations such as overhangs, lava blisters and a lava tube. Scattered food remains, primarily marine shell were observed in many of these natural shelters. Human remains were identified in the temporary habitation lava tube (Site 25571). Several of these features contain crudely constructed internal modifications.

The majority of the temporary habitation surface structures evidence insubstantial construction consisting either of roughly stacked and piled stones (n=4), stacked stones (2), aligned stones (3), roughly paved surfaces (2) and a flat slab supported by cobbles (1). Sparse cultural remains were noted in association with several of these structures. Three of the surface features were subjected to subsurface testing during the project (Sites 25583, 25589 and 25625, Feature C).

Habitation

Three sites were identified during the project are assigned a general habitation function. These consist of Sites 25610, 25611 and 25636, all of which are coastal sand areas with no surface architecture present (see Figure 7). These sand areas were subjected to subsurface testing with each unit containing evidence of habitation. As discussed above, two additional sand areas were also tested, although these exclusively contained waterworn and fragmented shells. The testing at the three sites also contained waterworn shells, but also yielded non-waterworn shell, sea urchin remains and charcoal. Site 25610 also contained a volcanic glass flake. It is possible that pole and thatched roofed structures may have once existed in these sand areas.

Ceremonial

In Hawaiian archaeology, evidence of ceremonial use includes the presence of branch coral offerings or the presence of an upright stone that is often elongated and waterworn (Kirch 1985). Hammar et al. (1987) compiled a list of *heiau* attributes drawn from several sources including Bennett (1930), Valeri (1985), Kirch (1985), Kolb (1991), and Stokes and Dyc (1991) that was used to support their interpretations. The attributes include upright stones and coral, mentioned above, prominent location on bluffs and cliff tops, historic references, large area, and several architectural attributes. The architectural attributes consist of depressions (used for bone pits or to support idols), altars, paving, and multiple levels or tiers.

Nineteen features at eight sites are interpreted to be ceremonial in function (see Figure 9). These sites consist of four with a single ceremonial feature (Sites 1888, 1889, 1898 and 25619), one with two features (1896), two with four features (Sites 1885 and 1892) and one with five ceremonial features (Site 1893; Table 7). One of the eight ceremonial sites (Site 1888) was not relocated during the present project. All of the ceremonial sites are located in the seaward portion of Kealakehe below 22 ft elevation.

Site 1885 is a complex of 17 features located in an area of pahoehoe lava. The features of the site are comprised of eight enclosures (Features A1, A2, B1, B2, H, I1, I2, and J), three alignments (Features B3, B4, C), two terraces (Features E1 and E2), two pavements (Features D and F), a filled crack (Feature G) and a lava blister (Feature K; see Figure 14 below). The site is interpreted as a complex comprised of four ceremonial features (Features D, E1, E2, and F) and 13 permanent habitation features. The Feature E1 terrace is assigned a ceremonial function that likely served as a *heiau*, based on its formal type, substantial construction (faced sides, paved surface), vertical waterworn stone, two upright slabs, and raised tier with branch coral. The adjacent Feature E2 terrace and the Feature F pavement are probable ceremonial structures due to their proximity to Feature E1. The Feature D pavement remnant appears to have been impacted or robbed of stones making a determination of its function difficult; however, the vertical slab and concave-

tion of branch coral at the feature are attributes of ritual sites and potentially indicate that the feature functioned as a shrine.

Table 7. Ceremonial Sites

Site	Feature	Formal Type	Shape	Construction	Area (sq m)	Elevation (ft)	Comments
1885	D	Pavement	Irregular	Vertical slabs	23.30	22	Assoc. with Feature E1 Terrace
1885	E1	Terrace	Rectangular	Stacked and faced sides with paved surface and uprights	28.70	21	Probable <i>heiau</i>
1885	E2	Terrace	Rectangular	Stacked sides with level surface	3.87	21	Assoc. with Feature E1 Terrace
1885	F	Pavement	Oval	Paved surface	96.70	21	Assoc. with Feature E1 Terrace
1888	-	Upright stone	n/a	n/a	n/a	n/a	Not relocated
1889	-	Walled Terrace	Rectangular	Stacked and faced sides with sand surface	167.40	16	Probable <i>heiau</i>
1892	A	Walled Terrace	Rectangular	Stacked and faced sides with paved surface	23.80	19	Shrine
1892	B	Alignment	Linear	Aligned stones	1.3 m long	19	Possible step
1892	C	Terrace	Rectangular	Stacked and faced sides with paved surface	5.80	20	Possible step
1892	D	Alignment	Irregular	Aligned stones	1.30	20	Possible step
1893	A	Platform	Oval	Stacked sides with paved surface	30.50	17	Possible shrine - 2 upright boulders on surface - also possible burial
1893	B	Mound	Oval	Stacked and piled cobbles and small boulders	1.24	17	Assoc. with Feature A platform
1893	D	Wall	Linear	Stacked and piled cobbles and small boulders	4.3 m long	17	Assoc. with Feature A platform
1893	E	Mound	Oval	Stacked and piled cobbles and small boulders	0.43	17	Assoc. with Feature A platform
1893	F	Wall	Linear	Stacked and piled cobbles and small boulders	4.75 m long	18	Assoc. with Feature A platform
1896	A	Platform	Square	Faced sides	174.10	7	Hale o Kane Heiau
1896	B	Overhang	Oval	Collapsed wall	14.30	7	Overhang adjacent to Heiau
1898	A	Platform	Rectangular	Faced sides, paved surface, uprights	189.80	5	Makaopio Heiau
25619	-	Cairn	Oval	Oval cairn with depression and branch coral	4.70	21	Possible shrine

Site 1888 was a possible shrine comprised of an upright stone representing a possible fishing shrine (Soehren 1981:1). The area in which the site was reportedly located was carefully examined during the present project and though numerous stones are scattered over this area, no upright stone resembling a shrine was identified.

Site 1889 is a walled terrace located in an area of level sand and pahoehoe outcrops. It is comprised of a large walled terrace built on top of a low bedrock outcrop covered in sand (see Figure 24 below). It has free standing walls extending along the north and west sides and a terrace retaining wall present along the west side. The site is interpreted as a possible *heiau* based on its formal type, its large area (167.4 sq m) and on the presence of an upright stone described by Emory and Soehren (1971).

Site 1892 is a complex of four features located along the side and base of an uneven pahoehoe ridge. The features are comprised of a walled terrace (Feature A), two alignments (Features B and D) and a terrace (Feature C; see Figure 27 below). The Feature A walled terrace potentially functioned as a shrine based on its formal type, substantial construction (faced sides and paved surface), the presence of branch coral and its coastal location. Features B, C and D may have functioned as a series of steps that lead up the pahoehoe ridge to the north.

Site 1893 is a complex of seven features located in an area of level sand. The features are comprised of two platforms (Features A and G), two mounds (Feature B and E), a cairn (Feature C), and two low walls (Features D and F; see Figure 28 below). The Feature A platform is interpreted as a possible ceremonial structure based on its formal type and on the presence of the upright stones on the surface. Emory and Soehren (1971:12) suggest that this structure may be a *ko'a* or fishing shrine or a possible burial platform. The Feature B and E mounds and the Feature D and F walls are also assigned possible ceremonial functions due to their proximity to Feature A. The Feature C cairn is interpreted as a marker based on its formal type and appearance. The Feature G platform potentially contains a burial based on its small size and formal type.

Site 1896 is a complex of two features located in an area of uneven coastal pahoehoe lava. The features consist of a large platform (Feature A) and an associated overhang (Feature B; see Figure 31 below). The site is interpreted as a ceremonial complex, with the Feature A platform functioning as a *heiau*. Feature A has attributes typical of *heiau* including substantial construction (faced walls, paved surface), large area (167 sq m), tiers, a depression that may have supported an idol, and location on a bluff overlooking the ocean. The Feature B overhang may have served in conjunction with the *heiau* due to its close proximity.

Site 1898 is a complex of 10 features located south of the harbor in an area of bare pahoehoe lava with a series of brackish water pools. A sandy beach area is situated along the shoreline to the southwest of the site. The features consist of a platform (Feature A), four terraces (Features B, D, E1 and G), three walls (Features C, F and I) and two enclosures (Feature E2, Feature H; see Figure 32 below). The site is interpreted as a ceremonial site with associated permanent habitation and transportation features. The Feature A platform is Makaopio Heiau based on informant information presented in Emory and Soehren (1971). Feature A has attributes typical of *heiau* including substantial construction (faced walls, paved surface), large area (189.9 sq m), upright stones representing idols, a depression that may have supported an idol, and location overlooking the ocean. The Feature C and F walls both have broad surfaces and potentially functioned as bridges permitting passage along the coast that avoided the *heiau*. The Feature H enclosure is interpreted as a possible canoe shed due to its formal type and linear shape. The remaining features of the site are interpreted as permanent habitation features.

Site 25619 is a collapsed cairn located in an area of level pahoehoe lava with pahoehoe ridges to the south and west. The cairn is roughly circular in shape with several waterworn basalt cobbles present (see Figure 123 below). There is an oval-shaped depression present in the surface of the cairn with fragments of waterworn and branch coral present. The site is interpreted as a possible shrine with the depression potentially supporting an idol based on its formal type and appearance and on the presence of the coral.

Burials

Human burials have been identified in three locations within the project area with three additional probable burials also identified. The burial features are summarized in Table 8 and their distribution is presented in Figure 9. The burial features consist of three platforms (Site 1890, 1983, Feature A and C),

a lava tube (Site 25571) and two filled cracks (Site 25632, Feature E and 25651). Human remains were identified in the lava tube during the present study and in the filled cracks by Kaloko-Honokohau National Park Service (NPS) staff and others in 2000.

The three probable burial platforms are each small well built structures that range in length from 4.4 to 6.1 m and in width from 2.35 to 5.0 m. The Feature A platform at Site 1893 is a ceremonial feature that may contain human remains. No testing was undertaken within these three features due to their coastal locations in areas to be preserved.

Table 8. Burial Sites

Site	Feature	Type	Length (m)	Width (m)	Height/Depth (m)	Elevation (feet)	Comments
1890	-	Platform	4.95	2.35	0.62	18	Probable burial along coast
1893	A	Platform	6.10	5.00	0.74	17	Ceremonial feature which may also contain burial
1893	G	Platform	4.40	2.40	0.32	19	Probable burial
25571	-	Lava Tube	14.10	3.35	0.75	35	Temporary habitation tube with human remains
25632	E	Filled crack	5.80	0.45	1.9 m deep	12	Fissure with human remains concealed by NPS staff
25651	-	Filled crack	3.30	0.60	0.8 m deep	12	Fissure with human remains concealed by NPS staff

Trails

Trail segments were identified in ten locations during the project, all within the Land of Kealahou. The location of the trails is presented in Figure 11 and they are summarized in Table 9. Two of the features (Features C and F) of Site 1898 consist of wide walls that extend across ponds inland of the Feature A *heiau*. These features likely functioned as bridges to allow people to pass behind the ceremonial structure.

The eight remaining trails consist of linear paths that extend through uneven terrain that range in length from 22.6 to 428.2 m. Of these eight trails, seven are oriented in generally inland-seaward directions (Sites 25549, 25563, 25572, 25574, 25602, 25607 and 25612) and one is oriented parallel to the coastline (Site 7704). Five of these trails (Sites 7704, 25574, 25572, 25574, 26502 and 25612) are delineated by from one to 26 cairns (discussed below), one is marked by aligned waterworm coral fragments (Site 25563), and two consist of cleared paths through a lava (Sites 25549 and 25607). Site 25607 also contains aligned slab steppingstones.

It is possible that some of the trail segments are part of the same trail. Sites 25572 and 25574 are oriented in the same direction with an 82.0 m wide gap between them. Sites 25602 and 25607 also have similar orientations, with a 95.0 m wide gap separating them. The majority of the trails are interpreted as prehistoric transportation routes. Site 7704 interpreted as an historic 19th Century trail. The absence of archaeological features on the lava associated with this very straight trail led Soehren to conclude that it represented a "preliminary route selection" for a nineteenth century horse trail that was subsequently abandoned, perhaps in favor of the "Old Mammalahou Trail" farther inland (1980:2).

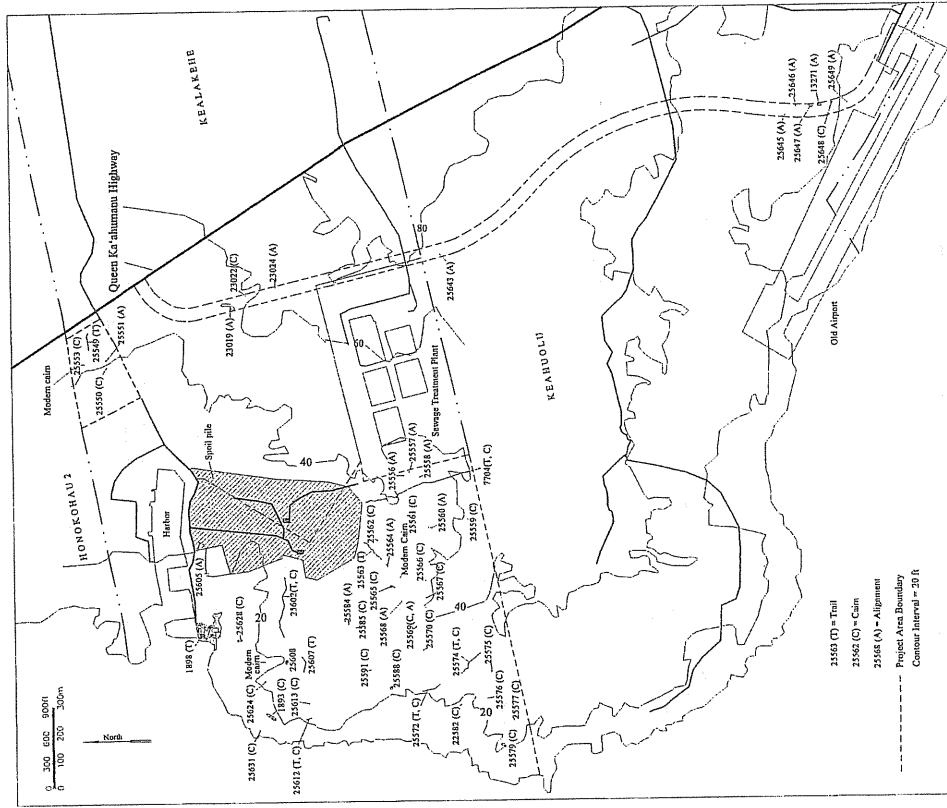


Figure 11. Trails, Cairns and Alignments

Table 9. Trails

Site	Feature	Shape	Length (m)	Width (m)	Elevation (ft)	No. of Assoc. Cairns	Comments
1898	C	Linear	7.20	2.30	5	0	Wall across pond - probable bridge
1898	F	Linear	11.90	3.50	7	0	Wall across pond - probable bridge
7704	A	Linear	438.20	n/a	38-41	26	Trail marked by a series of 26 aligned cairns
25549	-	Linear	66.00	0.8-1.2	43-44	0	Cleared path through A'a lava
25563	-	Linear	92.90	n/a	34-35	0	Trail marked by waterworn coral cobbles
25572	A	Linear	68.70	n/a	19-21	4	Trail marked by two cairns (Features D and C) and two fragments of Branch coral (Features D and E)
25574	A	Linear	113.40	n/a	25-30	7	Trail marked by four cairns (Features B-D, H) and three fragments of Branch coral (Features E-G)
25602	A	Linear	223.00	n/a	23-25	10	Trail marked by 10 stone cairns (Features B-K)
25607	-	Linear	65.90	0.70	23	0	Cleared path through A'a lava with slab stepping
25612	A	Linear	22.60	0.50	21-22	1	Trail marked by vertical waterworn boulder (Feature B), with alignment of waterworn coral extending to south

Cairns

A total of 75 cairns interpreted as prehistoric markers were identified in the project area (see *Figure 11* and *Table 10*). The majority of the cairns are situated in Kealahou, with one (Site 25648) located in Keahuolu. Of the 75 features, 45 are associated with trails, 19 are isolated features, six are associated with temporary habitation sites, one is associated with a permanent habitation site, one is associated with a ceremonial site, one contains an associated stone alignment and two are elements of a site comprised only of cairns. The majority of these features consists of small stacked or piled cobble and small boulder structures that range 0.24 to 2.5 m (averaging 0.6 m), in width from 0.12 to 1.6 m (averaging 0.45 m) and in height from 0.14 to 1.15 m (averaging 0.43 m). Five of the features are comprised of waterworn coral cobbles that are located between cairns within a trail. Three modern cairns also were noted in the Land of Kealahou, consisting of stacked stone features with wooden lathe extending vertically from them.

Alignments

Twenty-six stone alignment features at 18 sites were identified within the project area (see *Figure 11* and *Table 11*). The majority of these features (n=10) are located in the Land of Kealahou, with eight located in Keahuolu. These features are low alignments constructed of one, and occasionally two, courses of flat pahoehoe slabs, or a combination of flat slabs and subangular basalt cobbles and small boulders. These structures are all built on bare pahoehoe lava with no soil or cultural remains present.

These features range in length from 1.9 to 5.5 m (averaging 3.1 m), in width from 0.81 to 3.3 m (averaging 2.06 m) and in height from 0.07 to 0.7 m (averaging 0.23 m). The area of these features range from 1.94 to 16.3 sq m, with an average area of 6.72 sq m. Most of the alignments are oval in shape (n=12), with the remainder comprised of irregular (8), U-shaped (5) and C-shaped (1). The function of

Table 10. Cairns

Site	Feature	Length (m)	Width (m)	Height (m)	Elevation (ft)	Comment
1893	C	1.50	1.10	0.84	17	Assoc. with Ceremonial/Probable Burial site
7704	B	0.30	0.22	0.23	38	Trail Marker
7704	C	0.35	0.19	0.22	38	Trail Marker
7704	D	0.32	0.31	0.26	38	Trail Marker
7704	E	0.43	0.24	0.38	38	Trail Marker
7704	F	0.35	0.21	0.36	38	Trail Marker
7704	G	0.38	0.22	0.24	39	Trail Marker
7704	H	0.50	0.41	0.41	39	Trail Marker
7704	I	1.00	0.95	0.73	39	Trail Marker
7704	J	0.33	0.33	0.22	39	Trail Marker
7704	K	0.40	0.32	0.43	40	Trail Marker
7704	L	0.58	0.49	0.83	41	Trail Marker
7704	M	0.88	0.85	0.71	41	Trail Marker
7704	N	0.41	0.24	0.16	41	Trail Marker
7704	O	0.35	0.29	0.14	41	Trail Marker
7704	P	0.44	0.34	0.39	40	Trail Marker
7704	Q	0.43	0.36	0.40	39	Trail Marker
7704	R	0.37	0.33	0.36	39	Trail Marker
7704	S	0.50	0.26	0.44	39	Trail Marker
7704	T	0.44	0.33	0.41	39	Trail Marker
7704	U	0.35	0.30	0.43	39	Trail Marker
7704	V	0.70	0.27	0.41	38	Trail Marker
7704	W	0.39	0.37	0.36	38	Trail Marker
7704	X	0.49	0.40	0.44	38	Trail Marker
7704	Y	0.33	0.28	0.30	41	Trail Marker
7704	Z	0.55	0.30	0.51	41	Trail Marker
7704	AA	0.46	0.42	0.48	39	Trail Marker
23022	-	0.95	0.91	0.73	58	Isolated Feature
25550	-	0.40	0.25	0.23	39	Isolated Feature
25553	-	0.50	0.48	0.38	42	Isolated Feature
25559	-	0.58	0.37	0.86	41	Isolated Feature
25561	-	1.30	0.95	0.47	38	Isolated Feature
25562	-	0.59	0.42	0.48	37	Isolated Feature
25565	A	0.27	0.18	0.18	30	Assoc. cairn (Feature B)
25565	B	1.40	1.35	0.46	30	Assoc. cairn (Feature A)
25566	-	0.86	0.75	0.33	39	Isolated Feature
25567	-	1.30	1.10	0.41	39	Isolated Feature
25569	A	0.54	0.39	0.60	35	Assoc. stone alignment (Feature B)

Table 10. Cairns (cont.)

Site	Feature	Length (m)	Width (m)	Height (m)	Elevation (ft)	Comment
25570	-	0.27	0.26	0.43	31	Isolated feature
25572	B	0.40	0.22	0.26	21	Trail Marker
25572	C	0.35	0.29	0.29	20	Trail Marker
25572	D, E	Branch coral fragments marking Feature A	Trail			Trail Marker
25574	B	0.59	0.57	0.59	25	Trail Marker
25574	C	0.24	0.18	0.31	26	Trail Marker
25574	D	0.35	0.20	0.23	27	Trail Marker
25574	E-G	Branch coral fragments marking Feature A	Trail			Trail Marker
25574	H	0.40	0.29	0.43	30	Trail Marker
25575	-	0.59	0.56	0.52	30	Isolated feature
25576	-	0.43	0.39	0.24	23	Isolated feature
25577	-	0.46	0.33	0.52	23	Isolated feature
25579	B	1.65	1.30	0.67	21	Assoc. permanent habitation enclosure
25582	-	0.47	0.39	0.28	19	Isolated feature
25585	-	0.52	0.30	0.55	27	Isolated feature
25588	B	2.50	1.60	0.50	21	Assoc. Temporary habitation overhang
25588	C	1.60	1.30	0.35	21	Assoc. Temporary habitation overhang
25588	D	1.60	1.30	0.75	21	Assoc. Temporary habitation overhang
25588	E	1.05	0.78	0.70	21	Assoc. Temporary habitation overhang
25591	-	0.37	0.32	0.27	25	Isolated feature
25602	B	0.41	0.14	0.54	23	Trail Marker
25602	C	0.24	0.22	0.48	23	Trail Marker
25602	D	0.39	0.30	0.53	24	Trail Marker
25602	E	0.37	0.24	0.27	24	Trail Marker
25602	F	0.45	0.29	0.46	24	Trail Marker
25602	G	0.24	0.12	0.32	24	Trail Marker
25602	H	0.35	0.27	0.31	24	Trail Marker
25602	I	0.42	0.36	0.42	24	Trail Marker
25602	J	0.35	0.23	0.17	25	Trail Marker
25602	K	0.33	0.24	0.49	25	Trail Marker
25608	B	0.70	0.12	1.15	21	Assoc. Temporary habitation lava blister
25612	B	0.38	0.20	0.17	21	Trail Marker
25613	-	0.35	0.30	0.46	23	Isolated feature
25624	-	0.30	0.19	0.35	21	Isolated feature
25628	B	0.30	0.28	0.51	13	Assoc. temporary habitation overhang
25631	-	0.85	0.80	0.60	5	Isolated feature
25648	-	1.10	1.00	0.35	21	Isolated feature

Pahoehoe Excavations

Pahoehoe excavations are present in 170 locations within the project area. These consist of 169 identified during the present project and one (Site 23024) recorded in the inland portion of Kealahou by Haun and Henry (2001). Of the 169 features noted during the project, 142 are located in Kealahou (Site 25652) and 27 are situated in Keahuolu (Site 25653). These features are interpreted as resource procurement features, although they appear to have been created for at least two purposes. The physical characteristics of these features are summarized in Table 12 (Site 25652) and Table 13 (Site 25653). Sites 25652 and 25653 are discussed in detail in the Site Description portion of this document.

The majority of the excavations (n=137) are interpreted as the remains of efforts to extract seabird nestlings from crevices in the lava surface. Pahoehoe excavations have been variously interpreted as agricultural features (Carter 1986, O'Hare and Goodfellow 1994, Hammar et al. 1987, and Rienecke 1990), quarries for vesicular lava for making abraders (Donham 1987), quarries for fine-grained basalt (Haun and Henry 2002), and the result of digging to obtain juvenile dark rumped petrels from nests in crevices in the lava (Nakamura et al. (1998). Nakamura et al. (1998) hypothesize that the excavated areas artificially enhanced natural nesting areas and increased the predictability of the birds as a food resource.

Dye (2002) recorded over 1,200 excavated pahoehoe pits at Manini'owali and Kuki'o 2 in North Kona. He convincingly argues that traditional Hawaiian cultivation in excavated pits was in a lava and concludes that agricultural use of the pits in his area would have been too marginal to warrant the apparent intensive effort put into excavating the pits. Dye evaluated the hypothesis that the pits were used to obtain stone for construction and discards it as a primary purpose for pahoehoe excavations. He also evaluated the hypothesis that the pits were used as nesting sites. This was confirmed for a very small number (19) of pits where gravel-size pieces of pumice that had been digested by sea birds were recovered. Radiocarbon dates on a sea bird bones from habitation sites in Dye's project area indicated that the birds were being used as food sometime in the AD 1500-1600s.

Dye interpreted the presence of large waterworn cobble hammerstones associated with pahoehoe excavations and found in temporary habitation sites as indicating that pit excavation was a recurrent activity. Dye was not able to make a strong case for any specific dominant use for the pits with data limited to his project area, concluding that "the importance of the pits might not have been that any one function was particularly useful, but rather that they served a wide variety of functions - seabird nest, water catchment, sweet potato planter, construction material quarry, and others - which, in aggregate, improved the quality of life..." (2002:96).

The majority of the project area is bare pahoehoe lava with almost no soil. The pahoehoe excavations are present throughout the area, both adjacent to habitation sites, and in areas remote from them. Large cobble to small boulder-size hammerstones are associated with the pits and are present at several habitation sites. Although it is possible that some of the pits were used to obtain stone for tools, most did not exhibit suitable material (fine-grained basalt or vesicular lava), or the debris that would be expected in a quarry for stone tool material. Use of the features for gardens is considered to be unlikely based on the physical characteristics of the pits, the limited amount of rainfall in the project area, and the virtual absence of soil.

The remaining 32 features and Site 23024 are assigned a quarry function created to obtain vesicular lava for the manufacture of abraders. These features consist of areas, sometimes fairly large, with a relatively thin crust of vesicular, often ropey pahoehoe. These surfaces exhibit shallow excavations where stones from the surface layer have been displaced or removed. The displaced material usually consists of tabular slabs of vesicular lava. The stone resembles the raw material found in the extensive abrader quarrying and production sites are documented at 'Aneho'omahu where the entire process from raw material extraction to abrader shipping occurred in the same locale (Donham 1987, Donham and Jensen 1988, Welch 1989, Jensen 1989a-e, 2001, Burgett et al. 1999, Landrum et al. 2002, and Haun and Henry 2004); however, unlike the quarry and production sites at 'Aneho'omahu no abraded surfaces, which were used to

these features is undetermined. Most are too small and low to have been temporary habitation shelters. Many of the alignments are made from slabs of vesicular lava that may be raw material for abrader manufacture. The small area of most of the features is sufficient for a single individual to sit in the center; however, no evidence of debris from lithic reduction or abraded surfaces used to shape abraders is present.

Table 11. Stone Alignments

Site	Feature	Length (m)	Width (m)	Area (m ²)	Height (m)	Shape	Elevation (ft)	Materials
13271	A	2.10	1.65	3.47	0.28	Oval	23	Subangular stones
13271	B	2.68	1.76	4.72	0.4	Oval	23	Slabs & subangular stones
23019	B	2.55	1.75	4.46	0.19	Oval	55	Slabs
23019	C	2.65	2.05	5.43	0.17	C-shaped	55	Slabs
23024	-	3.30	1.85	6.11	0.15	Oval	62	Slabs
25551	-	3.56	2.87	10.22	0.21	Oval	41	Slabs & subangular stones
25556	-	5.55	2.47	13.71	0.1	Irregular	39	Slabs
25557	-	3.58	2.54	9.09	0.09	Oval	38	Slabs & subangular stones
25558	-	2.79	2.19	6.11	0.32	Oval	37	Slabs
25560	A	2.72	2.22	6.04	0.08	Oval	39	Slabs
25560	B	2.80	2.00	5.60	0.1	U-shaped	39	Slabs
25560	C	2.39	1.84	4.40	0.11	U-shaped	39	Slabs & subangular stones
25560	D	3.13	2.43	7.61	0.21	Irregular	39	Slabs & subangular stones
25564	A	4.85	3.37	16.34	0.27	U-shaped	35	Slabs & subangular stones
25564	B	3.27	2.25	7.36	0.18	Irregular	35	Slabs & subangular stones
25564	C	2.52	1.34	3.38	0.09	Irregular	35	Slabs
25568	-	2.75	1.88	5.13	0.18	Oval	28	Slabs
25569	B	3.58	1.40	5.01	0.2	Irregular	35	Slabs
25584	-	3.39	2.20	7.46	0.17	Irregular	29	Slabs
25605	-	2.58	1.32	3.41	0.17	Oval	21	Slabs & subangular stones
25643	-	2.56	2.18	5.58	0.21	Oval	75	Slabs (with 3 vertical)
25645	-	2.40	0.81	1.94	0.31	Irregular	28	Slabs & subangular stones
25646	-	2.70	1.92	5.18	0.3	U-shaped	28	Subangular stones
25647	A	1.90	1.73	3.29	0.1	U-shaped	25	Slabs
25647	B	3.40	2.69	9.15	0.7	Irregular	25	Slabs
25649	-	3.60	2.73	9.83	0.46	Oval	19	Slabs & subangular stones

Table 12. Site 25652 Pahoehoe Excavations in Kealakekua

Feature	Type	Length (m)	Width (m)	Depth (m)	Hammer-stone(s)	Hammerstone dimensions	Easting	Northing	H&A #/Site
A	A1	4.80	2.10	0.50	1	25cm x 18cm x 18cm	811865	217732	204
B	A2	2.40	2.10	0.35	1	35cm x 30cm x 18cm	811769	217735	339.1
C	A1	2.70	1.00	0.60	1	29cm x 25cm x 14cm	811758	217736	339.2
D	A2	1.90	0.90	0.35	1	21cm x 16cm x 16cm	811825	217736	338
E	A1	1.50	0.90	0.30	1	21cm x 16cm x 14cm	811585	217730	323.2
F	A1	3.25	2.40	0.40			811575	217731	323.1
G	A1	4.20	4.00	0.30			811514	217731	316
H	A1	3.90	2.10	0.50			811576	217727	322.1
I	A2	2.80	3.00	0.40			811593	217728	326
J	A2	10.00	4.00	0.30	2	1=20cm x 19cm x 13cm, 2=25cm x 20cm x 8cm	811603	217724	283.2
K	A2	6.00	3.00	0.50	2	1=21cm x 14cm x 18cm, 2=15cm x 12cm x 10cm	811596	217737	283.1
L	A2	2.20	1.00	0.25	1	13cm x 14cm x 16cm	811606	217726	327
M	A2	3.00	3.00	0.40	1	29cm x 20cm x 12cm	811576	217728	326
N	A2	2.85	2.10	0.30			811539	217727	318
O	A2	1.40	0.90	0.20			811514	217725	290
P	B	1.00	1.00	0.08			811602	217727	310
Q	A2	4.30	1.20	0.20			811666	217730	312
R	A2	6.50	1.20	0.50			811506	217725	313
S	A1	1.60	1.20	0.40			811509	217720	293
T	A2	4.80	2.00	0.45	1	45cm x 24cm x 10cm	811470	217719	299
U	B	1.50	0.70	0.07			811474	217719	295.3
V	B	2.20	1.50	0.12			811478	217719	295.2
W	A2	5.00	2.00	0.60	1	20cm x 17cm x 14cm	811501	217719	292
X	B	0.50	0.50	0.05			811471	217718	295.4
Y	B	1.00	0.80	0.10			811470	217718	295.5
Z	A2	2.00	1.00	0.08			811460	217716	295.1
AA	A1	5.00	2.00	0.80	1	26cm x 25cm x 15cm, 1=16cm x 15cm x 14cm, 2=15cm x 12cm x 12cm, 3=16cm x 15cm x 12cm	811468	217716	301.2
AB	A2	7.50	3.00	0.60	2		811464	217716	298
AC	A2	3.00	3.00	0.40	1		811459	217716	298
AD	A2	3.30	2.00	0.50			811498	217719	294
AE	A2	7.00	3.00	0.30	1	20cm x 12cm x 9cm	811517	217713	291.1
AF	A2	3.80	3.30	0.60	3	1=30cm x 20cm x 14cm, 2=30cm x 17cm x 12cm, 3=20cm x 20cm x 20cm	811525	217716	291.2
AG	A2	3.20	1.30	0.25			811570	217719	288
AH	A2	4.80	1.80	0.35			811503	217716	272
AI	A2	1.50	1.00	0.40	3	1=30cm x 25cm x 13cm, 2=30cm x 26cm x 12cm, 3=32cm x 27cm x 14cm	811442	217719	300
AJ	A2	2.80	0.80	0.30			811489	217719	285.1
AK	A2	2.50	2.00	0.50			811465	217714	285.2
AL	A1	10.00	6.00	0.60	1	27cm x 25cm x 12cm	811471	217707	285.4
AM	A1	2.00	1.50	0.50			811464	217709	285.3
AN	A1	7.00	5.00	0.30	1	13cm x 13cm x 7cm	811532	217709	270.1
AO	A1	4.00	2.70	0.40			811579	217710	273
AP	A2	4.00	2.00	0.50	3	1=50cm x 25cm x 11cm, 2=30cm x 26cm x 18cm, 3=26cm x 21cm x 9cm	811486	217708	265
AQ	A2	15.00	3.00	0.30	4	1=43cm x 26cm x 14cm, 2=30cm x 26cm x 14cm, 3=60cm x 36cm x 4cm, 4=30cm x 25cm x 20cm	811445	217702	257
AR	B	3.00	2.50	0.35			811440	217703	262.3
AS	A2	3.80	3.00	0.50	2	1=26cm x 19cm x 12cm, 2=35cm x 17cm x 12cm	811446	217704	262.2
AT	A2	4.20	0.75	0.50			811454	217705	262.1

Table 12. Site 25652 Pahohoe Excavations in Kealahou (cont.)

Feature	Type	Length (m)	Width (m)	Depth (m)	Hammer-stone(s)	Hammerstone dimensions	Ending	Northing	H&A Temp. #Site
DA	A2	5.10	1.90	0.35	1	33cm x 26cm x 13cm	811509	2176567	129.1
DB	A2	6.40	2.20	0.40			811620	2176569	122
DC	B	2.70	1.90	0.09			811708	2176565	64
DD	A2	2.65	1.80	0.35			811836	2176566	65
DE	B	2.00	0.90	0.07			811887	2176556	68
DF	B	2.70	3.30	0.10			811665	2176512	62
DG	A2	3.00	2.10	0.30	1	42cm x 37cm x 17cm	811476	2176551	131
DH	A1	4.75	2.20	0.30			811460	2176519	130
DI	A1	3.40	3.25	0.45			811456	2176503	135
DJ	B	6.70	6.00	0.08			811525	2176504	61
DK	A1	2.70	2.20	0.50	2	1=40cm x 29cm x 17cm, 2=35cm x 18cm x 15cm	811454	2176454	57.2
DL	A1	4.70	2.80	0.30	1	2=37cm x 18cm x 14cm	811452	2176458	57.1
DM	A2	4.00	3.60	0.35	2	1=37cm x 18cm x 14cm, 2=29cm x 20cm x 14cm	811440	2176456	59
DN	A2	5.60	1.50	0.40	1	42cm x 24cm x 14cm	811443	2176415	55
DO	A2	4.10	1.30	0.35			811435	2176392	56
DP	A2	7.00	3.50	0.12			811471	2176398	58.1
DQ	A2	13.50	6.40	0.40			811458	2176393	58.2
DR	A2	1.00	0.71	0.28	1	31cm x 27cm x 10cm	811310	2176369	49
DS	A2	4.60	3.20	0.60			811381	2176346	36
DT	A2	8.80	3.60	0.45	3	1=22cm x 15cm x 10cm, 2=17cm x 12cm x 11cm, 3=28cm x 26cm x 18cm	811423	2176340	30
DU	A1	2.60	1.60	0.45	1	24cm x 17cm x 8cm	811409	2176304	33
DV	A2	6.50	2.70	0.35			811399	2176297	38
DW	B	14.40	12.00	0.15	1	25cm x 22cm x 14cm	811441	2176283	31
DX	A2	3.60	2.30	0.50	3	1=20cm x 16cm x 12cm, 2=13cm x 10cm x 12cm, 3=31cm x 26cm x 12cm	811338	2176289	40
DY	A2	3.70	2.90	0.18	1	30cm x 26cm x 15cm	811332	2176270	44
DZ	A2	5.30	1.70	0.35			811384	2176277	35
EA	A2	4.10	2.20	0.65			811526	2176375	25
EB	A2	2.80	2.40	0.18			811503	2176355	29
EC	A2	3.40	1.80	0.34			811526	2176345	26
ED	A1	6.30	3.50	0.25	2	1=37cm x 21cm x 12cm, 2=31cm x 25cm x 19cm	811305	2176257	48
EE	B	4.40	3.50	0.07			811339	2176235	41
EF	B	14.60	6.40	0.10	2	1=28cm x 18cm x 16cm, 2=(10cm x 24cm x 17cm)	811323	2176234	46
EG	A2	3.30	2.10	0.35			811496	2176315	27
EH	B	11.00	5.60	0.07			811908	2176463	14.2
EI	B	21.00	6.00	0.10			811943	2176472	14.1
EJ	B	5.40	3.00	0.15			813179	2176625	362
EK	A2	5.80	1.90	0.30			811730	2177154	238
EL	A2	2.40	1.70	0.20	1	41cm x 25cm x 13cm	811454	2176538	132

Table 12. Site 25652 Pahohoe Excavations in Kealahou (cont.)

Feature	Type	Length (m)	Width (m)	Depth (m)	Hammer-stone(s)	Hammerstone dimensions	Ending	Northing	H&A Temp. #Site
AU	A2	6.00	1.90	0.80	1	28cm x 18cm x 10cm	811422	2177031	254.2
AV	A2	1.50	0.60	0.40	1	30cm x 26cm x 14cm	811422	2177039	254.1
AW	B	3.70	1.70	0.20	1	20cm x 20cm x 19cm	811505	2177658	264
AX	A1	3.60	0.65	0.10			811479	2177040	261
AY	A1	5.00	4.00	0.30			811484	2177044	259
AZ	A2	3.00	2.00	0.30			811561	2177059	243
BA	A2	5.70	4.00	0.40			811646	2177191	280
BB	A2	2.70	1.30	0.30	1	20cm x 15cm x 15cm	811709	2177200	232
BC	A1	2.60	1.80	0.40	1	25cm x 17cm x 15cm	811683	2177179	278
BD	A2	6.00	5.00	0.40			811783	2177154	236
BE	A2	4.65	2.13	0.23			811808	2177140	227.1
BF	A1	5.00	3.00	0.40	1	30cm x 20cm x 13cm	811913	2177168	311.136
BG	B	3.00	1.00	0.05			811643	2177048	237
BH	A2	4.20	1.90	0.60			811455	2177036	236.1
BI	A2	10.00	5.00	0.40	1	30cm x 25cm x 23cm	811404	2177031	233.1
BJ	A2	2.00	0.75	0.40			811467	2177006	247.3
BK	A1	2.40	2.00	0.30			811487	2177029	245
BL	A1	7.00	3.00	0.30			811481	2177009	246
BM	A1	6.80	5.00	0.60	1	21cm x 16cm x 10cm	811460	2176997	248.4
BN	A1	5.70	3.80	0.45			811466	2176994	248.1
BO	A2	4.00	2.50	0.50			811464	2176989	248.2
BP	A2	2.50	2.20	0.40			811450	2176992	248.3
BQ	A2	2.00	2.40	0.50			811463	2176977	249
BR	A2	3.20	0.70	0.25			811479	2176986	247.1
BS	A2	3.60	2.10	0.35			811610	2176973	189.1
BT	A1	7.20	1.30	0.35			811610	2176991	189.2
BU	A1	9.50	3.00	0.60			811764	2176934	191
BV	B	5.00	4.00	0.10			811681	2176929	191.2
BW	A2	9.30	4.40	0.30			811537	2176922	184.2
BX	A2	3.50	1.90	0.45	1	25cm x 18cm x 13cm	811710	2176925	159
BY	A2	4.60	1.90	0.50			811728	2176906	157
BZ	A2	6.80	2.10	0.35	1	17cm x 16cm x 17cm	811654	2176903	164
CA	A3	3.60	0.90	0.20			811653	2176881	162
CB	A1	4.50	1.00	0.40	1	24cm x 14cm x 10cm	811549	2176845	184
CC	A1	3.00	1.50	0.40	1	19cm x 16cm x 8cm	811506	2176922	331.129.1
CD	B	5.00	3.00	0.20	1	2=24cm x 12cm x 12cm	811528	2176818	171
CE	A2	7.00	4.00	0.60	2		811508	2176791	174
CF	B	2.90	4.60	0.25			811535	2176656	141
CG	A2	3.20	1.50	0.60			811624	2176645	123
CH	A2	1.55	2.10	0.40			811611	2176630	125
CI	A2	3.40	2.60	0.35			811611	2176607	66.2
CJ	B	1.50	1.00	0.10			811877	2176615	69
CK	B	10.30	4.50	0.07			812035	2176738	99
CL	B	5.70	4.90	0.10			812079	2176773	96
CM	B	29.00	9.70	0.06			812385	2176828	79
CN	B	1.30	0.95	0.07			812138	2176687	94
CO	A2	3.40	1.60	0.33			811730	2176647	117.1
CP	B	3.30	3.50	0.07			811664	2176673	120
CQ	A2	2.50	2.35	0.35			811616	2176684	144
CR	A2	1.90	0.75	0.26			811535	2176656	141
CS	B	17.00	12.00	0.10			811624	2176645	123
CT	A2	11.00	6.00	0.05			811611	2176630	125
CU	B	14.50	5.80	0.08			811611	2176607	66.2
CV	A2	3.90	3.50	0.12	1	30cm x 22cm x 13cm	811877	2176615	69
CW	A1	6.80	3.50	0.30	1	28cm x 24cm x 13cm	811836	2176538	132
CX	A2	3.40	3.00	0.25			811877	2176615	69
CY	A2	24.50	5.20	0.40			811836	2176538	132
CZ	A1	8.00	2.50	0.40			811971	2176867	71

shape the abraders, were identified. This suggests that either the manufacturing activity occurred elsewhere, or the excavations are the result of prospecting activity that did not yield suitable material.

Miscellaneous Feature Types

Several miscellaneous feature types were noted during the study. A complex of two mounds was noted in the Land of Kealahou which was assigned an indeterminate function (Site 25650). These mounds are located on bare lava and do not appear to be agricultural features. Feature B of Site 25650 is a cairn with a metal sign that has an "AQ" with a line through it printed on it. According to DLNR Boating Division Staff, this sign is associated with aircraft approaches to the airport. An adjacent low platform (Feature A) has metal scattered over its surface and probably supported a previous sign. Feature B at Site 25633 consists of a large metal tower that has been identified as the "Northwest Range Marker". Feature A at Site 1899 is a probable historic livestock pen. These features are discussed in detail below.

Table 13. Site 25653 Pahoehoe Excavations in Kealahou

Feature	Type	Length (m)	Width (m)	Depth (m)	Hammer-stone(s)	Hammer-stone dimensions	Easting	Northing	H&A Temp. #Site
A*	A2	5.00	5.00	0.20			813632	2175965	396
B*	B	6.20	4.60	0.25			813625	2175949	395
C*	A2	3.00	3.00	0.30			813645	2175939	394
D*	A2	5.80	4.30	0.35			813740	2175432	374
E*	A2	5.60	2.80	1.00			813724	2175390	375
F*	A2	15.00	3.50	2.00			813782	2175420	376
G*	A2	3.50	2.00	0.50			813718	2175375	377.3
H*	A2	3.50	2.40	0.50			813711	2175370	377.2
I*	A2	3.70	1.90	0.60			813711	2175372	377.1
J*	A2	4.70	2.85	0.25			813692	2175346	378
K*	A2	4.20	1.50	0.40			813720	2175345	379
L*	A2	3.30	3.30	0.60			813763	2175347	380.1
M*	A1	6.00	4.00	0.20			813716	2175287	401
N*	A2	2.70	2.40	0.80			813758	2175231	385.1
O*	A2	8.00	4.00	0.20	1	26cm x 22cm x 28cm	813735	2175245	381.2
P*	A2	6.00	4.00	0.30	1	34cm x 16cm x 15cm	813740	2175256	381.1
Q*	A1	2.90	2.40	0.15			813735	2175245	383.3
R*	A1	3.60	2.80	0.50			813746	2175243	382.2
S*	A2	5.00	3.00	0.30			813697	2175212	382.2
T*	A2	2.30	1.70	0.45			813700	2175212	382.1
U*	A2	4.40	3.00	0.40			813691	2175207	382.3
V*	A2	4.00	3.50	0.40			813728	2175204	399.2
W*	A2	3.30	2.80	0.50			813717	2175183	399.1
X*	A2	4.60	3.70	0.60	1	26cm x 18cm x 12cm	813703	2175213	400
Y*	A2	5.20	3.70	0.80			813710	2175175	384
Z*	A2	4.40	2.90	0.60			813702	2175159	386
AA*	A2	3.30	2.60	0.50			813706	2174993	403

Summary of Cultural Remains

Cultural remains were noted at 85 of the 127 sites. These materials consist of cultural remains noted and/or collected from the surface of sites and recovered from test units. Table 14 is a qualitative summary of cultural remains. The cultural remains are sorted by frequency of occurrence and sites are sorted by the total number of cultural remain types present. Waterworn coral, *Cypraea sp.*, *Cellana sp.*, and waterworn basalt were the most frequently encountered cultural remains encountered at from 39 to 60 of the sites.

Volcanic glass flakes present at seven sites and waterworn coral abraders at four sites were the most common traditional Hawaiian artifacts identified. Other indigenous artifacts consisted of a basalt adze and adze flake, a bird bone pick, a *Cellana* shell scraper, coral and sea urchin spine files, shell and bone fishhooks and fishhook ribs and worked dog and pig bone. Representative examples of the main artifact types are illustrated in Figure 12. In addition to marine shell and fish bone, food remains consisted of pig, bird, and dog bones. Goat bones were also noted, although most of these likely represent the remains of animals that have died naturally at the sites.

Historic cultural remains consisted of bottle glass, metal, ceramics and a wooden button. Modern debris was observed at eight of the sites. Human remains were identified at four sites. The remains at two filled cracks (Sites 25632 and 25651) were observed by Kaloiko-Honokohou National Park staff and others in 2000. These remains were not uncovered during the present project. Human remains were also noted in the Site 25571 lava tube. These remains were briefly examined during the recording process and were not disturbed. A human metatarsal and a fishhook fragment, probably made from human bone, were identified during laboratory processing of materials recovered during test excavations at Site 1885, Feature E2. These items were delivered to DLNR-SHPD Burial Sites Program staff for temporary curation on August 11, 2006.

Site Descriptions

As stated, 127 sites with 432 features have been documented within the project area. These sites and features are described below. The results of the subsurface testing are incorporated into the following site descriptions.

Site 1884

Site 1884 is a complex of two features located in the Land of Kealahou in an area of uneven pahoehoe lava at c. 18 ft elevation. The site is comprised of a lava blister (Feature A) and an alignment (Feature B) located in an area 16.8 m in length (northeast by southwest) and 12.1 m wide (Figure 13). The features of this site roughly correspond to Site 1884 which was initially identified during the 1973 Statewide Inventory of Historic Places survey. The Feature A lava blister is situated at the southwestern end of the site. This feature is accessed through an irregularly-shaped vertical entrance in the surface lava that is 4.3 m long (west-northwest by east-southeast), from 0.54 to 1.6 m wide and 0.65 m deep. The Feature A lava blister extends to the northwest, southwest and southeast from the entrance. It is irregular in shape with the interior measuring 12.1 m in length (northwest by southeast) and 1.1 to 3.3 m wide. The ceiling heights vary from 0.65 to 1.3 m. There is an area of thin sand with scattered marine shells (*Cypraea sp.* and *Cellana sp.*) and modern trash located in the southeastern portion of the blister. The trash is comprised of bottle glass, metal cans, milled lumber and glazed ceramics. The floor in the remaining portions of the blister is comprised of uneven sloping roof fall.

There is a small passage that extends to the southwest from the southwestern end of the diaphane. This passage is 2.4 m long (northeast by southwest), 0.7 to 1.55 m wide and 0.7 m in height. The floor slopes down to the southwest and there is a small bracketish water pool located at the southwestern end.

The Feature B alignment is located 9.1 m northeast of the entrance to Feature A in an area of bare pahoehoe lava. This feature is comprised of an irregularly-shaped configuration of subangular and water

worn basalt cobbles and small boulders located in an area 3.9 m long (north-south) and 2.4 m wide. There is a concentration of coarse sand with scattered marine shells (*Cypraea sp.* and *Calliana sp.*) and charcoal located at the southern end of the feature with a cluster of *Calliana sp.* shells located to the north.

Site 1884 is interpreted as a complex of temporary habitation features. The Feature A lava blister likely functioned as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The Feature B alignment likely functioned as an associated activity area due to its close proximity and presence of cultural remains. The site is unaltered and in good condition. The site is likely prehistoric in origin with a subsequent modern period of use evidenced by the presence of the modern debris.

Site 1885

Site 1885 is a complex of 17 features located in an area of pahoehoe lava in the Land of Koolakeke at elevations ranging from c. 21-22 ft. This site was initially identified by Emory and Soehren (1971) who assigned it several separate site designations (Sites D11-22, 24, 25 and 26). The location of the features identified during the present project correspond to Site 1885 as identified during the 1973 Statewide survey. The features of the site are comprised of eight enclosures (Features A1, A2, B1, B2, H1, H2, J1, and J2), three alignments (Features B3, B4, C), two terraces (Features E1 and E2), two pavements (Features D and F), a filled crack (Feature G) and a lava blister (Feature K) located in an area 96.0 m long (northwest by southeast) and 34.5 m wide (Figure 14).

The Feature A1 and A2 enclosures are located in the eastern portion of the site in an area of level pahoehoe lava. These two enclosures are adjoined, with Feature A1 located to the north (Figure 15). These features correspond to the southern portion of Emory and Soehren's Site D11-25 (1971:14, Figure 6). The northern part of Site D11-25 has been designated Feature B1 (discussed below). Feature A1 is roughly squared shaped and measures 5.85 m long (north-south) and 6.5 m wide. The north, east and west walls of the feature are built of stacked cobbles and small boulders. The southern wall is collapsed. Portions of the interior and exterior north and west walls are faced. There is no apparent entrance into the interior, probably the result of collapse. The walls range in width from 0.8 to 1.1 m and in height from 0.24 to 0.51 m. The interior is comprised of bare lava with scattered *Cypraea sp.* and *Calliana sp.* shells and water-worn coral fragments.

The Feature A2 enclosure extends to the south from the southern side of Feature A1. This feature is linear in shape and measures 13.1 m long and from 4.2 to 5.0 m wide. The north side of the feature is formed by the south wall of Feature A1. The west side is bordered by aligned subangular basalt small boulders and vertical slabs separated by areas of collapsed rubble, and ranges in height from 0.35 to 0.46 m. The eastern side consists of roughly stacked and faced stones at the north end, aligned vertical slabs and small boulders to the south, with collapsed rubble at the southern end. This side of the structure ranges in height from 0.33 to 0.36 m. The south end is bordered by a rubble berm that is 3.0 m long (east-west), 0.9 m wide and 0.3 m in height. A concentration of waterworn coral is present adjacent to the east end of this berm. The interior surface of the enclosure is comprised of a rough cobble pavement with scattered *Cypraea sp.* and *Calliana sp.* shells and waterworn coral. An area of marine shell (*Cypraea sp.* and *Calliana sp.*) and coral is present on the bare lava surface to the southwest of Feature A1.

The Feature B1 and B2 enclosures are located 5.0 m north of Feature A1 in an area of level pahoehoe lava (see Figure 14). Feature B1 corresponds to the northern portion of Emory and Soehren's Site D11-25 (1971:14, Figure 6). The enclosure is rectangular in shape and is 3.2 m long (north-south) and 2.7 m wide (Figure 16). Roughly stacked subangular basalt cobbles and small boulder walls extend along the east and south sides, with an alignment of cobbles and small boulders forming the western side. The walls range in width from 0.5 to 0.4 m wide and 0.25 to 0.27 m in height. The interior of the enclosure is roughly paved cobbles and pahoehoe slabs with scattered *Cypraea sp.* shells and waterworn coral fragments. There are waterworn basalt cobbles located outside the structure to the north and east. An alignment of cobbles extends to the west-southwest from the southwest corner of the enclosure. A low pavement of cobbles is located to the west of the enclosure measuring 3.8 m long (northwest by southeast), 1.35 m wide and 0.05 to 0.7 m in height above the surrounding terrain.

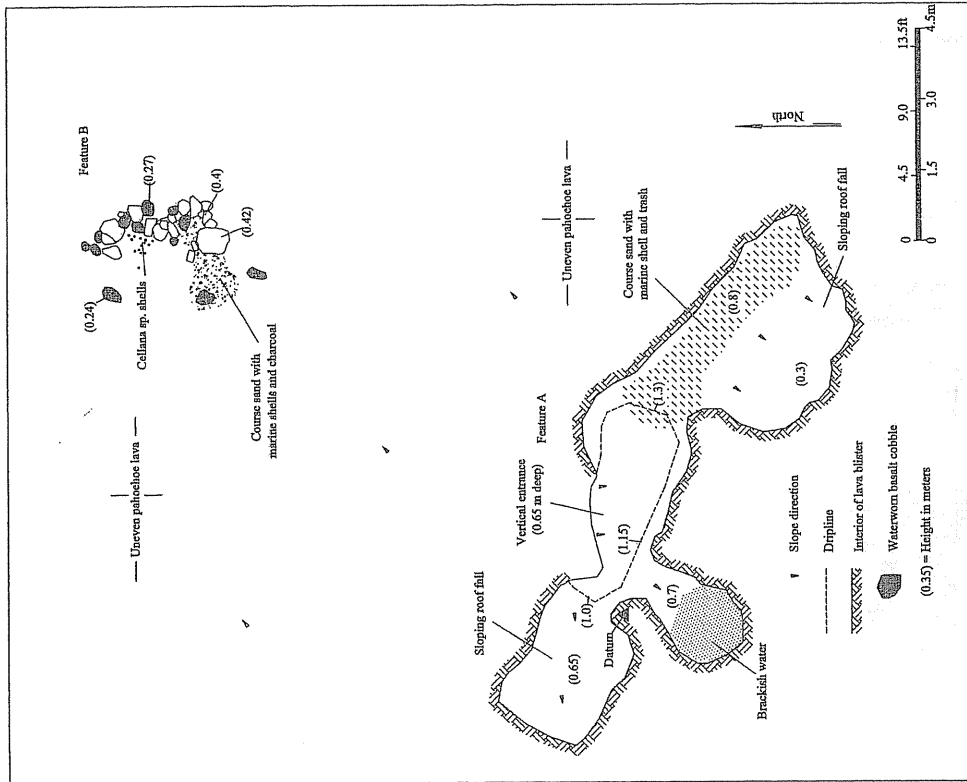


Figure 13. Site 1884 Plan Map

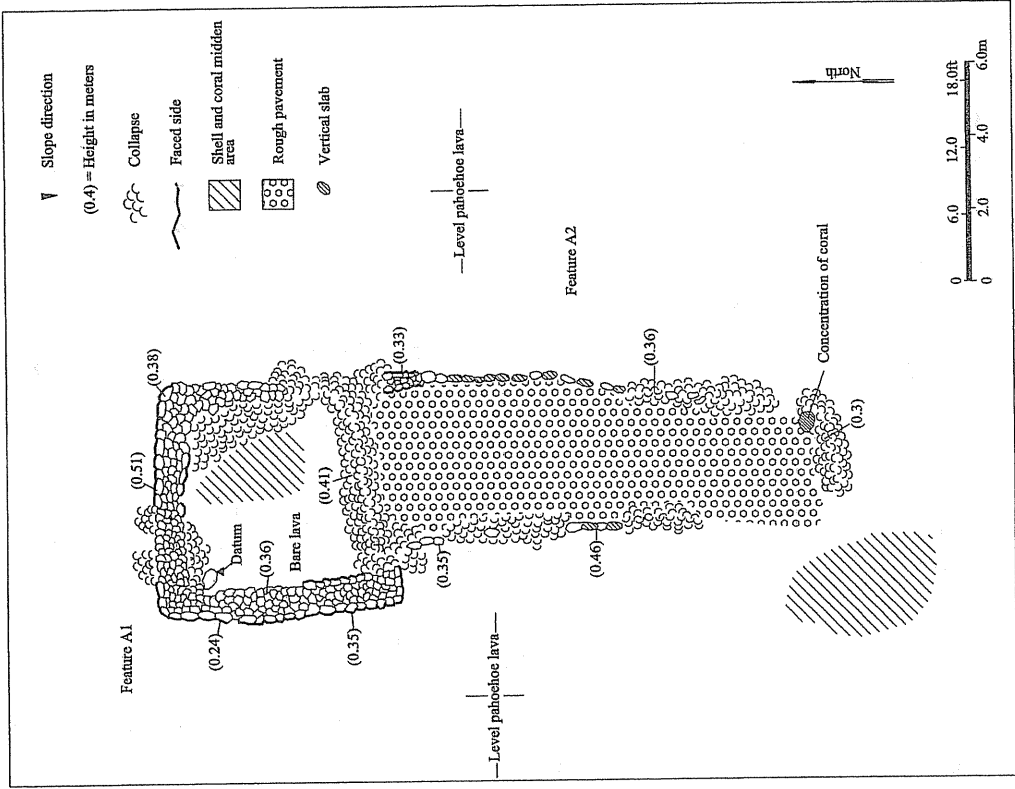


Figure 15. Site 1885, Feature A Plan Map

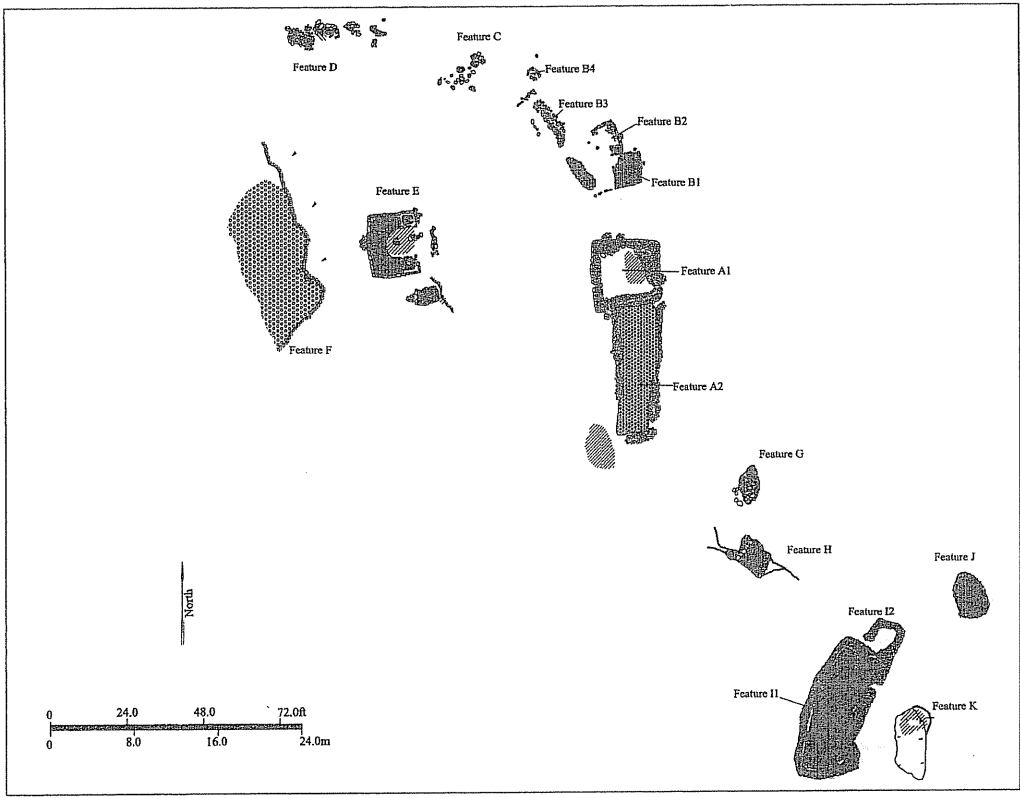


Figure 14. Site 1885 Overall Plan Map showing Feature Locations

The Feature B2 enclosure is located adjacent to Feature B 1 to the north. This feature is rectangular in shape and is 3.2 m long (north-northwest by south-southeast) and from 1.25 to 2.3 m wide, open to the west. The walls are built of stacked and piled cobbles and small boulders with collapsed areas present along the interior and exterior. The walls range in width from 0.2 to 0.3 m and in height from 0.2 to 0.46 m. Two waterworn basalt cobbles are present on top of the wall in the northeast corner. The interior is comprised of bare lava with several waterworn basalt cobbles present in the western portion. One of the cobbles is upright, measuring 0.46 m in height.

Feature B3 is located adjacent to Feature B2 to the west in an area of level pahoehoe lava (see Figure 16). This feature is comprised of a rough oval-shaped scatter of subangular and waterworn basalt cobbles and small boulders, with a linear alignment of stones located to the north. The scattered stones encompass an area 4.85 m long (northwest by southeast) and 1.1 m wide, with the stones ranging in height from 0.1 to 0.25 m. The linear alignment is located 1.0 m to the north, measuring 2.1 m long (northeast by southwest) and 0.11 m in height. Sparse *Cypraea sp.* shells are present. The Feature B4 alignment is located to the north of Feature B3. This feature is comprised of a roughly oval-shaped configuration of subangular and waterworn basalt cobbles and small boulders in an area 1.25 m long (northwest by southwest), 1.0 m wide and 0.25 to 0.42 m in height. The interior consists of bare lava with no cultural remains present.

Feature C is an irregularly-shaped cluster of small waterworn basalt boulders amidst scattered subangular and waterworn basalt cobbles located 4.5 m west of Feature B4. The stones are located in an area 5.0 m long (northeast by southwest) and 3.0 m wide (see Figure 16). Four of the waterworn boulders have naturally formed basins in them that range in length from 0.21 to 0.47 m, in width from 0.18 to 0.39 m and in depth from 0.11 to 0.25 m. Sparse fragments of waterworn coral and *Cypraea sp.* shells are scattered among the stones.

Feature D consists of the disturbed remnant of a pavement located on top of a pahoehoe ridge 7.5 m west of Feature C. The stones from this feature may have been removed to construct other features of the site. This feature is roughly rectangular and is 9.4 m long (east-west) and from 1.25 to 2.5 m wide (Figure 17). The feature is roughly bordered along the north and west sides by aligned subangular basalt cobbles and small boulders that range in height from 0.25 to 0.34 m. Waterworn basalt cobbles and small boulders are interspersed between the subangular stones. A vertical pahoehoe slab is present at the west end of the feature and a cluster of branch coral fragments are located at the western end. Fragments of *Cypraea sp.* and *Cellana sp.* shells are scattered over the surface of the ridge.

The Feature E1 and E2 terraces are located 14.0 m west of Feature A1 on top of a pahoehoe knoll (see Figure 14). The Feature E1 terrace corresponds to Emory and Soehren's Site D11-24 (1971:14; Figure 6). Feature E1 is rectangular in shape and is 6.05 m long (north-south) and 4.75 m wide (Figure 18). Stacked and faced subangular and waterworn basalt cobbles and small boulders extend along the north, west and south sides, ranging in height from 0.43 to 0.78 m. The central side of the west wall has collapsed outward. The eastern side of the structure abuts the side of the sloping knoll. The main surface of the feature is comprised of a level waterworn and subangular basalt cobble pavement with scattered waterworn coral fragments. A vertical waterworn basalt cobble is positioned along the central portion of the west side of the feature measuring 0.43 m in height above the terrace surface.

The inland portion of the surface is covered in a dense concentration of waterworn coral and marine shell (*Cypraea sp.* and *Cellana sp.*) midden. A 0.1 m deep oval depression is located in the center of the midden area measuring 0.37 m long (north-south) and 0.33 m wide. Two vertical pahoehoe slabs are located adjacent to the depression to the north and east. There is a possible walkway that enters the midden area from the east comprised of flat pahoehoe slabs and waterworn stones. A linear alignment of subangular and waterworn stones is oriented perpendicularly to the possible walkway, 0.85 m to the east.

There is a raised tier located in the northeast portion of the terrace that is 2.1 m long (east-west), 1.55 m wide and from 0.21 to 0.32 m above the surface of the terrace. The surface of this tier is covered in

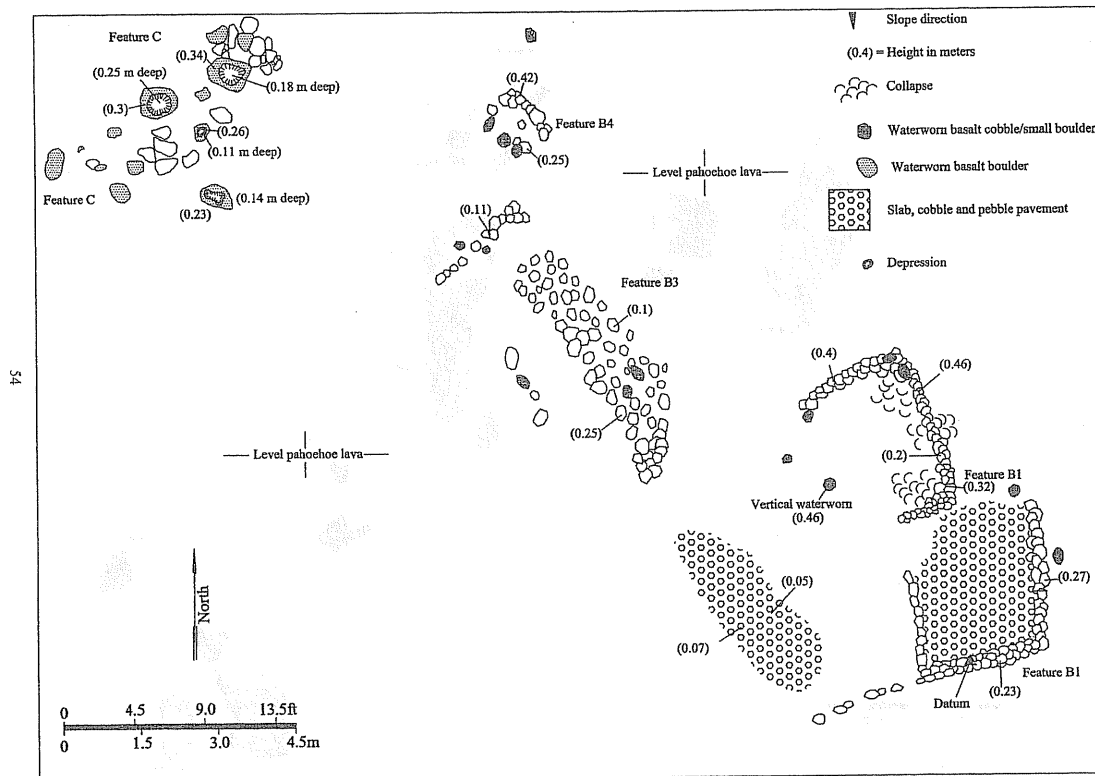


Figure 16. Site 1885, Feature B and C Plan Map

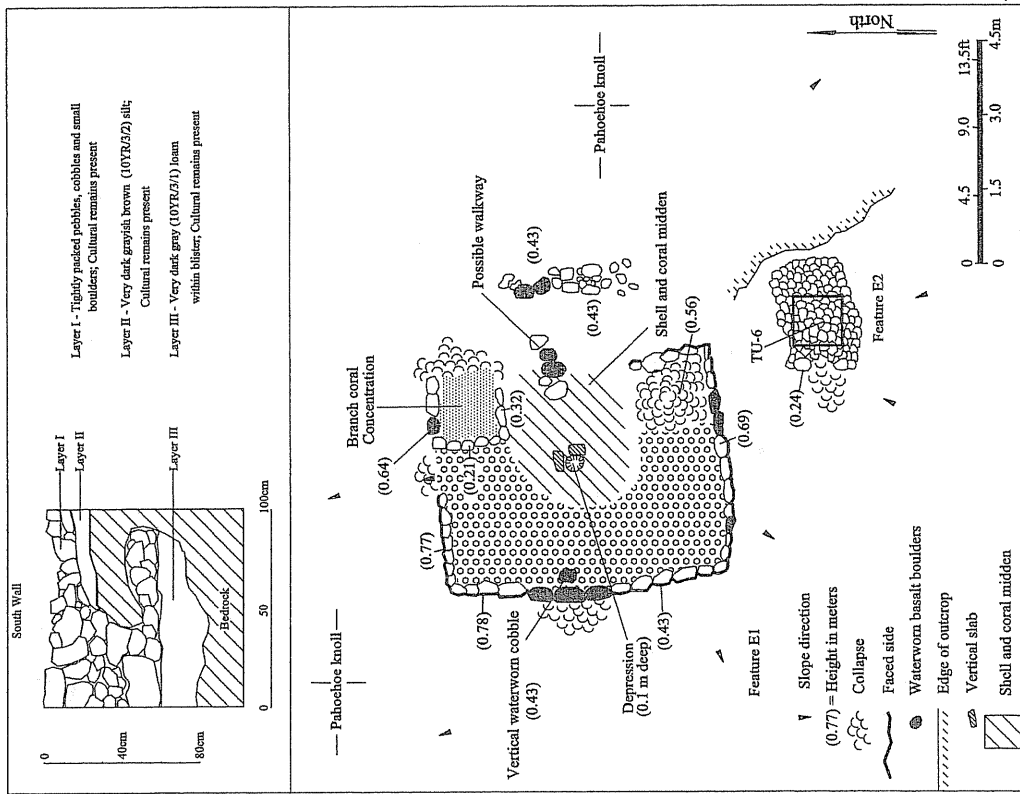


Figure 18. Site 1885, Feature E Plan Map and TU-6 South Face Profile

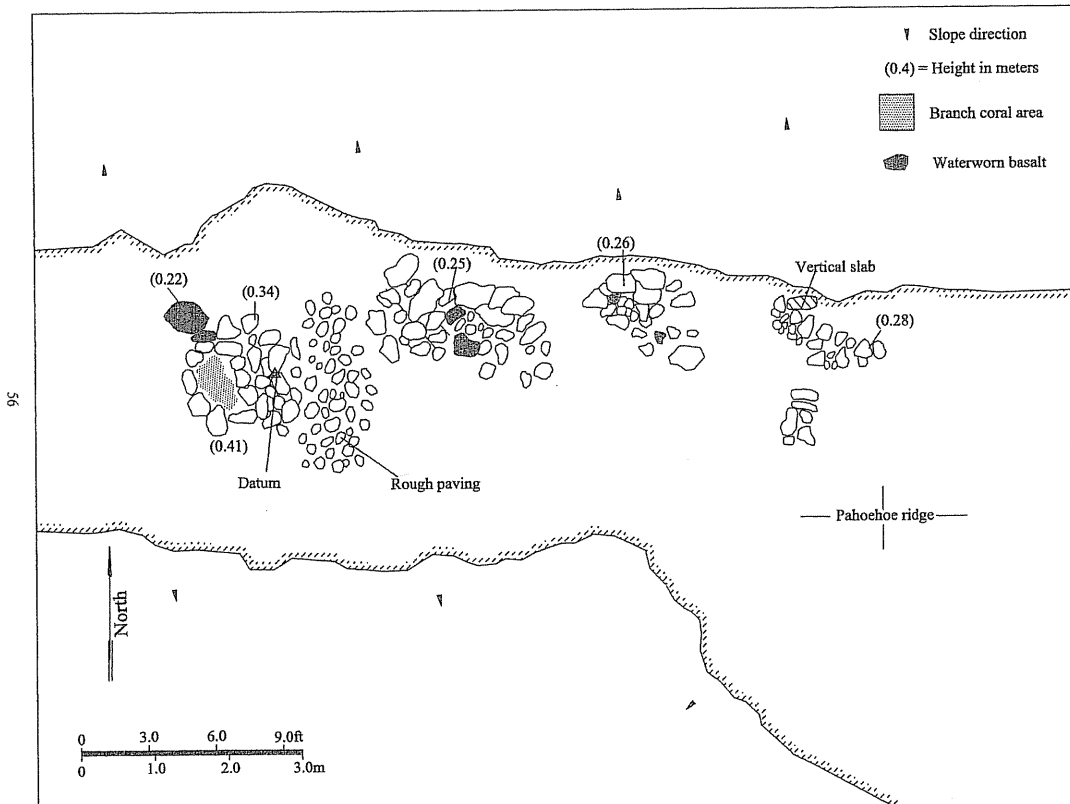


Figure 17. Site 1885, Feature D Plan Map

branch coral fragments. A second tier is located in the southeast corner, comprised of a rounded piled of cobbles and small boulders. It is 1.7 m long (east-west), 1.6 m wide and 0.56 m in height above the terrace.

The Feature E2 terrace is located adjacent to Feature E1 to the south (see Figure 14). This terrace is rectangular in shape and is 2.35 m long (east-west) and 1.65 m wide, located adjacent to a low bedrock outcrop to the west. The west side is comprised of a 0.24 m tall stacked wall with the remaining sides abutting the surrounding terrain. The surface is comprised of level but unpaved cobbles and small boulders with no cultural remains present.

A 1.0 by 1.0 m test unit (TU-6) was excavated into the surface of the terrace revealing three layers over bedrock (see Figure 18). Layer I consisted of 0.12 to 0.59 m of tightly packed pebble, cobbles and small boulders that contained two waterworn coral abraders (#1 = 48.5mm long, 26.8mm wide, 14.5mm thick, 12.2g, #2 = 33.6mm long, 13.3mm wide, 13.3mm thick, 4.3g), marine shells and fragments (*Comus* sp. [n=2, 15.4g], *Cypraea* sp. [n=13, 145.8g], *Cellana* sp. [n=7, 24.4g], *Nerita picea* [n=1, 0.5g], *Drupa ricina* [n=1, 4.3g], *Drupa* sp. [n=2, 2.9g], *Nassa serrata* [n=1, 10.0g], *Thalididae* sp. [n=5, 16.9g] unidentified marine shell fragments [n=4, 16.3g], *Crustacea* of urchin body (n=9, 6.3g), urchin spines (n=7, 8.9g), waterworn coral (n=7, 68.5g), *Crustacea* (n=6, 90.6g), fish bones (n=2, 0.2g), kukui nut shell (n=1, 0.5g) and five fragments of charcoal (1.1g).

A 0.06 to 0.09 m thick deposit of a very dark grayish brown (10YR 3/2) silt (Layer II) was located beneath Layer I in the western portion of the unit. Bedrock was encountered below Layer II and cultural remains consisted of two waterworn coral abraders (#1 = 30.9mm long, 13.0mm wide, 8.6mm thick, 3.8g, #2 = 27.1mm long, 13.3mm thick, 3.6g), ten volcanic glass flakes (5.0g), marine shells (*Comus* sp. [n=16, 22.0g], *Pexillum cancellarioides* [n=1, 0.4g], *Cypraea granulata* [n=1, 0.6g], *Cypraea* sp. [n=192, 22.1g], *Cellana* sp. [n=16, 5.8g], *Thalididae* sp. [n=28, 46.8g], *Isogommon* sp. [n=3, 0.5g], *Littoraria pinnata* [n=9, 2.6g], *Modiolus lectum* [n=1, 0.8g], *Nerita picea* [n=301, 86.1g], *Nerita polita* [n=2, 3.6g], *Cellana sandwicensis* [n=21, 21.3g], *Cellana talcosa* [n=18, 12.7g], *Phenacolepas granocostata* [n=2, 0.3g], *Drupa ricina* [n=10, 17.7g], *Drupa rubicundacea* [n=5, 3.3g], *Drupa* sp. [n=86, 120.4g], *Trochus* *in-aequalis* [n=1, 0.3g], *Chama* sp. [n=1, 1.2g], *Isogommon californicum* [n=1, 0.1g], *Isogommon perna* [n=15, 2.0g], *Tellina pallidum* [n=1, 0.3g], unidentified marine shells [n=221, 91.0g], waterworn marine shells [n=34, 9.5g], *Polylapophora* body fragments (n=1, 0.4g), urchin body fragments (1,732, 254.0g), urchin spine fragments (n=238, 59.3g), an urchin spine abrader (47.8mm long, 6.4mm wide, 6.7mm thick, 1.8g), 267 waterworn coral (836.8g), *Crustacea* body fragments (n=6, 0.6g), fish bones (n=60, 3.6g), non-human mammal bones (n=3, 0.5g), and 20 charcoal fragments (1.6g).

A deposit of a very dark gray (10YR 3/1) silt (Layer III) was located beneath Layer I in the remainder of the unit. This deposit varied in thickness from 0.12 to 0.26 m and contained one basalt adze flake (12.2mm long, 7.9mm wide, 1.9mm thick, 0.2g), ten waterworn coral abraders (#1 = 54.6mm long, 34.4mm wide, 22.5mm thick, 32.4g, #2 = 41.2mm long, 35.2mm wide, 20.5mm thick, 28.8g, #3 = 36.1mm long, 28.5mm wide, 19.6mm thick, 10.5g, #4 = 26.0mm long, 19.1mm wide, 15.8mm thick, 5.4g, #5 = 69.4mm long, 47.8mm wide, 37.3mm thick, 75.9g, #6 = 81.2mm long, 38.8mm wide, 34.0mm thick, 58.5g, #7 = 64.6mm long, 22.7mm wide, 30.2mm thick, 26.8g, #8 = 34.1mm long, 28.4mm wide, 23.4mm thick, 14.0g, #9 = 46.7mm long, 18.4mm wide, 15.9mm thick, 7.1g, #10 = 31.5mm long, 14.0mm wide, 16.8mm wide, 5.5g), five waterworn coral files (#1 = 34.9mm long, 8.7mm wide, 6.9mm thick, 1.5g, #2 = 16.0mm long, 10.2mm wide, 7.3mm thick, 1.3g, #3 = 26.0mm long, 8.2mm wide, 6.3mm thick, 0.9g, #4 = 12.3mm long, 12.7mm wide, 6.2mm thick, 0.9g, #5 = 18.0mm long, 6.8mm wide, 5.7mm thick, 0.7g), three urchin spine abraders (#1 = 48.8mm long, 7.4mm wide, 4.5mm thick, 1.2g, #2 = 58.9mm long, 6.1mm wide, 5.8mm thick, 1.7g, #3 = 28.8mm long, 5.8mm wide, 4.2mm thick, 0.7g), 11 volcanic glass flakes (7.7g), marine shells (*Comus* sp. [n=33, 76.5g], *Cypraea granulata* [n=1, 0.4g], *Cypraea* sp. [n=173, 560.7g], *Fasciolaritidae* sp. [n=2, 23.2g], *Littoraria pinnata* [n=110, 28.5g], *Nerita picea* [n=728, 222.6g], *Cellana* sp. [n=235, 374.2g], *Phenacolepas granocostata* [n=3, 0.8g], *Drupa* sp. [n=82, 114.6g], *Morula* sp. [n=5, 5.8g], *Thalididae* sp. [n=226, 877.8g], *Barbatia divaricata* [n=1, 0.2g], *Isogommon* sp. [n=87, 21.3g], *Spondylus* sp. [n=3, 2.3g], *Tellina pallidum* [n=1, 2.6g], *Neolithus hurpa* [n=1, 2.3g] and unidentified marine shells [n=539, 258.8g]), urchin body fragments (n=5,992, 726.5g), urchin spine fragments (n=789, 206.4g), waterworn coral (n=331, 971.8g), *Crustacea* body fragments (n=184, 37.0g), fish bones (n=755, 149.5g), rodent bones (n=14, 0.9g), dog bones (n=6, 4.0g), non-human mammal bones (n=81, 46.6g), a drilled dog

bone (25.3mm long, 10.1mm wide, 5.3mm thick, 0.5g), 23 kukui nuts (16.8g), burned kukui nut (n=1, 0.1g), waterworn basalt pebble (n=1, 7.0g), waterworn basalt cobble (n=1, 810.9g), 225 charcoal fragments (17.3g), two bone fishhook fragments (#1 = 47.0mm long, 17.3mm wide, 8.5mm thick, 2.0g, #2 = 16.1mm long, 8.6mm wide, 2.3mm thick, 0.2g) and a human metatarsal. The larger fishhook fragment is probably made from human bone. This fishhook and the metatarsal items were delivered to DLNR-SHPD Burial Sites Program staff for temporary curation on August 11, 2006.

The Feature F pavement is located at the base of a ridge below Feature E 6.0 m to the west (see Figure 14). The location of this feature roughly corresponds to Emory and Soehren's (1971) Site D11-22. The pavement is roughly oval in shape and measures 15.6 m long (north-south) and from 5.8 to 6.2 m wide (Figure 19). The surface is comprised of rough pahoehoe slabs and cobbles with scattered *Cypraea* sp. and *Cellana* sp. shells and waterworn coral fragments, interspersed with coarse sand. The western side is paved area, is 0.05 to 0.1 m in height above the surrounding ground surface and the eastern side is level with the base of the pahoehoe ridge. A U-shaped alignment of subangular cobbles with one waterworn cobble is present along the east side of the feature in the southern portion. The alignment is 1.3 m long (north-northwest by south-southeast) and 0.75 m wide.

The Feature G filled crack is located 9.5 m southeast of Feature A2 (see Figure 9). The feature is located in an area of level pahoehoe lava and is oval in shape, measuring 3.45 m long (north-south) and 1.75 m wide (Figure 20). The sides of the feature are level with the surrounding ground surface. Fragments of waterworn coral and *Cypraea* sp. shell are present on the surface. There is an oval-shaped depression located in the eastern portion of the fill area that is 0.7 m long (northwest by southeast), 0.5 m wide and 0.13 m in depth.

A 1.0 by 1.0 m test unit (TU-3) was excavated into the surface of the feature over the depression, revealing a single stone layer over bedrock (see Figure 20). Layer I consisted of 0.49 to 0.68 m of tightly packed cobbles, pebbles and small boulders with cultural remains consisting of eight waterworn coral abraders (#1 = 48.3mm long, 56.9mm wide, 39.7mm thick, 66.5g, #2 = 47.2mm long, 30.2mm wide, 32.1mm thick, 33.6g, #3 = 47.1mm long, 20.1mm wide, 24.3mm thick, 20.4g, #4 = 33.0mm long, 23.8mm wide, 26.6mm thick, 14.3g, #5 = 42.8mm long, 35.1mm wide, 17.0mm thick, 17.8g, #6 = 32.5mm long, 23.0mm wide, 31.5mm thick, 20.1g, #7 = 49.7mm long, 33.0mm wide, 15.8mm thick, 17.8g, #8 = 22.6mm long, 19.5mm wide, 15.1mm thick, 4.1g), five volcanic glass flakes (1.5g), marine shells (*Comus* sp. [n=3, 2.6g], *Cypraea* sp. [n=22, 65.2g], *Littoraria pinnata* [n=7, 1.6g], *Nerita picea* [n=49, 135.0g], *Cellana* sp. [n=8, 4.8g], *Phenacolepas granocostata* [n=3, 0.5g], *Drupa* sp. [n=160, 159.1g], *Morula* sp. [n=4, 2.9g], *Thalididae* sp. [n=77, 49.9g], *Isogommon* sp. [n=24, 6.5g], *Spondylus* sp. [n=4, 4.2g], *Tellina* sp. [n=4, 2.9g], unidentified marine shells [n=57, 14.2g], waterworn marine shells [n=44, 31.0g]), *Polylapophora* body fragments (n=7, 4.2g), urchin body fragments (n=223, 54.4g), urchin spine fragments (n=96, 106.6g), waterworn coral (n=238, 850.2g), *Crustacea* body fragments (n=22, 7.3g), fish bones (n=1, 1.5g), burned kukui nuts (n=13, 7.5g), and three charcoal fragments (0.2g). A thin band of sand over bedrock was noted in the northwestern corner of the unit (0.02 to 0.03 m thick) with no cultural remains present.

The Feature H enclosure is located 4.0 m south of Feature G. This feature is located within a natural depression in an area of level pahoehoe lava measuring 2.8 m long (northwest by southeast) and 2.45 m wide (Figure 21). It is bordered along the northeast and southwest sides by the edge of the depression, by a low subangular basalt cobble and small boulder wall along the southwest side and by an alignment of subangular small boulders along the northwest side. The wall is 0.4 to 0.5 m wide and 0.54 m in height and the alignment is 0.45 m wide and 0.47 m in height. The interior of the enclosure consists of a rough cobble pavement with scattered *Cypraea* sp. shells, waterworn coral and a volcanic glass flake. This paved area extends outside the enclosure to the northwest, bordered by the edges of the depression.

The Feature I enclosure contains two compartments, with Feature I1 occupying the southern portion and Feature I2 located in the northern end. These features correspond to Emory and Soehren's Site D11-26 (1971:14, Figure 6). Feature I1 is roughly rectangular in shape and is 13.8 m long (north-northeast by south-southwest) and 5.95 to 6.5 m wide (see Figure 21). The walls of the enclosure are mostly collapsed subangular basalt cobbles and small boulders with some remnant stacking present along the east side. Two vertical slabs are incorporated into the interior face of the north wall. There is a 0.6 m wide

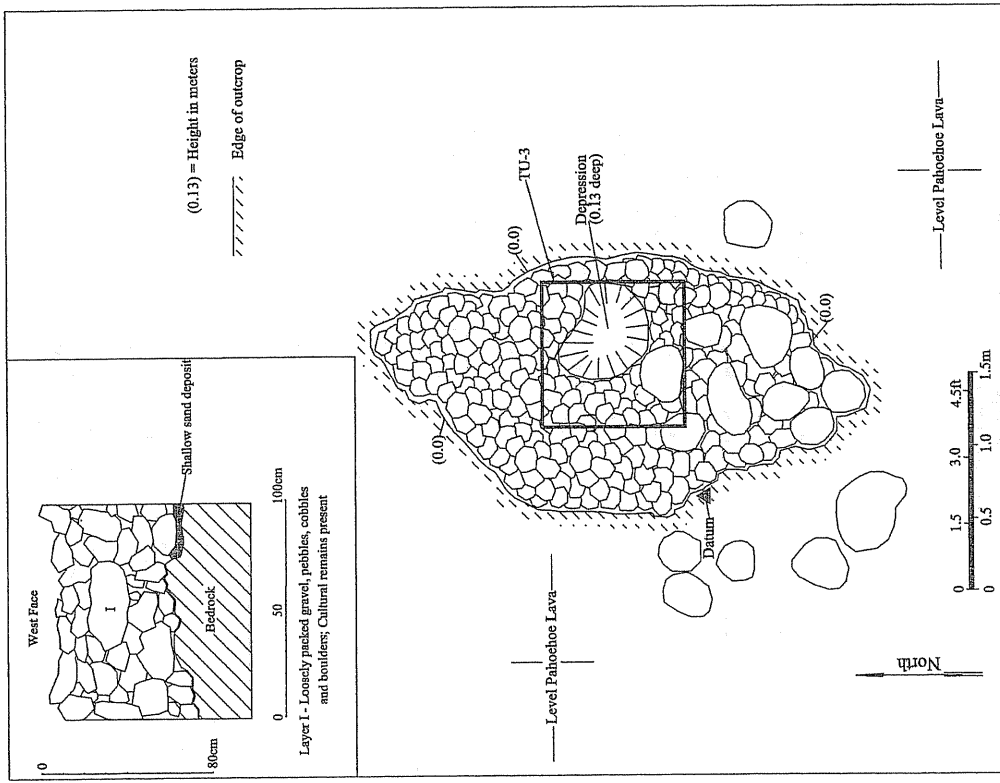


Figure 20. Site 1885, Feature G Plan Map and TU-3 West face Profile

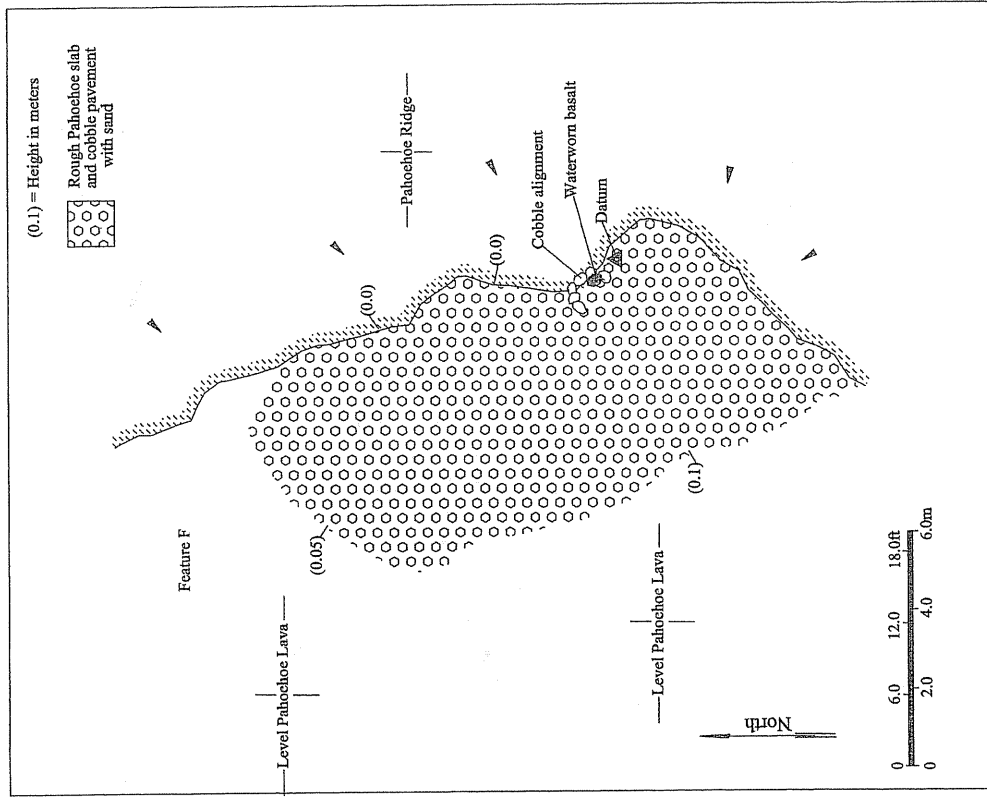


Figure 19. Site 1885, Feature F Plan Map

entrance into the interior in the eastern wall. The walls range in width from 0.65 to 1.25 m and in height from 0.25 to 0.41 m. The interior of the feature is roughly paved with cobbles with bedrock visible between the stones. *Cypraea sp.* and *Calliana sp.* shells and waterworn coral fragments are scattered over the surface.

The Feature 12 enclosure is built against the northern wall of Feature 11. It is roughly square-shaped and is 3.5 m long (north-northeast by south-southwest) and 3.4 m wide, with a 0.55 m wide opening in the southwestern corner. The walls are built of stacked subangular basalt cobbles and small boulders with collapse present in the interior southeast corner and at the south end of the west wall. The walls range in width from 0.55 to 0.8 m and in height from 0.3 to 0.38 m. Fragments of *Cypraea sp.* shell and waterworn coral are present inside the interior.

Feature J is an enclosure located 5.4 m to the northeast of Feature 12 (see Figure 21). The feature is roughly U-shaped and is open to the southwest. The feature is 4.6 m long (north-northeast by south-southwest) and 3.5 m wide, with walls comprised of collapsed subangular basalt cobbles and small boulders. The walls range in width from 0.65 to 1.2 m and in height from 0.28 to 0.37. There is a 0.43 m high vertical pahoehoe slab incorporated into the interior side of the south wall. The interior is comprised of a level cobble pavement with scattered waterworn coral fragments present.

A 1.0 by 1.0 m test unit (TU-4) was excavated into the interior of the enclosure, revealing a single layer over bedrock (see Figure 27). Layer 1 consisted of 0.21 to 0.38 m of tightly packed gravel, pebbles, cobbles and small boulders. Cultural remains from Layer 1 consisted of one basalt adze flake (13.9mm long, 8.6mm wide, 5.1mm thick, 0.9g), one fishhook preform (18.2mm long, 8.2mm wide, 1.8mm thick, 0.3g), four waterworn coral abraders (#1 - 69.8mm long, 64.0mm wide, 21.9mm thick, 38.1g, #2 - 47.8mm long, 30.3mm wide, 18.4mm thick, 20.7g, #3 - 24.6mm long, 23.5mm wide, 13.5mm thick, 6.3g, #4 - 37.3mm long, 20.0mm wide, 15.2mm thick, 7.8g), one waterworn coral file (42.5mm long, 18.0mm wide, 14.9mm thick, 7.7g), 39 volcanic glass flakes (18.8g), marine shells (*Conus sp.* [n=10, 11.9g], *Cypraea sp.* [n=31, 60.9g], *Littoraria pinaxata* [n=26, 7.6g], *Nerita picea* [n=203, 68.8g], *Calliana sp.* [n=7, 5.0g], *Phenacolepus granocostata* [n=33, 5.3g], *Cymatium sp.* [n=2, 3.1g], *Thalididae sp.* [n=19, 85.9g], *Trachinus hirtus* [n=1, 0.9g], *Inogonion sp.* [n=1,000, 182.3g], unidentified marine shells [n=101, 41.2g], waterworn marine shell [n=133, 35.0g]), *Polyplocophora* body fragments (n=22, 9.6g), urchin body fragments (n=100, 15.3g), urchin spine fragments (n=10, 12.2g), waterworn coral (n=379, 348.2g), *Crustacea* body fragments (n=28, 6.4g), fish bones (n=6, 0.5g), non-human mammal bones (n=13, 5.5g), waterworn basalt pebble (n=1, 7.7g), *hilaria* nut (n=3, 0.5g), and eight charcoal fragments (0.4g).

The Feature K lava blister is located 2.8 m to the southwest of Feature 11 (see Figure 21). This feature is located in the northeastern end of an oval-shaped rubble filled depression in the pahoehoe lava that is 6.7 m long (north-south), 2.8 m wide and 1.5 m in depth. The entrance to the blister is 2.7 m long (north-northeast by south-southwest) and 1.2 m in height. This opens onto an oval-shaped chamber that is 2.7 m long (northwest by southeast), 1.0 m wide and 0.5 m in height. The floor has been mostly cleared of the rubble and contains scattered *Cypraea sp.* and *Calliana sp.* shells and waterworn coral.

Site 1885 is interpreted as a complex comprised of four ceremonial features (Features D, E1, E2, and F) and 13 permanent habitation features. The Feature E1 terrace is assigned a ceremonial function that likely served as a *heiau*, based on its formal type, substantial construction (faced sides, paved surface), vertical waterworn stone, two upright slabs, and raised tier with branch coral. The adjacent Feature E2 terrace and the Feature F pavement are probable ceremonial structures due to their proximity to Feature E1. The Feature D pavement remnant appears to have been impacted or robbed of stones making a determination of its function difficult; however, the vertical slab and concentration of branch coral at the feature are attributes of ritual sites and potentially indicate that the feature functioned as a shrine.

The remaining features of the site likely functioned as permanent habitations. The Features A1, A2, I1 and J enclosures likely served as the foundation for permanent habitation structures due to their formal type, substantial construction and areas greater than 16 sq m. Alternatively, it is possible that two of the features (A1 and I1) may have functioned as canoe houses based on the feature's linear form, both are more

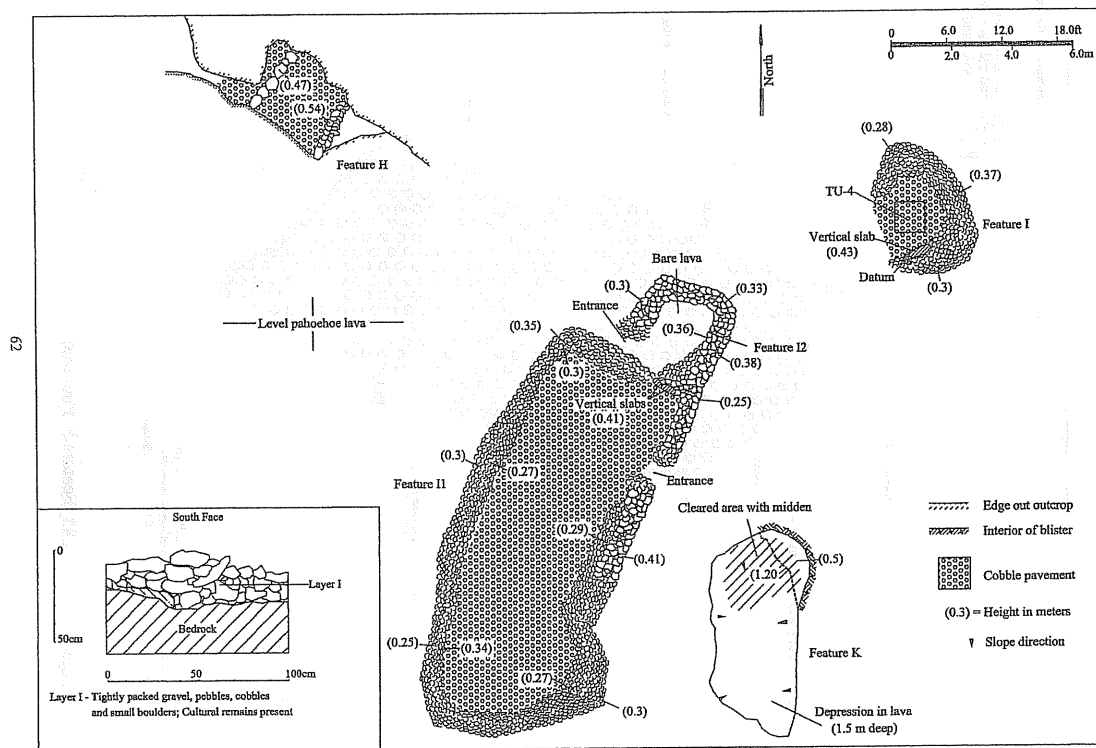


Figure 21. Site 1885, Features H, I, J and K and TU-4 South Face Profile

than 13 m long; however, canoe houses typically are U-shaped with an open end. Both features are attached to probable habitation features, a characteristic that also is atypical for canoe houses.

The Feature B1, B2, H and I2 enclosures may have functioned as associated special purpose structures based on formal type and small areas less than 16 sq m. The Feature C waterworn and subangular stone cluster likely functioned as an ancillary feature which may have served as a work area, as did the Feature B3 and B4 alignments and the Feature G filled crack. The Feature K lava blister probably served as an ancillary storage area. The site is unaltered and in fair to good condition.

Site 1886

Site 1886 consists of a low terrace remnant located along the coast in the Land of Kealahou at c. 15 ft elevation. This was initially identified by Emory and Soehren (1971) as Site D11-21 and was assigned its current SHIP site designation during the 1973 statewide survey. The terrace is linear in shape and is bordered by an area of uplifted pahoehoe lava to the east and south and by sand to the north and west. It measures 9.6 m in length (north-south) and ranges in width from 2.25 to 3.27 m (Figure 22). The north, northeast and northwest sides of the structure are bordered by waterworn and subangular basalt cobbles and small boulders with several stones placed in a linear alignment along the eastern side. The sides of the terrace in the northern portion range in height from 0.12 to 0.29 m and the southern portion is level with the surrounding ground surface. A slight depression bordered by cobbles and small boulders is located in the northwest corner, measuring 0.8 m long (north-south), 0.72 m wide and 0.25 m deep. An alignment of waterworn stones bisects the north end of the site in a north-south direction. The surface is comprised of a level cobble and pebble pavement with scattered *Cypraea sp.* and *Cellana sp.* shells, waterworn coral and sand.

There is a natural depression in the bare lava to the south of the terrace. It is 1.7 m long (north-south), 1.4 m wide and 0.88 m deep and is filled with sand. A waterworn basalt cobble is located adjacent to the depression to the east, and a pile of waterworn and subangular basalt stones are located to the north-west.

Site 1886 is interpreted as the foundation for a permanent habitation structure. This is based on its formal type, substantial construction (paved surface) and area (31.3 sq m). The site has likely been impacted by wave activity. It is unaltered and in poor to fair condition.

Site 1887

Site 1887 consists of coastal sand area (Feature A) that contains the remnant of an enclosure (Feature B) located in the Land of Kealahou at c. 15 ft elevation. The Feature B enclosure was assigned its current SHIP designation during the 1973 statewide survey. The Feature A sand area is surrounded by bare coastal pahoehoe lava and encompasses an area 36.5 m long (north-northwest by south-southeast) and 14.0 m wide (see Figure 7). Sun-bleached marine shells and fragments of waterworn coral are scattered over the surface of the sand.

The Feature B enclosure remnant is located in the approximate center of the sand area. This feature encompasses an area 6.15 m long (east-west) and from 3.4 to 4.0 m wide (Figure 23). The eastern portion of the feature contains a relatively intact portion of the enclosure that measures 2.85 m long (north-south) by 2.7 m long (east-west). This wall segment is comprised of stacked and faced cobbles and small boulders that range in width from 0.58 to 0.97 m and in height from 0.2 to 0.56 m. The wall is collapsed rubble to the northwest of the intact section and along the south side. There is a perpendicular wall that extends to the west from this intact section that is faced along the south side. It measures 1.1 m long (east-west) and 0.3 m in height.

A second portion of the enclosure is located to the west of the intact portion. A flat pahoehoe slab is located between the two sections along the south side. It is comprised of collapsed rubble in an oval-shaped piled that extends to the south from a low pahoehoe outcrop. It measures 3.95 m long (north-south), 1.9 m wide and 0.28 to 0.45 m in height. There are three aligned small boulders in the center of this wall at

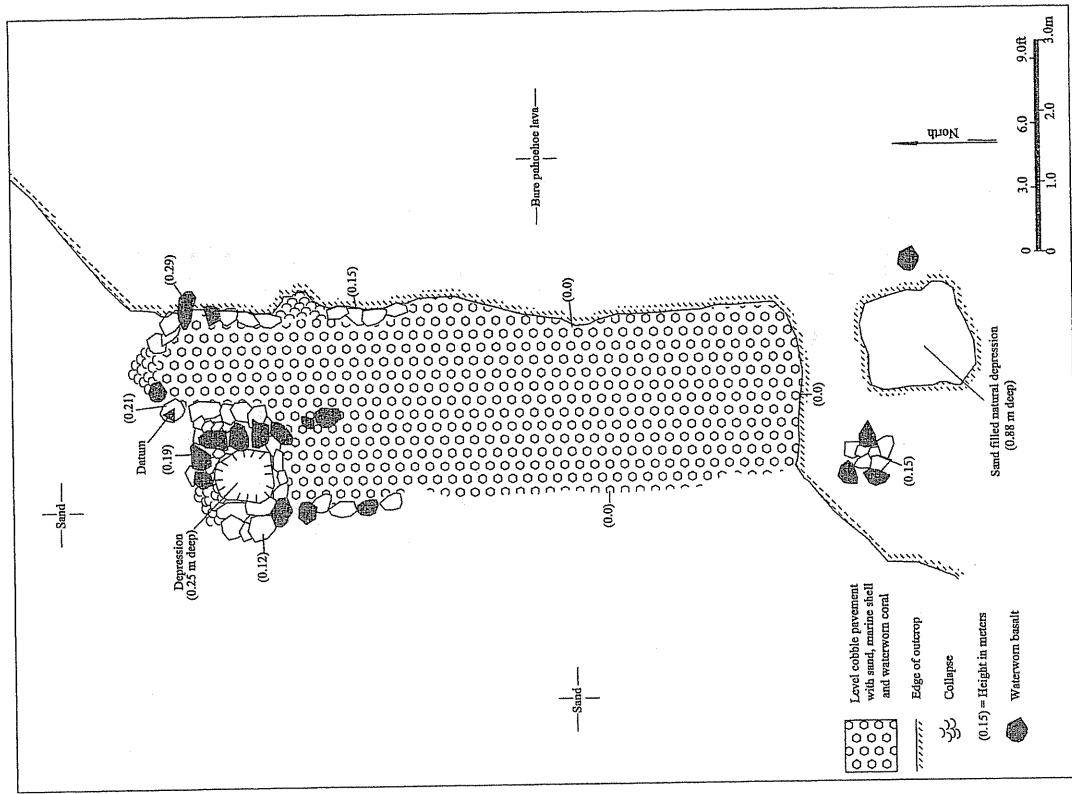


Figure 22. Site 1886 Plan Map

the north end that may represent a remnant portion of the west wall. The interior of the enclosure is comprised of level sand with scattered sun-bleached marine shells.

A 0.5 by 0.5 m unit (TU-5) was excavated into the Feature A sand, 5.0 m to the west of the Feature B enclosure remnant (see Figure 23). This excavation revealed a single layer of a white (10YR 8/2) coarse sand over bedrock that ranged in thickness from 0.7 to 0.76 m. Materials recovered from this layer consisted of marine shells (*Nerita picea* [n=45, 8.4g], *Cellana* sp. [n=16, 4.7g], *Thalididae* sp. [n=14, 5.4g], *Coma* sp. [n=3, 0.5g], *Trachis inxatus* [n=6, 0.6g], *Isognomon californicum* [n=1, 0.1g], *Cypraea* sp. [n=5, 27.8g], *Littoraria pinnata* [n=22, 2.8g], *Isognomon* sp. [n=5, 0.3g], *Barbata divaricata* [n=3, 0.6g], waterworn marine shells [n=1,633, 277.1g], waterworn coral (n=871, 431.4g), urchin body fragments (n=84, 10.0g), urchin spine fragments (n=17, 2.9g), *Polysiphonia* body fragments (n=4, 0.9g), *Cristate* body fragment (n=1, 0.1g), fish bone (n=1, 0.1g) and two charcoal fragments (0.2g).

Site 1887 is interpreted as a permanent habitation complex. The Feature B enclosure likely served as a foundation for a rooded structure based on its formal type, substantial construction (faced side) and area (24.6 sq m). The Feature A sand area was probably utilized as an associated living area based on its association with Feature B. The site is unaltered and in poor condition.

Site 1888

Site 1888 was initially identified during the 1973 statewide survey and was briefly examined by Soehren (1981). Soehren describes this site as a possible shrine comprised of an upright stone representing a possible fishing shrine (1981:1). The area in which the site was reportedly located was carefully examined during the present project and though numerous stones are scattered over this area, no upright stone resembling a shrine was identified.

Site 1889

Site 1889 is a walled terrace located in the Land of Kealaheke in an area of level sand and pahoehoe outcrops at c. 16 ft elevation. This site was initially identified by Emory and Soehren (1971) who designated it as Site D11-20. The site was subsequently examined during the statewide survey in 1973 at which time it was assigned its current SHIP site designation. The site was also visited by Soehren (1981). The site is comprised of a large walled terrace built on top of a low bedrock outcrop covered in sand (Figure 24). It measures 16.1 m long (east-west) and from 7.1 to 10.4 m wide, with free standing walls extending along the north and west sides and a terrace retaining wall present along the west side.

The freestanding walls range in width from 0.59 to 1.0 m and in height from 0.27 to 0.55 m. Portions of the interior and exterior sides of these walls are faced with the remainders having collapsed, east and west sides. The western terrace wall is built of stacked and faced cobbles and small boulders that ranges in height on the exterior western side from 0.46 to 0.49 m. The eastern side of this retaining wall is level with the sand surface of the structure.

There is an oval-shaped alignment of cobbles and small boulders located in the approximate center of the site, measuring 2.15 m long (north-south), 1.68 m wide and 0.3 m in height. Emory and Soehren also identified this alignment, but at the time of their study, a vertical, "square stone that stands about 2 feet high" (1971:13). This interior stone was not present during the current project.

A second possible oval alignment is incorporated into the eastern wall of the structure. This alignment is 1.3 m long (east-west), 1.05 m wide and 0.42 m in height. Additional scattered cobbles and small boulders are present in the eastern half of the structure, with several waterworn basalt boulders also present. There is a waterworn basalt boulder with a worn depression in the center located in the western portion of the site. The boulder is 0.85 m long (northwest by southeast), 0.72 m wide and 0.6 m in height and the depression is 0.34 m long, 0.23 m wide and 0.22 m deep. A concentration of waterworn coral is present 1.5 m south-southwest of the boulder.

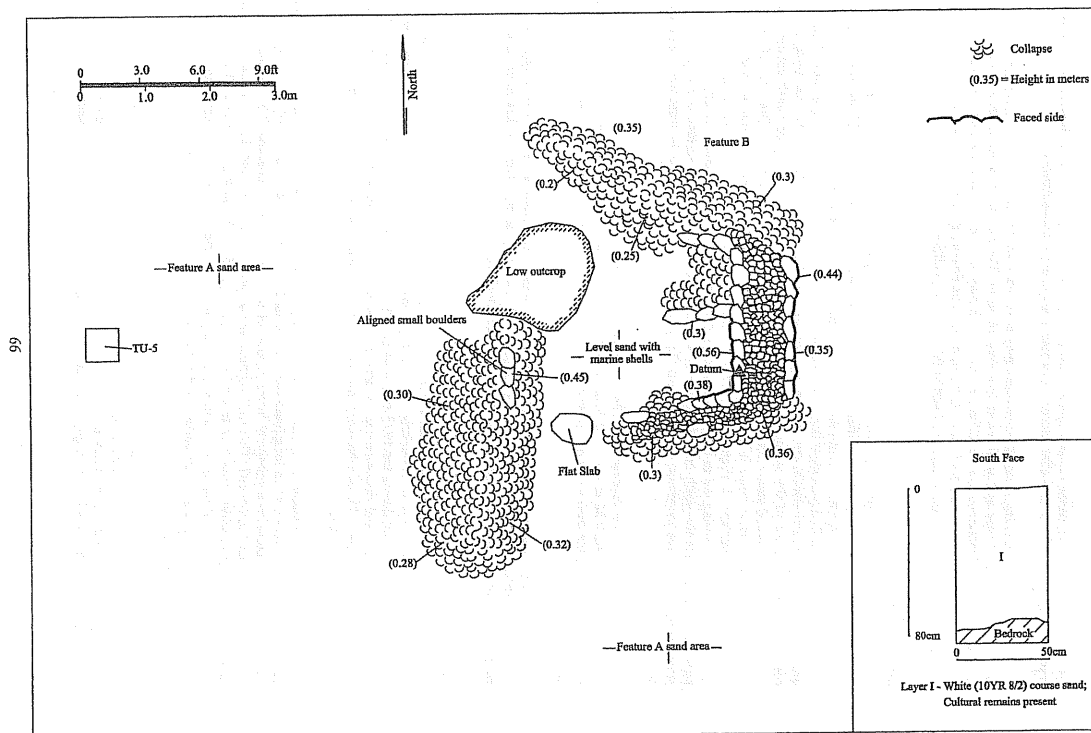


Figure 23. Site 1887 Plan Map and TU-5 South Face Profile

Site 1889 is interpreted as a possible *heiau*. This is based on its formal type, its large area (167.4 sq m) and the upright stone described by Emory and Soehren (1971). The site is unaltered and in fair condition.

Site 1890

Site 1890 is a platform located on a ridge overlooking the shoreline in the Land of Kealahou at c. 18 ft elevation. This site was initially identified by Emory and Soehren and designated as D11-19 (1971:13). The site was also examined during the 1973 statewide survey at which time the site was assigned its current SHP site designation. Soehren (1981) also examined the site though he offers little information. The examination of the site during the present project indicates that Site 1890 consists of a rectangular platform that measures 4.95 m in length (north-northwest by south-southeast) and from 2.0 to 2.35 m wide (Figure 25). The sides are built of aligned small waterworn and subangular basalt boulders, ranging in height from 0.24 to 0.62 m. The surface is uneven and irregular and is comprised predominantly of cobble fill with scattered waterworn and subangular boulders present. Two volcanic glass flakes were noted on the ground surface to the north of the structure, and there are thin pockets of wind blown sand around the base. No cultural remains were present on the surface.

Site 1890 is interpreted as a probable burial site based on its formal type and on its coastal location. No subsurface testing was undertaken at the structure during the present project due to the high probability that human remains would be encountered. The site is unaltered and in fair condition.

Site 1891

Site 1891 is an enclosure remnant located in the Land of Kealahou at c. 20 ft elevation. The site was initially identified by Emory and Soehren (1971) as Site D11-18 and was assigned its current SHP site designation during the 1973 statewide survey. The main portion of the enclosure is roughly U-shaped and is open to the west (Figure 26). The site is situated in an area of uneven pahoehoe lava near the shoreline that overlooks the Site 25611 sand area (discussed below) to the north. The enclosure is 6.0 m long (north-south) and from 4.5 to 6.0 m wide, with walls that range in width from 0.63 to 1.0 m and in height from 0.18 to 0.48 m. The walls are built of stacked cobbles and small boulders with several vertical stones incorporated into the southern wall. A 1.4 m wide gap is present in the northeast corner. Portions of the interior north and east sides and the exterior north side are roughly faced. The remaining sides of the structure have collapsed. The interior of the enclosure is comprised of level sand with scattered *Cypraea sp.* shell and waterworn coral. A large possible *Cypraea sp.* shell scraper is present in the northern portion of the interior.

A small U-shaped extension extends off the south side of the main enclosure. This portion is 1.4 m long (east-west), 1.35 m wide and is open to the east. The walls are built of stacked cobbles and small boulders ranging in width from 0.6 to 0.68 m and in height from 0.25 to 0.4 m. An area of level sand with scattered *Cypraea sp.* shell and waterworn coral is present to the east of the main enclosure, measuring 5.9 m long (north-south) and 3.1 m wide.

Site 1891 is interpreted as the foundation for a permanent habitation structure based on its formal type, substantial construction (faced sides) and area (36.0 sq m). Emory and Soehren (1971) suggest that the sand and coral area to the east of the enclosure may have contained a house. Alternatively, it may have functioned as an associated activity area. The site has been impacted by storm waves. It is unaltered and in fair condition.

Site 1892

Site 1892 is a complex of four features located along the side and base of an uneven pahoehoe ridge in the Land of Kealahou at c. 19 to 20 ft elevation. The features are comprised of a walled terrace (Feature A), two alignments (Features B and D) and a terrace (Feature C) located in an area 10.2 m long (north-south) and 6.8 m wide (Figure 27). This site was initially documented by Emory and Soehren (1971) as Site D11-17 and was assigned its current SHP site designation during the 1973 Statewide survey.

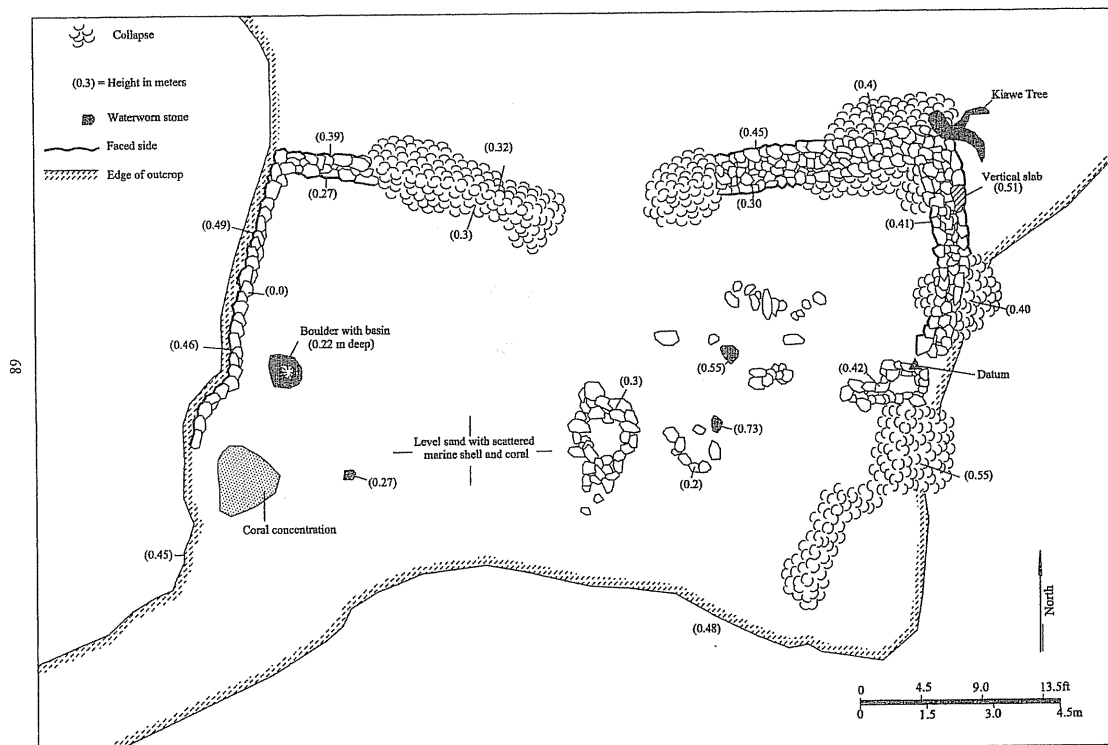


Figure 24. Site 1889 Plan Map

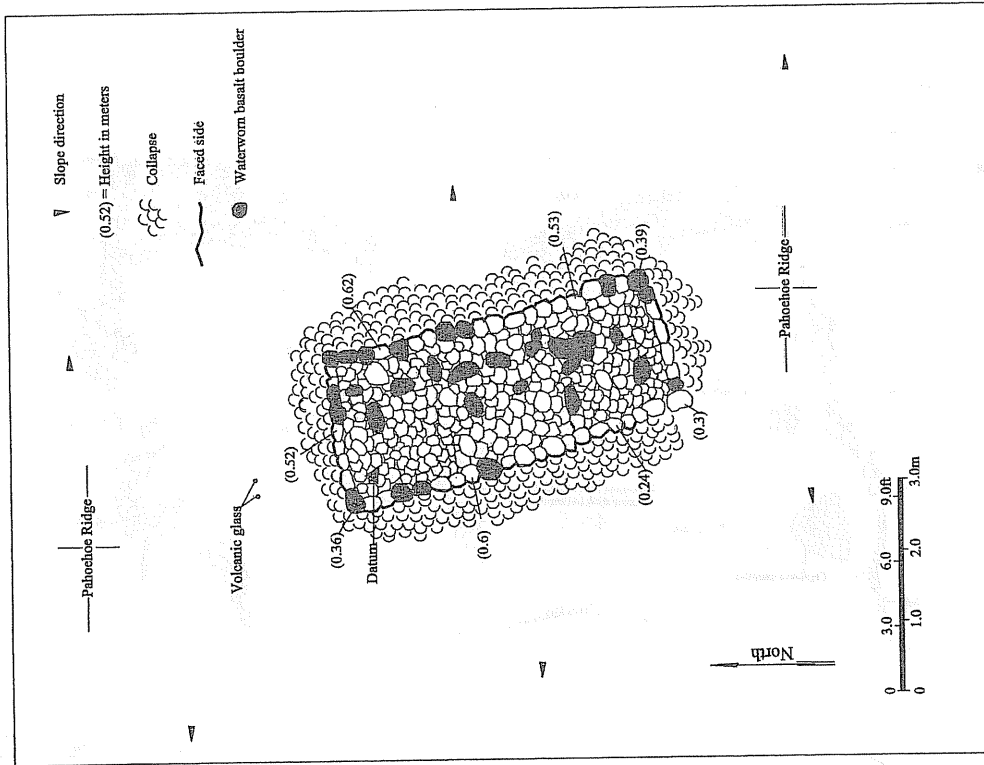


Figure 25. Site 1890 Plan Map

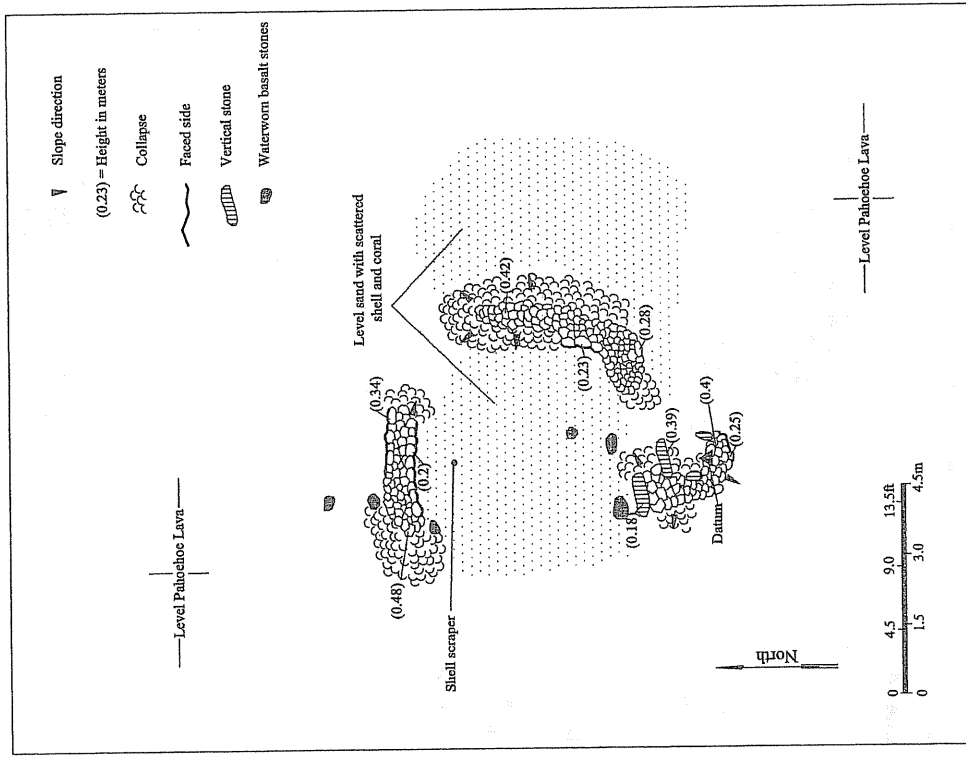


Figure 26. Site 1891 Plan Map

The Feature A walled terrace is located at the base of the pahoehoe ridge on the south side, in an area of level sand. The feature is rectangular in shape and is 6.8 m long (east-northeast by west-southwest) and from 3.55 to 3.5 m wide. The exterior sides of the feature are comprised of stacked waterworn basalt cobbles and small boulders with facing present on the south, east and west sides. The north side abuts the base of the ridge. The interior sides of the walls and portions of the exterior sides have collapsed. The interior surface of the walled terrace is comprised of a relatively level cobble pavement with the interior sides of the walls ranging in height from 0.25 to 0.35 m above the surface. Fragments of waterworn and branch coral are present on the surface of the structure.

Feature B is a linear alignment of waterworn basalt cobbles and small boulders located 1.7 m north of Feature A, on the side of the pahoehoe ridge. This feature is comprised of a rough alignment of waterworn basalt cobbles and small boulders that measures 1.3 m long (east-west) from 0.18 to 0.45 m wide and 0.3 to 0.51 m in height. No cultural remains were present.

Feature C is a crude rectangular terrace located 1.4 m to the north of Feature B on the side of the ridge. This feature is 4.35 m long (east-west) and from 1.2 to 1.35 m wide. The southern downslope side is built of sacked and roughly faced waterworn cobbles and small boulders that ranges in height from 0.48 to 0.58 m. The upslope northern side abuts the side of the sloping terrain. The surface is a rough cobble pavement with no cultural remains present.

The Feature D alignment is located 0.95 m north of Feature C near the top of the ridge. This feature is 1.3 m long (east-west), 0.6 m wide and 0.4 m in height, comprised of waterworn basalt cobbles and small boulders. No cultural remains were present.

Site 1892 is interpreted as a possible ceremonial site, with the Feature A walled terrace potentially functioning as a shrine. This is based on its formal type, substantial construction (faced sides and paved surface), presence of branch coral and its coastal location. Features B, C and D may have functioned as a series of steps that lead up the pahoehoe ridge to the north. The site is unaltered and in fair condition.

Site 1893

Site 1893 is a complex of seven features located in an area of level sand in the Land of Kealahou at elevations that range from c. 17 to 18 ft elevation. The site was assigned its current SHP designation during the 1973 statewide survey. The features are comprised of two platforms (Features A and G), two mounds (Features B and E), a cairn (Feature C), and two low walls (Features D and F) located in an area 38.9 m long (northwest by southeast) and 11.5 m wide (Figure 28).

Feature A consists of the disturbed remnant of a platform located in an area of level sand. The platform is roughly oval in shape and is 6.1 m long (north-northwest by south-southeast) and from 3.0 to 5.0 m wide. The west and southwest side of the structure is built of roughly stacked waterworn basalt cobbles and small boulders and a vertical basalt slab, ranging in height from 0.68 to 0.7 m. The remaining sides of the platform have collapsed outward and range in height from 0.52 to 0.74 m. The surface is comprised of a level cobble pavement with two waterworn small boulders set vertically on end. Scattered waterworn coral is present on the surface of the feature. A collapsed pile of rubble extends to the north-northeast from the northeast corner of Feature A. It measures 3.3 m long, 1.3 to 1.7 m wide and 0.5 to 0.59 m in height. A vertical waterworn basalt small boulder is present along the northwest side of this pile. The Feature A platform may potentially correspond to Emory and Soehren's (1971) Site D11-16; however, no plan map that would help verify this is presented in the report.

Feature B is small mound of stacked and piled waterworn cobbles and small boulders located adjacent to Feature A to the south. It measures 1.45 m long (north-northwest by south-southeast), 0.86 m wide and 0.47 m in height. No cultural remains were present. Feature C is comprised of a cairn located 4.5 m west-southwest of Feature B. This feature consists of a vertical boulder that is supported by piled cobbles and small boulders placed around its base. The base of the feature measures 1.5 m long (north-south) and 1.1 m wide, with the vertical boulder extending to a height of 0.86 m above the surrounding ground surface. No cultural remains were present.

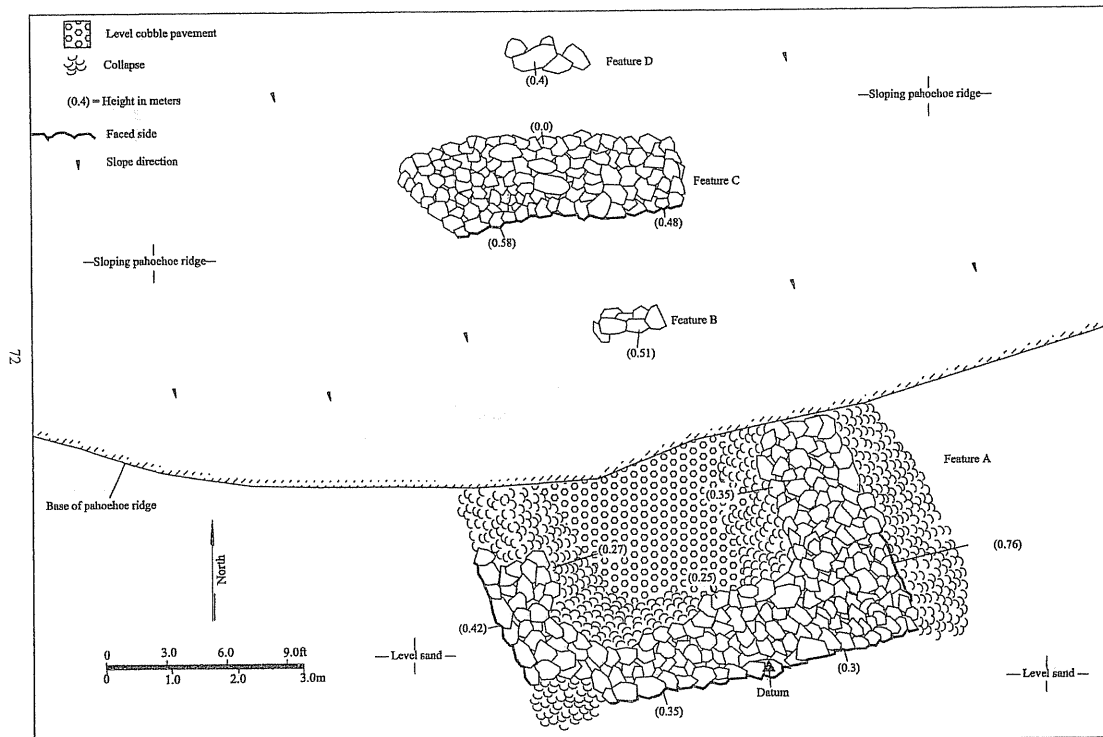


Figure 27. Site 1892 Plan Map

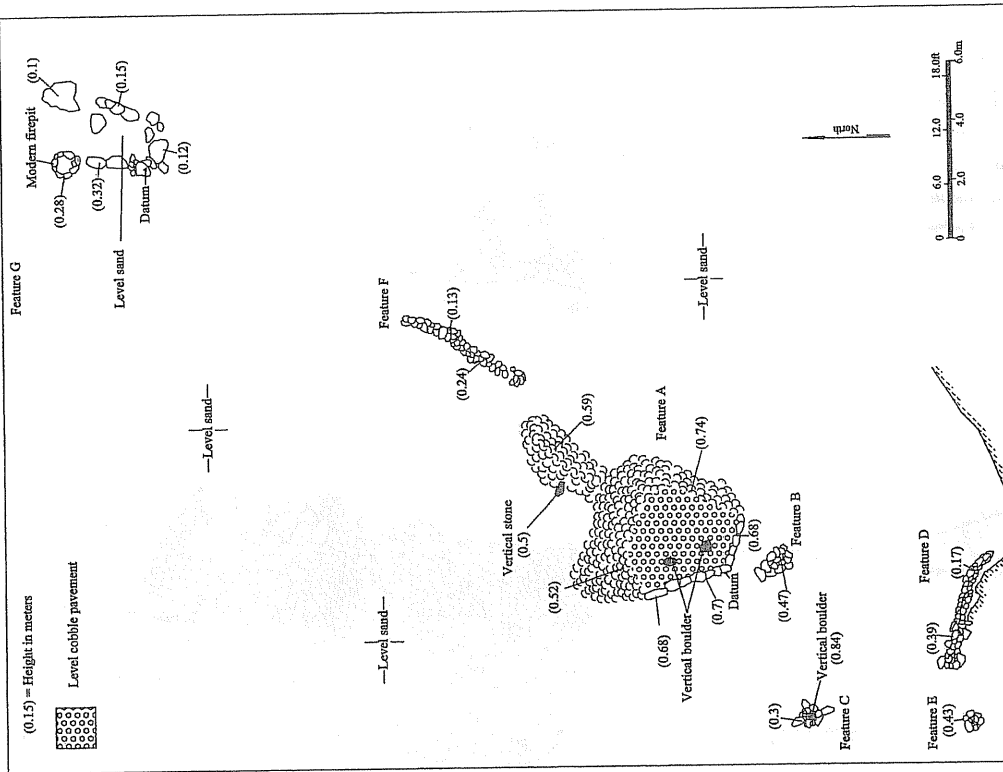


Figure 28. Site 1893 Plan Map

Feature D is a crude low wall located 6.0 m south of Feature B. This wall is 4.3 m long (east-west) and is built adjacent to a low bedrock outcrop to the north. The wall is comprised of roughly stacked cobbles and small boulders, varying in width from 0.35 to 0.9 m and in height from 0.17 to 0.39 m. No cultural remains were present. The **Feature E** mound is located adjacent to Feature D to the west. It measures 0.69 m long (east-west), 0.63 m wide and 0.43 m in height, built of piled waterworn basalt cobbles and small boulders. No cultural remains were present.

Feature F is a low wall located to the north-northeast of Feature A. The wall is 4.75 m long (north-northeast by south-southwest), from 0.35 to 0.45 m wide and 0.13 to 0.24 m in height. It is built of one to three courses of roughly stacked and piled waterworn cobbles and small boulders. No cultural remains were present.

Feature G is the remnant of a possible low platform located 9.7 m north-northeast of Feature F. This feature may potentially correspond to Emory and Soehren's (1971) Site D11-15, but no plan map of this site is presented in this earlier report and only a limited amount of descriptive information is available. The feature currently consists of a U-shaped alignment of waterworn basalt cobbles and small boulders that are partially buried in the sand. The feature measures 4.4 m long (north-south) and 2.4 m wide, with the stones ranging in height from 0.12 to 0.35 m. The surface of the feature is comprised of level sand. A modern frepit is located adjacent to the structure to the north.

The **Feature A** platform is interpreted as a possible ceremonial structure based on its formal type and on the presence of the upright stones on the surface. Emory and Soehren (1971:12) suggest that this structure may be a *ko'a* or fishing shrine. They also suggest a possible burial function. The **Feature B** and **Feature C** are also assigned possible ceremonial functions due to their proximity to **Feature A**. The **Feature C** cairn is interpreted as a marker based on its formal type and appearance. The **Feature G** platform potentially contains a burial based on its small size and formal type. Emory and Soehren also suggest this function (1971:12). No subsurface testing was conducted at the site due to its location within an area that the developer intends to preserve. The presence of the modern frepit located adjacent to **Feature G** indicates that the site has been recently utilized. The site is unaltered and in poor to fair condition.

Site 1894

Site 1894 is a complex of five features located in an area of uneven pahoehoe lava at c. 8 ft elevation in the Land of Kealahou. The site is comprised of an enclosure (**Feature A**), a terrace (**Feature B**), two petroglyphs (**Features C1** and **C2**), and a lava tube (**Feature D**) located in an area 31.7 m long (northeast by southwest) and 16.5 m wide (*Figure 29*). The location of this site roughly corresponds to Emory and Soehren's (1971) Site D11-13, and to the location of Site 1894 as identified during the 1973 statewide survey.

The **Feature A** enclosure is located on top of a northwest by southeast trending ridge, at the southwestern end of the site. The enclosure is rectangular in shape and measures 7.8 m long (northwest by southeast) and from 4.6 to 4.9 m wide. The remains of low walls and aligned cobbles and small boulders extend along the northeast, southeast and southwest sides, with the northwestern side open. The aligned stones range in height from 0.25 to 0.32 m, with the walls ranging in width from 0.3 to 1.55 m and in height from 0.2 to 0.47 m. The interior of the enclosure is comprised of bare lava. There are thin pockets of coarse sand present along the northwest, south and southwest perimeter of the structure. These sand areas contain waterworn coral and marine shells (*Cypraea sp.* and *Callana sp.*).

The **Feature B** terrace is built against the north side of the ridge, 1.0 m southeast of **Feature A**. The terrace is roughly triangular in shape and is 2.35 m long (northeast by southwest) and from 0.8 to 1.6 m wide. There is a structured and faced cobble and small boulder retaining wall that extends along the north and east sides of the structure that ranges in height from 0.56 to 0.86. The surface is comprised of coarse sand with waterworn coral and marine shells (*Cypraea sp.* and *Callana sp.* shells).

Feature C is comprised of two adjacent anthropomorphic petroglyphs (**Features C1** and **C2**) that have been pecked into the surface of the pahoehoe ridge, 7.0 m southeast of **Feature A**. **Feature C1** is the

northern most petroglyph. The petroglyph is a complete human figure with arms, legs, torso and head, measuring 0.26 m long (north-south) and 0.18 m wide. The Feature C2 petroglyph is situated 0.65 m south of Feature C1. This feature is also a complete human figure that is 0.29 m long (east-west) and 0.15 m wide. No cultural remains were found in association with the petroglyphs.

Feature D is a lava tube located 11.4 m northeast of the Feature B terrace in an area of uneven pahoehoe lava. There are two entrances into the interior, one at the south end and one along the east side. These entrances consist of vertical holes that range in length from 0.95 to 2.55 m, in width from 0.57 to 0.67 m and in depth from 0.8 to 1.45 m. The interior of the tube is irregularly-shaped and measures 13.2 m long (northeast by southwest) and from 1.25 to 5.6 m wide. The floor throughout most of the tube is comprised of bare lava with an area of coarse sand present in the northern portion. A fragment of waterworn coral is present on the sand area. Scattered roof fall is present below each of the two entrances. A low stacked cobble and small boulder wall is present in the southern portion of the tube, measuring 1.3 m long (north-northeast by south-southwest), 0.3 m wide and 0.52 to 0.48 m in height. A crude cobble pavement of cobbles and small boulders is located adjacent to the wall to the east, measuring 1.3 m long (north-northeast by south-southwest), 0.65 m wide and 0.1 to 0.15 m in height.

The entrance to a low chamber is located along the southeastern wall of the main tube. This entrance is 0.88 m long (north-northeast by south-southwest), 0.6 m wide and 0.96 m in depth. This opens onto an oval-shaped chamber that is 4.15 m long (northeast by southwest), 1.65 m wide and from 1.25 to 1.3 m in height. The floor is comprised of level sand with no cultural remains present.

Site 1894 is interpreted as a permanent habitation complex with associated rock art features. The Feature A enclosure likely functioned as the foundation for a roofed structure based primarily on its formal type and area (38.2 sq m). The adjacent Feature B terrace likely served as an ancillary feature potentially functioning for sleeping or as an activity area. The Feature D lava tube was likely utilized as an associated sleeping or storage area due to its proximity to Feature A and B. The Feature C petroglyphs represent examples of Hawaiian rock art. The site is unaltered and in fair to good condition.

Site 1895

Site 1895 is the badly disturbed remnants of a possible platform located along the shoreline in the Land of Kealahou. This site corresponds to Bishop Museum Site D11-11 which was initially identified by Emory and Soehren (1971) and assigned its current SHIP Site designation during the 1973 statewide survey. Very limited information concerning this site is presented in the earlier report, though the authors state:

On the west side of the bay is a platform of boulders demolished by surf, with only a few traces of the original wall visible. The surf has done a thorough job of demolition (1971:12).

The examination of the site during the present project generally confirms Emory and Soehren's findings. The site is comprised of the disturbed remnant of a platform that currently measures 5.3 m in length (north-south) and 2.6 to 4.7 m wide (Figure 30). The north and west sides of the structure are comprised of stacked and faced waterworn basalt boulders that range in height from 1.4 to 1.5 m. The east side is bordered by an area of sand and the south side adjoins a jumbled pile of boulders and cobbles. The surface is comprised of uneven cobbles with no cultural remains present. A large disorganized pile of waterworn basalt boulders and cobbles extends to the north and west from the structure, encompassing an area 25.8 m long (east-west) and 5.0 to 16.7 m wide. The interpretation of Site 1895 is problematic due to its highly disturbed condition. The area of the remaining portion of the site (24.0 sq m) and the substantial construction (faced sides) suggest that at a minimum the site served as the foundation for a permanent habitation structure; however, the large scatter of associated boulders indicates the site was likely originally much larger and may have served as a possible ceremonial structure. The site is altered and in poor condition.

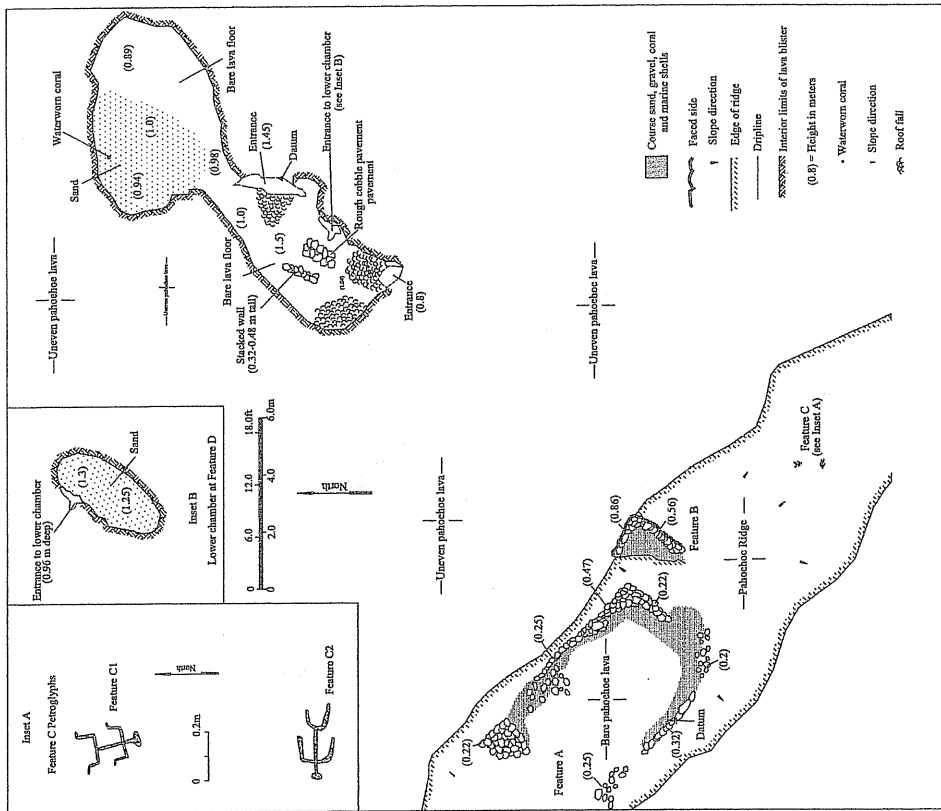


Figure 29. Site 1894 Plan Map

Site 1896

Site 1896 is a complex of two features located in an area of uneven coastal pahoehoe lava in the Land of Kealahou at c. 7 ft elevation. A portion of this site (Feature A) was initially identified by Emory and Soehren (1971) as Site D1-12, Hale o Kane *heiau*. The site was assigned its current SHIP designation during the 1973 statewide survey. The features consist of a large platform (Feature A) and an associated overhang (Feature B) located in an area 26.0 m long (northeast by southwest) and 13.3 m wide (Figure 31).

The Feature A platform is located in the southern portion of the site. This platform is Hale o Kane *heiau*. It is located on a broad area of uneven, sloping pahoehoe lava, inland from a vertical pahoehoe bluff that ranges in height from 1.7 to 2.8 m. There are several vertical fissures in the surface lava that are partially filled with waterworn stones. The platform is roughly square and measures 12.9 m in length (north-south) and from 12.4 to 13.5 m wide. The sides of the platform are comprised of stacked and faced waterworn basalt cobbles and small boulders that range in height from 0.35 to 1.02 m above the surrounding lava surface. Portions of the walls have collapsed along all four sides. The surface of the platform is comprised of uneven cobbles and small boulders with scattered sun-bleached *Cypraea sp.*, *Callina sp.*, and *Nerita sp.* shells and waterworn coral fragments. A possible ramp leads up onto the surface of the platform in the northeastern corner.

There is a raised tier present in the southern portion of the platform's surface, ranging in height from 0.3 to 0.36 m above the surface of the main platform. This raised tier is rectangular in shape and is 9.0 m long (east-west) and 4.3 m wide, with the surface comprised of uneven cobbles and small boulders. Portions of the north and west side evidence stacked and faced sections, with several vertical stones incorporated into the northern side. The remaining sides of the tier have collapsed outward. Scattered shells and coral are also present on the raised tier. There is a depression located in the northern portion of the tier that is 1.4 m long (east-west), 1.25 m wide and 0.34 m in depth.

There are two areas of surface midden located to the north and southwest of the platform. These middens contain sun-bleached marine shells fragments (*Cypraea sp.*, *Callina sp.*), urchin spines and waterworn coral. A rock ring built of aligned stones is situated adjacent to the northwest corner of the platform. It is 1.6 m long (north-south), 1.4 m wide with a maximum height of 0.46 m.

The Feature B overhang is located 6.0 m to the north of Feature A. The entrance to this feature is located along the northeast side of a vertical bedrock outcrop, measuring 3.2 m long (north-northwest by south-southeast) and from 1.2 to 1.4 m in height. This opens onto an oval-shaped chamber that is 4.4 m long (north-northwest by south-southeast) and from 2.4 to 3.25 m wide. The ceiling heights range from 0.27 to 0.83 m and the floor is comprised of a rocky soil with scattered *Cypraea sp.* shells, waterworn coral fragments and waterworn basalt pebbles. Sloping roof fall slopes down into the interior from the drip-line.

There is a stone wall located outside the entrance to the overhang to the north, extending between two bedrock outcrops. The wall is linear in shape and is 2.85 m long (northeast by southwest), 0.8 to 1.0 m wide and 0.3 to 0.56 m in height. It is mostly collapsed rubble with some remnant stacking present. An area of sloping rubble is present outside the drip-line to the east, to the south of the stone wall.

Site 1896 is interpreted as a ceremonial complex, with the Feature A platform functioning as a *heiau*. Feature A has attributes typical of *heiau* including substantial construction (faced walls, paved surface), large area (167 sq m), tiers, a depression that may have supported an idol, and location of a bluff overlooking the ocean. The Feature B overhang may have served in conjunction with the *heiau* due to its close proximity. It is unaltered and in fair to good condition.

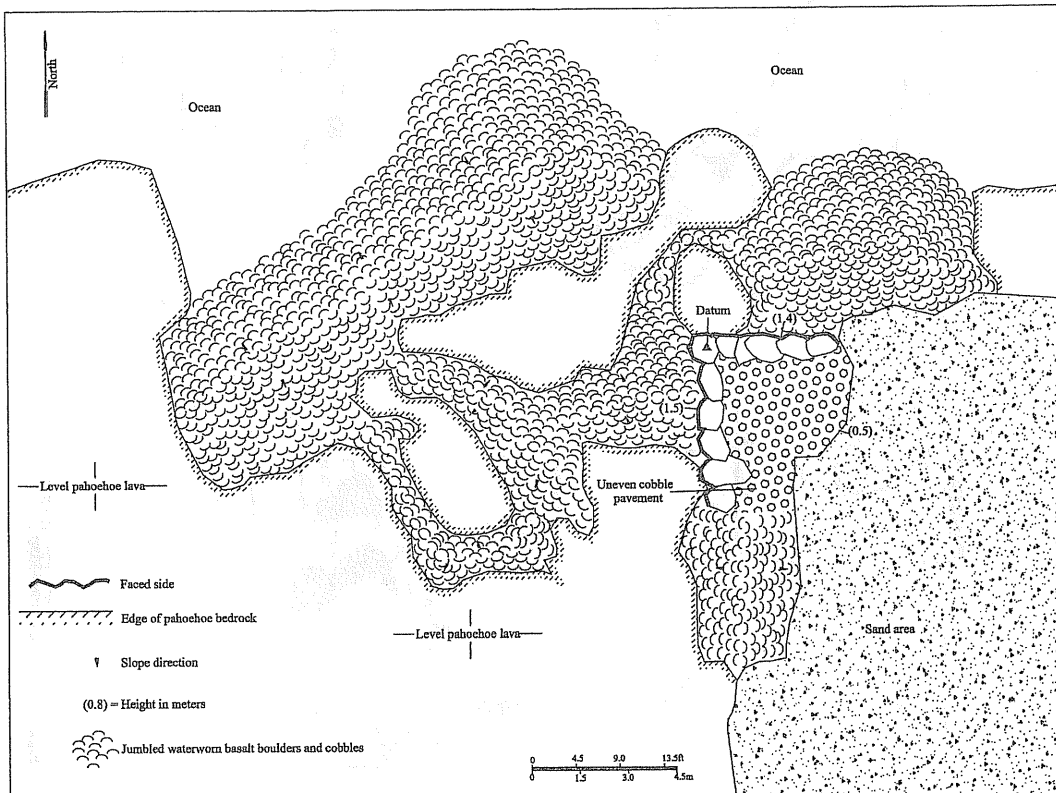


Figure 30. Site 1895 Plan Map

Site 1898

Site 1898 is a complex of 10 features located south of the harbor in the Land of Kealahou at elevations that range from c. 5-10 ft. The site is located in an area of bare pahoehoe lava with a series of brackish water pools. A sandy beach area is situated along the shoreline to the southwest of the site. Portions of the site were previously identified by Emory and Soehren and designated as Sites D11-7, 9 and 10. The site was assigned its current SHIP site designation during the 1973 state-wide survey. The features consist of a platform (Feature A), four terraces (Features B, D, E1, and G), three walls (Features C, F and I) and two enclosures (Feature E2, Feature H) and are located in an area 88.5 m long (north-south) and 42.5 m wide (Figure 32).

Feature A is a large platform located in the northwestern portion of the site near the shoreline. This feature was first noted by Reinecke as Site 35 (1930). It was subsequently designated as Site D11-7 during Emory and Soehren's (1971) study. The platform is rectangular in shape with a notch in the north-eastern corner (Figure 33). It measures 16.6 to 16.8 m long (north-south) and 10.5 to 11.3 m wide, with the notch measuring 3.7 m long (north-south) and 1.9 m wide. A low terrace is located below the notch to the east. The structure is bordered by bedrock outcrops to the north, east and southwest, with brackish water pools extending to the south, southeast and northeast. The outcrop to the north of the platform is c. 1.5 m in height above the surface. An area of wave deposited waterworn boulders is located to the west of the northwest corner of the feature.

The sides of the platform are built of cobbles and small boulders that range in height from 0.51 to 1.21 m. There are several massive slabs along the west side that range in height from 2.24 to 2.25 m and which extend above the surface of the platform. Smaller vertical slabs are incorporated into the structures side along the west side and in the northeast corner. The surface throughout the majority of the feature is comprised of uneven pavement of cobbles and small boulders with scattered waterworn coral fragments that has likely been impacted by storm waves. An area of level cobble pavement is located in the north-central portion of the feature measuring 7.5 m long (north-south) and from 2.5 to 3.2 m wide. Waterworn coral fragments and marine shells (*Cypraea* sp. and *Cellana* sp.) are scattered over the surface of the pavement.

Emory and Soehren provide the following description for this large platform:

The *heiau*, site No. 35 in Reinecke's manuscript, he gives as "name unknown." The two largest slabs he called "kai'ula" (fish gods). Aged Naluahine gave as the name of the *heiau*, Makaopio, when interviewed shortly before his death by Violet Hansen, February 1957. He said that the smaller of the two larger slabs represented Ka-eha and the larger his father. He stated further that the stones were brought from Kaihau and that this was a fishing *heiau*. The name Hale o Lono appearing on the present U.S. Geological Survey map has no source for this in the Bishop Museum records (1971:9).

A vertical waterworn basalt small boulder is located within the level paved area in the northern portion, measuring 0.58 m in height. A faced pit is located adjacent to the south end of the level pavement to the east. This pit is 1.4 m long (north-south), 1.3 m wide and 0.4 to 0.8 m in depth below the platform surface. The floor of this pit contains waterworn coral and basalt pebbles. This pit potentially supported an upright stone or idol.

It is probable that the two largest slabs along the west side of the structure are the stones noted by Emory and Soehren (1971) as representing Ka-eha and his father. The upright waterworn may also represent an idol and the faced pit may have once supported an upright or idol.

Feature B is a narrow terrace that is located 9.5 m to the northeast of Feature A, along the north side of the tidal pool in this area (see Figure 32). The terrace is rectangular in shape and is 29.6 m long (east-northeast by west-southwest) and from 1.2 to 1.8 m wide. The north side is relatively level with the

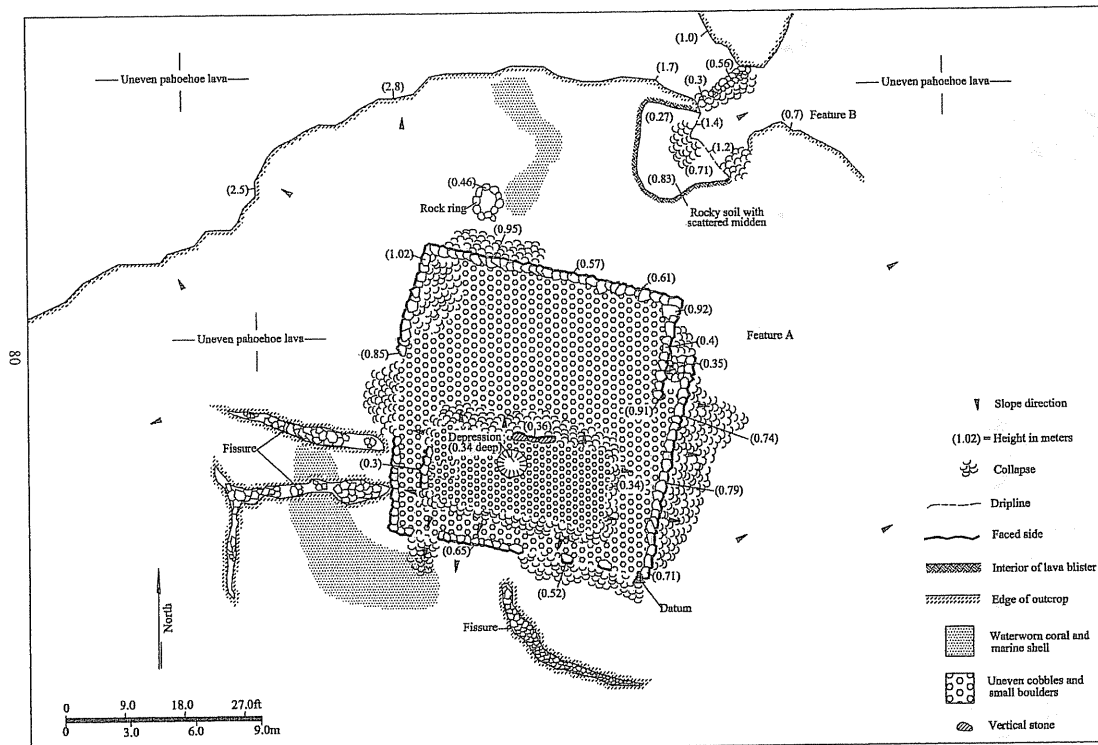


Figure 31. Site 1896 Plan Map

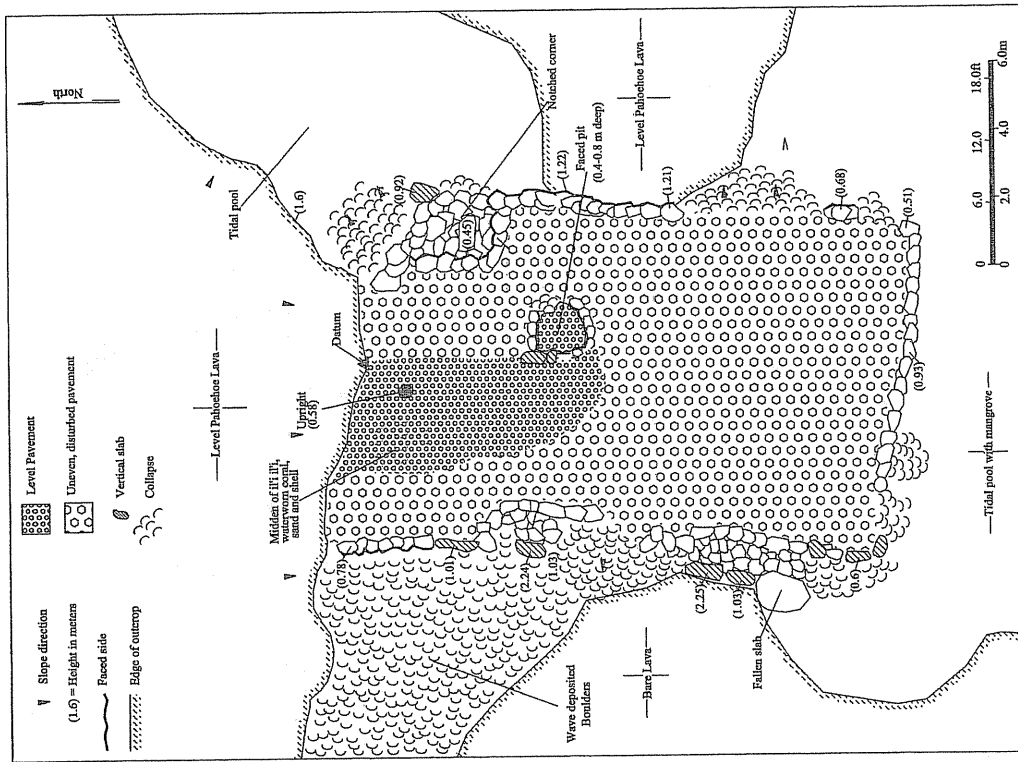


Figure 33. Site 1898, Feature A Plan Map

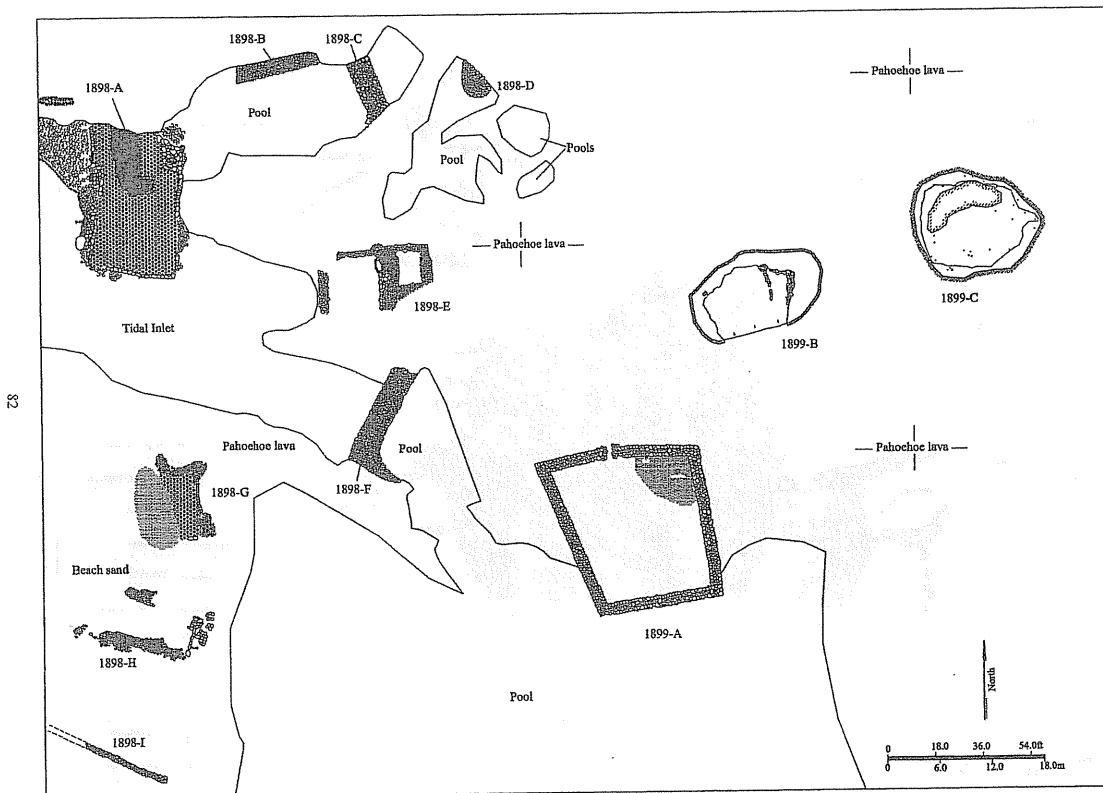


Figure 32. Site 1898 and 1899 Plan Map

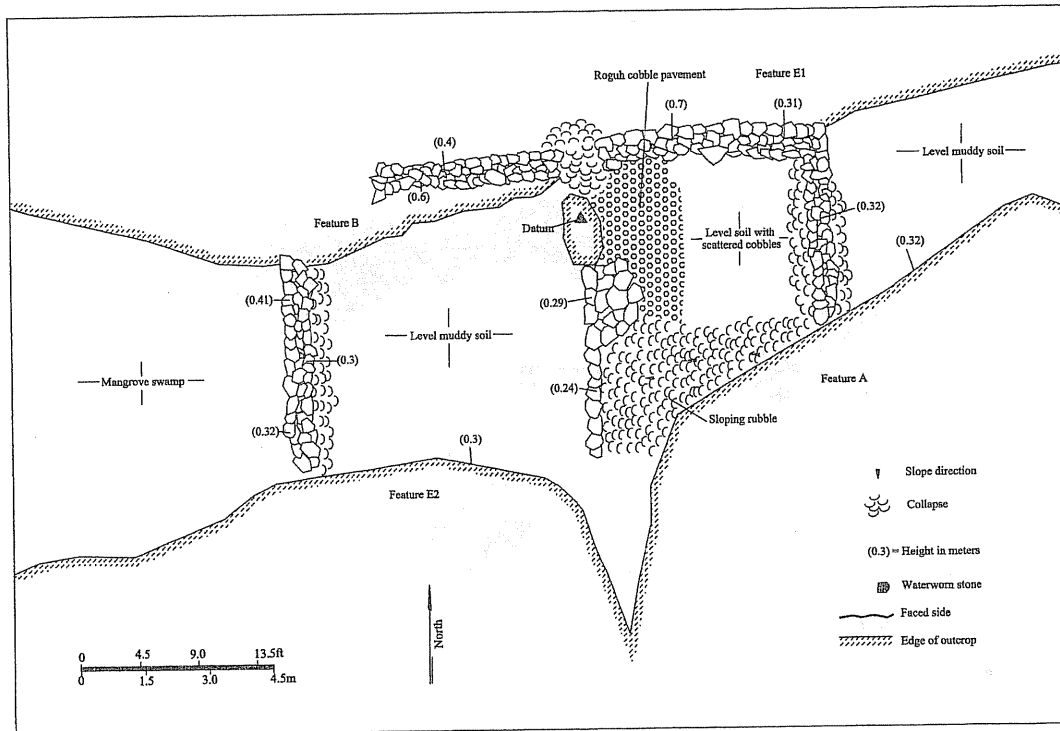


Figure 34. Site 1898, Feature E Plan Map

edge of the surrounding pahoehoe lava and the south side ranges in height from 0.5 to 0.6 m above the surface of the water. No cultural remains are present.

The Feature C wall is located 3.5 m to the east of Feature B (see Figure 32). This wall spans a brackish water pool in this area, measuring 6.25 to 7.2 m long (north-northwest by south-southeast) and 1.7 to 2.3 m wide. The surface is comprised of level, paved cobbles with no cultural remains present. It averages 1.0 m in height above the surface of the water. The Feature D terrace is located 10.0 m east of Feature C, in a smaller isolated brackish water pool. This terrace is roughly oval in shape and measures 4.6 m long (northwest by southeast) and 2.5 m wide. The northeast side is level with surrounding pahoehoe lava with the southwest side measuring 0.7 m in height the surface of the water in the tidal pool. The surface is irregular and uneven with several fragments of *Cypraea sp.* shell present.

Feature E1 is a roughly rectangular-shaped terrace located to the east of the Feature A platform. The Feature E2 enclosure adjoins Feature E1 to the west (Figure 34). Feature E1 is built across the surface of the inland end of a brackish water pool, and measures 4.3 to 7.3 m long (north-south) and 6.0 m wide. The north side is built on top of the bare pahoehoe lava and the east and west sides extend across the pool. The sides are built of stacked waterworn basalt cobbles and small boulders, ranging in width from 0.55 to 1.2 m and in height, with collapse present along the south and east sides. The surface consists of a rough cobble pavement in the western portion, with an area of level soil with scattered cobbles in the eastern portion. A fragment of *Cypraea sp.* shell is present on top of the paved area.

The Feature E2 enclosure adjoins Feature E1 to the west. It encompasses an area 7.05 m long (east-west) and 6.8 m wide. It is formed by a wall that extends across a brackish water pool along the west sides and a wall located on the pahoehoe lava along the north side (see Figure 34). The west wall measures 5.1 m long (north-south), 0.9 to 1.15 m wide and 0.3 to 0.42 m in height. It is comprised of waterworn basalt cobbles and small boulders, collapsed along the eastern side. The north wall of the enclosure originates at the northwest corner of Feature E1 and extends 5.0 m to the west. It is 0.5 to 0.7 m wide and 0.4 to 0.6 m in height, built of roughly stacked and piled waterworn basalt cobbles and small boulders. The south side of the feature is bordered by the pahoehoe lava that forms the south side of the tidal pool. The interior of the feature is comprised of a level muddy area with no cultural remains. The area to the west is comprised of a mangrove (*Rhizophora sp.*) thicket.

Feature F is a wall that extends across a tidal inlet that extends to the southeast from the Feature A platform (see Figure 32). The inlet is covered with a dense thicket of mangrove. The wall is linear in shape and measures 11.9 m long (north-northwest by south-southeast) and 2.7 to 3.5 m wide. It is constructed of stacked waterworn basalt cobbles and small boulders with a relatively level, roughly paved surface and no cultural remains. The sides of the feature range in height from 0.47 to 0.65 m above the surface of the tidal pool.

Feature G is a terrace located 14.5 m west of Feature F. The terrace is roughly rectangular in shape and is located at the inland edge of a beach in an area of uneven pahoehoe lava that slopes slightly to the east (Figure 35). This feature corresponds to Emory and Soehren's Site D11-9. It is 8.4 m long (north-south) and from 3.5 to 4.5 m wide. The east and north sides of the feature are bordered by retaining walls that range in height from 0.36 to 0.74 m. The central portion of the east side is stacked and faced subangular basalt cobbles and small boulders, with the remaining portions of the east and north sides having collapsed. The south side is bordered by several aligned subangular small boulders and the west side abuts the side of the sloping pahoehoe lava. The surface of the feature is comprised of an uneven pavement of pahoehoe slabs, cobbles and small boulders with fragments of unidentified bivalve shell and waterworn coral. A *Cellana sp.* shell is located to the north of the structure. A pocket of thin coarse sand is located adjacent to the terrace to the west.

Feature H is an enclosure remnant 7.5 m to the south of Feature G on a low sand dune. The enclosure remnant is rectangular in shape with overall dimensions of 11.9 m long (west-northwest by south-southeast) and 5.1 to 6.9 m wide (Figure 36). The enclosure is open to the west and the eastern wall is comprised of scattered waterworn basalt cobbles and small boulders that range in height from 0.15 to 0.2 m. The south wall is comprised of roughly stacked cobbles and small boulders with collapse present in the

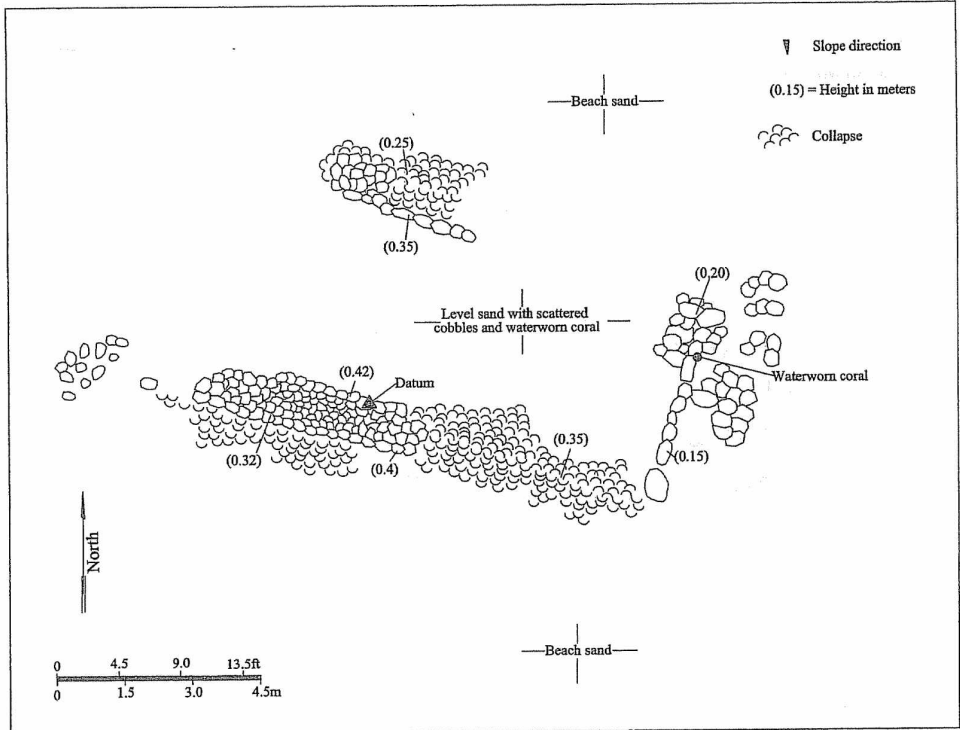


Figure 36. Site 1898, Feature H Plan Map

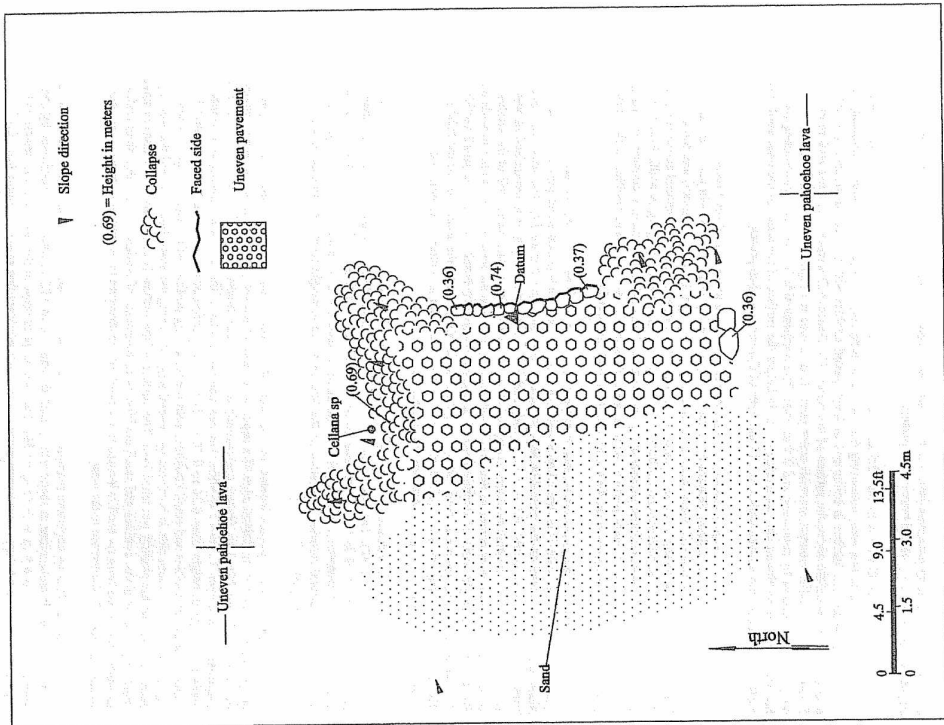


Figure 35. Site 1898, Feature G Plan Map

eastern portion and along the south side. This wall is 0.8 to 1.7 m wide and in height from 0.32 to 0.42 m. The north wall is disturbed with only the western end remaining. This section is comprised of cobbles and small boulder rubble with an alignment of stones present along the southern side. It is 3.7 m long (west-northwest by east-southeast), from 1.0 to 1.3 m wide and 0.23 to 0.35 m in height. The interior of the enclosure is comprised of level sand with scattered cobbles and waterworn coral.

Feature I is a wall located 11.8 m to the south of Feature H in an area of sand (see Figure 32). This feature appears to correspond to Emory and Soehren's Site D11-10. It is linear in shape and currently measures 10.1 m long (northwest by southeast), 0.6 to 0.8 m wide and 0.5 to 0.7 m in height. Emory and Soehren (1971) indicate that the wall measured 15.4 m long, suggesting that portions of it have been destroyed. The wall is constructed of piled waterworn basalt cobbles and small boulders with scattered *Cypraea* sp. and *Cellana* sp. shells and waterworn coral scattered to the north and south.

Site 1899 is interpreted as a ceremonial site with associated permanent habitation and transportation features. The Feature A platform is Makopio Heiau based on informant information presented in Emory and Soehren (1971). Feature A has attributes typical of *heiau* including substantial construction (faced walls, paved surface), large area (189.9 sq m), upright stones representing idols, a depression that may have supported an idol, and location overlooking the ocean. Emory and Soehren suggest that the Feature B and D terraces may have been used to facilitate bathing within the brackish water pools (1971: 11). The Feature C and F walls both have broad surfaces and potentially functioned as bridges permitting passage along the coast that avoided the *heiau*.

The Feature E1 and G terraces and the Feature E2 enclosure may have served as the foundation for permanent habitation structures, based on their formal types, areas (Feature E1 = 43.8 sq m, Feature E2 = 47.9 sq m, Feature G = 37.8 sq m) and the substantial construction (paved surfaces) at Features E1 and G. The Feature H enclosure is interpreted as a possible canoe shed due to its formal type and linear shape. The site is unaltered and in poor to fair condition.

Site 1899

Site 1899 is a complex of three features located in the Land of Kealahake in an area of uneven pahoehoe lava at c. 10 ft elevation. The site is located to the east of Site 1898 and is bordered by a brackish water pool to the south (see Figure 32). The features are comprised of a large enclosure (Feature A) and two lava blisters (Features B and C). The Feature A enclosure was initially documented by Emory and Soehren (1971) as Site D11-8. This feature was assigned its current SIHP Site designation during the 1973 statewide survey.

The Feature A enclosure is located in the southern portion of the site. It is rectangular in shape with a 1.0 m wide entrance in the center of the northern wall (Figure 37). It measures 19.1 m in length (north-south) and from 14.7 to 18.9 m wide. The walls are built of stacked and faced subangular basalt cobbles and small boulders ranging in width from 1.0 to 1.5 m and in height from 1.4 to 2.2 m. The interior of the feature is comprised of pahoehoe lava with grass and *kiawe* trees. There is an area of thin soil located in the northeastern interior corner with scattered cobbles. A cluster of historic green, purple and blue glass bottle fragments are located outside the structure at the northeast corner.

The Feature B lava blister is situated 12.8 m northeast of Feature A, in an area of uneven pahoehoe lava. The entrance to the feature is through a roughly oval-shaped sinkhole that is 10.8 m long (east-northeast by west-southwest), 7.7 m wide and 2.8 m in depth below the surrounding ground surface (Figure 38). The interior of the sink is filled with cobbles and boulder rubble and modern trash. The interior of the blister is 15.6 m long (east-northeast by west-southwest) and from 0.65 to 3.0 m wide. The floor is comprised of bare lava with the ceiling heights ranging from 0.85 to 1.65 m, with the dripline heights ranging from 1.8 to 2.5 m.

There is a small piled cobble mound located in the western portion of the interior, measuring 0.52 m long (northeast by southwest), 0.32 m wide and 0.26 m in height. An oval-shaped rock ring is situated below the dripline in the north portion. This ring is comprised of aligned cobbles and small boulders

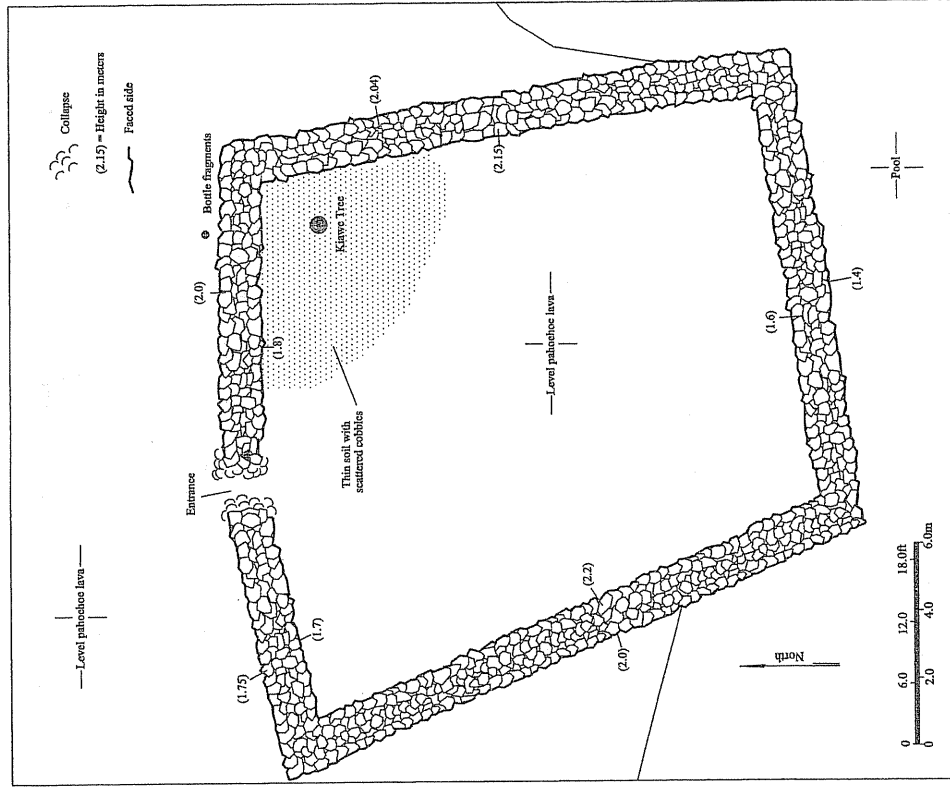


Figure 37. Site 1899, Feature A Plan Map

and is 1.06 m long (east-west), 0.73 m wide and 0.41 m in height. A linear alignment of small boulders extends 3.4 m to the south from the southern side of the ring.

A crude terrace is located below the drip-line in the eastern portion of the interior, below the drip-line. This feature is 4.0 m long and from 0.3 to 0.9 m wide. The western side is built of roughly stacked and aligned small boulders and cobbles ranging in height from 0.65 to 0.71 m. The east side is level with the bedrock floor. The surface of the terrace consists of a rough uneven cobble pavement. Scattered marine shells (*Cypraea sp.* and *Calliana sp.*) shells and waterworn coral fragments are present to the east and west of the terrace.

A 1.5 by 1.0 m test unit (TU-16) was excavated into the surface of the terrace, revealing a single layer over bedrock (see Figure 38). Layer I consisted of 0.55 to 1.0 m of tightly packed cobbles and small boulders with cobble and pebble pavement at the surface. Cultural remains from Layer I consisted of marine shells (*Cypraea sp.* [n=279], 368.8 g), *Conus sp.* [n=12, 34.1 g], *Isogomomys sp.* [n=2, 283, 333.4 g], *Littoraria pinnata* [n=80, 11.7 g], *Mytilidae sp.* [n=7, 1.1 g], *Merita picea* [n=184, 66.4 g], *Thauidae sp.* [n=63, 74.7 g], *Trachis inextus* [n=4, 3.8 g] and unidentified marine shell fragments [n=75, 36.5 g], ur-chin body fragments (n=21, 12.5 g), *Crustacean* fragments (n=10, 2.2 g), *Latidat* nut shells (n=92, 285.9 g), waterworn coral (n=83, 412.4 g), a dog tooth (n=1, 0.2 g), charcoal (n=31, 5.2 g), volcanic glass flakes (n=4, 2.7 g), two bone fishhook fragments (#1- point and tip fragment=11.1 mm long, 7.4 mm wide, 1.4 mm thick, 0.2 g #2-shank fragment = 23.7 mm long, 9.6 mm wide, 3.8 mm thick, 0.6 g), three uretin abraders (#1 = 30 mm long, 7.6 mm wide, 6.7 mm thick, 1.0 g #2 = 27.4 mm long, 9.6 mm wide, 6.6 mm thick, 1.3 g #3 = 22.1 mm long, 8.1 mm wide, 6.2 mm thick, 0.8 g) and five waterworn coral abraders (#1 = 52.6 mm long, 35.6 mm wide, 31.1 mm thick, 38.9 g #2 = 35.1 mm long, 31.1 mm wide, 20.1 mm thick, 12.6 g #3 = 41.5 mm long, 24.2 mm wide, 22.4 mm thick 15.2 g #4 = 38.9 mm long, 23.3 mm wide, 17.0 mm thick, 9.9 g #5 = 31.1 mm long, 23.0 mm wide, 9.9 mm thick, 4.1 g).

The Feature C lava blister is located 15.0 m east-northeast of Feature B in an area of uneven pahoehoe lava. The entrance to the blister is through a roughly oval-shaped vertical entrance that is 11.5 to 13.4 m long (east-west), 9.7 m wide and 3.2 m deep below the surrounding ground surface (Figure 39). The dripline ranges in height from 1.6 to 1.8 m. A raised bedrock outcrop occupies the north-central portion of the floor below the entrance. The entrance opens onto an oval chamber that is 14.5 m long (east-west) and from 0.3 to 1.6 m wide. The floor is comprised of bare lava with scattered with scattered roof fall and the ceiling heights range from 0.5 to 0.8 m. Scattered waterworn coral fragments are present throughout the floor of the feature and several *Cypraea sp.* and *Ceclana sp.* shell are present in the northwestern portion. There are two areas of standing brackish water in the central portion of the feature, below the entrance. A large waterworn basalt cobble is present in the northeastern area of water.

The Feature A enclosure is interpreted as an historic corral based on its large area (360.9 sq m), method of construction, high walls, and on the presence of the glass bottles. Emory and Soehren (1971) also interpreted the enclosure to be a livestock pen. The Feature B and C lava blisters likely served as pre-historic temporary habitation shelters based on their formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 1900

Site 1900 is a complex of four features located in an area of level pahoehoe lava adjacent to a harbor parking lot in the Land of Kealahou at c. 5 ft elevation. The site was initially documented by Emory and Soehren (1971) as Site D11-6 and was assigned its current SHP site designation during the 1973 statewide survey. Emory and Soehren's initial examination of the site identified three platforms, two of which had attached enclosures and a wall (Figure 40). The examination of the site during the present project indicates that the site was impacted subsequent to this earlier study, evidenced by discrepancies between the original map and its current condition (Figure 41). Emory and Soehren (1971) described the site as follows:

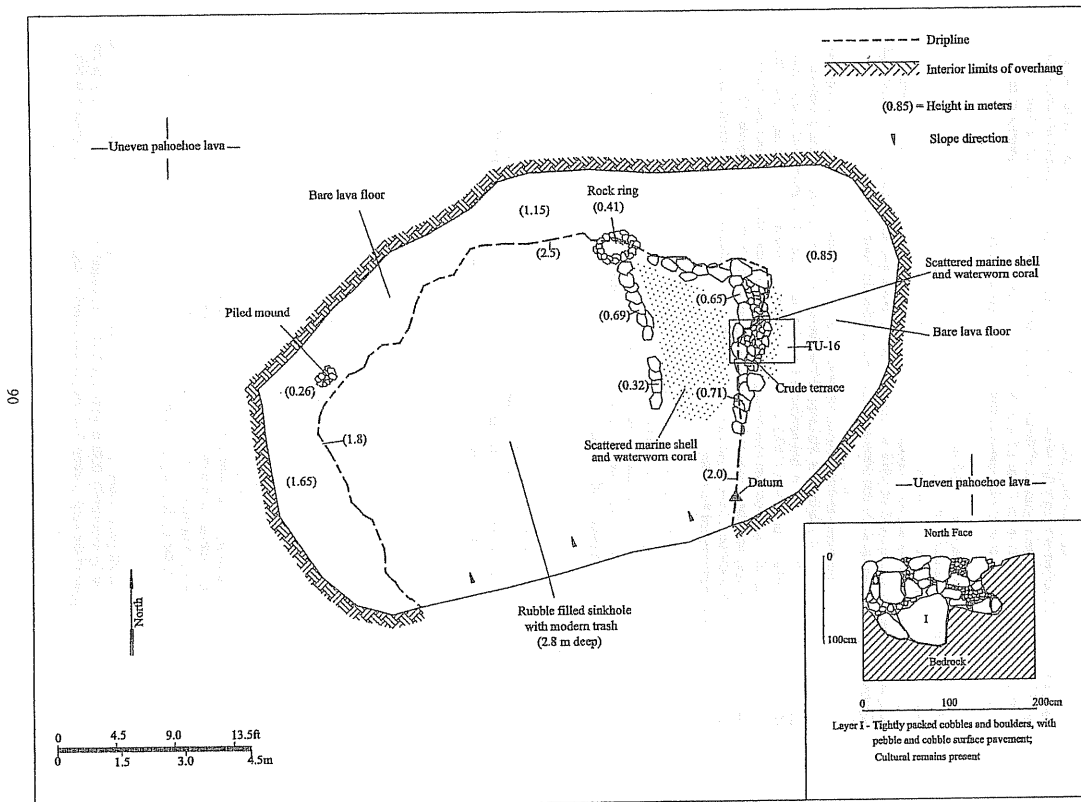


Figure 38. Site 1899, Feature B Plan Map and TU-16 North Face Profile

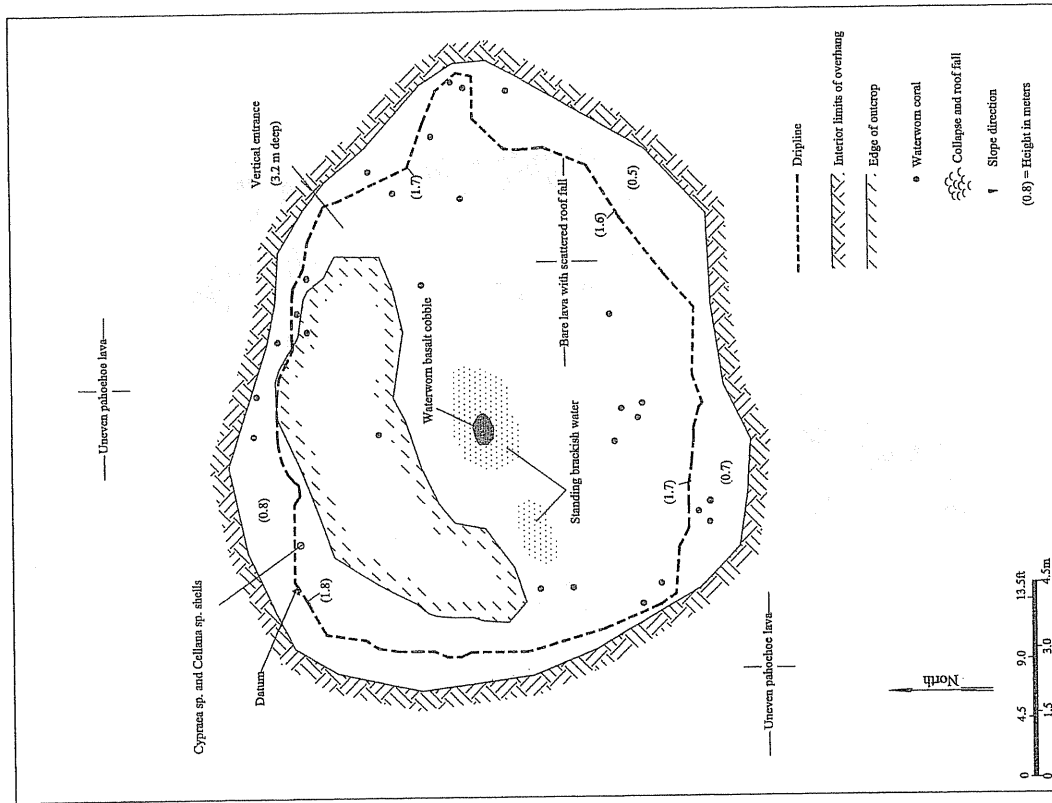


Figure 39. Site 1899, Feature C Plan Map

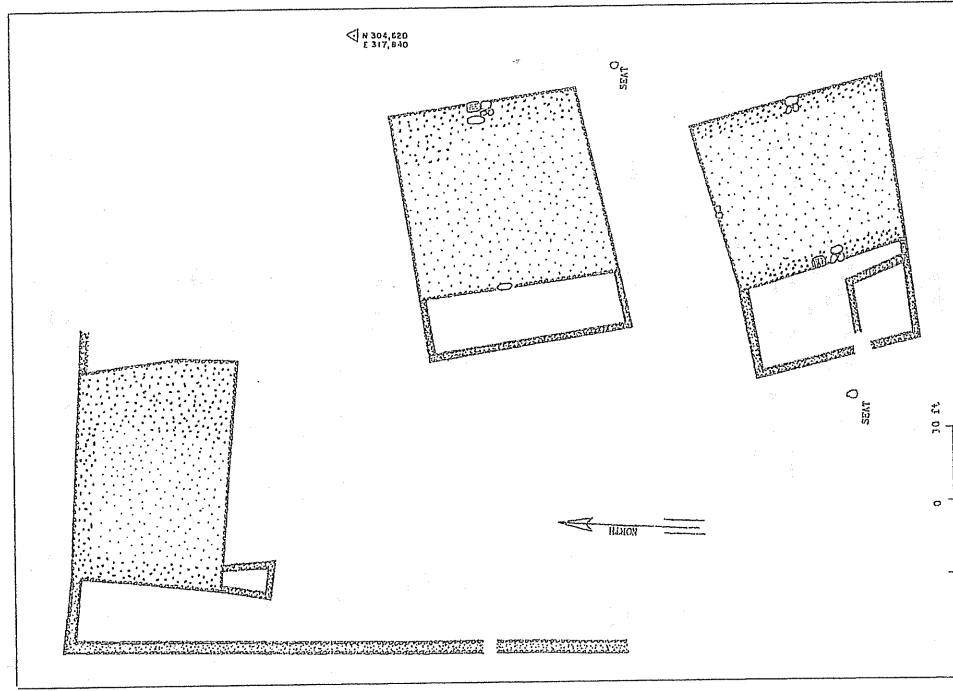


Figure 40. Site 1900 Plan Map from Emory and Soehren (1971:8)

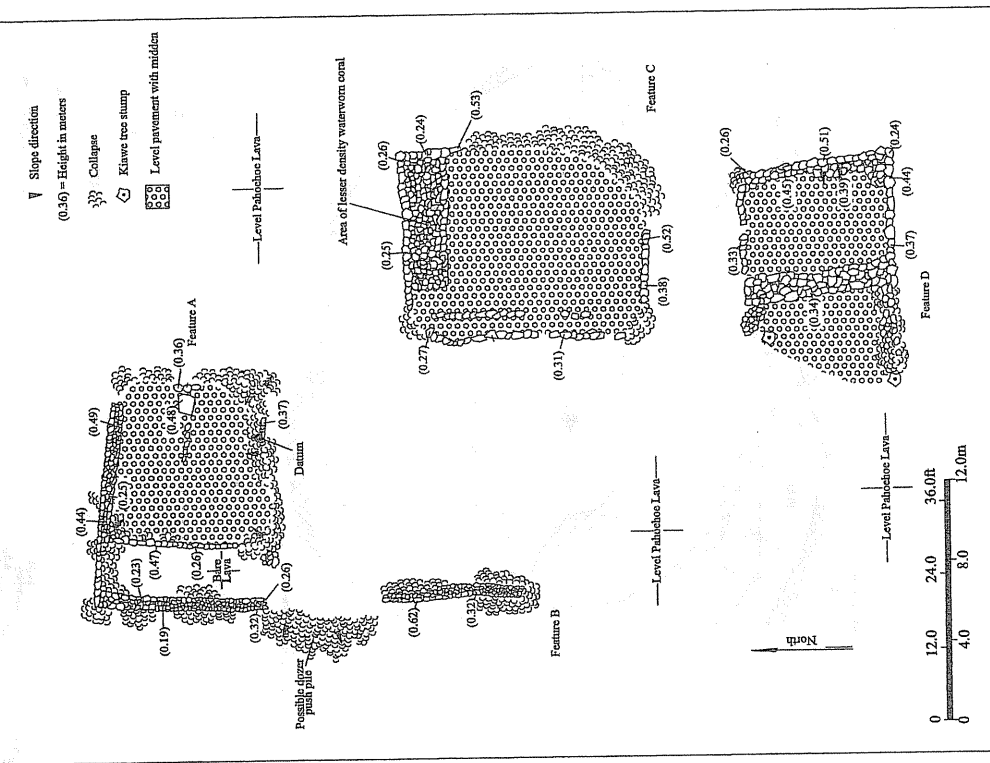


Figure 41. Current Condition of Site 1900

This group of three house platforms, two of which are in an excellent state of preservation [Features C and D], illustrates the use of material from an abandoned site [Feature A] in the construction of a new one. The northernmost of the platforms is of an earlier date, as indicated by its disrepair. It had at one time been enclosed by a wall similar to D11-1. This [platform] has been mostly destroyed to provide material for the newer two platforms....

The two recent *kahua* are fine examples of the type found in this area. From 1 to 1 1/2 feet high, each is faced with lava slabs and paved with sand and coral, save for a strip about 3 feet wide running the length of the east and west sides, which was left rough. The central portion would thus accommodate a house 3 by 4 fathoms, a generous dimension. Over-all, the platform is 4 fathoms square. Both houses had entrances at the west (front) and east (back), marked by large waterworn slabs set as steps. The house to the south [Feature D] has a *konane* board set in the platform adjacent to the front entrance and the north house has one at the back entrance. Each has a very small enclosed yard in front and a small pen has been incorporated into the yard of the south house. In front of the south house is a large beach boulder which may have served as a seat and behind the north house is another (1971:6-7).

The Feature A platform is located at the northern end of the site. According to Emory and Soehren's (1971:8) map of the site (see *Figure 40*) this platform was rectangular in shape, with a small rectangular enclosure extending to the south of the southwestern corner. The map has a mislabeled scale, because it depicts the platform as measuring c. 14.4 to 16.0 ft (4.4 to 4.9 m) long and 10.4 ft (3.2 m) wide. The examination of the feature during the present project indicates the feature is nearly twice as large, measuring 9.05 m long (east-west) and from 7.8 to 8.7 m wide. The eastern side of the feature is collapsed and appears to have been disturbed, potentially by bulldozer activity. A large boulder is located on top of the structure in this area, with an alignment of cobbles extending to the west. The boulder may have been pushed onto the platform during the bulldozing activity. No evidence of the adjoined enclosure noted by Emory and Soehren (1971) is currently present and it appears to have been destroyed.

The platform is built of waterworn basalt cobbles and small boulders with the west side and portions of the east and south sides ranging in height from 0.26 to 0.47 m. The Feature B wall (discussed below) extends across the northern side of the platform. The surface is paved with waterworn cobbles, small boulders and pebbles in a soil matrix with waterworn coral and marine shells (*Cypraea sp.*, *Celidana sp.*).

The Feature B wall extends across the northern end of Feature A, then angles to the south, bordering the western side of the complex. According to Emory and Soehren's (1971) map, the wall originally extended to the east of the northeastern corner of Feature A; however, this portion of the wall has been destroyed. The northern portion of the wall is 10.5 m long (east-west). It turns to the south at the west end of this section and extends 22.4 m in this direction to where it terminates. Large portions of the wall have collapsed and c. 5.9 m wide section in the approximate center appears to have been destroyed by bulldozer activity. This disturbed area is located adjacent to the original location of the adjoined enclosure at Feature A and it is likely that the enclosure and this section of wall were impacted at the same time. Currently the wall is built of roughly stacked and piled waterworn cobbles and small boulders ranging in width from 0.55 to 0.9 m and in height from 0.19 to 0.62 m. The portion of the wall that extends across Feature A, is 0.25 m in height above the surface of the platform. Several fragments of waterworn coral are incorporated into the wall.

The Feature C platform is located 6.8 m southeast of the southeastern corner of Feature A. This platform is rectangular in shape and measures 12.5 m long (north-south) and from 8.5 to 9.5 m wide. The long axis of this feature is depicted differently on the Emory and Soehren (1971) site map, oriented in a east-northeast by west-southwest direction. The southeastern portion of the platform is collapsed and may have been disturbed by dozer activity. The remaining sides are built of stacked waterworn basalt cobbles and small boulders that range in height from 0.24 to 0.53 m in height above the surrounding lava surface. The surface throughout the majority of the platform is comprised of c. 20% waterworn cobbles and boulder and pebble paving with c. 80% waterworn coral. There is a roughly rectangular area along the

north side of the structure that evidences a lesser density of waterworn coral (40%) compared to waterworn stone paving (60%). Modern debris along with *Cypraea* sp. and *Callina* sp. shells are scattered over the surface.

There is an alignment of waterworn stones that parallels the western side of the feature. This alignment may represent the original western side of the platform, with an enclosure that once extended to the west; however, this is not clear from Emory and Soehren's (1971) map or description. This earlier map also depicts a "seat" located to the southeast of the Feature C platform, but this was not identified during the present study.

The Feature D platform is located 4.8 m to the south of Feature C. Originally this structure was comprised of a platform with an adjoined enclosure that extends to the west (see Figure 40). The majority of this enclosure has been destroyed subsequent to 1971, likely by bulldozer disturbance. The platform portion of the feature is 7.8 m long (north-south) and 6.9 m wide, with the sides built of stacked waterworn basalt cobbles and small boulders that range in height from 0.24 to 0.51 m in height. The surface is comprised of a level pavement of waterworn coral and basalt cobbles and pebbles with scattered *Cypraea* sp., *Callina* sp., and *Nerita* sp. shells. Modern debris is also scattered across the surface. The enclosure remnant is 7.8 m long (north-south) and 1.8 to 4.85 m wide. The walls are mostly collapsed and range in width from 0.8 to 1.45 m and in height from 0.3 to 0.34 m. The interior of the enclosure is roughly paved with waterworn stones and coral.

Features A, C, and D are interpreted as foundations for permanent habitation structures based on formal type, substantially constructed nature (paved surfaces) and area ($A=158$ sq m, $C=112.5$ sq m and $D=53.82$ sq m). Feature B is a remnant of a wall that would have enclosed a yard around Feature A. The site is in fair condition. Alterations to the site consist of the removal of stone from Feature A described by Emory and Soehren, probable bulldozing activity that occurred after 1971, and the removal or displacement of waterworn threshold slabs from Features C and D, two *papauma*, and two boulder seats.

Site 7704

Site 7704 is a trail that extends across an area of uneven pahoehoe lava at elevations ranging from 38 to 41 ft. This trail was initially documented by Soehren (1980) who assigned it its current site designation. The portion of the site within the project area originates 15.0 m south of the large spoil pile located to the south of the harbor. The trail (Feature A) extends to the south a distance of 428.2 m to where it exits the project area at the boundary between Kealaheke and Keahuolu. The trail is marked by a series of 26 stone cairns (Features B through AA) with Feature B located at the north end and Feature AA located at the south. The trail extends to the south into the Land of Keaholu an undetermined distance.

The Feature B through AA cairns are comprised of stacked cobbles and small boulders that range in length from 0.3 to 1.0 m (averaging 0.48 m long), in width from 0.19 to 0.95 m (averaging 0.37 m) and in height from 0.14 to 0.83 m (averaging 0.4 m). The individual characteristics of the 26 cairns are summarized in Table 10 and examples of these features are depicted in Figures 42 and 43. Of the 26 cairns, 20 contain fragments of waterworn coral (Features B-K, M, R, T-AA).

Site 7704 is interpreted as a north-south transportation route across the pahoehoe field. Soehren interpreted this site as a trail that "appears to join the village and pond at Honokohau with the small settlement at Pawai in Keahuolu (1980:2). Doulihan's survey in Keahuolu did not identify a trail within her survey area; however, she did identify a complex of cairns, mounds, alignments wall and a boulder concentration (Site 13286) that is depicted on her site location map in a linear configuration of features that terminates inland of Pawai Bay (1990b:16). It is possible that this site represents the southern end of Site 7704. According to Soehren:

It is delineated by coral pebbles ranging in size from one inch to six inches and spaced five to ten feet apart...The trail appears to join the village and pond at Honokohau with the small settlement at Pawai in Keahuolu...it was traced for 1600 ft across the natural basin in which the project is located; to the north it has been obliterated by the small boat



Figure 42. Site 7704, Feature E Cairn, view to southwest



Figure 43. Site 7704, Feature H Cairn, view to southwest

harbor... The trail, or alignment of coral pebbles, is about as straight as a man on foot could make it, and pays little regard to irregularities in the terrain which make following it precisely rather difficult in places. In the absence of any abrasion of the lava surface, kerstones, causeways over low places or other evidence of frequent use, it probably represents a "preliminary route selection" for a nineteenth century horse trail (Apple 1965) subsequently abandoned, perhaps in favor of the "Old Mamalahoa Trail" farther inland (1980:2).

The northern portion of the trail, north of the Feature B cairn has been buried beneath the large spoil pile that was created during the dredging of the harbor. The site is altered and in fair to good condition.

Site 13271

Site 13271 is a complex of two stone alignments located in the Land of Keanuolu in an area of level pahoehoe lava at c. 23 ft elevation. The features are located in an area 15.0 m long (north-south) and 2.5 m wide (Figure 44). The Feature A alignment in this complex was previously identified by Donham (1990b) and was assigned its current site designation. Although no site map is presented in this earlier report, a metal site tag with "PHRI T-18" inscribed on it was identified on Feature A during the present project. According to the site description (Donham, 1990b:A-13) Site T-18 corresponds to Site 13271. The Feature B alignment was newly identified during the present project.

The Feature A alignment is located at the southern end of the site. The alignment is oval in shape and measures 2.1 m in length (north-south) and 1.65 m wide. It is comprised of a single course of subangular basalt cobbles and small boulders with the individual stones ranging in length from 0.07 to 0.39 m, in width from 0.05 to 0.33 m and in height from 0.14 to 0.23 m. The Feature B alignment is situated 10.2 m north of Feature A. This feature is also roughly oval in shape and is comprised of one to two courses of subangular basalt cobbles and small boulders and several pahoehoe slabs set on edge. The feature measure is 2.68 m long (north-south) and 1.76 m wide. The stones range in length from 0.07 to 0.55 m and in width from 0.05 to 0.42. The cobbles and small boulders range in height from 0.1 to 0.4 m, with the vertical slabs averaging 0.4 m in height.

No soil or cultural remains were present in association with the either of the alignments. Donham (1990b:A-13) assigned the originally identified feature an indeterminate function. As no cultural remains were present at the site and the features exhibit no readily identifiable functional characteristics, an indeterminate function has been assigned to Site 13271 during the present project. The site is unaltered and in fair condition.

Site 23019

Site 23019 is a complex of three features located on a low pahoehoe outcrop within the corridor in the inland portion of Kealahala seaward of the Queen Ka'ahumanu Highway at c. 55 ft elevation. This site was previously identified by Haun and Henry (2001). The features consist of a pahoehoe excavation (Feature A) and two stone alignments (Features B and C). No soil was present at the site and no cultural remains were observed.

Feature A is a pahoehoe excavation located near the northwestern end of the low pahoehoe outcrop. The feature consists of an irregularly shaped hole that is 2.35 m long (north-northwest by south-southeast), 0.89 m wide, and 0.79 m in depth below the surface of the outcrop. A crude, irregular-shaped pile of angular to subangular, fine-grained basalt cobbles and small boulders has been placed adjacent to the excavation on the western side. This pile is 2.8 m long (north-northwest by south-southeast), 1.95 m wide and 0.4 to 0.65 m in height.

Feature B is a roughly oval-shaped alignment of stones located on the same low outcrop as Feature A, to the south. The feature is constructed of one course of small, flat pahoehoe slabs. It measures 2.55

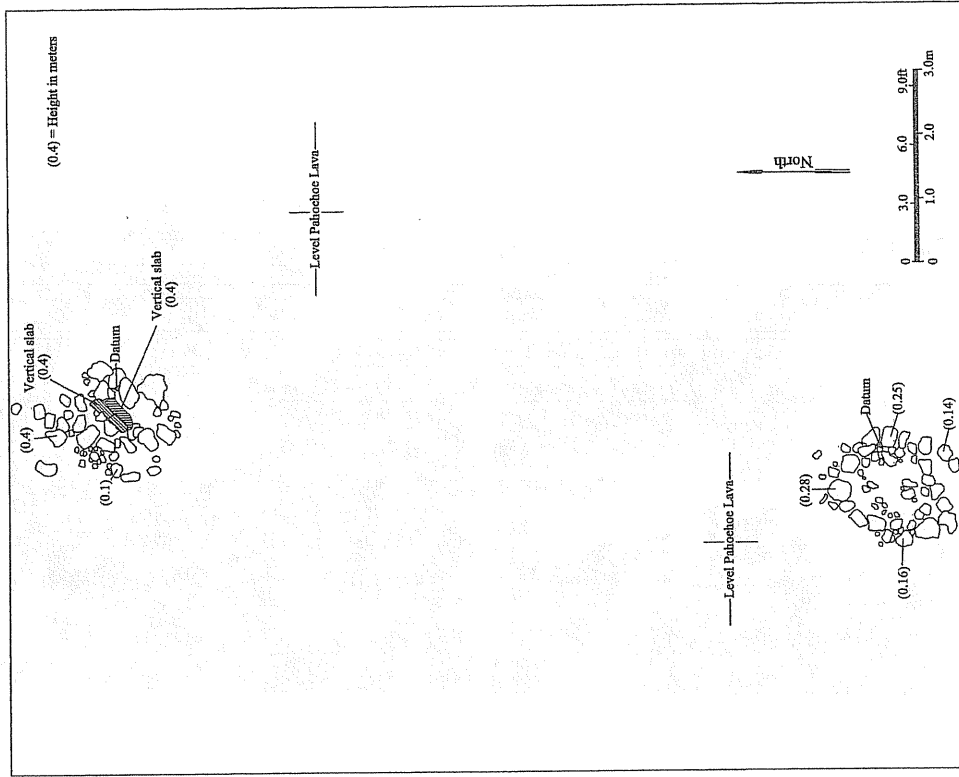


Figure 44. Site 13271 Plan Map

m long (east-west), and 1.75 m wide. The stones range in size from 0.12 to 0.45 m long, 0.1 to 0.27 m wide and 0.08 to 0.19 m in height.

Feature C is a second stone alignment, located to the southwest of Feature B. The feature is C-shaped and is open at the southern end. The stones used in this feature consist of a single course of small, flat pahoehoe slabs similar in size to those observed at Feature B. The feature measures 2.65 m long (east-west), and 2.05 m wide with the height of the stones varying from 0.09 to 0.17 m. Haun and Henry (2001) assigned the Feature A pahoehoe excavation a quarry function, with Features B and C assigned indeterminate functions. The site is unaltered and in good condition.

Site 23022

Site 23022 is a well-built cairn situated on a low pahoehoe outcrop within the corridor in the inland portion of Kealahou seaward of the Queen Ka'ahumanu Highway at c. 58 ft elevation. This site was previously identified by Haun and Henry (2001). It is constructed of stacked subangular basalt cobbles and small boulders, and is 0.95 m long (northwest by southeast) and 0.91 m wide at the base, and 0.74 m long by 0.67 m wide at the top (Figure 45). The cairn measures 0.73 m in height. It is unaltered and in good condition. No cultural remains were present. Haun and Henry (2001) interpreted the site as a marker based on its formal type.

Site 23024

Site 23024 is an alignment of flat pahoehoe slabs located on a low pahoehoe ridge within the corridor in the inland portion of Kealahou seaward of the Queen Ka'ahumanu Highway at c. 62 ft elevation. This site was previously identified by Haun and Henry (2001). The alignment is oval in shape and is comprised of a single course of slabs that range in size from 0.15 to 0.4 m long, 0.1 to 0.35 m wide and 0.08 to 0.15 m in height. The oval alignment measures 2.3 m long (northeast by southwest) and 1.85 m wide. No soil was present on the pahoehoe ridge and no cultural remains were noted. Site 23024 was unaltered and in good condition and was assigned an indeterminate function by Haun and Henry (2001).

Site 23033

Site 23033 is small overhang located on the eastern side of a pahoehoe ridge within the corridor in the inland portion of Kealahou seaward of the Queen Ka'ahumanu Highway at c. 81 ft elevation. This site was previously identified by Haun and Henry (2001). The entrance to the overhang faces the northeast, measuring 2.05 m long (northwest by southeast) and 1.0 m in height (Figure 46). The interior of the overhang is oval-shaped and is 2.7 m long (northeast by southwest) and 2.5 m wide. The overhang has a domed-shaped ceiling that is 1.3 m in height. The floor of the overhang consists of jagged lava. A series of ten flat pahoehoe slabs have been placed inside the overhang to create a relatively level surface. These slabs vary in length from 0.3 to 0.65 m, in width from 0.19 to 0.4 m, and in thickness from 0.11 to 0.2 m. No cultural remains were present at the site. Site 23033 was interpreted as a temporary habitation based on its formal type and the presence of the pahoehoe slab floor. It is unaltered and in good condition.

Site 25549

Site 25549 is an inland-seaward oriented trail located in the northeastern section of the project area in the Land of Kealahou at elevations that range from 43 to 44 ft. The site was identified during the present project. The trail extends across an area of uneven a'a lava and is comprised of a 0.8 to 1.2 m wide cleared path through the uneven terrain with irregularly spaced flat pahoehoe slabs (Figure 47). The inland end of the trail originates on the seaward side of a recently bulldozed road cut, to the west of the Mamalahoa Highway. It extends 66.0 m in a roughly westerly direction where it terminates along the interface with an area of pahoehoe lava (see Figure 7). No cultural remains were found in association with the trail. Site 25549 is interpreted as a transportation route across the a'a lava based on its location and formal type. The site is altered and in fair to good condition.



Figure 45. Site 23022 Cairn, view tou southeast



Figure 46. Site 23033 Overhang, view to southwest



Figure 47. Site 25549 Trail, view to east

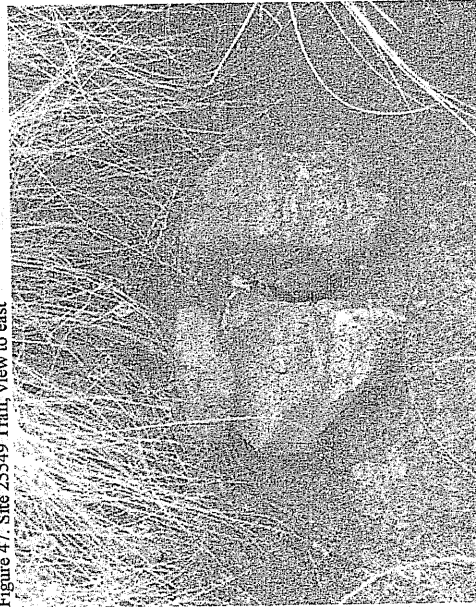


Figure 48. Site 25550 Cairn, view to north

Site 25550

Site 25550 is a cairn located in the northeastern section of the project area in the Land of Kealakhe at c. 39 ft elevation. The site is located in an area of level pahoehoe lava and encompasses an area 0.4 m long (northeast by southwest), 0.28 m wide and 0.23 m in height. The cairn is comprised of five small pahoehoe slabs, consisting of two adjacent slabs placed on the surface of the pahoehoe lava, with an additional slab stacked on top of each (Figure 48). The fifth slab is leaning against the slabs at the southwest end of the cairn. No cultural remains were present. Site 25550 is interpreted as a marker based on its formal type. It is unaltered and in fair condition.

Site 25551

Site 25551 is a small roughly oval-shaped stone alignment situated on a level pahoehoe outcrop in the northeastern portion of the project area in the Land of Kealakhe at c. 41 ft elevation. The alignment is comprised of a single course of small, flat pahoehoe slabs and subangular basalt cobbles aligned in an oval-shaped configuration that is 3.56 m long (northeast by southwest) and 2.87 m wide (Figure 49). The individual stones range in size from 0.08 to 0.57 m long, 0.5 to 0.39 m wide and 0.1 to 0.21 m in thickness. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25552

Site 25552 is a roughly L-shaped wall situated in an area of uneven a'a lava in the northeastern section of the project area in the Land of Kealakhe at c. 42 ft elevation. The wall is 4.35 m long (east-west) and 3.1 m long (north-northwest by south-southeast) and is built of stacked and piled cobbles and flat pahoehoe slabs with a large uplifted slab located at the eastern end (Figure 50). The wall ranges in width from 0.5 to 0.68 m and in height from 0.85 to 1.2 m and the uplifted slab measures 2.35 m long, 0.4 to 1.15 m wide and from 1.2 to 1.4 m in height. The area surrounding the wall is comprised of uneven a'a lava with no soil present. A *Cypraea* sp. shell is present on top of the uplifted slab at the eastern end. Site 25552 is interpreted as a possible temporary habitation shelter based primarily on its formal type, substantial construction (stacked and piled stones) and area (13.4 sq m). The site is unaltered and in fair condition.

Site 25553

Site 25553 is a cairn located in the northeastern section of the project area in the Land of Kealakhe at c. 42 ft elevation. The site is located on an uneven a'a lava flow situated on the inland side of an area of level pahoehoe lava. The cairn is built of roughly stacked and piled cobbles and small boulders, measuring 0.5 m long (north-south) by 0.48 m wide at the base with sloping sides (Figure 51). The top of the cairn is capped with a a'a cobble that is 0.38 in height above the uneven a'a lava. No cultural remains were found in association with the cairn. Site 25553 is interpreted as a marker based on its formal type. It is unaltered and in fair condition.

Site 25554

Site 25554 is a low walled enclosure located in the northeastern section of the project area in the Land of Kealakhe at c. 41 ft elevation. The site is built on a level pahoehoe flow to the west of an area of uneven a'a lava. The enclosure is rectangular in shape and is 4.1 m in length (north-northwest by south-southeast) and 3.65 m wide (Figure 52). There is a 0.5 m wide opening into the interior in the western wall. The walls of the enclosure are built of stacked and piled cobbles and small boulders with collapse present along the exterior north, west and south sides and in the interior northwest, northeast and southeast corners. The intact walls range in width from 0.55 to 0.77 m and in height from 0.2 to 0.51 m. The interior of the enclosure consists of bare pahoehoe lava with no cultural remains present.

Site 25554 is interpreted as the foundation for a permanent habitation roofed structure. Though slightly smaller in area than a typical house foundation (14.95 sq m), its formal type and substantial con

Site 25550

Site 25550 is a cairn located in the northeastern section of the project area in the Land of Kealahake at c. 39 ft elevation. The site is located in an area of level pahoehoe lava and encompasses an area 0.4 m long (northeast by southwest), 0.28 m wide and 0.23 m in height. The cairn is comprised of five small pahoehoe slabs, consisting of two adjacent slabs placed on the surface of the pahoehoe lava, with an additional slab stacked on top of each (Figure 48). The fifth slab is leaning against the slabs at the southwest end of the cairn. No cultural remains were present. Site 25550 is interpreted as a marker based on its formal type. It is unaltered and in fair condition.

Site 25551

Site 25551 is a small roughly oval-shaped stone alignment situated on a level pahoehoe outcrop in the northeastern portion of the project area in the Land of Kealahake at c. 41 ft elevation. The alignment is comprised of a single course of small, flat pahoehoe slabs and subangular basalt cobbles aligned in an oval-shaped configuration that is 3.56 m long (northeast by southwest) and 2.87 m wide (Figure 49). The individual stones range in size from 0.08 to 0.57 m long, 0.5 to 0.39 m wide and 0.1 to 0.21 m in thickness. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25552

Site 25552 is a roughly L-shaped wall situated in an area of uneven a'a lava in the northeastern section of the project area in the Land of Kealahake at c. 42 ft elevation. The wall is 4.35 m long (east-west) and 3.1 m long (north-northwest by south-southeast) and is built of stacked and piled cobbles and flat pahoehoe slabs with a large uplifted slab located at the eastern end (Figure 50). The wall ranges in width from 0.5 to 0.68 m and in height from 0.85 to 1.2 m and the uplifted slab measures 2.35 m long, 0.4 to 1.15 m wide and from 1.2 to 1.4 m in height. The area surrounding the wall is comprised of uneven a'a lava with no soil present. A *Cypraea* sp. shell is present on top of the uplifted slab at the eastern end. Site 25552 is interpreted as a possible temporary habitation shelter based primarily on its formal type, insubstantial construction (stacked and piled stones) and area (13.4 sq m). The site is unaltered and in fair condition.

Site 25553

Site 25553 is a cairn located in the northeastern section of the project area in the Land of Kealahake at c. 42 ft elevation. The site is located on an uneven a'a lava flow situated on the inland side of an area of level pahoehoe lava. The cairn is built of roughly stacked and piled cobbles and small boulders, measuring 0.5 m long (north-south) by 0.48 m wide at the base with sloping sides (Figure 51). The top of the cairn is capped with a a'a cobble that is 0.38 m in height above the uneven a'a lava. No cultural remains were found in association with the cairn. Site 25553 is interpreted as a marker based on its formal type. It is unaltered and in fair condition.

Site 25554

Site 25554 is a low walled enclosure located in the northeastern section of the project area in the Land of Kealahake at c. 41 ft elevation. The site is built on a level pahoehoe flow to the west of an area of uneven a'a lava. The enclosure is rectangular in shape and is 4.1 m in length (north-northwest by south-southeast) and 3.65 m wide (Figure 52). There is a 0.5 m wide opening into the interior in the western wall. The walls of the enclosure are built of stacked and piled cobbles and small boulders with collapse present along the exterior north, west and south sides and in the interior northwest, northeast and southeast corners. The intact walls range in width from 0.55 to 0.77 m and in height from 0.2 to 0.51 m. The interior of the enclosure consists of bare pahoehoe lava with no cultural remains present.

Site 25554 is interpreted as the foundation for a permanent habitation roofed structure. Though slightly smaller in area than a typical house foundation (14.95 sq m), its formal type and substantial cor-

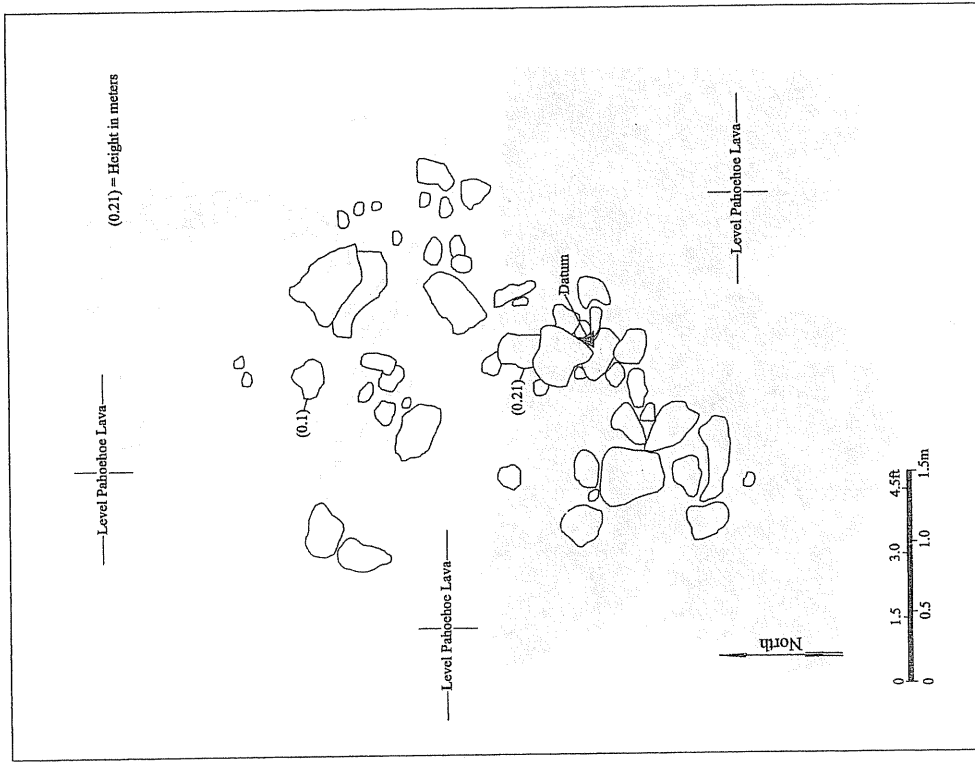


Figure 49. Site 25551 Plan Map

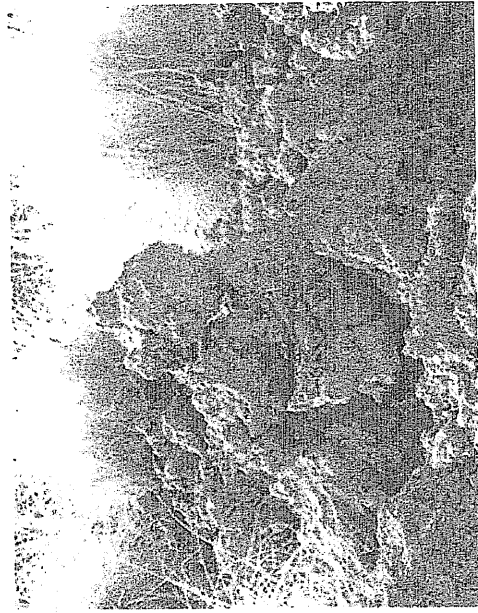


Figure 51. Site 25553 Cam, view to northeast

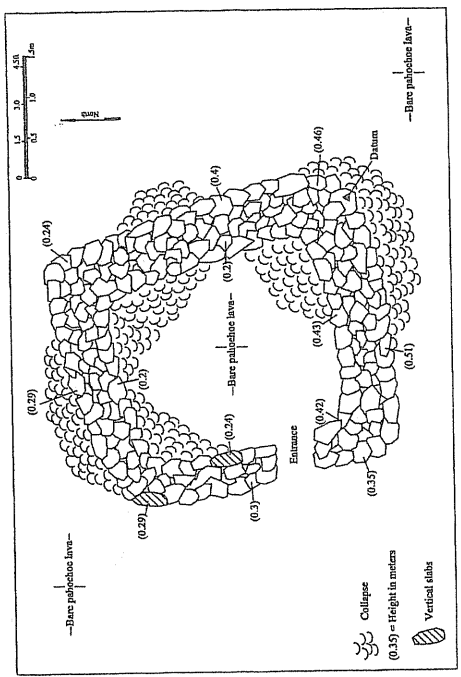


Figure 52. Site 25554 Plan Map

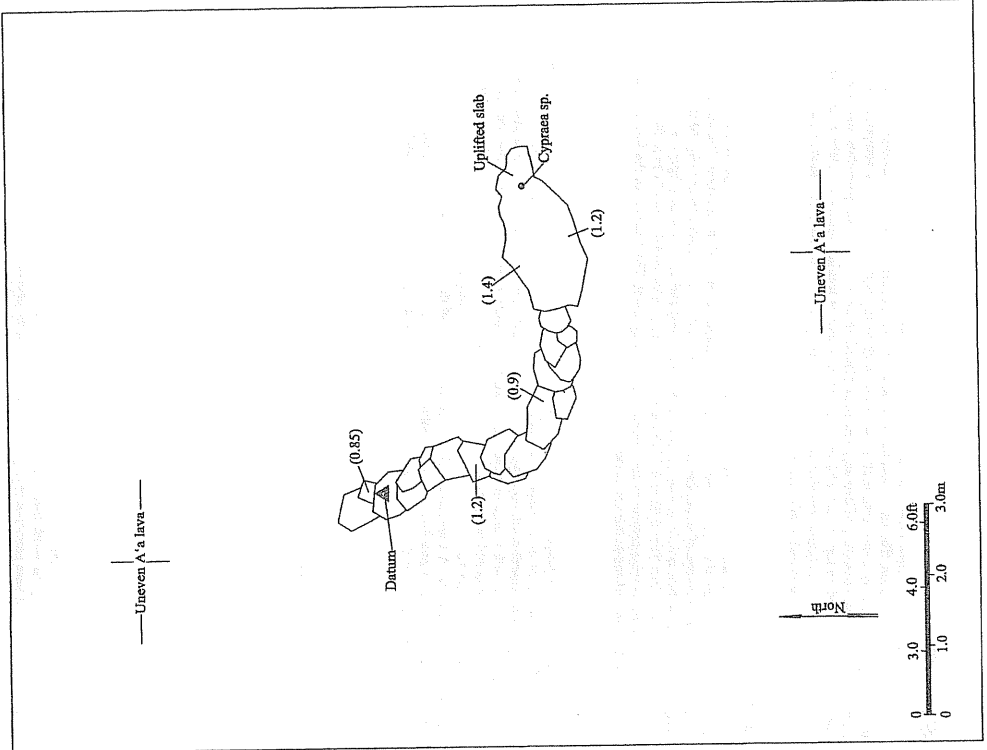


Figure 50. Site 25552 Plan Map

struction (vertical slabs) suggest it potentially functioned in this capacity. The site is unaltered and in fair condition.

Site 25555

Site 25555 is an enclosure located in the northeastern section of the project area in the Land of Kealahke at c. 41 ft elevation. The site consists of a linear wall that encloses an interior area bordered by an uneven a'au outcrop (Figure 53). The area to the southwest of the site consists of level pahoehoe lava. The wall is 5.3 m long (northwest by southeast), 0.5 to 0.62 m wide and 0.89 to 0.9 m in height, built of stacked and faced cobbles and small boulders. The interior of the enclosure is irregularly-shaped and is 5.6 m in length (northeast by southwest) and from 3.7 to 5.3 m wide. The sides of the outcrop bordering the enclosed area vary in height from 0.83 to 1.24 m. The floor of the interior is comprised of a level soil deposit bisected by a low bedrock outcrop. No cultural remains were present. A Christmas-berry tree is growing inside the enclosed space in the northeastern portion.

Site 25555 is interpreted as the possible foundation for a permanent habitation roofed structure. This interpretation is based on the substantially constructed wall (faced sides) and the area of the enclosed space (29.6 sq m). The site is unaltered and in good condition.

Site 25556

Site 25556 is an irregularly-shaped stone alignment situated in an area of level pahoehoe lava in the Land of Kealahke, south of the spoil pile area and seaward of the sewage treatment plant at c. 39 ft elevation. The alignment is comprised of a single course of small, flat pahoehoe slabs, aligned in an irregular configuration that is 5.55 m long (northeast by southwest) and 2.47 m wide (Figure 54). The individual slabs range in size from 0.12 m long, 0.07 to 0.65 m wide and 0.05 to 0.1 m in thickness. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25557

Site 25557 is a stone alignment situated in an area of level pahoehoe lava in the Land of Kealahke, 25.0 m south-southeast of Site 25556 at c. 38 ft elevation. The alignment is comprised of a single course of small, flat pahoehoe slabs and subangular cobbles aligned in a roughly oval-shaped configuration that is 3.58 m long (east-northeast by west-southwest) and 2.54 m wide (Figure 55). The individual stones range in size from 0.07 to 0.65 m long, 0.05 to 0.35 m wide and 0.07 to 0.09 m in thickness. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25558

Site 25558 is a stone alignment situated in an area of level pahoehoe lava in the Land of Kealahke, 45.0 m south-southwest of Site 25557 at c. 37 ft elevation. The alignment is comprised of a single course of small, pahoehoe slabs aligned in a roughly oval-shaped configuration that is 2.79 m long (east-west) and 2.19 m wide (Figure 56). The majority of the slabs are positioned flat on the ground, ranging in length from 0.1 to 0.57 m, in width from 0.07 to 0.45 m and in thickness from 0.06 to 0.08 m. One slab was positioned vertically measuring 0.26 m long, 0.1 m wide and 0.32 m in height. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25559

Site 25559 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealahke, 175.0 m seaward of the Site 7704 trail at c. 41 ft elevation. The cairn consists of a base of four pahoehoe boulders with four pahoehoe slabs stacked on top (Figure 57). The cairn measures 0.58 m long (north-south), 0.58 m wide and 0.86 m in height. No cultural remains were found in association with the cairn.

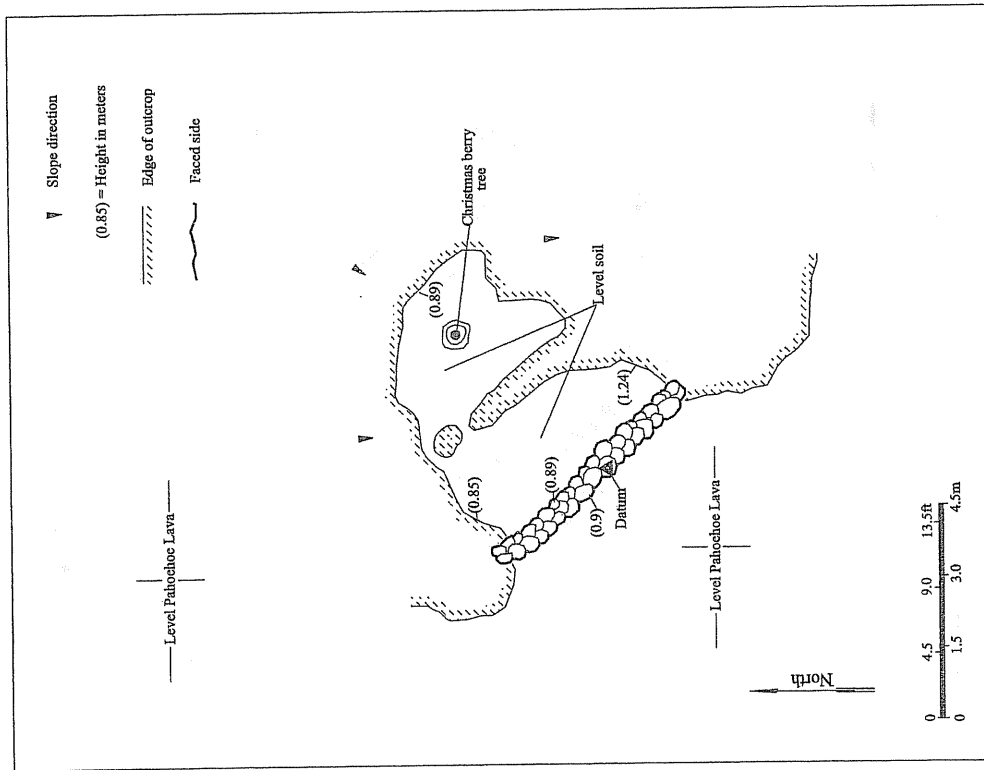


Figure 53. Site 25555 Plan Map

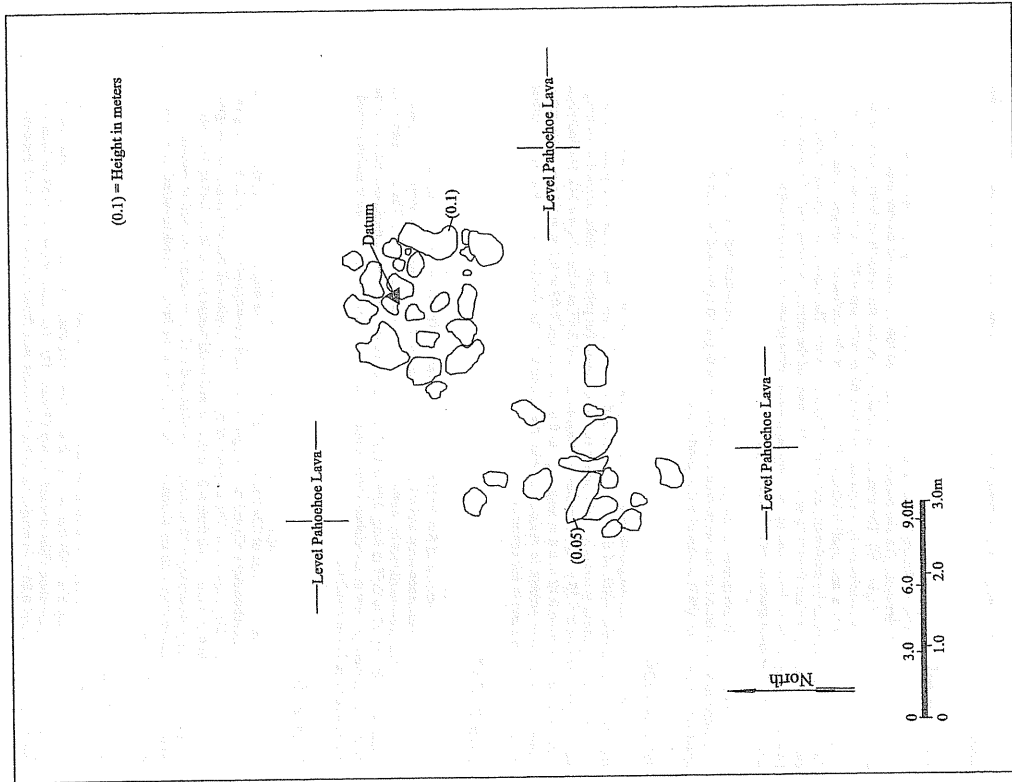


Figure 54. Site 25556 Plan Map

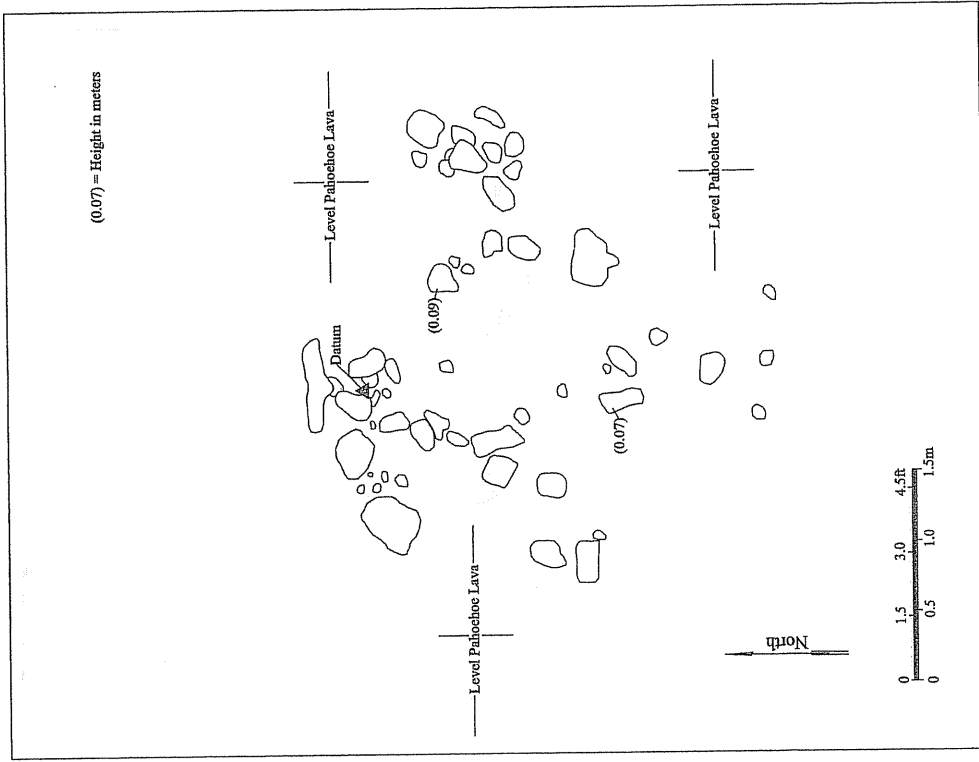


Figure 55. Site 25557 Plan Map

Site 25559 is interpreted as a marker based on its formal type and appearance. It is unaltered and in fair condition.

Site 25560

Site 25560 is a complex of four stone alignments located in an area of level pahoehoe lava in the Land of Kealahou at c. 39 ft elevation. The alignments are situated in an area 15.2 m long (north-south) and 8.5 m wide (Figure 58). The Feature A alignment is located at the southeast end of the site. It is roughly oval in shape and is comprised of a single course of flat pahoehoe slabs that encompasses an area 2.72 m long (northwest by southeast) and 2.22 m wide. The individual slabs range in length from 0.12 to 0.62 m, in width from 0.07 to 0.34 m and in height from 0.05 to 0.08 m.

The Feature B alignment is located 3.5 m west of Feature A. This alignment is U-shaped and is 2.8 m in length (east-west) and 2.0 m wide, comprised of a single course of flat slabs. The stones vary in length from 0.21 to 0.612 m long, 0.12 to 0.44 m wide and 0.06 to 0.1 m in height. The Feature C alignment is situated 5.7 m north-northeast of Feature B. This feature is roughly U-shaped and is comprised of one to two courses of flat slabs and subangular basalt cobbles (Figure 59). It is 2.39 m long, northwest by southeast) and 1.84 m wide, with the individual stones ranging in length from 0.07 to 0.7 m, in width from 0.05 to 0.35 m and in height from 0.05 to 0.11 m.

The Feature D alignment is situated 5.0 m north-northeast of Feature C. The alignment is irregularly shaped and is 3.13 m long (northwest by southeast), 2.43 m wide and from 0.1 to 0.21 m in height. The alignment is constructed of one to two courses of flat pahoehoe slabs and subangular basalt cobbles, with the individual stones ranging in length from 0.07 to 0.61 m and in width from 0.05 to 0.49. No soil or cultural remains were found in association with any of the Site 25560 alignments. The site is unaltered and in fair condition and is assigned an undetermined function.

Site 25561

Site 25561 is a cairn located in an area of relatively level pahoehoe lava in the Land of Kealahou 85.0 m north-northeast of Site 25560 and 90.0 m seaward of the Site 7704 trail. The cairn is comprised of roughly stacked and piled flat pahoehoe slabs. It is oval in shape and measures 1.3 m in length (east-west), 0.95 m wide and 0.47 m in height (Figure 60). No cultural remains were found in association with the cairn. Site 25561 is interpreted as a marker based on its formal type and appearance. It is unaltered and in fair condition.

Site 25562

Site 25562 is a low cairn located in an area of level pahoehoe lava in the Land of Kealahou, 70.0 m south of the large spoil pile area at c. 37 ft elevation. The cairn is comprised of seven flat pahoehoe slabs stacked one on top of the other (Figure 61). The cairn is 0.59 m long (northeast by southwest), 0.42 m wide and 0.48 m in height. No cultural remains were present. Site 25562 is interpreted as a marker based on its formal type and appearance. The site is unaltered and in fair condition.

Site 25563

Site 25563 is a trail that extends across an area of uneven pahoehoe lava in the Land of Kealahou, 22.5 m south of the spoil pile and 35.0 m west of the Site 25562 cairn. The trail is 92.9 m in length (north-east by southwest) at elevations ranging from c. 34 to 35 ft. The trail is marked by a series of waterworn coral cobbles spaced at irregular intervals ranging from 0.8 to 20.0 m (Figure 62). A total of 17 cobbles were noted at the site. No other cultural remains were present. Site 25563 is interpreted as a transportation route across the pahoehoe flow based on its formal type and appearance. The site is unaltered and in good condition.

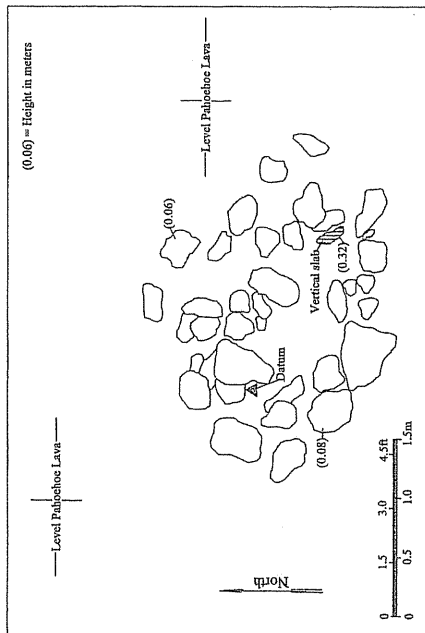


Figure 56. Site 25558 Plan Map

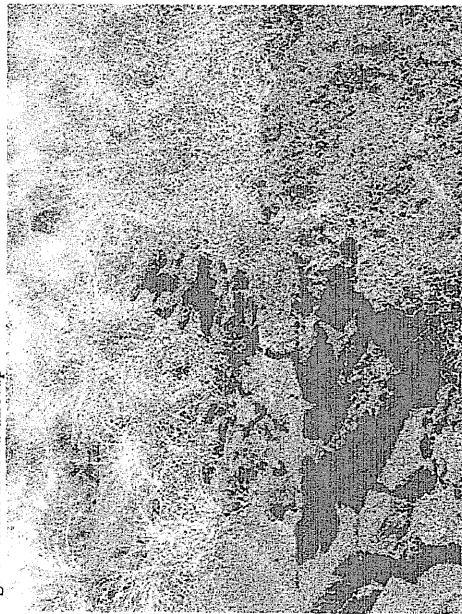


Figure 57. Site 25559 Cairn, view to east

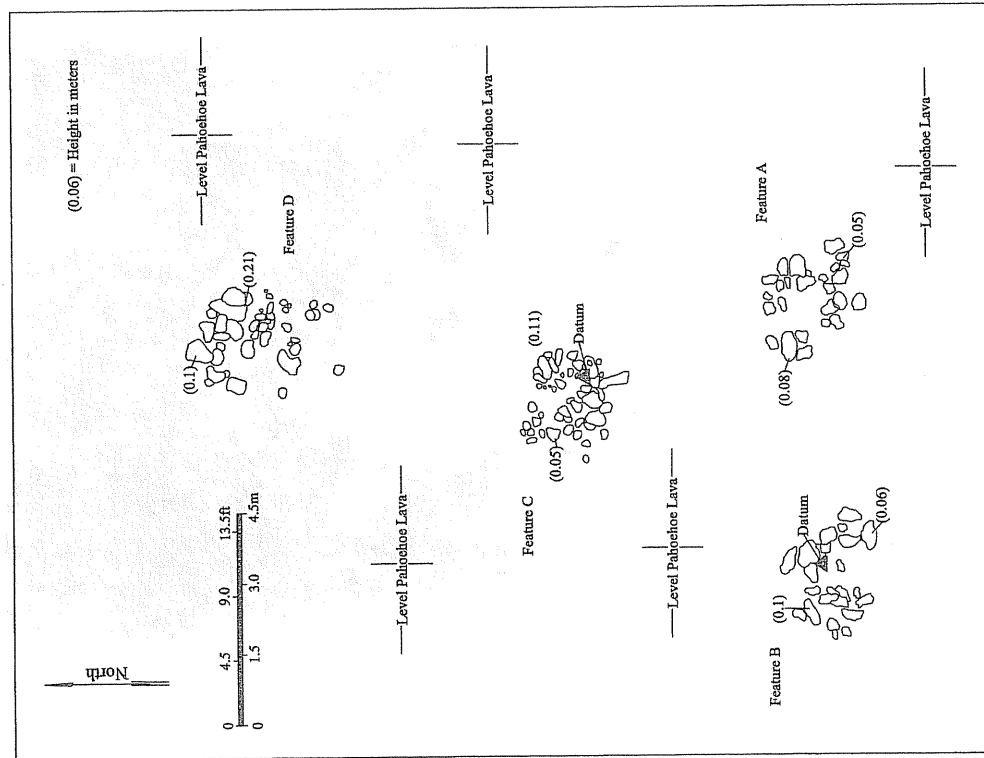


Figure 58. Site 25560 Plan Map

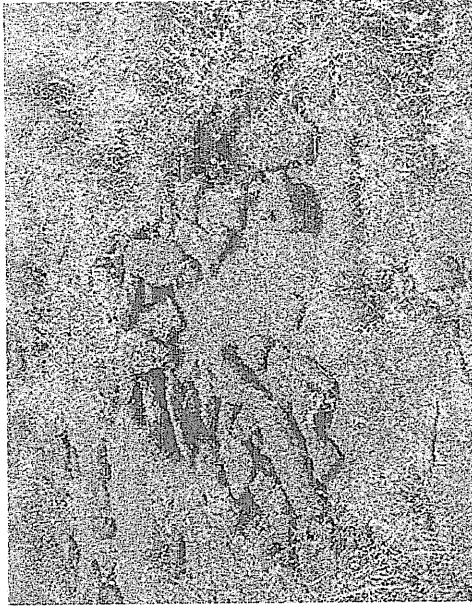


Figure 59. Site 25560, Feature C Alignment, view to south



Figure 60. Site 25561 Cairn, view to east

Site 25564

Site 25564 is a complex of three stone alignments located in an area of relatively level pahoehoe lava in the Land of Kealahou at c. 35 ft elevation. The site is located 26.0 m southwest of the southwestern end of the Site 25563 trail. The complex encompasses an area 12.8 m long (northeast by southwest) and 9.55 m wide (Figure 63). The Feature A alignment is located at the southwestern end of the site. This feature is roughly U-shaped and measures 4.85 m long (east-west) and 3.37 m wide. The alignment is comprised of one to two courses of flat pahoehoe slabs and subangular basalt cobbles. The individual stones range in length from 0.12 to 1.28 m, in width from 0.08 to 0.65 m and in thickness from 0.12 to 0.27 m. No cultural remains were present.

The Feature B alignment is situated 4.9 m north-northeast of Feature A. This feature is irregularly-shaped and measures 3.27 m long (east-west) and 2.25 m wide. The alignment is comprised of one course of flat slabs and subangular cobbles, with the individual stones ranging from 0.09 to 0.66 m long, 0.08 to 0.47 m wide and 0.07 to 0.18 m in thickness. No cultural remains were present.

Feature C is located 4.9 m southeast of Feature B. This alignment is irregularly-shaped and is 2.52 m long (northeast by southwest) and 1.34 m wide and is comprised of one course of flat slabs. The individual stones vary in length from 0.1 to 0.81 m, in width from 0.06 to 0.63 m and in thickness from 0.05 to 0.09 m. No cultural remains were found in association with the feature. Site 25564 is unaltered and in fair condition and is assigned an undetermined function.

Site 25565

Site 25565 is a complex of two stone cairns located 70.0 m west of Site 25564 in an area of uneven pahoehoe lava in the Land of Kealahou at c. 30 ft elevation. The Feature A cairn is located at the northern end of this site. This feature is comprised of two rough pahoehoe slabs stacked one on top of the other, with a cobble placed on top (Figure 64). The cairn measures 0.27 m long (north-south), 0.18 m in width and 0.18 m in height. No cultural remains were present at the feature.

The Feature B cairn is located 14.0 m south-southwest of Feature A. This cairn is comprised of roughly stacked and piled pahoehoe slabs and measures 1.4 m long (northeast by southwest), 1.35 m wide and 0.46 m in height (Figure 65). No cultural remains were found in association with the cairn. The Site 25565 cairns are interpreted as markers based on their formal type and appearance. The site is unaltered and in fair condition.

Site 25566

Site 25566 is a cairn located in an area uneven pahoehoe lava in the Land of Kealahou at c. 39 ft elevation. The cairn has likely collapsed and is currently comprised of roughly stacked and piled flat pahoehoe slabs. It is built partially over a natural fissure in the lava and measures 0.86 m in length (east-west), 0.75 m wide and 0.33 m in height (Figure 66). No cultural remains were found in association with the cairn. Site 25566 is interpreted as a marker based on its formal type and appearance. It is unaltered and in fair condition.

Site 25567

Site 25567 is a collapsed cairn located on top of a pahoehoe pressure ridge in the Land of Kealahou, 64.0 m west of Site 25566 at c. 39 ft elevation. The cairn is comprised of piled pahoehoe slabs and measures 1.3 m in length (north-south), 1.10 m wide and 0.41 m in height (Figure 67). No cultural remains were found in association with the cairn. Site 25567 is interpreted as a marker based on its formal type and appearance. It is unaltered and in fair condition.

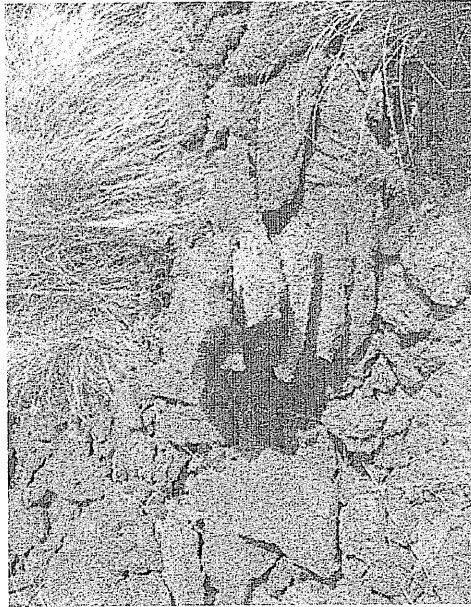


Figure 61. Site 25562 Cairn, view to west

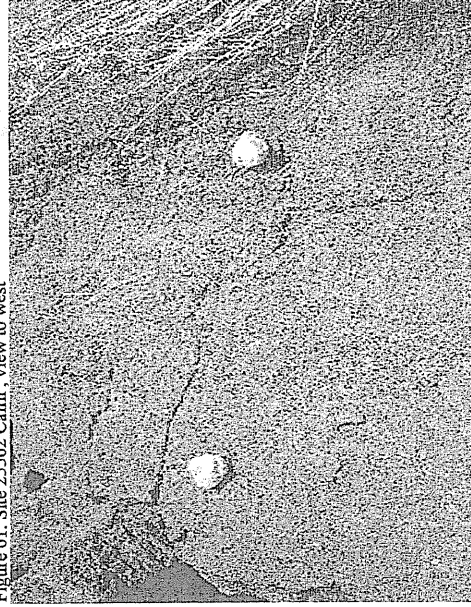


Figure 62. Waterworn coral marking Site 25563 Trail, view to east

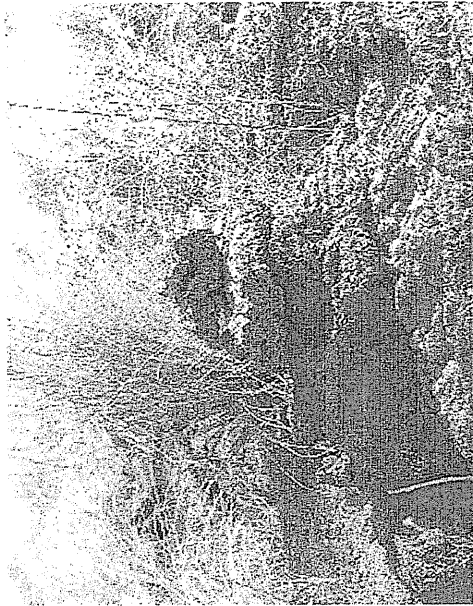


Figure 64. Site 25562, Feature A Cairn, view to west



Figure 65. Site 25565 Cairn, view to northwest

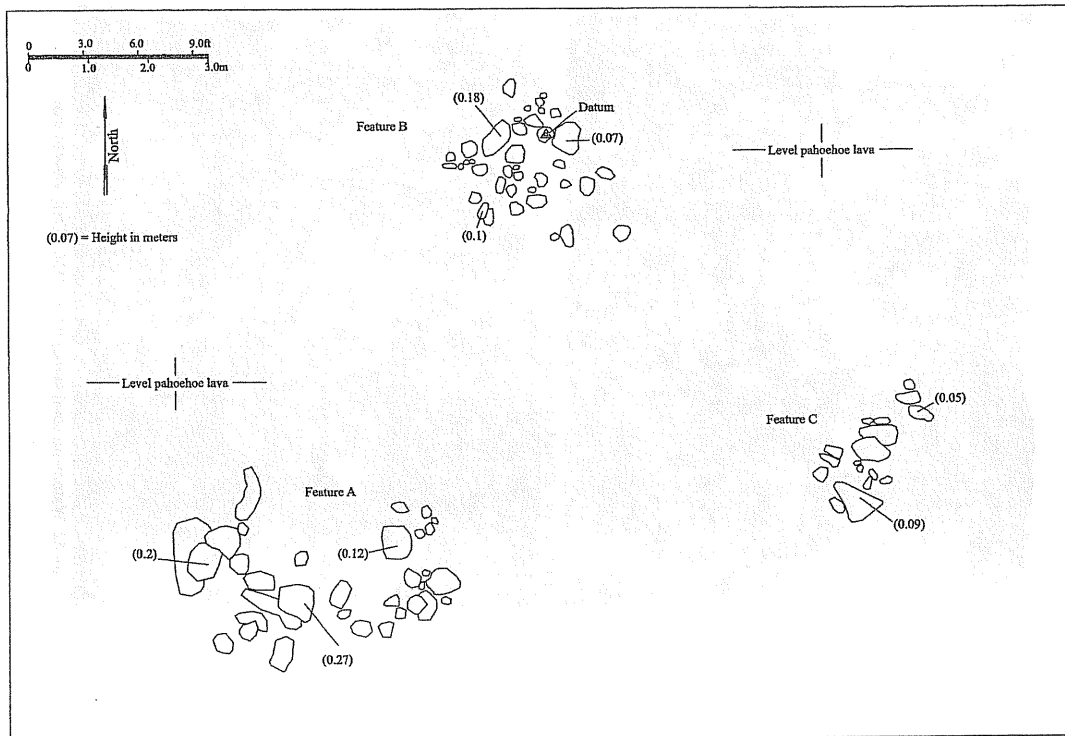


Figure 63. Site 25564 Plan Map

Site 25568

Site 25568 is a stone alignment situated in an area of relatively level pahoehoe lava in the Land of Kealahou, 55.0 m southwest of Site 25565 at c. 28 ft elevation. The alignment is comprised of a single course of small, pahoehoe slabs aligned in a roughly oval-shaped configuration that is 2.73 m long (north-east by southwest) and 1.88 m wide (Figure 66). The individual stones range in length from 0.1 to 0.36 m, in width from 0.08 to 0.4 m and in thickness from 0.1 to 0.18 m. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25569

Site 25569 is a complex of two features located in an area of relatively level pahoehoe lava in the Land of Kealahou at c. 35 ft elevation. The features are comprised of a cairn (Feature A) and a stone alignment (Feature B), located in an area 3.58 m long (east-west) by 1.9 m wide (Figures 69 and 70). The Feature A cairn is comprised of a horizontal pahoehoe slab that is supported by four slabs that have been stood on end. The top slab is 0.54 m long, 0.39 m wide and 0.09 m thick. The four vertical slabs range in height from 0.47 to 0.51 m.

The Feature B stone alignment is situated adjacent to Feature A to the south. The alignment is comprised of an irregularly-shaped configuration of from one to two courses of flat pahoehoe slabs present in an area 3.58 m long (east-west) and 1.4 m wide. The individual stones range in length from 0.1 to 0.6 m, in width from 0.07 to 0.42 m and in height from 0.08 to 0.2 m. No cultural remains were present at Site 25569. The Feature A cairn is interpreted as a marker based on its formal type and appearance. The function of the Feature B stone alignment is undetermined. It is unaltered and in good condition.

Site 25570

Site 25570 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 31 ft elevation. The cairn is comprised of three stacked pahoehoe slabs placed one on top of the other. The cairn measures 0.27 m long, (north-south), 0.26 m wide and 0.43 m in height (Figure 71). No cultural remains were found in association with the cairn. Site 25570 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

Site 25571

Site 25571 is a lava tube located in the Land of Kealahou at c. 35 ft elevation. The main entrance to the site is in an area of sloping pahoehoe lava and measures 6.3 m wide (east-west) and from 0.65 to 0.7 m in height (Figure 72). This opens onto the main chamber of the tube, which consists of an irregularly-shaped room that is 14.1 m long (east-west) and from 0.91 to 3.35 m wide. The floor in this chamber is comprised of bare lava with scattered roof fall and from 0.91 to 3.35 m wide. The ceiling heights range from 0.3 to 0.73 m. A concentration of goat bones is present at the west end of this chamber.

Two passages extend off the main chamber; one to the north and one to the east. The northern passage is accessed through a small hole that is 1.3 m wide and 0.4 m deep, opening onto a small oval-shaped chamber that is 4.6 m long (east-west), 1.65 m wide with a bare lava floor and ceiling heights that range from 0.5 to 0.6 m. A *kukui* nut shell was noted in this chamber.

The second passage extends to the west from the main chamber, accessed through a sloping opening that is 1.0 m wide. This opens onto an irregularly-shaped chamber that is 16.3 m long (north-northeast by south-southwest) and from 0.9 to 3.6 m wide. The floor in this chamber is bare lava with scattered roof fall and the ceiling heights range from 0.5 to 1.2 m. There are two vertical secondary entrances into this chamber that range in length from 2.25 to 3.2 m, in width from 0.2 to 0.45 m and in depth from 0.75 to 0.9 m below the ground surface. A raised ledge is located to the south of the entrance to this chamber, with a second raised ledge located to the south of the southern vertical entrance. No cultural remains were present on these ledges. A third ledge is situated along the west wall of the chamber at the southern end containing

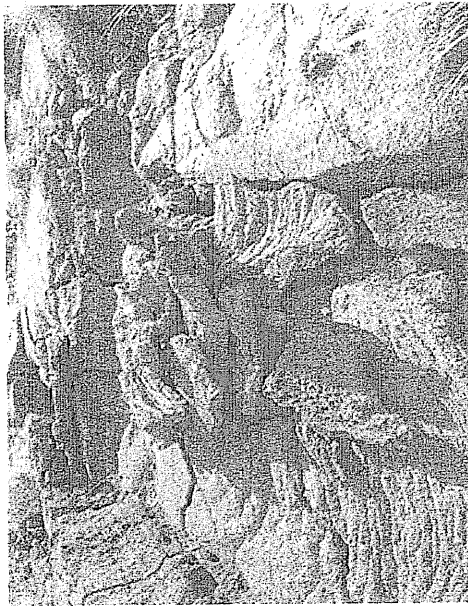


Figure 66. Site 25566 Cairn, view to east



Figure 67. Site 25567 Cairn, view to south

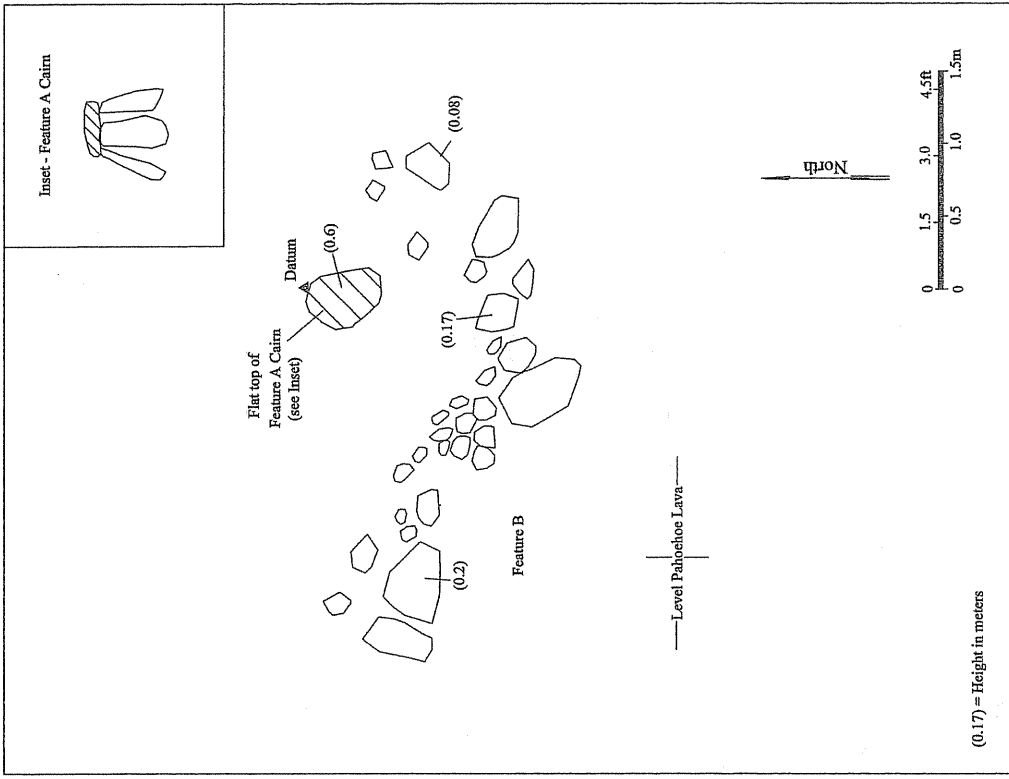


Figure 69. Site 25569 Plan Map

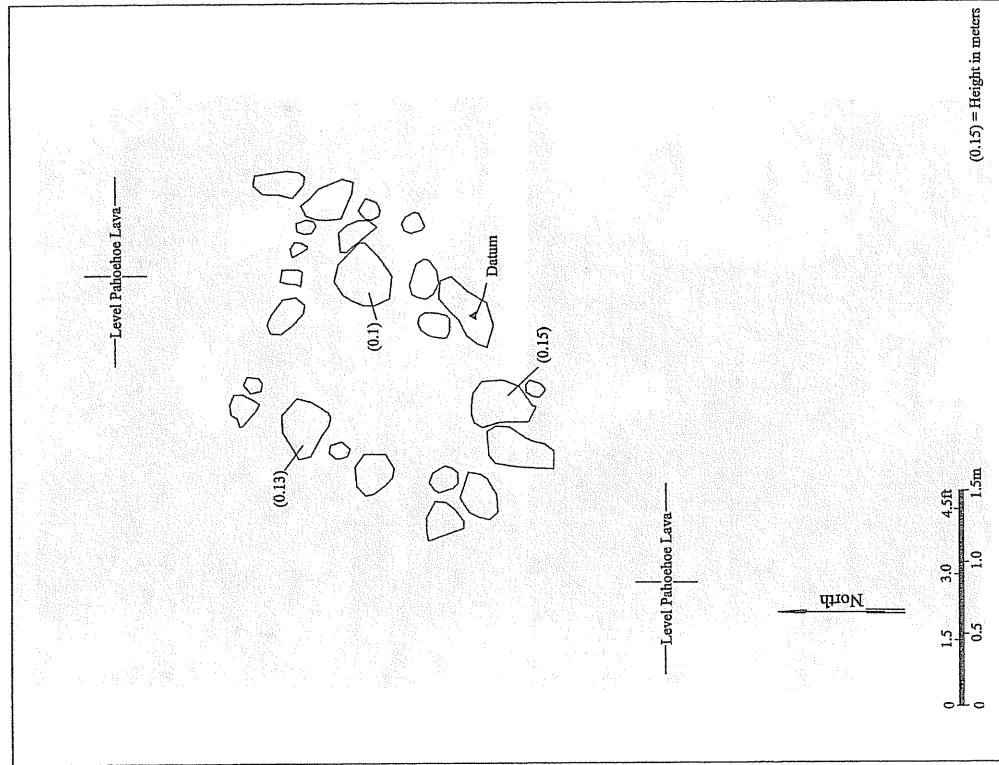


Figure 68. Site 25568 Plan Map

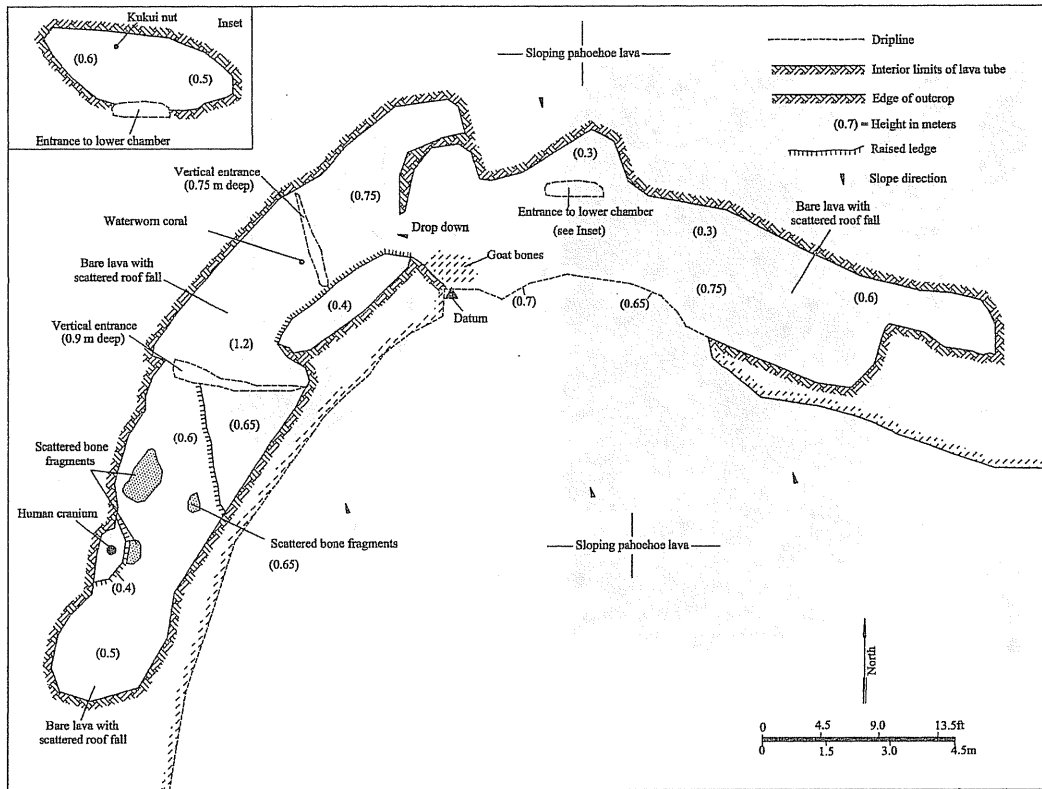


Figure 72. Site 25571 Plan Map



Figure 70. Features of Site 25569, view to south

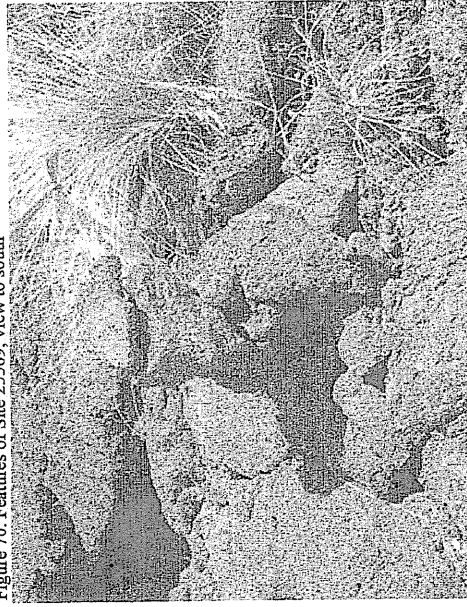


Figure 71. Site 25570 Cairn, view to southwest

a human cranium. Fragmentary human remains are located below this ledge on the main floor of the tube in three discrete areas to the east, north and northeast. A fragment of waterworn coral is present on the floor in the northeastern portion of this chamber, to the south of the northern vertical entrance.

Site 25571 is interpreted as a possible temporary habitation shelter based on the presence of the waterworn coral and the *kukui* nut shell. The human remains present within the site indicate a burial function. The site is unaltered and in good condition.

Site 25572

Site 25572 is a trail that extends across an area of uneven pahoehoe lava in the Land of Kealahou at elevations that range from 19 to 21 ft. The trail (Feature A) is marked by two cairns (Features B and C) and two fragments of branch coral (Features D and E). The Feature A trail is 63.7 m in length, oriented in a north-northwest by south-southeast direction (see Figure 7). The Feature B cairn defines the southern end of the trail. It is comprised of three flat pahoehoe slabs stacked one on top of the other, with a fragment of branch coral present on top (Figure 73). The cairn measures 0.4 m long (north-south), 0.22 m wide and 0.26 m in height.

The Feature C cairn is visible from Feature B and is located 24.0 m to the north-northwest. This feature is comprised of three subangular basalt cobbles stacked one on top of the other, with a fragment of branch coral present on the top. It is 0.35 m in length (northeast by southwest), 0.29 m wide and 0.28 m in height. The first fragment of branch coral (Feature D) is located 22.0 m north of Feature C. The coral is readily visible from the Feature C cairn and is 0.3 m long, 0.09 m wide and 0.07 m in thickness. The second branch coral fragment (Feature E) is visible from the first and is located 18.4 m to the north-northwest. This fragment is located on top of a naturally uplifted pahoehoe slab and is 0.13 m long, 0.09 m wide and 0.07 m in thickness.

Site 25572 is interpreted as a transportation route across the uneven pahoehoe lava based on its formal type and appearance. No cultural remains (except the coral fragments) were found in association with the site. The site is unaltered and in good condition.

Site 25573

Site 25573 is a lava blister located in at the base of a pahoehoe ridge at c. 33 ft elevation. The entrance is located along the southern base of the ridge, to the north of an area of uneven pahoehoe lava (Figure 74). The entrance is 0.45 m wide and 0.5 m in height. This opens onto an oval-shaped chamber that measures 6.7 m in length (east-west) and from 1.2 to 2.53 m wide. The floor throughout the majority of the blister is comprised of uneven bare lava with scattered cobbles with sloping roof fall present below the entrance. An area that has been cleared of surface stones is located in the eastern portion of the chamber, measuring 1.5 m long by 0.8 m wide. The surface of this cleared area contains scattered fragments of *Cypraea* shells. No other cultural remains were present. Site 25573 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25574

Site 25574 is a trail that extends across an area of uneven pahoehoe lava in the Land of Kealahou at elevations that range from 25 to 30 ft. This trail is situated 82.0 m south-southeast of the Site 245572 trail and may represent a southern extension of this trail. The trail (Feature A) is marked by four cairns (Features B-D and H) and three fragments of branch coral (Features E-G). The Feature A trail is 113.4 m in length, oriented in a north-northwest by south-southeast direction (see Figure 7). The Feature B cairn defines the southern end of the trail. It is comprised of five flat pahoehoe slabs stacked one on top of the other, placed on the surface of an outcrop (Figure 75). The cairn measures 0.59 m long (north-south), 0.37 m wide and 0.39 m in height.

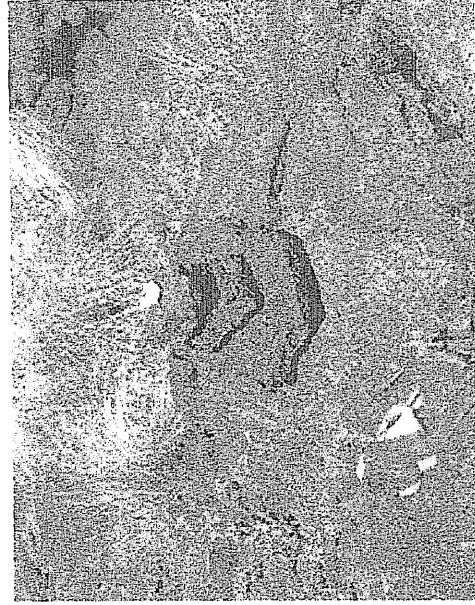


Figure 73. Site 25572, Feature B Cairn, view to east

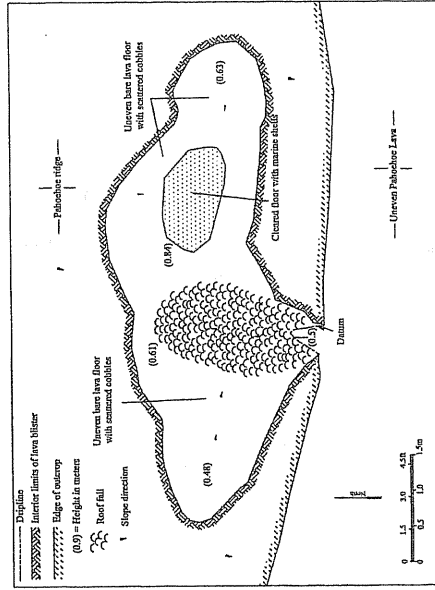


Figure 74. Site 25573 Plan Map



Figure 75. Site 25574, Feature B Cairn, view to east

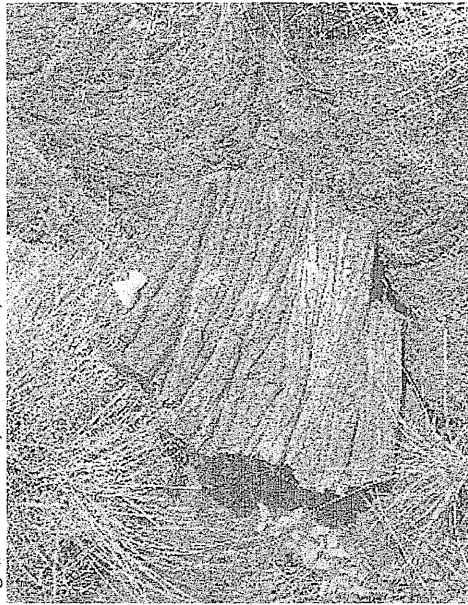


Figure 76. Site 25574, Feature H Cairn, view to east

The Feature C cairn is visible from Feature B and is located 25.2 m to the north-northwest. This feature is comprised of four flat pahoehoe slabs stacked one on top of the other. It measures 0.24 m long (northeast by southwest), 0.18 m wide and 0.31 m in height. The Feature D cairn is situated 17.6 m north-northwest of Feature C. It consists of three subangular basalt cobbles placed on an outcrop, measuring 0.35 m long (north-south), 0.2 m wide and 0.23 m in height. The Feature E branch coral fragment is located 18.0 m west-northwest of Feature D. The coral is readily visible from the Feature D cairn and is 0.08 m long, 0.05 m wide and 0.06 m in thickness. The Feature F branch coral fragment is visible from the first and is located 16.6 m to the north-northwest, measuring 0.12 m long, 0.1 m wide and 0.07 m thick. The Feature G coral fragment is located 17.4 m north-northwest of Feature F and is 0.11 m long, 0.09 m wide and 0.07 m in thickness. The Feature H cairn marks the northern end of this trail section. It is located 12.7 m north-northwest of Feature G and is comprised of a slab positioned vertically on the lava surface with a small fragment of branch coral placed on top. The slab is 0.4 m long, 0.29 m wide and 0.43 m in height (Figure 76).

Site 25574 is interpreted as a transportation route across the uneven pahoehoe lava based on its formal type and appearance. No cultural remains (except the coral fragments) were found in association with the site. The site is unaltered and in good condition.

Site 25575

Site 25575 is a cairn located in an area of uneven pahoehoe lava at c. 30 ft elevation in the Land of Kealahou, 80.0 m southwest of the southern end of the Site 25574 trail. The cairn appears to have collapsed as it is comprised of roughly stacked pahoehoe slabs placed on the bare pahoehoe lava. The cairn is 0.59 m in length (northwest by southeast), 0.55 m wide and 0.52 m in height (Figure 77). No cultural remains were found in association with the cairn. Site 25575 is interpreted as a marker based on its formal type and appearance. It is unaltered and in poor condition.

Site 25576

Site 25576 is a cairn located in an area of relatively level pahoehoe lava at c. 23 ft elevation in the Land of Kealahou, 100.0 m west-northwest of the Site 25575 cairn. The cairn is comprised of roughly stacked and piled flat pahoehoe slabs and subangular cobbles, encompassing an area 0.43 m long (north-south), 0.59 m wide and 0.24 m in height (Figure 78). No cultural remains were found in association with the cairn. Site 25576 is interpreted as a marker based on its formal type and appearance. It is unaltered and in poor condition.

Site 25577

Site 25577 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 23 ft elevation. The cairn is comprised of seven roughly stacked and leaning pahoehoe slabs encompassing an area 0.46 m long (east-west), 0.33 m wide and 0.52 m in height (Figure 79). No cultural remains were found in association with the cairn. Site 25577 is interpreted as a marker based on its formal type and appearance. It is unaltered and in fair condition.

Site 25578

Site 25578 is a lava blister situated in an area of uneven pahoehoe lava in the Land of Kealahou at c. 21 ft elevation, 66.0 m west-northwest of the Site 25577 cairn. The blister is comprised of an irregularly-shaped vertical hole in the lava that measures 4.05 m long (east-northeast by west-southwest), 0.45 to 2.0 m wide and 1.6 m in depth (Figure 80). The interior of the blister is oval in shape and is 6.5 m long (east-west) and 4.1 m wide, with ceiling heights that range from 0.65 to 1.35 m. There is a rough pile of roof fall located below the entrance that ranges in height from 0.3 to 0.4 m above the floor of the blister.

The floor of the blister consists of level coarse sand and coral gravel that was likely deposited during a storm surge episode. There is an area of marine shells (*Callama* sp. and *Nerita picea*) located on the



Figure 77. Site 25575 Cairn, view to east.

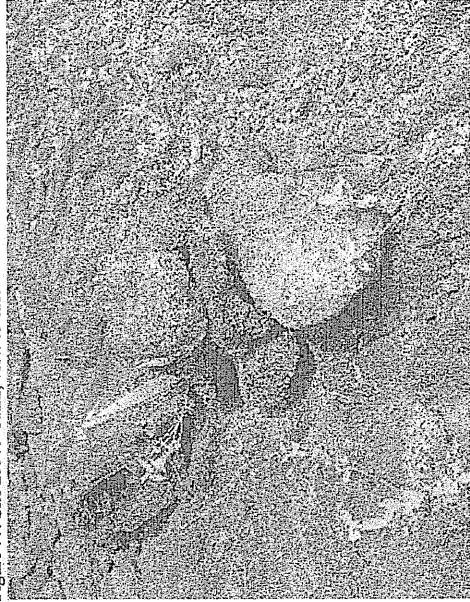


Figure 78. Site 25576 Cairn, view to east.



Figure 79. Site 25577 Cairn, view to east.

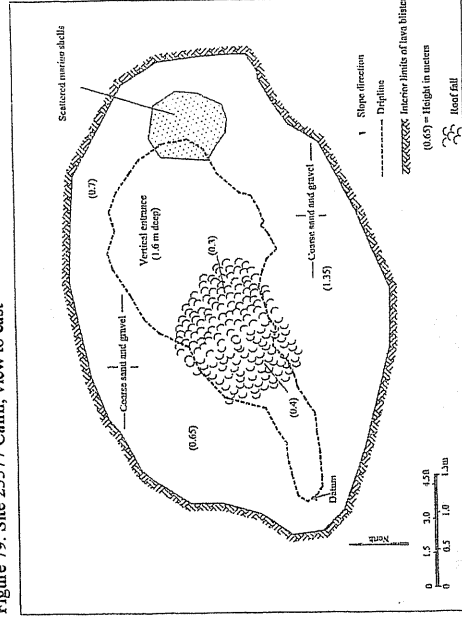


Figure 80. Site 25578 Plan Map

floor in the eastern portion of the blister. Site 25578 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the marine shells. The site is unaltered and in good condition.

Site 25579

Site 25579 is a complex of two features located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 21 ft elevation, 38.0 m northwest of Site 25578 cairn. The features consist of a crude enclosure remnant (Feature A) and a cairn (Feature B) located in an area 16.0 m long (northeast by southwest) and 5.0 m wide (Figure 87). The Feature A enclosure is located at the southwestern end of the site. This feature is completely collapsed and potentially has been impacted by storm surge activity. It is roughly oval in shape with gaps present along the northeast and northwest sides. The feature encompasses an area 5.8 m long (northeast by southwest) and 3.1 m wide, with low piled walls that range in width from 0.4 to 1.8 m wide and 0.13 to 0.37 m in height. The interior of the enclosure is comprised of level pahoehoe lava with no soil present. A concentration of scattered marine shells (*Cypraea* sp. and *Callina* sp.) and waterworn coral pebbles are present in the interior southern end of the feature.

The Feature B cairn is located 8.5 m north-northwest of Feature A built on the surface of an uneven pahoehoe outcrop. The feature is roughly oval in shape and is 1.65 m long (east-west), 1.3 m wide and from 0.6 to 0.63 m in height. It is built of roughly stacked and piled pahoehoe slabs and subangular basalt cobbles and small boulders. A waterworn basalt cobble is present along the southeastern side of the feature. The interior of the cairn has collapsed evidencing an irregular depression that is 0.63 m long (east-west), 0.41 m wide and 0.23 m deep. No cultural remains were found in association with the cairn.

The Feature A enclosure potentially represents the remnant of a permanent habitation foundation, based primarily on its overall area (29.5 sq m). The Feature B cairn is interpreted as a marker based on its formal type and appearance. The site is altered and in poor to fair condition.

Site 25580

Site 25580 is a complex of two features located on the side of a bare pahoehoe ridge with areas of drifting beach sand. The site is situated in the Land of Kealahou at c. 4 ft elevation. It is comprised of an enclosure (Feature A) and an alignment (Feature B) located in an 11.6 m long (northeast by southwest) and 6.8 m wide (Figure 82). The Feature A enclosure is located in the western portion of the site. The main portion of the enclosure is roughly oval in shape and measures 4.15 m long (north-south) and 3.05 m wide. The walls of the enclosure are comprised of stacked and piled waterworn basalt cobbles and small boulders and range in width from 0.35 to 0.5 m and in height from 0.25 to 0.55 m. There is no entrance into the interior. An alignment of cobbles and small boulders extends to the north from the northeast corner of the enclosure, measuring 2.75 m long, 0.3 to 0.4 m wide and 0.2 m in height. The interior of the enclosure is comprised of thin sand over bedrock. Fragments of waterworn coral and waterworn, sun-bleached marine shell fragments are located on the surface of the sand, potentially representing naturally deposited materials.

The Feature B alignment is located 6.5 m to the northeast of Feature A. The alignment is linear and is comprised of one course of waterworn cobbles and small boulders, measuring 3.4 m long (northwest by south-southeast), 0.25 to 0.3 m wide and 0.5 m in height. No cultural remains were found in association with the alignment.

Site 25580 is interpreted as a possible temporary habitation site. The Feature A enclosure may have served as a temporary habitation shelter based on its formal type, small area (12.6 sq m) and informal construction (stacked and piled walls). The Feature B alignment likely served in association with Feature A due to its close proximity. The site is unaltered and in poor condition.

Site 25581

Site 25851 consists of a concentration of cultural remains located in a c. 0.5 by 0.5 m area in an area of bare uneven pahoehoe lava in the Land of Kealahou at c. 12 ft elevation. The materials consist of a

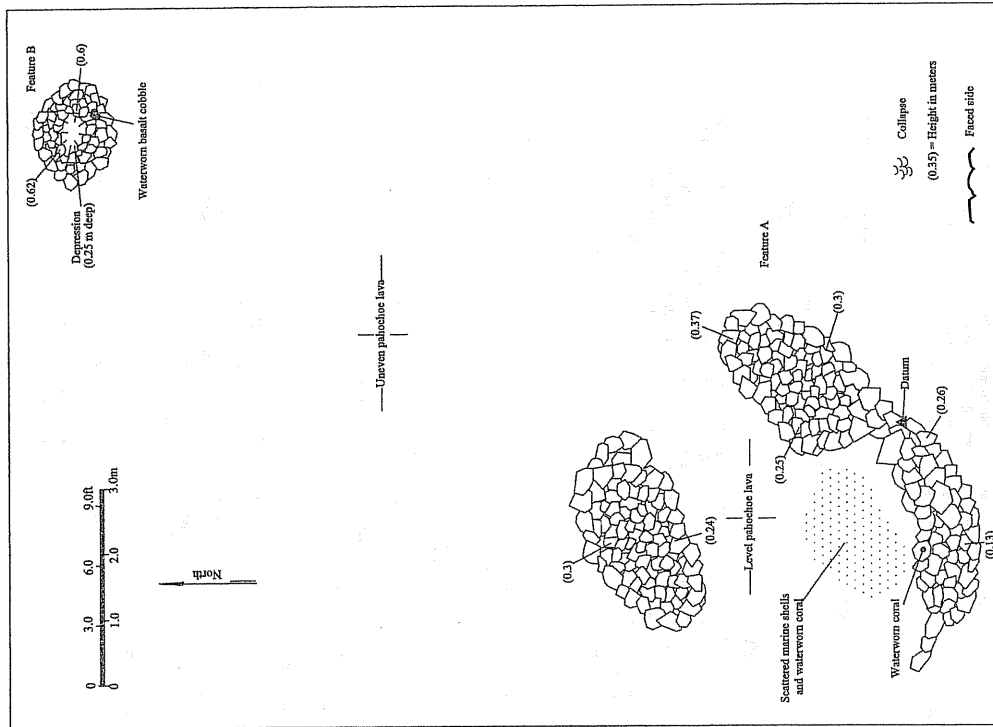


Figure 81. Site 25579 Plan Map

large *Cellana* sp. shell scraper, a coral abradar fragment, a volcanic glass flake, two *kukui* nut shells, a bird bone pick, two waterworn basalt pebbles, a possible basalt abradar and four fragments of plastic (*Figure 83*). This site is located 20.0 m south of Site 1887 and it is possible that these cultural remains may be associated with the site. Alternatively it is possible that these remains represent materials looted from a site in the area. The site is unaltered and in good condition and is assigned an indeterminate function.

Site 25582

Site 25582 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 19 ft elevation, 60.0 m east of Site 1887. The cairn is comprised of three subangular basalt cobbles stacked one on top of the other (*Figure 84*). The cairn measures 0.47 m long (north-south), 0.39 m wide and 0.28 m in height. No cultural remains were found in association with the cairn. Site 25582 is interpreted as a marker based on its formal type and appearance. It is unaltered and in poor condition.

Site 25583

Site 25583 is a terrace located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 19 ft elevation. The terrace is built against the northern side of a raised outcrop and is roughly oval in shape with overall dimensions of 3.2 m long (east-west) and 2.7 m wide (*Figure 85*). The sides of the structure have collapsed in all directions, with the northern downslope side ranging in height from 0.4 to 0.75 m and the southern side averaging 0.2 m in height above the surface of the outcrop. The central portion of the surface is comprised of relatively level cobble, pebble and slab pavement. A crude pile of blocky pahoehoe small boulders are located adjacent to the terrace to the west. The pile is 2.6 m long (north-northwest by south-southeast), 0.35 to 1.0 m wide and 0.4 m in height. No cultural remains were present on the surface of the site.

A 1.0 by 1.0 m test unit (TU-1) was excavated into the center of the terrace, revealing a single layer over bedrock (see *Figure 85*). Layer 1 consisted of 0.17 to 0.25 m of loosely packed cobbles, pebbles and small boulders. Cultural remains from Layer 1 consisted of two waterworn coral abraders (#1 – 48.0mm long, 28.0mm wide, 16.4mm thick, 16.2g; #2 – 77.3mm long, 37.9mm wide, 31.7mm thick, 86.2g), marine shells (*Cypraea* sp. [n=10, 16.2g], *Littoraria piniata* [n=2, 1.1g], *Nerita picea* [n=1, 0.6g], *Cellana* sp. [n=1, 0.2g], *Phaeoaculepus gravicosata* [n=1, 0.1g], *Drupa* sp. [n=11, 15.6g], *Isogammarus parva* [n=13, 2.0g], unidentified marine shell [n=2, 0.5g]), *Echinoid* body fragments (n=495, 64.4g), *Echinoid* spine fragments (n=195, 17.6g), waterworn coral (n=54, 1,930.1g), *Cristateca* body fragments (n=39, 3.1g), fish bones (n=307, 22.5g), and 11 charcoal fragments (0.8g).

Site 25583 is interpreted as a temporary habitation structure. Despite the presence of the paved surface, its small area (8.6 sq m) and the cultural remains present suggest a temporary habitation function. The site is unaltered and in fair condition.

Site 25584

Site 25584 is a stone alignment situated in an area of relatively level pahoehoe lava in the Land of Kealahou at c. 29 ft elevation. The alignment is comprised of a single course of small, pahoehoe slabs aligned in an irregular configuration that is 3.39 m long (east-west) and 2.2 m wide (*Figure 86*). The individual stones range in length from 0.19 to 0.67 m, in width from 0.08 to 0.35 m and in thickness from 0.09 to 0.17 m. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25585

Site 25585 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 27 ft elevation, 32.0 m south-southwest of Site 25584. The cairn is comprised of vertical slab that is supported by small cobbles placed along each side (*Figure 87*). The cairn measures 0.52 m long (northeast-southwest), 0.3 m wide and 0.55 m in height. No cultural remains were found in association with the cairn. Site 25585 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

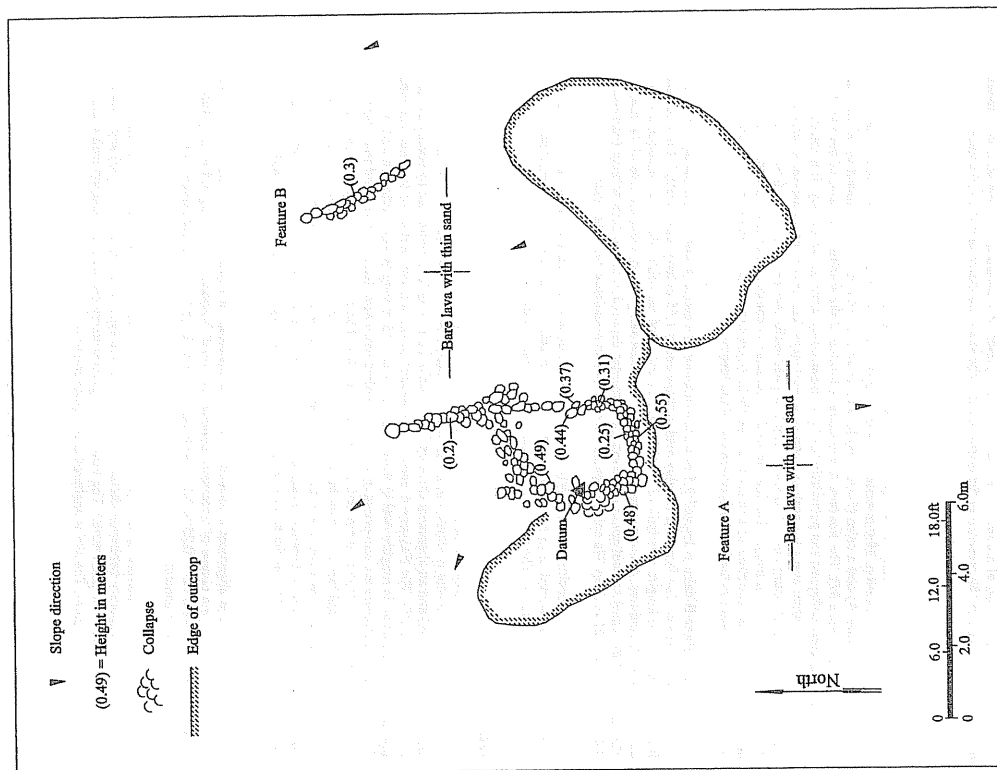


Figure 82. Site 25580 Plan Map

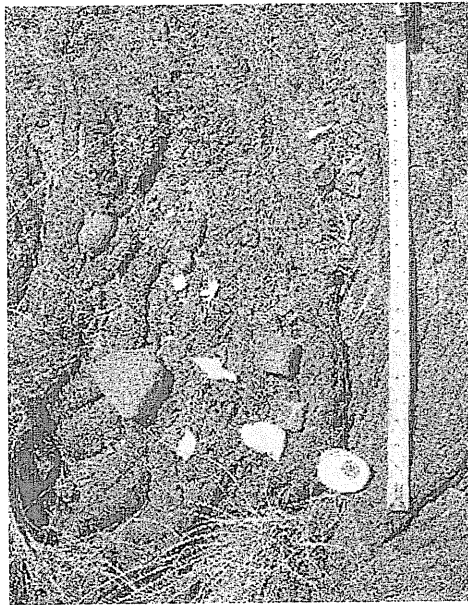


Figure 83. Site 25581 Artifact Scatter, view to north



Figure 84. Site 25582 Cairn, view to west

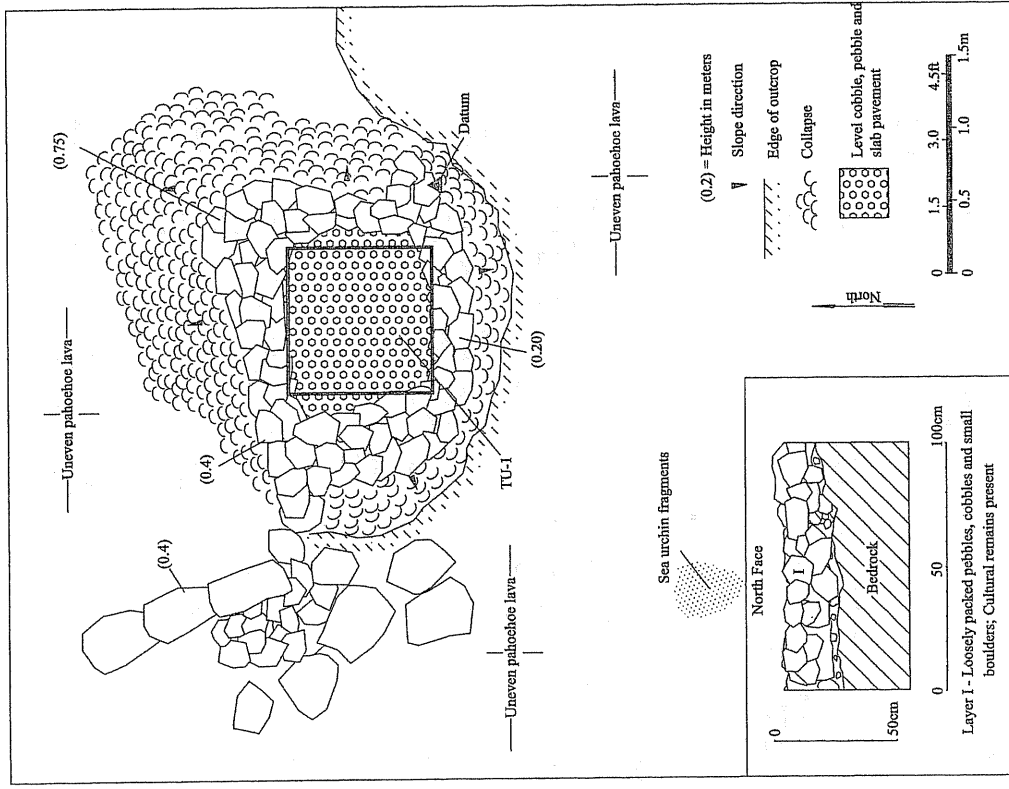


Figure 85. Site 25583 Plan Map and TU-1 North face Profile

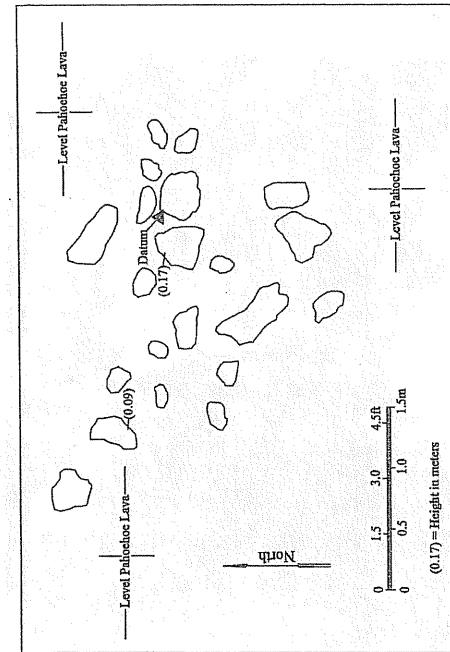


Figure 86. Site 25584 Plan Map

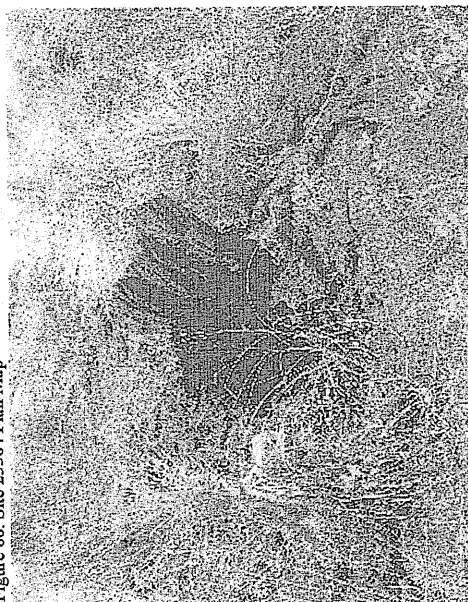


Figure 87. Site 25585 Cairn, view to east

Site 25586

Site 25586 is a lava blister located in an area of uneven pahohoe lava in the Land of Kealahou at c. 26 ft elevation 75.0 m west of Site 25585. The entrance to the blister is comprised of an oval-shaped, vertical hole that is 3.06 m long (north-south), 21.5 m wide and 2.9 m in depth below the surrounding ground surface (Figure 88). This opens onto an oval-shaped chamber that measures 8.2 m long (north-south) and 6.1 m wide, with ceiling heights that range from 0.7 to 1.2 m. The dripline height ranges from 1.9 to 2.15 m. There is a roughly oval-shaped piled cobble and boulder mound located beneath the entrance that facilitated access into the interior. The mound is 2.65 m long (northwest by southeast), 2.2 m wide and from 0.85 to 1.0 m in height and does not appear to be roof fall, but rather a crudely constructed feature.

The floor in the blister is comprised of bare lava with no cultural remains present. There is a raised ledge present along the western side of the blister that is 2.9 m long (north-south), 1.5 m wide and 0.75 m in height above the floor of the blister. There is recessed area beneath the ledge in which numerous goat bones are present.

Site 25586 is interpreted as a possible temporary habitation shelter. Though no cultural remains were noted at the site, the stone mound indicates that the blister was utilized. The site is unaltered and in good condition.

Site 25587

Site 25587 is a lava blister located in an area of uneven pahohoe lava in the Land of Kealahou at c. 19 ft elevation. The entrance into the blister is through an irregularly-shaped vertical hole that measures 1.8 m in length (north-south), 0.25 to 1.4 m wide and 0.95 m in depth below the surrounding ground surface (Figure 89). This opens onto an oval-shaped chamber that is 3.6 m long (northeast by southwest) and from 1.75 to 3.2 m wide. The floor of the blister consists of bare lava and the ceiling heights range from 0.51 to 0.95 m. Two waterworn basalt cobbles are present on the floor of the blister in the southern portion.

There is a crude pile of cobbles and small boulders located directly below the entrance that is 0.52 to 0.55 m in height above the floor of the blister. This pile measures 1.85 m long (northeast by southwest) and 1.45 m wide. A 1.0 by 1.0 m test unit (TU-10) was excavated into the center of the pile, revealing a single stone deposit over bedrock (see Figure 89). Layer I consisted of 0.45 to 0.59 m of tightly packed cobbles and small boulders. No cultural remains were present in Layer I.

Site 25587 is interpreted as a possible temporary habitation shelter based on its formal type and on the presence of the waterworn stones. It is likely that the stone pile below the entrance was used as a step to facilitate access into the interior. The site is unaltered and in good condition.

Site 25588

Site 25588 is a complex of five features located in area of uneven pahohoe lava at c. 21 ft elevation. The features are comprised of an overhang (Feature A) and four cairns (Features B-E) located in an area 11.3 m long (northwest by southeast) and 11.0 m wide (Figure 90). The Feature A overhang is located in the southeastern portion of the site, situated at the base of a pahohoe ridge. The entrance to the overhang is 5.7 m long (northeast by southwest) and 1.0 m in height. The interior is irregularly-shaped and is 5.7 m long (northeast by southwest) and from 0.73 to 2.8 m wide. The floor of the overhang is comprised of bare lava with scattered roof fall. The ceiling height averages 1.5 m inside the dipline with the ceiling sloping down to the east to heights of 0.3 to 0.4 m. Scattered *Cypraea sp.* and *Catina sp.* shells, fishbone, waterworn coral and pockets of ash are present in the lower portion of the interior.

There is a raised shelf that extends across the central portion of the overhang in a northeast by southwest direction. The floor of the shelf is 0.9 m in height above the main floor of the overhang, with the interior measuring 4.7 m long (northeast by southwest) and from 0.3 to 1.8 m wide. The floor of the shelf is bare lava and the ceiling height averages 0.6 m.

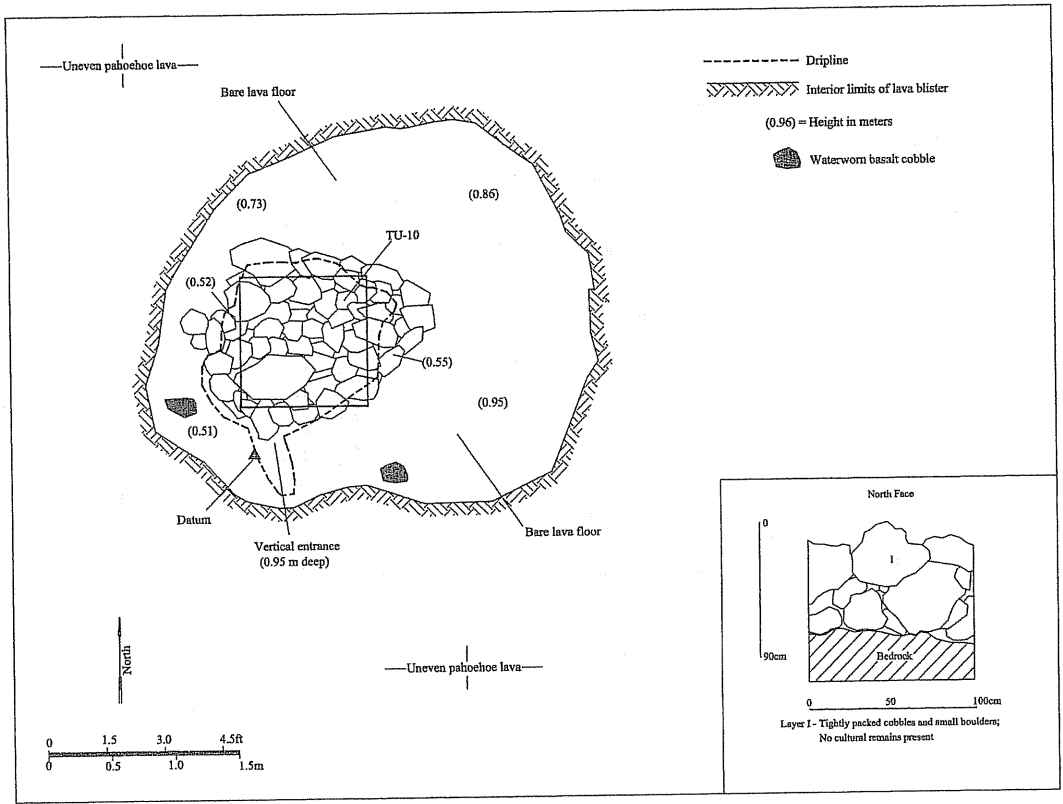


Figure 89. Site 25587 Plan Map and TU-10 North Face Profile

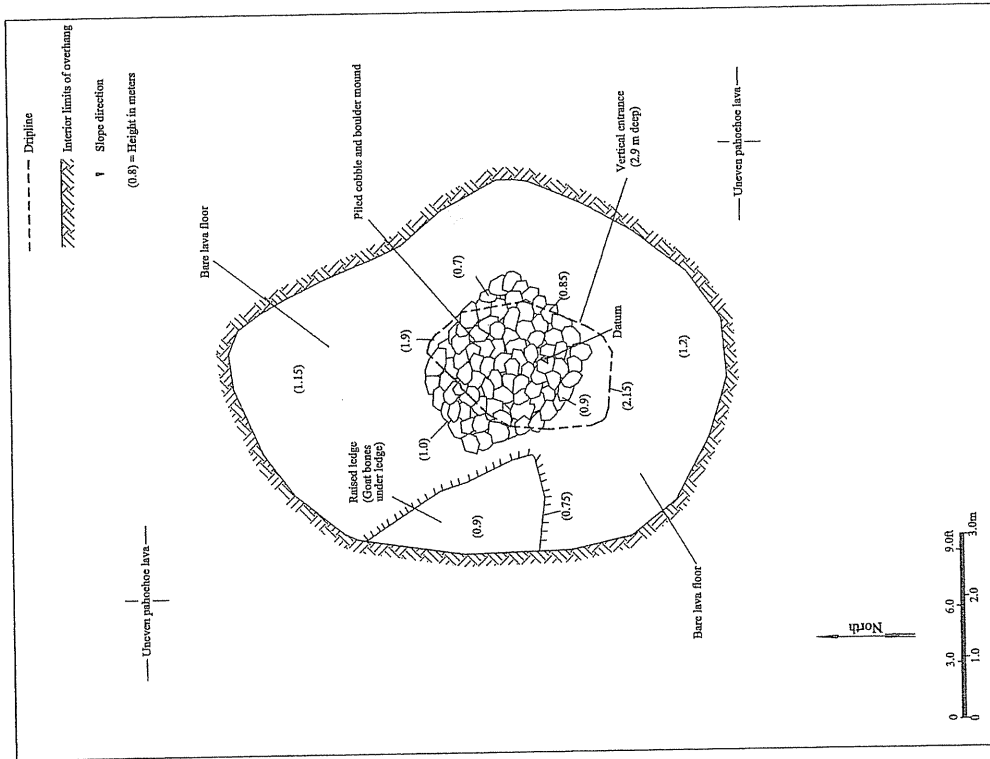


Figure 88. Site 25586 Plan Map

There are two walls associated with the overhang; one located to the southwest and one to the north. The southwest wall originates within the southern portion of the overhang and extends 2.85 m to the north. It is built of stacked subangular basalt cobbles and small boulders, collapsed along the western side. The wall is 0.9 m wide and 0.7 m in height. The wall to the north originates against the base of the pahoehoe ridge, 1.7 m north of the north end of the drip line to overhang. The wall extends 2.4 m long to the west, then angles to the south-southwest for 1.95 m. It is constructed of stacked and piled cobbles and small boulders, ranging in width from 0.9 to 1.3 m and 0.65 to 0.8 m in height. The wall is collapsed along the north side and along the interior and exterior west sides.

The Feature B cairn is located 1.2 m northwest of the northern wall at Feature A. The cairn is built against the side of a domed pahoehoe outcrop and is triangular in shape, measuring 2.4 m long (north-south, from 0.9 to 1.5 m wide and 0.5 m in height. It is constructed of stacked and piled subangular basalt cobbles and small boulders with no cultural remains present.

The Feature C cairn is located 3.2 m southwest of Feature B. It is roughly oval in shape and is constructed of stacked and piled subangular basalt cobbles and small boulders. It is 1.6 m long (northwest by southeast), 1.3 m wide and 0.35 m in height. No cultural remains were present on the surface. A 1.0 by 1.0 m test unit (TU-9) was excavated into the center of the feature, revealing a single deposit over bedrock (see Figure 90). Layer 1 consisted of 0.12 to 0.28 m of loosely packed cobbles, pebbles and small boulders. No cultural remains were present.

The Feature D cairn is situated 2.4 m southwest of Feature C. This cairn is oval-shaped and is 1.6 m long (northwest by southeast), 1.3 m wide and 0.55 to 0.75 m in height. The feature is constructed of stacked and piled subangular basalt cobbles and small boulders with no cultural remains present. The Feature E cairn is located 2.1 m southeast of Feature D. It is oval-shaped and is built of stacked subangular basalt cobbles and small boulders. It measures 1.05 m long (northwest by southeast), 0.78 m wide and 0.6 to 0.7 m in height. No cultural remains were present.

The Feature A overhang is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The Feature B-E cairns potentially functioned as markers based on their formal type and appearance. The site is unaltered and in good condition.

Site 25589

Site 25589 is a crude pavement located in a low area between two pahoehoe ridges in the Land of Kēalahoe at c. 19 ft elevation, 2.0 m southwest of Site 25588. The paved area is irregular in shape is comprised of relatively level cobbles and small boulders. It measures 3.55 m in length (east-west) and from 0.5 to 2.25 m wide (Figure 91). The sides of the pavement are level with the surrounding pahoehoe lava. A fragment of waterworn coral and two waterworn basalt cobbles are present on the surface.

A 1.0 by 1.0 m test unit (TU-2) was excavated into the surface of the pavement revealing a single layer over bedrock (see Figure 91). Layer 1 consisted of 0.13 to 0.4 m of tightly packed cobbles, small boulders and pebbles. Cultural remains from Layer 1 consisted one fire cracked basalt cobble fragment (28.4g), three volcanic glass flakes (0.6g), marine shells (*Nerita picea* [n=7, 1.2g], *Platystrophia granulata* [n=2, 0.1g], *Dryas* sp. [n=4, 0.7g], *Spondylus* sp. [n=1, 1.0g], unidentified marine shells [n=22, 33.9g]), urchin body fragments (n=147, 19.7g), urchin spine fragments (n=11, 2.1g), waterworn coral (n=28, 727.5g), *Crustaceae* body fragments (n=51, 14.4g), fish bones (n=58, 2.8g), non-human mammal bone (n=1, 0.8g), and 110 charcoal fragments (14.7g).

Site 25589 is interpreted as a possible temporary habitation site. This is based primarily on its small area (7.5 sq m) and on the presence of the cultural remains. The site is unaltered and in fair condition.

Site 25590

Site 25590 is a complex of two overhangs located in along the base of a large U-shaped indentation in a pahoehoe ridge in the Land of Kēalahoe at c. 24 ft elevation. The features are located in an area

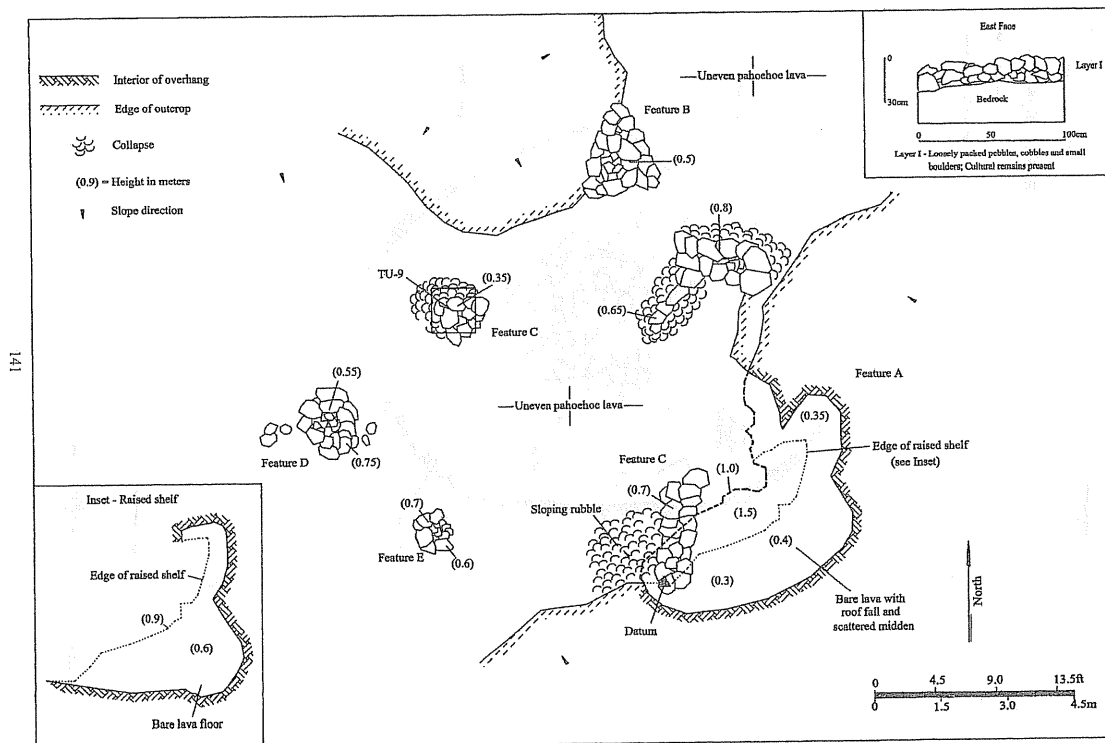


Figure 90. Site 25588 Plan Map and TU-9 East Face Profile

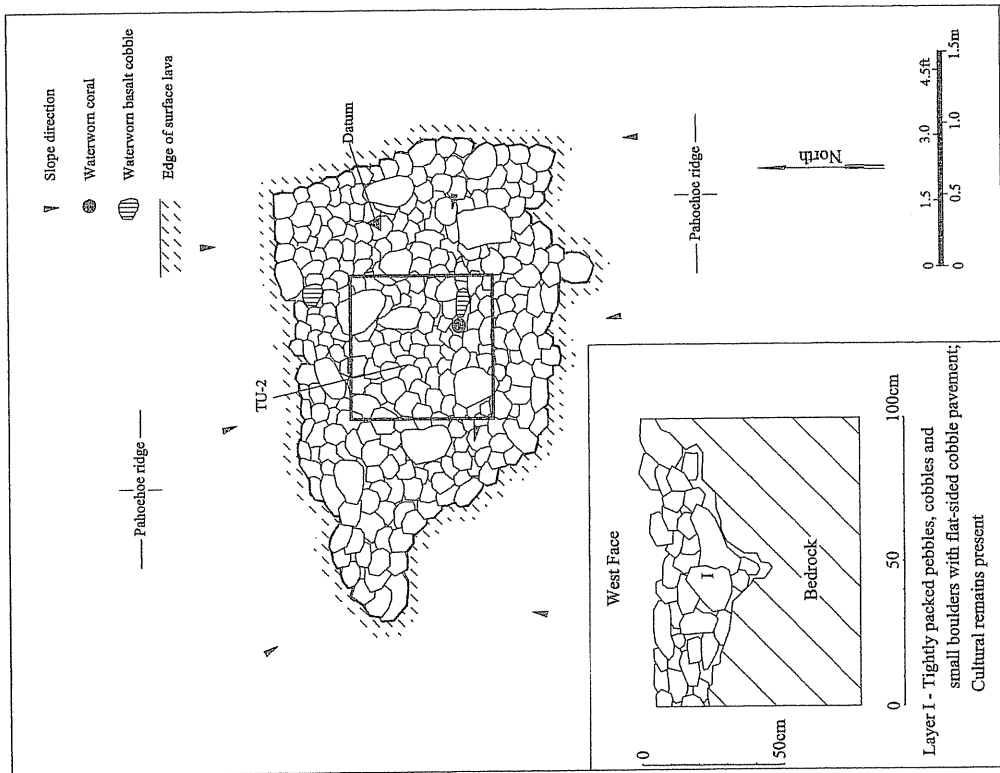


Figure 91. Site 25589 Plan Map and TU-2 West face Profile

25.2 m long (east-northeast by west-southwest) and 17.8 m wide (Figure 92). The Feature A overhang is located at the eastern end of the site. The entrance to the feature is 5.8 m in length (north-northeast by south-southwest) and from 1.2 to 1.36 m in height. This opens onto an irregularly-shaped chamber that is 8.8 m in length (north-south) and from 1.62 to 3.2 m wide. The floor in the overhang is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.92 to 1.75 m. There is a concentration of marine shells (*Callinaxa* sp. and *Nerita* sp.) located in the southern half of the interior with a fragment of waterworn coral located to the east and a waterworn basalt cobble located to the south.

The Feature B overhang is located 10.0 m southwest of Feature A. This overhang contains three entrances separated by the near vertical sides of the pahoehoe ridge. The northern entrance is 6.6 m long (north-south) and from 0.5 to 1.4 m in height. The central entrance is located 1.25 m southwest of the north entrance, measuring 2.0 m long (north-south) and 0.5 m high. The southern entrance is situated 2.05 m east of the central entrance. It measures 3.85 m long (northwest by southeast) and 0.7 m in height. These entrances open onto an irregularly-shaped chamber that is 18.2 m long (northwest by southeast) and from 1.15 to 5.2 m wide. The floor throughout this chamber is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.5 to 1.3 m.

There are four concentrations of marine shells present in Feature B, with three located in the northern portion and one in the southeastern portion. These concentrations are comprised of *Cypraea* sp., *Callinaxa* sp., *Nerita* sp. and *Isoegromma* sp.). Gourd fragments are located adjacent to the shell concentration in the southeastern portion of the feature. A concentration of *kukui* nut shells is present along the southwest wall of the overhang and scattered waterworn basalt cobbles are present in the northern portion. A small passage extends to the southeast from the south end of the main chamber. It is 1.7 m long, 0.52 to 0.73 m wide and 0.2 m in height. Scattered *kukui* nut shells are present at the entrance to the passage.

Site 25590 is interpreted as a complex of temporary habitation shelters. This is based on their formal feature type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25591

Site 25591 is a cairn located on top of an uneven, fractured pahoehoe pressure ridge in the Land of Kealahou at c. 25 ft elevation. The cairn consists of an angular basalt small boulder that has two small waterworn coral cobbles stacked on top of it. The boulders is 0.37 m long (east-west), 0.32 m wide and 0.19 m high, with the top of the stacked cobbles measuring 0.27 m in height above the surface of the ridge. Several additional angular cobbles are scattered around the cairn. The cairn is visible from a distance due to its location on the ridge. No cultural remains were present. Site 25591 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

Site 25592

Site 25592 is a low overhang located along the western side of a north-south trending ridge in the Land of Kealahou at c. 22 ft elevation. The entrance to the overhang is 1.4 m long (north-south) and 1.0 m in height (Figure 93). A cobble and small boulder wall is located outside the entrance to the west. The wall is collapsed along the western side and is 1.95 m in length (north-northeast by south-southwest). The intact portions of the wall are comprised of stacked and aligned stones, ranging in width from 0.2 to 0.35 m and in height from 0.45 to 0.92 m.

The interior of the overhang is irregular in shape with the main chamber measuring 5.1 m in length (north-south) and from 0.85 to 2.2 m wide. A small skylight opening is present in the ceiling of the main chamber at the south end. The floor in this chamber is comprised of bare lava with ceiling heights that range from 0.4 to 0.9 m. Two concentrations of goat bones are present in this chamber along the western side and a cluster of modern debris is present in the southeastern corner. This modern material is comprised of a blue plastic tarp, clothing, a tent and paper.

Small low passages extend to the north-northeast and south from the main chamber. The north-northeast passage is 2.0 m long, 0.75 to 0.95 m wide with ceiling heights that average 0.4 m. The southern

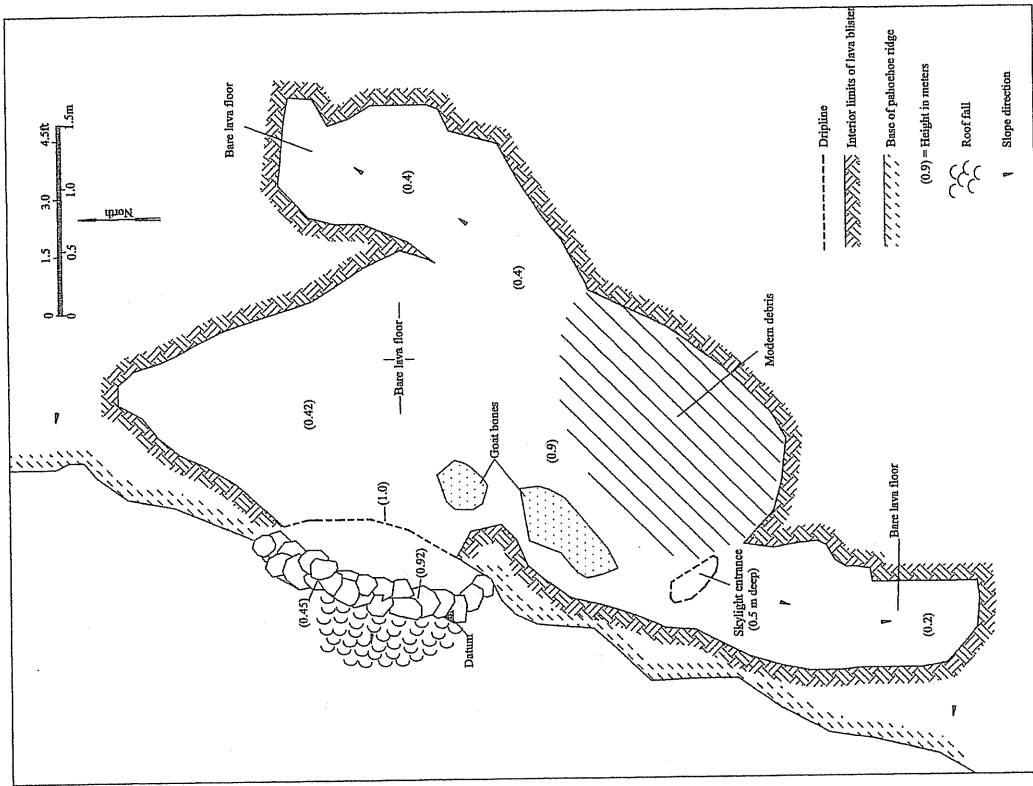


Figure 93. Site 25592 Plan Map

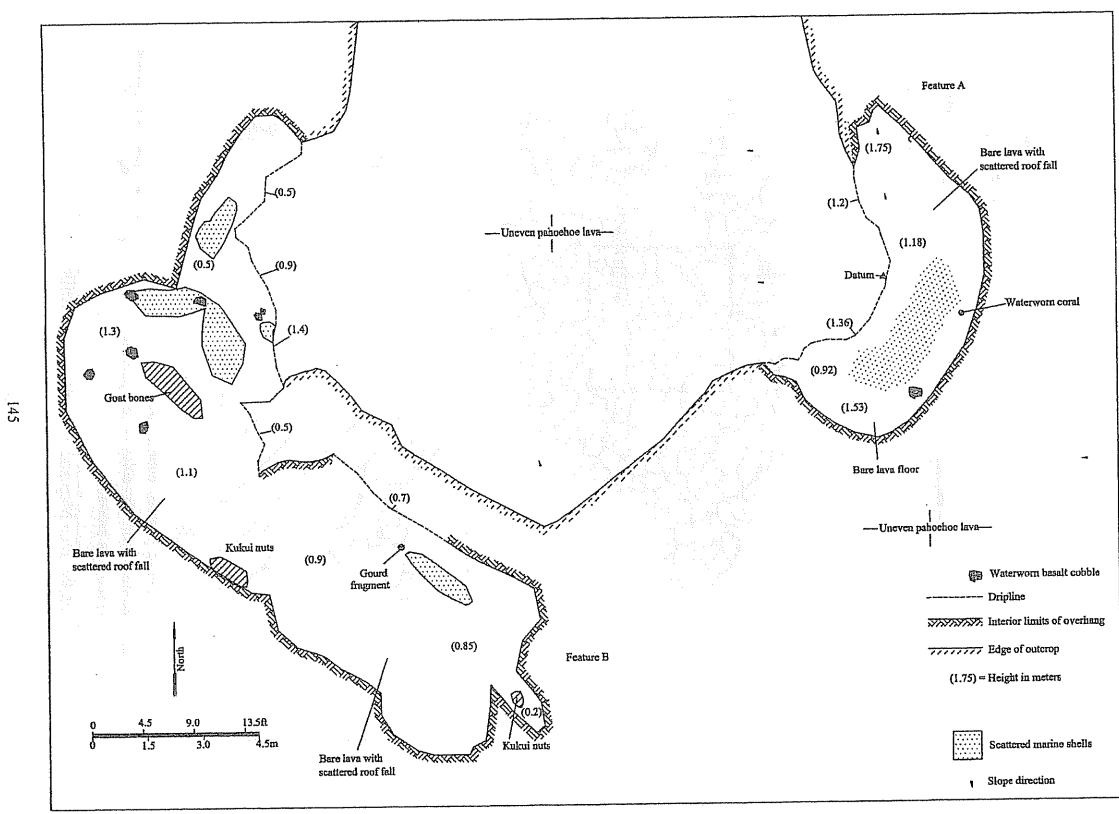


Figure 92. Site 25590 Plan Map

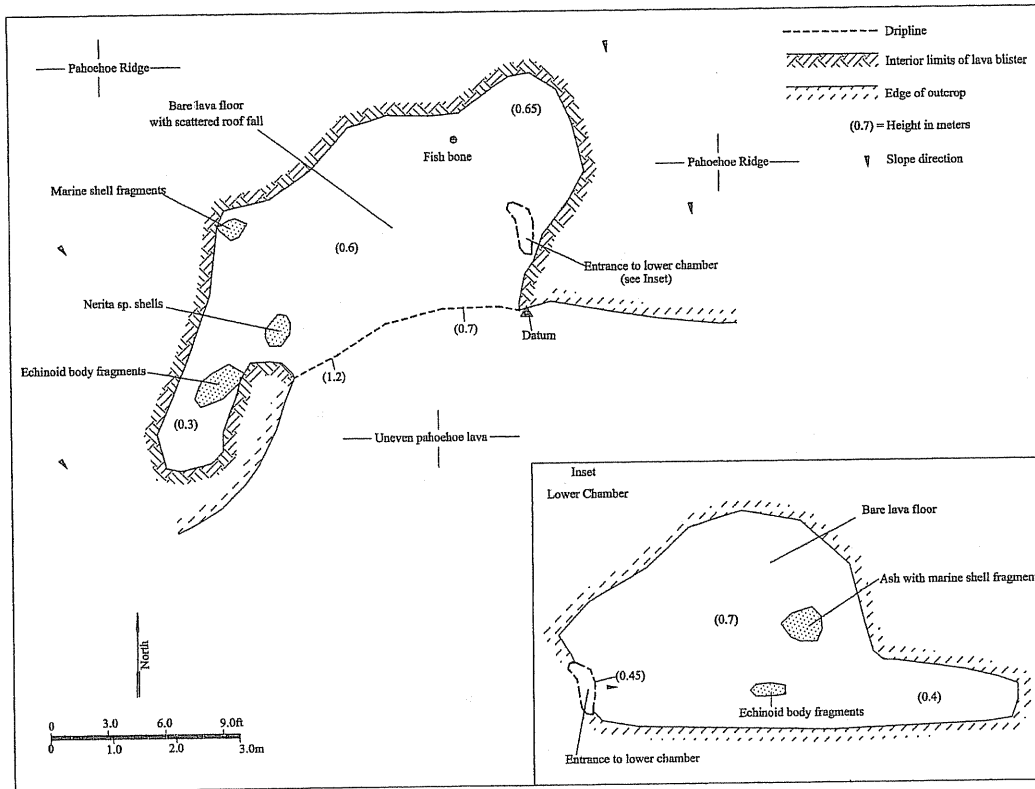


Figure 94. Site 25594 Plan Map

passage is 2.15 m long (north-south), 0.65 to 1.0 m wide with a ceiling height that averages 0.2 m. The floor in both of these passages is comprised of sloping bare lava that angles downward from the main chamber.

Site 25592 is interpreted as a possible prehistoric temporary habitation shelter based primarily on the presence of the stone wall that encloses the entrance. The modern material inside the overhang indicates it has also been recently used. The site is unaltered and in good condition.

Site 25593

Site 25593 is a midden scatter located in an area of level pahoehoe lava at c. 19 ft elevation in the Land of Kealahé. The midden is confined to an area bordered on the north, east and south by natural fissures in the lava and encompasses an area 9.5 m long (east-west) and 3.8 m wide. Subangular basalt cobbles and small boulders are scattered throughout the area, with some stone located within the natural fissures. The midden is comprised of waterworn coral pebbles and small cobbles and *Cypraea sp.* and *Ceallama sp.* shells. The site is interpreted as a probable temporary habitation site. The site is unaltered and in good condition.

Site 25594

Site 25594 is an overhang located along the base of a pahoehoe ridge in the Land of Kealahé at c. 23 ft elevation. The entrance to the overhang is located along the southern side of the ridge, measuring 3.75 m long (east-northeast by west-southwest) and from 0.7 to 1.2 m in height (Figure 94). This opens onto an irregularly-shaped chamber that is 8.5 m long (northeast by southwest) and from 0.92 to 3.7 m. The floor throughout the overhang is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.3 to 0.65 m. There is a concentration of urchin body fragments located in the southern portion of the overhang, with a cluster of *Nerita sp.* shells located 0.65 m to the north-northeast. A scatter of unidentified marine shell fragments is located against the northwest wall of the overhang and there is a fish bone located in the eastern portion.

The entrance to a lower chamber is located along the eastern side of the overhang. This entrance is 0.82 m long (north-south), 0.4 m wide and 0.45 m deep. It opens onto an irregularly-shaped chamber that is 4.7 to 6.9 m long (east-west), 0.95 to 3.4 m wide with a bare lava floor and ceiling heights that range from 0.4 to 0.7 m. A concentration of urchin body fragments is present along the southern wall of the lower chamber, with an ash concentration located 0.75 m to the north-northeast. A fragment of *Cypraea sp.* shell is present within the ash.

Site 25594 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25595

Site 25595 is a lava blister located in an area of uneven pahoehoe lava in the Land of Kealahé at c. 24 ft elevation. The entrance to the blister is along the southeast and southwest sides of a linear rubble filled sinkhole that is 7.3 m long (north-northeast by south-southwest), from 1.15 to 2.1 m wide and 1.6 m in depth below the surrounding ground surface (Figure 95). The dripline measures 3.1 m long north-west by southeast and 6.2 m long north-northeast by south-southwest and ranges in height from 1.0 to 1.4 m. This opens onto an irregularly-shaped chamber that is 13.2 m in length (northeast by southwest) and from 1.25 to 6.8 m wide. The floor throughout the blister is comprised of rough bare lava and the ceiling heights range from 0.15 to 1.4 m. A raised bedrock shelf extends along the rear east, south and southwest sides, ranging in height from 0.4 to 0.6 m above the floor of the main chamber.

There are three concentrations of *Cypraea sp.* and *Ceallama sp.* shell present on the floor in the southern portion of the blister, with a concentration of *Echinoid* body fragments present to the south against the base of the shelf. A fragment of waterworn coral is located to the east of the marine shell with several goat bones present to the north. A concentration of *Nerita picea* shells is located on the raised shelf in the eastern portion with a fragment of waterworn coral located to the south.

Site 25595 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains in the interior. The site is unaltered and in good condition.

Site 25596

Site 25596 is a small rectangular enclosure located on a pahoehoe knoll in the Land of Kealahou at c. 23 ft elevation. A natural fissure is located adjacent to the enclosure to the east. The enclosure measures 3.7 m in length (north-south) and 3.4 m wide with no apparent entrance into the interior (Figure 96). The walls of the feature have collapsed along the exterior north and east sides and along the interior north, east and west sides. Inset stacked and faced sections are however present along the exterior east, west and south side and along the interior north, south and east sides. These intact sections range in width from 0.45 to 0.62 m and in height from 0.17 to 0.4 m. There is a *kiawe* tree growing out of the center of the western wall. The interior of the enclosure is comprised of level bare lava with scattered sun-bleached unidentified marine shell fragments and waterworn coral pebbles.

Site 25596 is interpreted as the foundation for a permanent habitation structure. Although smaller than typical permanent habitation foundations (12.58 sq m), its formal type and substantial construction (faced sides) suggest it functioned in this capacity. The site is unaltered and in fair condition.

Site 25597

Site 25597 consists of the collapsed remnant of a C-shaped enclosure located on the crest of a pahoehoe knoll in the Land of Kealahou at c. 23 ft elevation. The enclosure is open to the west and measures 4.95 m long (north-south) and 3.65 m wide (Figure 97). The walls are generally collapsed rubble ranging in width from 0.85 to 1.3 m and in height from 0.28 to 0.56 m. Remnants of the original enclosure are however present, indicated by aligned vertical slabs situated along the interior eastern side. The interior of the enclosure is comprised of level pahoehoe lava with scattered cobbles, waterworn coral and unidentified sun-bleached marine shell fragments. Site 25597 is interpreted as the possible foundation for a permanent habitation structure. This is based on its formal type, substantial construction (vertical slabs) and area (18.06 sq m). The site is unaltered and in poor to fair condition.

Site 25598

Site 25598 is a lava blister located at the base of pahoehoe ridge in the Land of Kealahou at c. 26 ft elevation. The entrance to the blister is along the western side of the ridge and measures 0.4 to 1.65 m wide and 0.95 to 1.15 m in height (Figure 98). The area to the west of the entrance is comprised of uneven pahoehoe lava. The entrance opens onto an irregularly-shaped chamber that is 10.3 m in length (north-northeast by south-southwest) and from 0.79 to 4.1 m wide. The floor within the blister is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.2 to 1.1 m. There are sparse scatters of *Cypraea* sp. shells and unclut body fragments located within the entrance and just outside the blister to the west. Site 25598 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25599

Site 25599 is an overhang located along the eastern side of a low spot in an area of uneven pahoehoe lava in the Land of Kealahou at c. 23 ft elevation. The entrance to the overhang is 5.4 m in length (north-south) and from 0.4 to 1.6 m in height (Figure 99). This opens onto an irregularly-shaped chamber that is 1.2 to 5.4 m long (north-south) and from 0.95 to 2.95 m wide. The floor throughout the overhang is comprised of bare lava. A boulder is located beneath the dripline with a second boulder located outside the entrance to the northwest. A single waterworn basalt pebble is present adjacent to the first boulder to the west. No other cultural remains were noted at the site. Site 25599 is interpreted as a possible temporary habitation shelter based on its formal type and on the presence of the waterworn basalt pebble. The site is unaltered and in good condition.

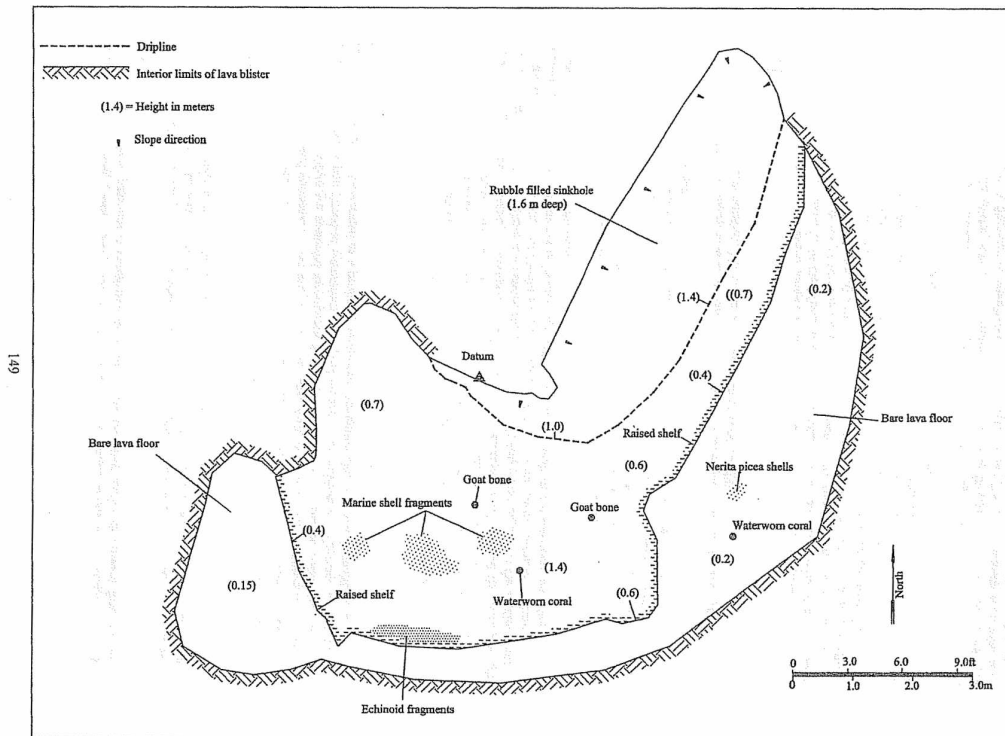


Figure 95. Site 25595 Plan Map

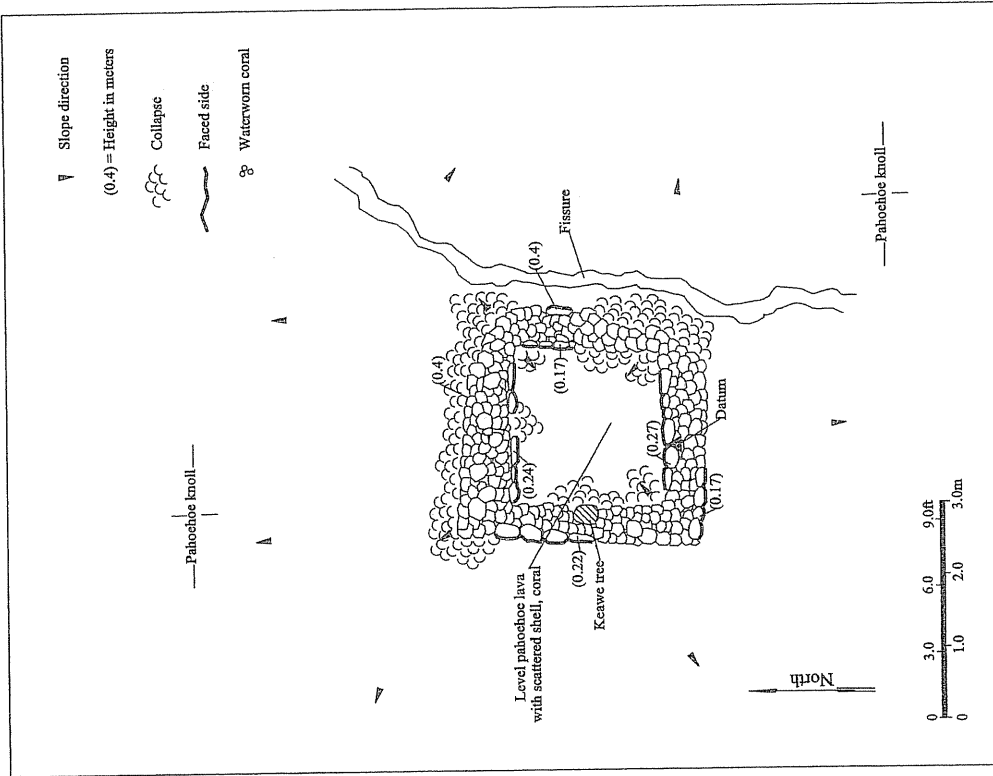


Figure 96. Site 25596 Plan Map

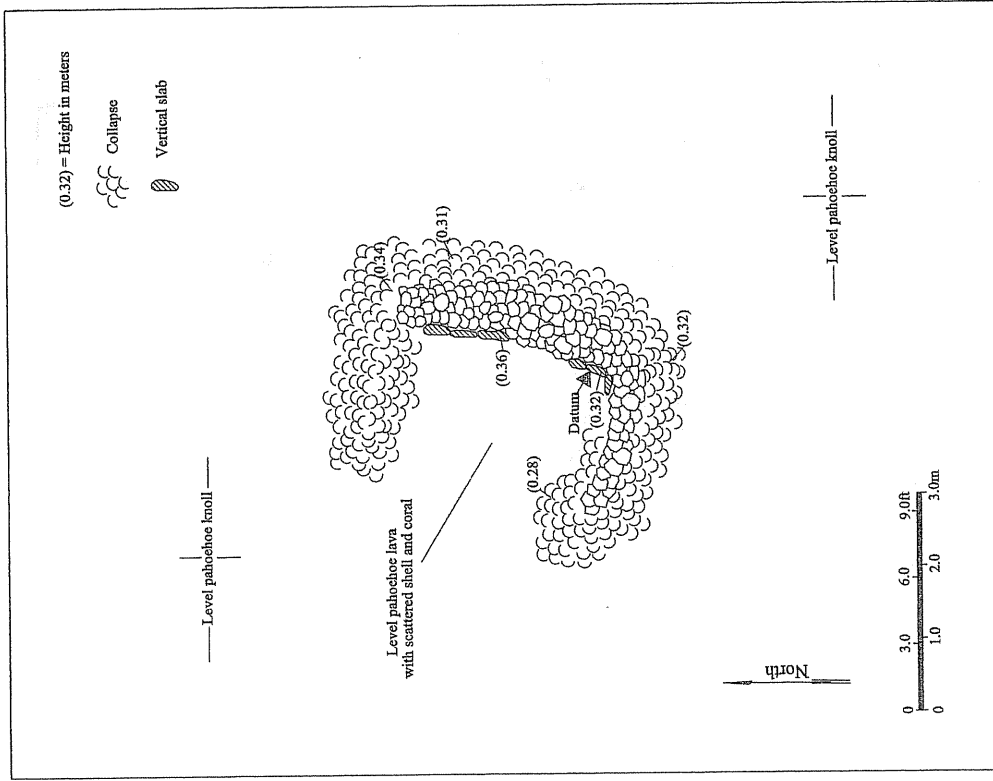
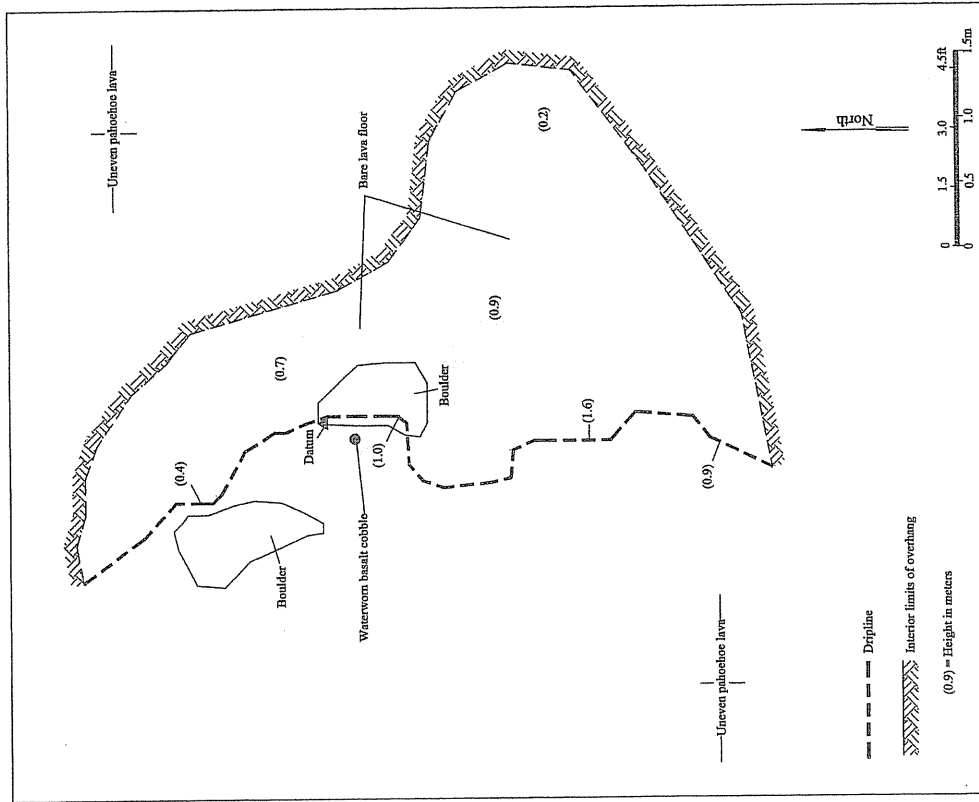
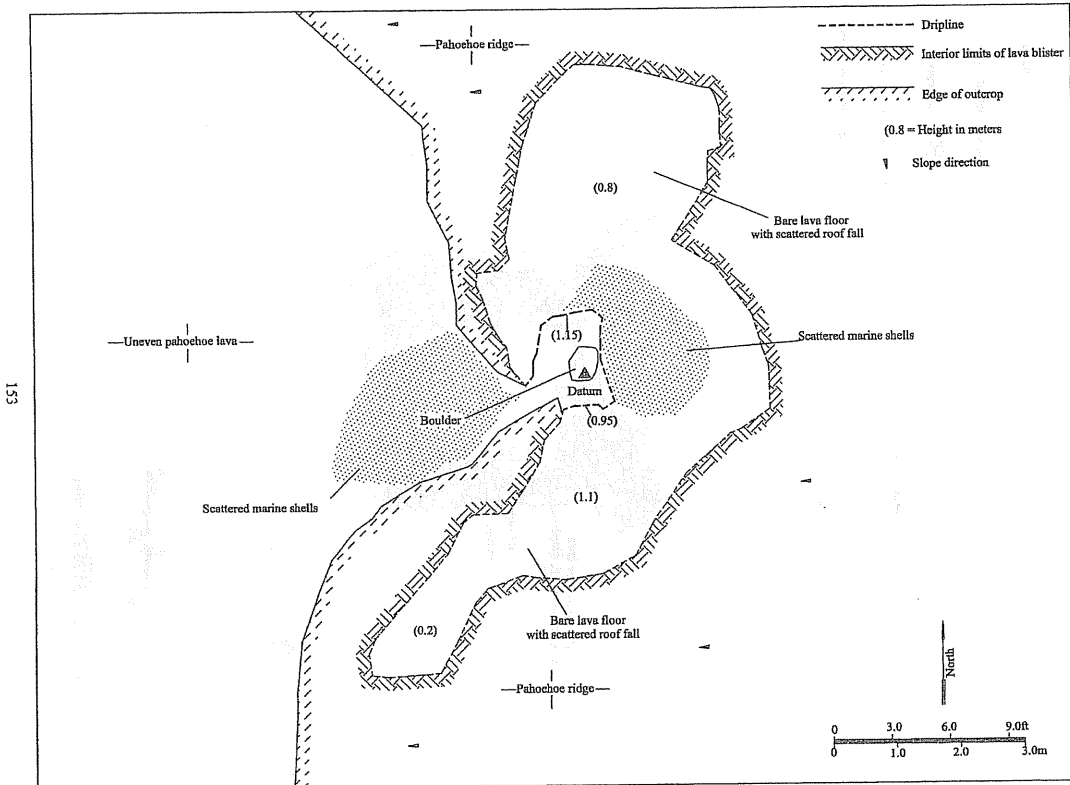


Figure 97. Site 25597 Plan Map



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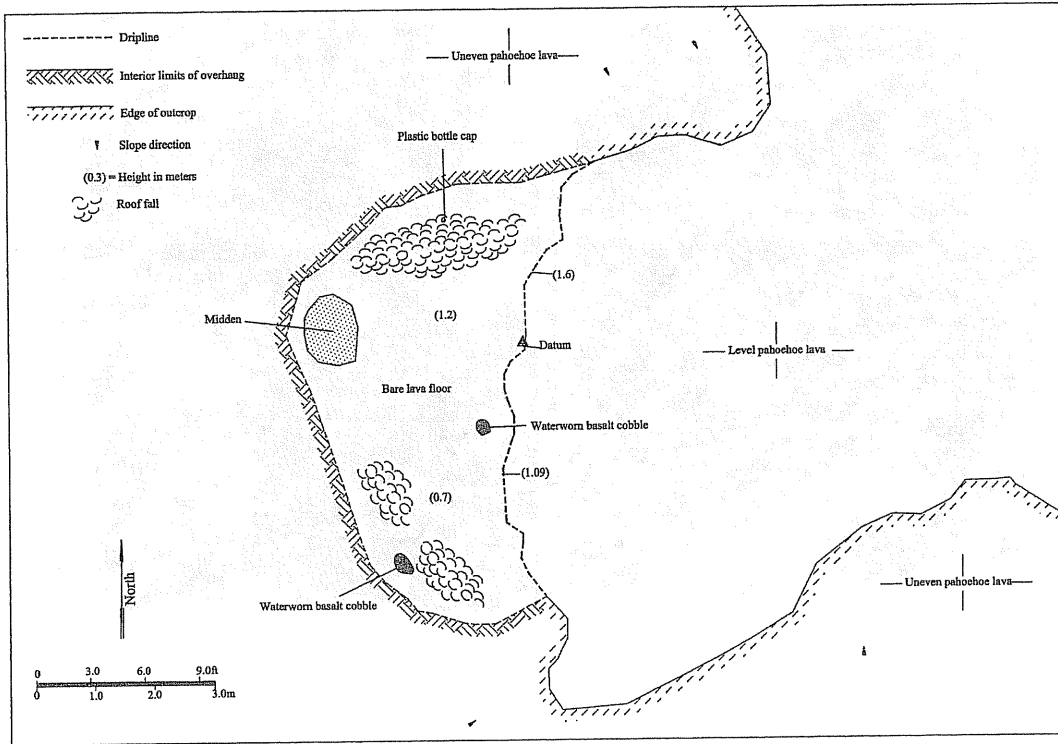


Figure 100. Site 25600 Plan Map

Site 25600

Site 25600 is an overhang located along the western side of a low spot in an area of uneven pahoehoe lava in the Land of Kealahou at c. 23 ft elevation, 42.0 m west-northwest of Site 25599. The entrance to the overhang is 7.15 m in length (north-south) and from 1.09 to 1.6 m in height (Figure 100). This opens onto an irregularly-shaped chamber that is 5.4 to 7.15 m long (north-south) and from 2.0 to 4.5 m wide. The ceiling heights range from 0.7 to 1.2 m. The floor inside the overhang is comprised of bare lava with areas of roof fall present along the north and south sides. A plastic bottle cap is present on the roof fall at the northern end of the overhang.

A concentration of *Cypraea* sp. and *Callina* sp. shells, waterworn coral pebbles, and ash is present along the western wall of the overhang potentially representing the remnant of a surface hearth. This area is 1.15 m long (north-south) by 0.9 m wide. Two waterworn basalt cobbles are also present; one in the southwestern portion of the interior and one situated to the west of the dripline. Site 25600 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25601

Site 25601 is an overhang located along the eastern side of a low spot in an area of uneven pahoehoe lava in the Land of Kealahou at c. 23 ft elevation, 19.5 m north of Site 25599. The entrance to the overhang is 9.9 m in length (northwest by southeast) and from 1.26 to 1.54 m in height (Figure 101). This opens onto an irregularly-shaped chamber that is 7.9 to 9.9 m long (northwest by southeast) and from 0.58 to 2.72 m wide. The floor inside the overhang is comprised of bare lava with the ceiling heights ranging from 0.34 to 1.4 m. A waterworn coral pebble in the northern end of the overhang, and there is an area of ash (c. 0.01 m thick) present along the northeastern interior wall. This ash area is 0.53 m long (north-south) and 0.43 m wide. No charcoal or cultural remains were present within the ash. Site 25601 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25602

Site 25602 is a trail that extends through an area of uneven pahoehoe lava in an inland-seaward direction in the Land of Kealahou at elevations that range from 23 to 25 ft. This trail is situated 27.5 m north of Site 25599 and 22.0 m north of Site 25600. The trail (Feature A) is marked by an alignment of ten stone cairns (Features B-K) and is 223.0 m in length, oriented in a roughly east-west direction (see Figure 7). The Feature B cairn defines the western end of the trail. It is comprised of a single pahoehoe slab placed on end and leaning against an outcrop. It is 0.24 m long (east-west), 0.22 m wide and 0.48 m in height.

The Feature C cairn is visible from Feature B and is located 40.3 m to the north-northeast. This feature is comprised of three subangular basalt cobbles stacked one on top of the other (Figure 102). This feature is 0.24 m long (northeast by southwest), 0.22 m wide and 0.48 m in height. The Feature D cairn is situated 24.0 m east of Feature C. It consists of eight pahoehoe slabs stacked on top of the next (Figure 103). It measures 0.39 m long (northeast by southwest), 0.3 m wide and 0.53 m in height. The Feature E cairn is located 13.7 m southeast of Feature D. This cairn consists of four flat pahoehoe slabs stacked one on top of the next and measuring 0.37 m long (north-south), 0.24 m wide and 0.27 m in height.

The Feature F cairn is situated 27.0 m south-southeast of Feature E and is comprised of four flat pahoehoe slabs stacked on top of each other with a subangular cobble placed on top. This feature is 0.45 m long (north-south), 0.29 m wide and 0.46 m in height. The Feature G cairn is located 18.4 m south-southeast of Feature F. This cairn consists of two flat pahoehoe slabs and two subangular cobbles stacked on top of an uplifted slab. It measures 0.24 m long (north-south), 0.12 m wide and 0.32 m in height above the top of the uplifted natural slab. The Feature H cairn is situated 36.7 m east-northeast of Feature G and consists of one flat pahoehoe slab with two subangular cobbles stacked on top, all located on a naturally



Figure 102. Site 25602, Feature C Cairn, view to northeast



Figure 103. Site 25602, Feature D Cairn, view to east

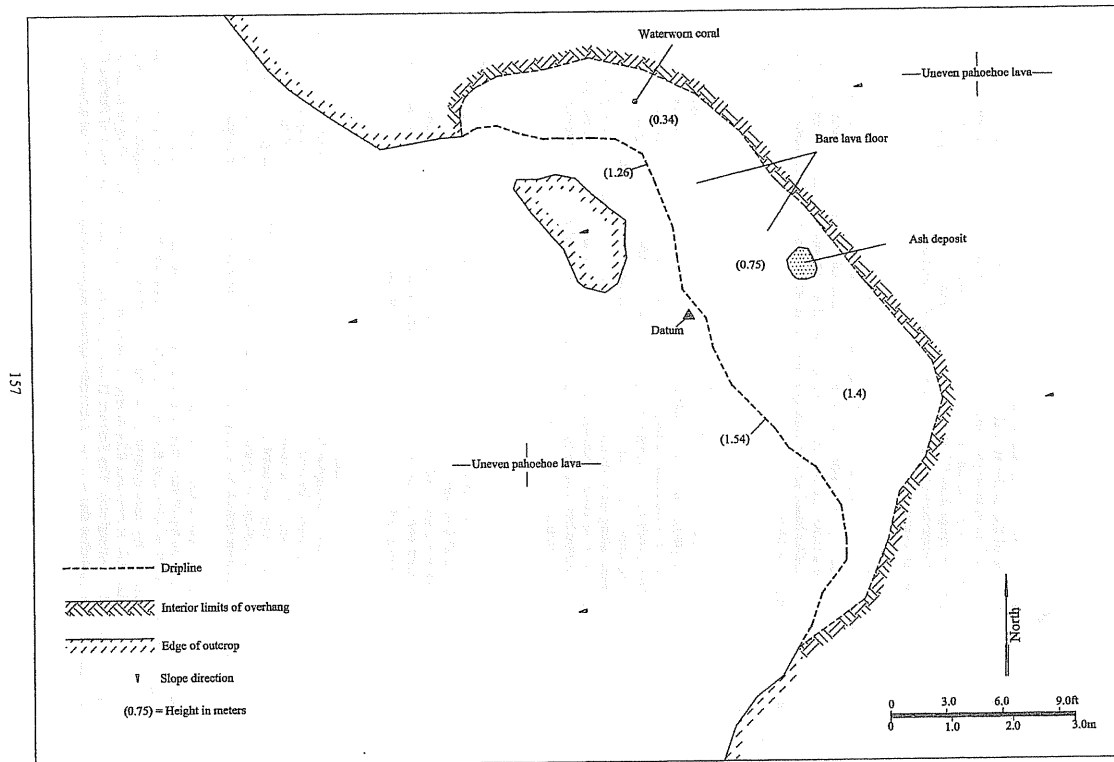


Figure 101. Site 25601 Plan Map

unified slab. This feature is 0.35 m long (east-west), 0.27 m wide and 0.31 m in height above the uplifted slab.

The Feature I cairn is situated 27.0 m southeast of Feature H. This cairn consists of two irregular pahoehoe slabs stacked on top of each other, measuring 0.42 m in length (north-south), 0.36 m wide and 0.42 m in height. The Feature J cairn is located 8.0 m southeast of Feature I. It is comprised of two pahoehoe slabs stacked on top of a rough pile of cobbles and slabs. This feature is 0.35 m long (east-west), 0.23 m wide and 0.17 m in height. The Feature K cairn is located 40.8 m west-northwest of Feature J, consisting of two subangular basalt cobbles stacked on top of each other. It measures 0.33 m long (north-south), 0.24 m wide and 0.49 m in height.

Site 25602 is interpreted as a transportation route based on its formal type and appearance. No cultural remains were found in association with the site. The site is unaltered and in good condition.

Site 25603

Site 25603 is a complex of two overhangs (Features A and B) located along the west and south sides of a natural 1.0 m deep depression in an area of uneven pahoehoe lava in the Land of Keialakehe at c. 20 ft elevation (Figure 104). The Feature A overhang is located along the west side of the depression. The entrance to this feature measures 7.1 m long (north-south) and 2.1 m long (east-west) and varies in height from 0.7 to 1.2 m. This opens onto an irregularly-shaped chamber that is 8.75 m in length (north-south) and from 0.2 to 2.4 m wide. The ceiling heights range from 0.65 to 0.8 m and the floor is comprised of bare lava. A fragment of branch coral is present on the floor in the northern portion of the chamber and a piece of waterworn coral is located at the southwest end. No other cultural remains are present.

The Feature B overhang is situated along the southern side of the natural depression. The entrance to this feature is 2.65 m wide (east-west) and 0.8 m in height. This opens onto a small oval-shaped chamber that is 1.35 to 2.6 m long (east-west), 1.0 to 1.35 m wide, with a 0.72 m tall ceiling height. The floor in this feature is bare lava with a single *Cypraea sp.* shell present in the southeast corner. Site 25603 is interpreted as a complex of temporary habitation shelters based on their formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25604

Site 25604 is a complex of five features located in an area of uneven pahoehoe lava at c. 15 ft elevation in the Land of Keialakehe. The site is comprised of a terrace (Feature A), a wall (Feature B) and three low pavements (Features C, D and E) situated in an area that measures 13.5 m long (northeast by southwest) and 9.5 m wide (Figure 105). The Feature A terrace is located at the northeastern end of the site. The terrace is bordered by a stacked subangular basalt cobble and small boulder retaining wall along the southwest side and bedrock outcrops to the north, east and southeast. The feature is roughly oval in shape and measures 4.8 m long (north-northwest by south-southeast) and from 2.2 to 3.7 m wide. The retaining wall ranges in height from 0.19 to 0.24 m and the surrounding outcrop ranges in height from 0.3 to 0.4 m above the surface of the terrace.

The surface of the terrace is comprised of a level cobble pavement with no cultural remains present. A 1.0 by 1.0 m test unit (TU-17) was excavated into the surface of the terrace, revealing two layers over bedrock (see Figure 105). Layer I consisted of 0.22 to 0.34 m of tightly packed subangular basalt pebbles, cobbles and boulders. Cultural remains from Layer I consisted of one *Callana sp.* shell (1.8 g), one waterworn coral cobble (24.2 g) and one waterworn coral abraider (10.7 g - 36.5mm long, 35.4 mm wide, 18.6 mm thick).

Layer II was comprised of 0.08 to 0.12 m of a very dark brown (7.5YR 2.5/2) silt with 10% cobble inclusions. Cultural remains from Layer II consisted of *Cypraea sp.* shells (n=12, 25.4 g), *Merita picea* shell (n=1, 0.1 g), *Naohais harpa* (n=1, 0.6 g), *Thaididae sp.* (n=3, 4.7 g), *Isogrammon sp.* (n=10, 1.7 g),

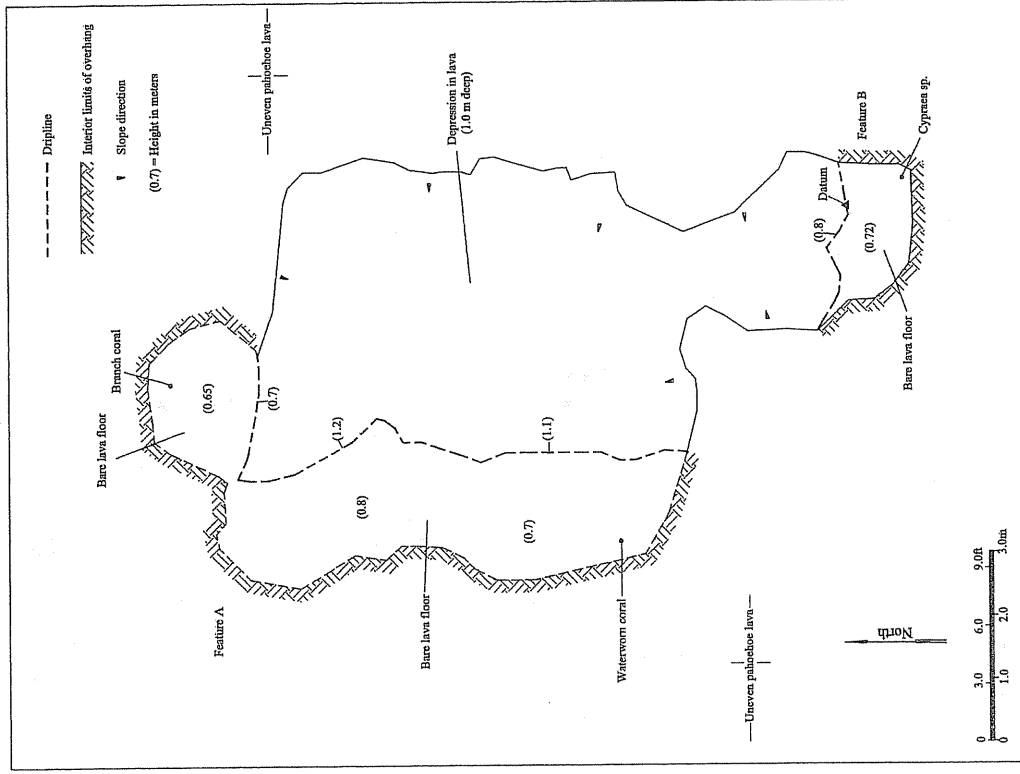


Figure 104. Site 25603 Plan Map

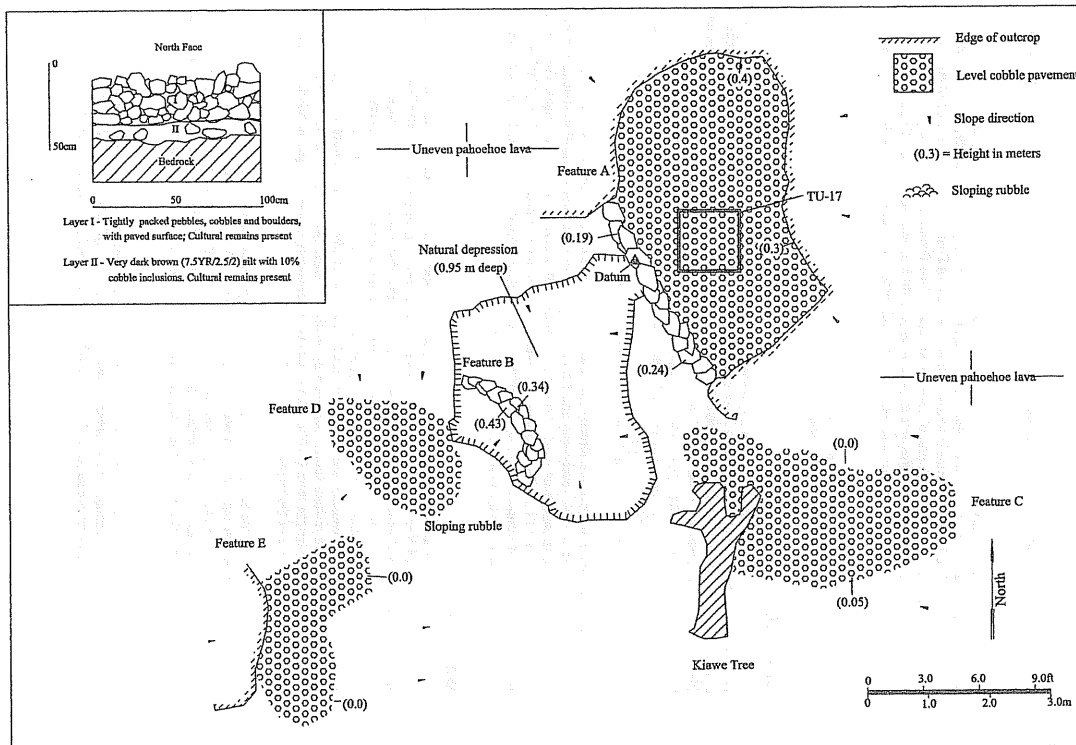


Figure 105. Site 25604 Plan Map and TU-17 North Face Profile

unidentified marine shell fragment (n=1, 0.4 g), fragments of waterworn coral (n=2, 35.9 g), one piece of *Crustacea* (0.4 g) and eight *Kakai* nut shells (3.2 g).

Feature B is a curved wall built inside the southwestern end of a natural depression in the pahoehoe lava, adjacent to Feature A to the southwest. The depression is 3.85 m long (northwest by southeast), from 1.0 to 4.2 m wide and 0.95 m deep. The wall is built of stacked subangular basalt cobbles and small boulders. It measures 2.2 m long (northwest by southeast), 0.19 to 0.45 m wide and from 0.34 to 0.43 m in height. No cultural remains were found in association with the wall or within the depression.

The Feature C pavement is located 0.7 m to the south of Feature A. This feature is roughly oval in shape and is 4.65 m long (east-west) and from 1.1 to 2.65 m wide. The sides of the feature are level or are built up slightly higher than the surrounding ground surface. The surface is comprised of level cobbles and small boulders with no cultural remains present. A fallen *Kiawe* tree extends across the surface of the pavement in the western portion.

Feature D is situated adjacent to Feature B to the west-southwest. This pavement is oval-shaped and is 2.7 m long (northwest by southeast) and 1.55 m wide, surrounded by sloping pahoehoe rubble. The surface is level cobbles with no cultural remains. The Feature E pavement is located 0.8 m to the southwest of Feature D. This feature is a low cobble pavement that is irregularly-shaped and is bordered by a low bedrock outcrop to the west. It measures 3.2 m long (north-south) and from 0.9 to 1.3 m in width. The sides are level with the surrounding ground surface and no cultural remains are present.

Site 25604 is interpreted as a complex of permanent habitation features. The Feature A terrace likely functioned as the foundation for a roofed structure based on its formal type, substantial construction (paved surface) and area (17.7 sq m). The Feature B wall and the Feature C, D, and E pavements potentially served as associated ancillary features based on their formal types and proximity to Feature A. The site is unaltered and in fair condition.

Site 25605

Site 25605 is a stone alignment situated at c. 21 ft elevation in an area of relatively level pahoehoe lava in the Land of Kealahoe to the west of the northern end of the large spoil pile and south of the harbor access road. The alignment is comprised of a single course of small, pahoehoe slabs and subangular basalt cobbles aligned in an oval-shaped configuration that is 2.58 m long (north-south) and 1.32 m wide (Figure 106). The individual stones range in length from 0.13 to 0.39 m, in width from 0.08 to 0.28 m and in thickness from 0.12 to 0.17 m. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25606

Site 25606 is an overhang located in an area of uneven pahoehoe lava in the Land of Kealahoe at c. 23 ft elevation. The overhang is located along the north and east sides of an oval-shaped rubble filled sinkhole that measures 5.4 m long (east-west), from 3.2 to 4.9 m wide and 1.8 m in depth below the surrounding ground surface (Figure 107). The entrance to the main overhang measures 4.9 m long east-west and 2.6 m long north-south, ranging in height from 0.7 to 1.5 m above the floor of the sink. The interior of the overhang is irregularly-shaped and is 8.55 m long east-west and 2.7 m long north-south, ranging in width from 0.2 to 2.45 m. The floor inside the overhang is comprised of uneven cobbles and boulders with the ceiling heights ranging from 0.4 to 0.95 m. There are two *Calluna sp.* shells present on the rubble floor in the northwestern portion of the overhang.

Two small non-cultural overhangs are situated along the west and southwest sides of the sink. These non-cultural chambers range in length from 1.15 to 2.27 m, in width from 0.72 to 1.2 m and in height from 0.4 to 0.8 m, with uneven cobble and boulder floors and no cultural remains. Site 25606 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25607

Site 25607 is a trail that extends across an area of relatively level at a lava in the Land of Kealahoe at elevations that range from c. 23 to 24 ft. The trail is comprised of a c. 0.7 m wide cleared and leveled path through an area of a lava partially paved with irregularly-shaped flat pahoehoe slabs (Figure 106). The slabs vary in length from 0.2 to 0.52 m and in width from 0.15 to 0.45 m. The trail evidences an overall length of 65.9 m. The seaward end of the trail originates at an area of pahoehoe lava. It extends to east-southeast for 39.0 m then angles to the northeast for 26.9 m where it terminates at a pahoehoe lava flow. Cultural remains noted in association with the trail consist of one small waterworn basalt boulder and a fragment of waterworn coral. Site 25607 is interpreted as a transportation route across the uneven terrain. It potentially was connected to the Site 25602 trail to the east. The site is unaltered and in good condition.

Site 25608

Site 25608 is a complex of two features located in the Land of Kealahoe in an area of uneven pahoehoe lava at c. 21 ft elevation. The features are comprised of a lava blister (Feature A) and a cairn (Feature B) located in an area 12.5 m long (east-west) and 7.4 m wide (Figure 109). The Feature A lava blister is located in the eastern portion of the site. It is accessed through an irregularly-shaped vertical entrance that measures 4.45 m long (north-northeast by south-southwest), from 0.65 to 3.2 m wide and 1.5 m in depth below the surrounding ground surface. This opens onto an oval-shaped chamber that is 7.4 m long (north-northeast by south-southwest) and 6.4 m wide. The ceiling heights range from 0.44 to 0.84 m. The main floor of the feature contains a rough cobble and small boulder pavement in the northeastern portion, with an area of uneven roof fall rubble in the southwestern portion. A raised shelf extends along the east, south and southwest sides, ranging in width from 0.55 to 1.85 m and is 0.2 to 0.4 m in height above the floor of the main chamber. The surface of the shelf is comprised of bare lava. There are waterworn basalt cobbles and small boulders and waterworn coral fragments present within the main portion of the blister and on the surface of the raised shelf.

A 1.2 by 1.0 m test unit (TU-11) was excavated into the rough paved area in the northeastern portion of the blister, revealing a single layer over bedrock (see Figure 109). Layer 1 consisted of 0.65 to 1.23 m of loosely packed gravel, pebble, cobbles and small boulders with a variety of cultural remains present. These remains consist of marine shell (*Cypraea sp.* [n=1, 17.2 g], *Cellana sp.* [n=19, 12.7 g], unidentified marine shell fragments [n=5, 2.1 g]), fragments of urchin body (n=130, 22.3) and urchin spines (n=7, 3.5 g), fragments of *Crustacean* (n=7, 2.4 g), fish bones (n=26, 2.3 g), fragments of non-human mammal bone (n=8, 0.9 g), *Kukui* nut shells (n=32, 33.4 g), volcanic glass flake (n=1, 0.2 g), and two fragments of charcoal (0.1 g).

The Feature B cairn is located 7.0 m west of the entrance to Feature A. The cairn is comprised of a vertical slab that measures 0.7 m in length (north-south) 0.12 m wide and 1.15 m in height. The slab is set in a small niche in the surface bedrock with several subangular basalt cobbles placed along the east and west sides to support. No cultural remains were found in association with the cairn.

The Feature A lava blister is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The Feature B cairn is interpreted as a marker based on its formal type and appearance. It potentially marked the blister shelter. Site 25608 is unaltered and in good condition.

Site 25609

Site 25609 is an overhang located along the base of a pahoehoe ridge in the Land of Kealahoe at c. 21 ft elevation. The entrance to the overhang is located along the east side of the ridge and is 5.3 m in length (northeast by southwest) and from 0.3 to 0.75 m in height (Figure 110). This opens onto a linear chamber that is 11.8 m long (northeast by southwest) and from 1.24 to 4.2 m wide. The floor is comprised of bare lava and the ceiling heights range from 0.65 to 1.0 m. There are four large waterworn cobbles present at the northern end of the overhang, ranging in length from 0.2 to 0.25 m, in width from 0.14 to 0.17 m and in thickness from 0.1 to 0.13 m. A small fragment of *Cypraea sp.* shell is present to the east of the cob-

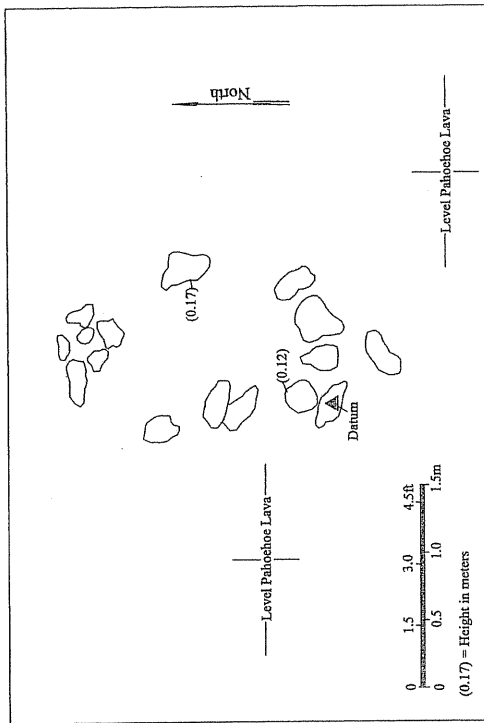


Figure 106. Site 25607 Plan Map

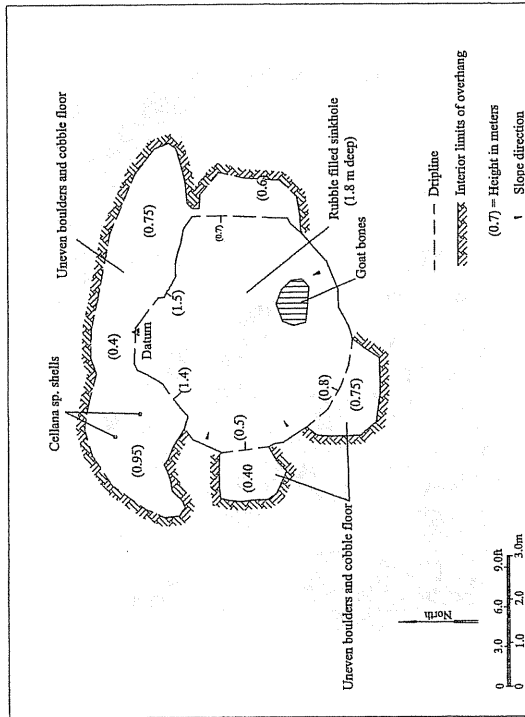


Figure 107. Site 25608 Plan Map



Figure 108. Site 25607 Trail, view to west

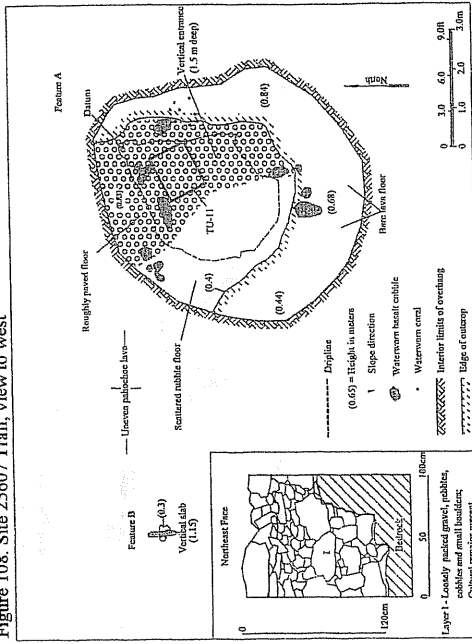


Figure 109. Site 25608 Plan Map and TU-11 Northeast Face Profile

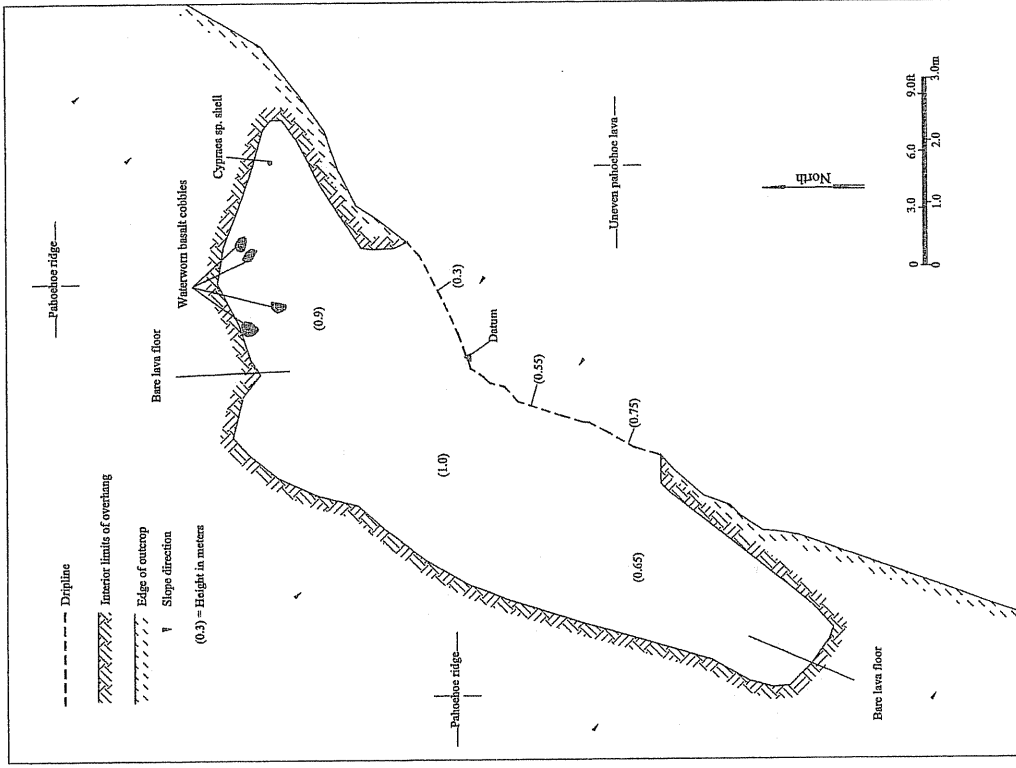


Figure 110. Site 25609 Plan Map

bles, in the northeastern corner of the overhang. Site 25609 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25610

Site 25610 consists of a sand deposit surrounded by bare pahoehoe lava located in the Land of Kealahou at elevations that range from 17-21 ft. The site encompasses an area 43.5 m long (east-west) and 17.5 m wide and is comprised of level sand (see Figure 7 and Figure 11). Sun-bleached marine shells and fragments of waterworn coral are scattered over the sand surface. No surface architecture was present on the surface of the sand area.

A 1.0 by 0.5 m test unit (TU-13) was excavated into the sand in the approximate center of the area, revealing a single sand layer over bedrock (Figure 12). Layer I consisted of 0.86 to 0.94 m of a coarse white (7.5YR 8/2) sand. Waterworn marine shell (n=360, 71.3 g). Layer I was recovered from all levels within Layer I, though non-waterworn shell and an artifact were also present. These remains consisted of marine shells (*Cypraea* sp. [n=21, 8.7 g], *Calliana* sp. [n=32, 10.0g], *Comus* sp. [n=4, 1.8 g], *Littoraria pinnata* [n=25, 6.4 g], *Nerita picea* [n=45, 9.2 g], *Prodota istomus* [n=1, 0.6 g], *Isoegonon* sp. [n= 4, 1.0 g], *Cymatium* sp. [n=4, 2.0 g], *Phenacolepas granocostata* [n=2, 0.4 g], *Sponditus* sp. [n=73, 10.4 g], *Tzellina* sp. [n=5, 1.4 g], *Trochus inexpectus* [n=40, 8.2 g], *Barbatia divaricata* [n=2, 0.7 g], urchin body fragments (n=131, 20.6 g) and spines (n=149, 23.7 g), *Crustacean* fragments (n=4, 0.5 g), volcanic glass flake (n=1, 0.9 g) and 19 fragments of charcoal (1.4 g).

Site 25610 is interpreted as a habitation site based on the presence of non-waterworn shells, the volcanic glass and the charcoal. It is possible that pole and thatched roofed structures may have once existed in the sand area. The site is unaltered and in good condition.

Site 25611

Site 25611 consists of a large sand area surrounded by bare coastal pahoehoe lava, located in the Land of Kealahou at elevations that range from 19-21 ft. The site encompasses an area 80.5 m long (north-south) and 57.2 m wide and is comprised of level sand (see Figure 7 and Figure 11). Sun-bleached marine shells and fragments of waterworn coral are scattered over the sand surface. A modern camp is present in the northeast portion of the sand area, consisting of recently built stone enclosure bordered by a bedrock outcrop to the west. This enclosure is comprised of two adjacent wall segments that encompass an area 11.5 m long (north-south) and 8.5 m wide, open to the north. The walls of this enclosure are narrow and built of stacked waterworn and subangular basalt cobbles and small boulders. The walls range in width from 0.35 to 0.45 m and in height from 0.79 to 1.44 m (Figure 11A). Waterworn coral cobbles line the top of the walls and milled lumber, a garden rake, a length of rope and a bed sheet are scattered around the enclosed area.

Two additional modern walls likely associated with this modern camp are also present within the sand area. The first is located 23.5 m south of the enclosure and the second is located 29.0 m further south. These walls are similar in construction to the walls of the enclosure, built of stacked cobbles and small boulders. The northern wall is 5.0 m long (east-west), 0.65 to 0.8 m wide and 0.7 to 0.75 m in height (Figure 11B). A green glass Coke bottle is present along the south side of the wall. The southern wall is 6.5 m long (northwest by southeast), 0.55 to 0.7 m wide and 0.58 to 0.75 m in height. There is a 1.0 m wide gap in the wall in the approximate center. A bamboo pole is leaning against the wall along the southeast side.

A 1.0 by 0.5 m test unit (TU-14) was excavated into the sand in the approximate center of the area, revealing three soil layers over bedrock (Figure 11C). Layer I consisted of 0.49 to 0.52 m of a white (10YR 8/2) coarse sand with cultural remains consisting of marine shells (*Littoraria pinnata* [n=75, 19.7g], *Nerita picea* [n=52, 13.4g], *Calliana* sp. [n=40, 14.1g], *Thalidite* sp. [n=20, 13.1g], *Isoegonon* sp. [n=45, 13.2g], *Cypraea* sp. [n=17, 7.8g], *Imbricaria olivaeformis* [n=1, 0.4g], *Nassarius papillosus* [n=1, 0.5g], *Cymatium* sp. [n=2, 1.2g], *Barbatia divaricata* [n=2, 0.8g], *Barbatia tenella* [n=1, 0.4g], *Drupa ricina* [n=1, 2.1g] *Spondylus* sp. [n=16, 9.7g], *Trochus inexpectus* [n=1, 2.8g], *Comus* sp. [n=2, 1.1g], *Theodoxus versperinus*



Figure 111. Site 25610 Sand Area, view to west

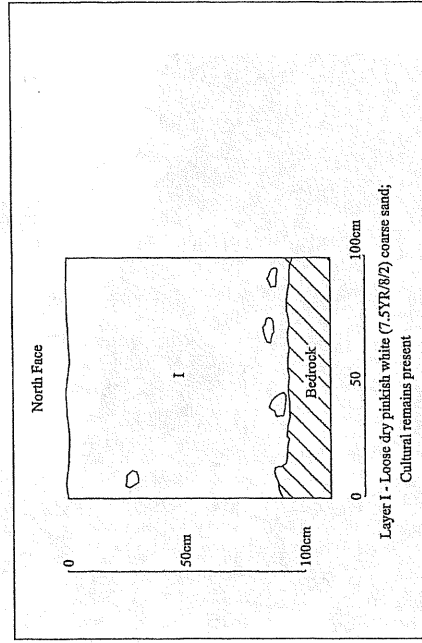


Figure 112. Site 25610, TU-10 North Face Profile

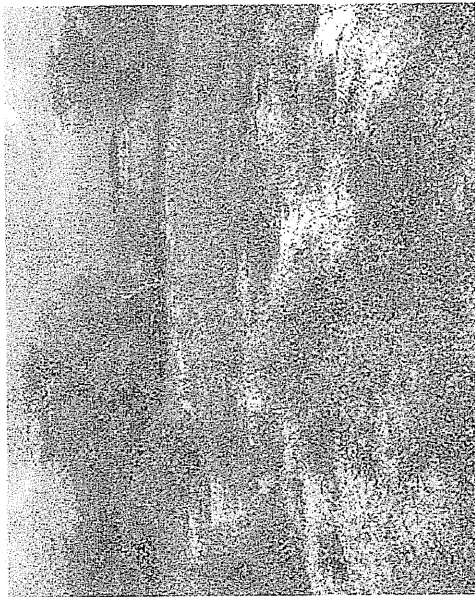


Figure 113. Site 25611 Sand Area, view to northwest



Figure 114. Modern Enclosure in Site 25611 Sand Area, view to east

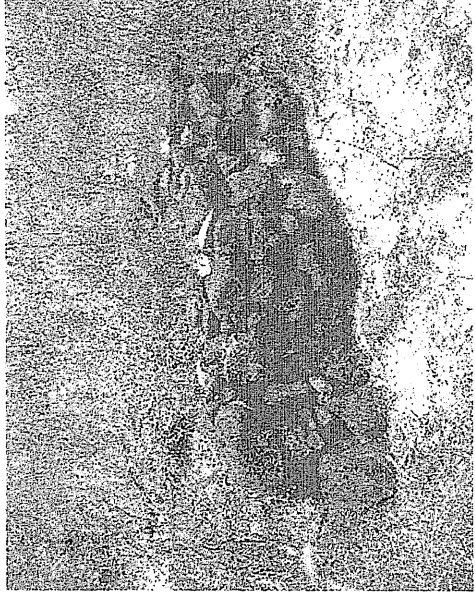


Figure 115. Modern Wall in Site 25611 Sand Area, view to north

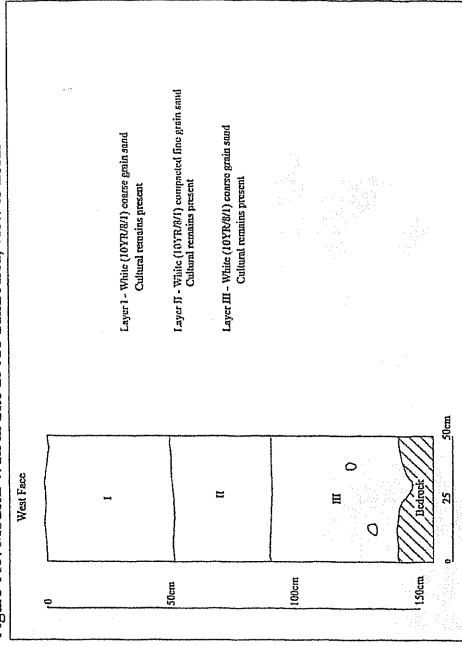


Figure 116. Site 25611, TU-14 West Face Profile

[n=1, 0.4g], *Tellina palatum* [n=1, 0.2g], *Argyromorpha perna* [n=4, 1.0g], waterworm marine shells [n=145, 35.6g], *Crustacea* body fragments (n=9, 2.0g), avian bones (n=3, 0.1g), *Polyplocapora* body fragments (n=7, 1.2g), urchin body fragments (n=61, 10.1g), urchin spine fragments (n=93, 12.8g), historic glass fragment (n=1, 0.3g), and one charcoal fragment (0.1g).

Site 25611 is interpreted as a habitation site based on the nature of the cultural remains noted in TU-14. It is possible that pole and thatched roofed structures may have once existed in the sand area. The site is unaltered and in good condition.

Site 25612

Site 25612 is a short section of trail located in the Land of Kealakehe in an area of uneven coastal lava adjacent to a small sand area at c. 21-22 ft elevation. The northern end of the trail (Feature A) is marked by a small waterworm basalt boulder (Feature B) set on edge (Figure 117). A linear alignment of waterworm coral cobbles and pebbles extends across the pahoehoe lava a distance of 22.6 m where it terminates on a low rise. The Feature B vertical boulder is 0.38 m in height, 0.2 m wide and 0.19 m in thickness. No additional cultural remains were found in association with the trail. Site 25612 is interpreted as a transportation route across the pahoehoe flow based on its formal type and appearance. The site is unaltered and in good condition.

Site 25613

Site 25613 is a cairn located in an area of uneven pahoehoe lava in the Land of Kealakehe at c. 23 ft elevation. The cairn is comprised of three stacked subangular basalt cobbles (Figure 118). It measures 0.35 m long (north-south), 0.3 m wide and 0.46 m in height. A fragment of waterworm coral is present 1.0 m to the east of the cairn and two *Cellana sp.* shells are located 3.0 m east. Site 25613 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

Site 25614

Site 25614 is a complex of two enclosures located in an area of sloping pahoehoe lava in the Land of Kealakehe at c. 21 ft elevation. The features consist of an enclosure with an attached terrace (Feature A) and a C-shape (Feature B) located in an area 17.3 m long (north-south) and 3.1 m wide (Figure 119). The Feature A enclosure is located at the northern end of the site. The feature has overall dimensions of 7.8 m long (north-south) and 5.1 m wide, with the enclosure portion located at the southern end. The enclosure has collapsed with remnant stacking present, built of subangular basalt cobbles and small boulders. The enclosure is 4.9 m long (east-west) and 4.6 m wide, with a possible entrance present along the western side. The walls range in width from 0.92 to 1.4 m wide and from 0.15 to 0.4 m in height. There are two slight depressions present on top of the enclosure walls in the northeastern portion, possibly representing post supports. These depressions range in length from 0.44 to 0.48 m long, 0.29 to 0.33 m wide and 0.38 to 0.39 m deep. The interior of the enclosure is comprised of level sand.

A crude terrace that may represent a *lanai* extends to the north from the enclosure. It is roughly rectangular in shape and measures 5.1 m long (east-west) and 3.2 m wide. The north side evidences some crude stacking although the remaining sides have collapsed outward. The sides range in height from 0.34 to 0.5 m. The majority of the surface is comprised of uneven subangular basalt cobbles and small boulders though an area of crude cobble paving is present in the northwestern corner. No cultural remains were present at Feature A.

The Feature B enclosure is located 4.4 m south of Feature A. The C-shaped enclosure is 5.25 m long (north-south) and 4.5 m wide, open to the west. The walls are built of subangular basalt cobbles and small boulders ranging in width from 0.65 to 1.3 m and in height from 0.27 to 0.43 m. The interior of the feature is comprised of a thin sand deposit with scattered waterworm coral fragments and *Cypraea sp.* and *Cellana sp.* shells.



Figure 117. Site 25612, Feature B Vertical boulder, view to northwest

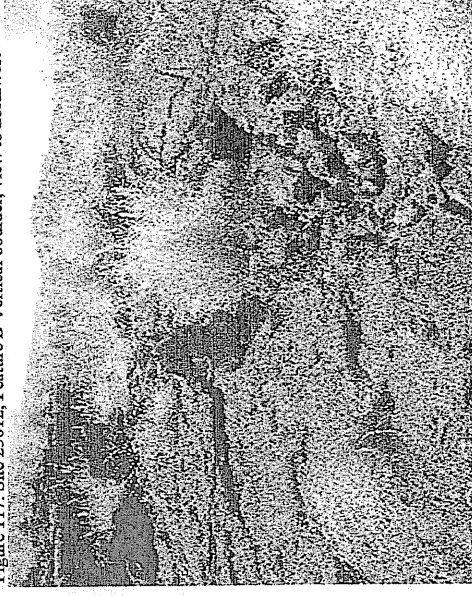


Figure 118. Site 25613 Cairn view to north

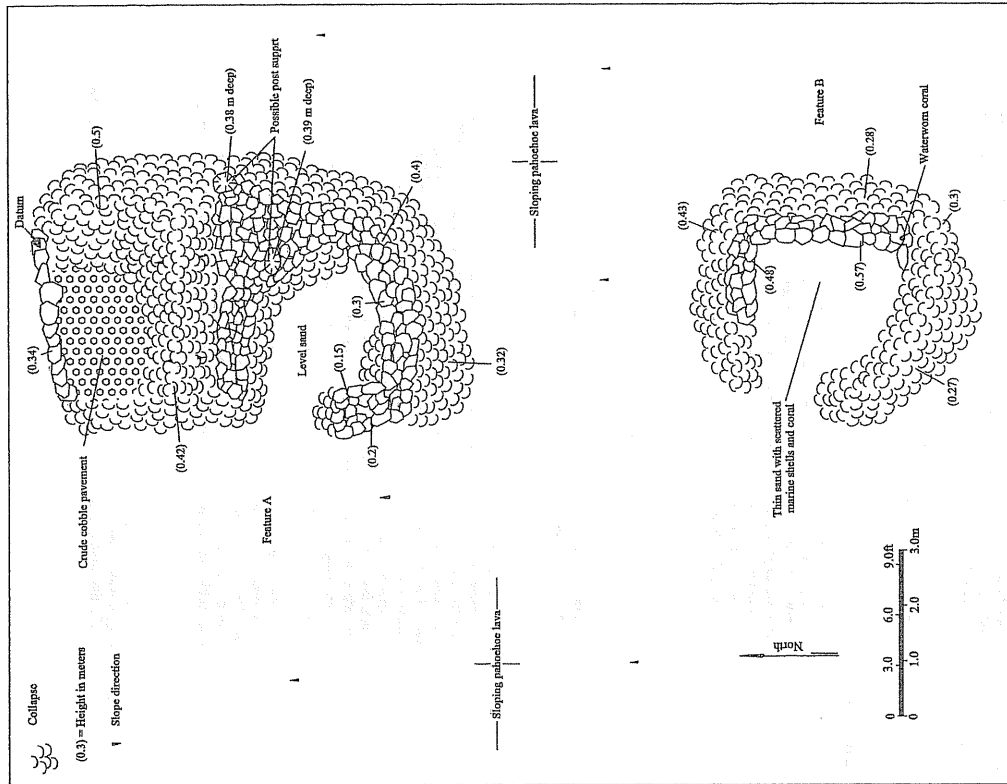


Figure 119. Site 25614 Plan Map

Site 25614 is interpreted as a complex of permanent habitation features. The features likely functioned as foundations for roofed structures based primarily on their formal types and areas (Feature A = 39.7 sq m, Feature B = 23.6 sq m). The site is unaltered and in poor to fair condition.

Site 25615

Site 25615 is a complex of four features located on a pahoehoe ridge in the Land of Kealahake at c. 22 ft elevation. The features are comprised of an overhang (Feature A), an alignment (Feature B), a small pavement (Feature C) and a flat slab supported by cobbles (Feature D). The site encompasses an area 23.0 m long (northeast by southwest) and 18.3 m wide (Figure 120).

The Feature A overhang is located at the base of the pahoehoe ridge on the eastern side. The entrance to the feature is 8.45 m in length (north-northwest by south-southeast) and from 0.6 to 1.5 m in height. This opens onto a roughly oval-shaped chamber that is 11.7 m in length (north-northwest by south-southeast) and from 1.4 to 3.4 m wide. The floor throughout the overhang is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.5 to 1.1 m. There are three midden concentrations located within the interior, consisting of marine shells (*Cypraea sp.*, *Nerita sp.*, and *Cellana sp.*), urchin body fragments and spines, and ash in a sand matrix. A cluster of *kikui* nut shells is present adjacent to the northern midden area to the west, against the west wall of the overhang.

The Feature B alignment is located on top of the ridge, 14.5 m southwest of the entrance to Feature A. The alignment is oval in shape and measures 1.4 m long (north-south), 1.0 m wide and 0.25 to 0.43 m in height, comprised of pahoehoe slabs and subangular basalt cobbles. A waterworn basalt cobble is present on the southern side. The interior of the alignment contains a coarse sand deposit with *Cypraea sp.* and *Cellana sp.* shells. This deposit extends outside of the alignment to the southeast, encompassing an area 2.75 m long (northwest by southeast) and from 0.35 to 1.15 m wide.

The Feature C pavement is situated 5.0 m south of the Feature A entrance on top of the pahoehoe ridge. The paved area is roughly oval in shape and is 1.7 m long (north-south) and 1.1 m wide. The pavement is bordered by flat slabs along the north and west sides. Additional slabs, subangular basalt cobbles and waterworn basalt cobbles are scattered to the west-southwest. Scattered *Cypraea sp.* shells are present on the surface of the feature. There are two concentrations of thin sand with *Cypraea sp.* and *Cellana sp.* shells and waterworn coral are present at the west end of the scattered stones.

The Feature D flat slab is located 7.6 m southeast of Feature C. This slab is 1.55 m long (north-northeast by south-southwest) and from 0.82 to 1.15 m wide. The slab is elevated off the ground and is supported by subangular basalt cobbles. The height of the supported slabs ranges from 0.27 to 0.44 m above the bedrock surface. No cultural remains were found in association with the feature.

Site 25615 is interpreted as a complex of temporary habitation features. The Feature A overhang is interpreted as a shelter based on its formal type and on the presence of the culturally remains. Features B and C are likely associated with the use of the shelter due to their close proximity potentially functioning as associated activity areas. The Feature D slab may have served as a low table or work area based on its appearance. The site is unaltered and in good condition.

Site 25616

Site 25616 is a lava blister located in an area of uneven pahoehoe lava at c. 22 ft elevation in the Land of Kealahake. The entrance to the blister is through an oval-shaped, vertical entrance that is 3.3 m long (northwest by southeast), from 0.45 to 1.25 m wide and 0.83 m in depth below the surrounding ground surface (Figure 121). This opens onto a roughly oval-shaped chamber that measures 5.6 m long (northwest by southeast) and 2.2 to 4.2 m wide. There are areas of uneven roof fall along the northwest and southeast sides of the interior with a bare lava floor present throughout the remainder. A 0.35 m tall raised shelf extends along the northeastern side of the blister. Scattered marine shell (*Cypraea sp.*) and waterworn coral are present on the raised shelf and below it to the southwest on the main floor of the blister. A fragment of waterworn coral is present on the blister floor in the southwestern portion of the interior. Site 25616 is

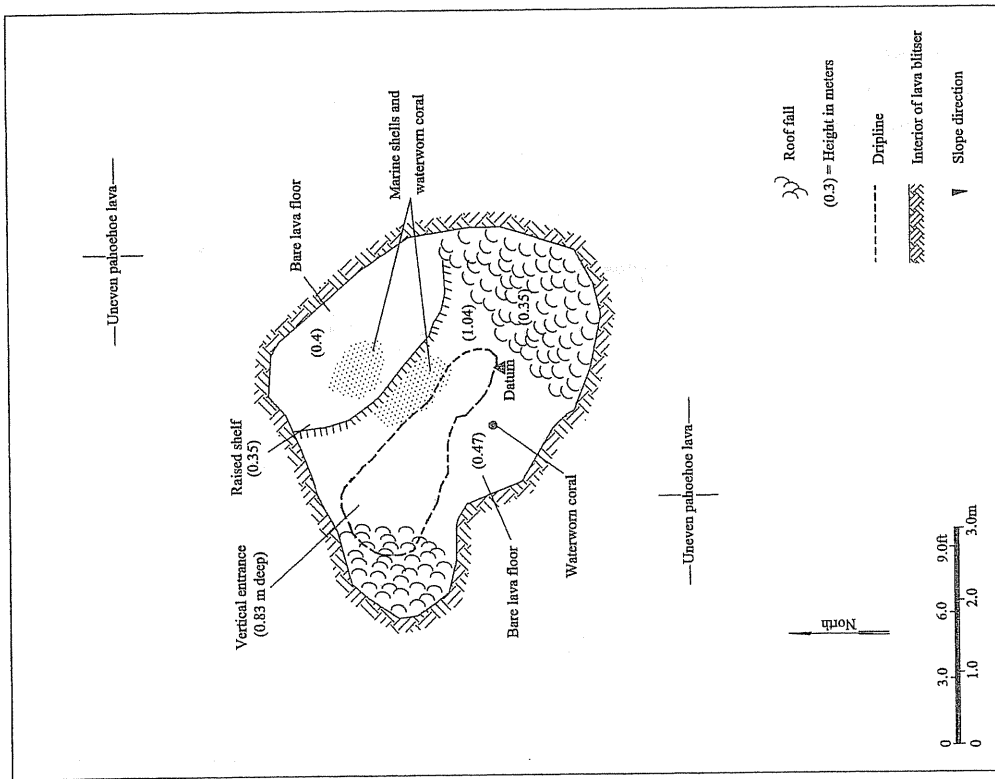


Figure 121. Site 25616 Plan Map

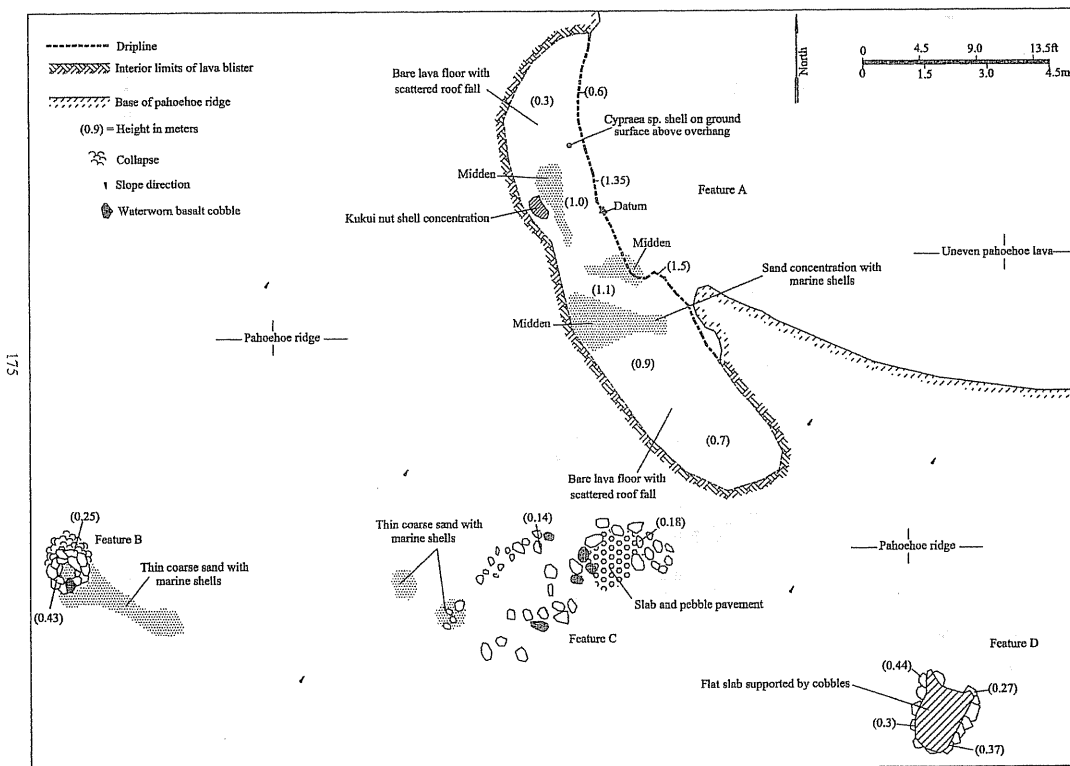


Figure 120. Site 25615 Plan Map

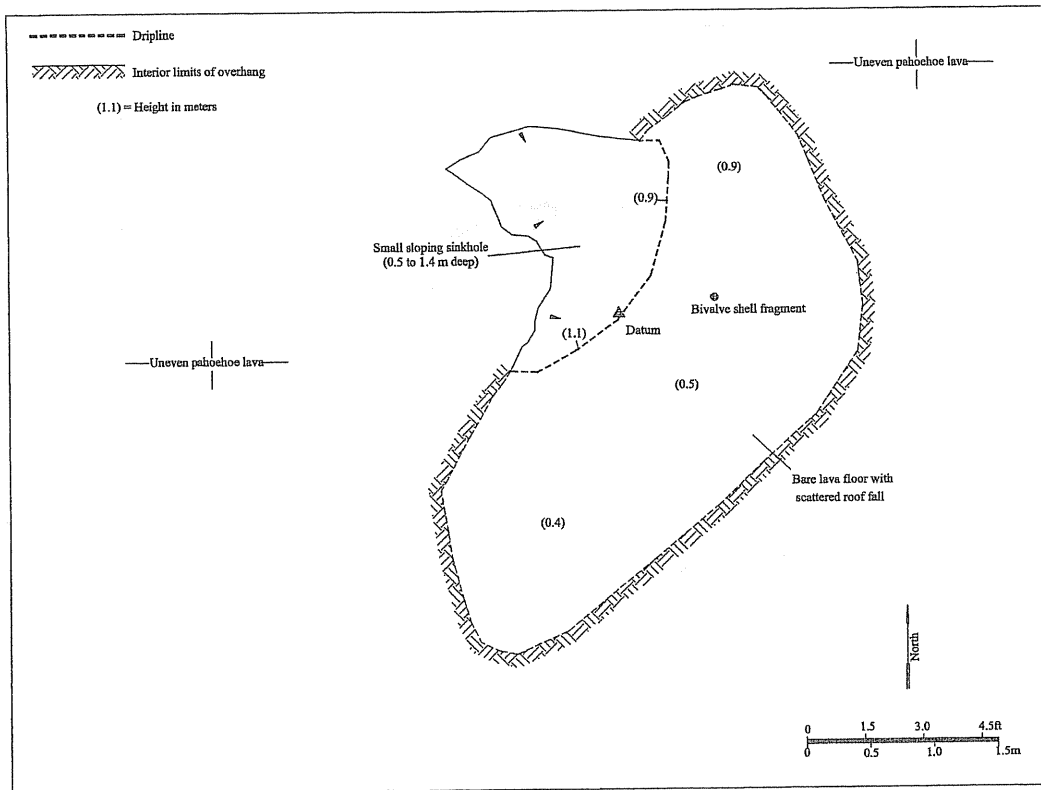


Figure 122. Site 25618 Plan Map

interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25617

Site 25617 is a discrete scatter of marine shell, waterworn coral and waterworn basalt located on top of a pahoehoe ridge in the Land of Kealahou at c. 21 ft elevation. The materials are located in an area 3.2 m long (northeast by southwest) and 2.5 m wide and consists of three waterworn basalt cobbles, 15 waterworn coral pebbles and scatter marine shells (*Cypraea sp.*, *Cellana sp.*, *Nerita sp.*). No surface architecture was found in association with the midden. Site 25617 is assigned a possible temporary habitation function likely representing a single episode of use based on the paucity of the cultural remains. The site is unaltered and in fair condition.

Site 25618

Site 25618 is a lava blister located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 23 ft elevation. The entrance to the blister is through an opening on the east and southeast sides of a small sloping sinkhole (Figure 122). The sink measures 2.15 m long (north-south), 0.2 to 1.75 m wide and 0.4 to 1.4 m in depth below the surrounding ground surface. The dripline varies in height from 0.9 to 1.1 m and opens onto an oval-shaped chamber that is 4.85 m long (north-northeast by south-southwest) and from 1.3 to 2.1 m wide. The floor in the blister is comprised of bare lava with scattered roof fall. Cultural remains present in the blister consist of a single *Ctena sp.* bivalve shell. Site 25618 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the marine shell. The site is unaltered and in good condition.

Site 25619

Site 25619 is a collapsed cairn located in the Land of Kealahou in an area of level pahoehoe lava with pahoehoe ridges situated to the south and west at c. 21 ft elevation. The cairn is roughly circular in shape and is 2.2 m long (east-west) and 2.15 m wide, built of subangular basalt cobbles and small boulders with several waterworn basalt cobbles present (Figure 123). The sides of the structure slope downward from the top, with the surface measuring 0.25 to 0.33 m in height above the surrounding ground surface. There is an oval-shaped depression present in the surface of the cairn that is 0.57 m long (northeast by southwest), 0.4 m wide and 0.2 m deep. Fragments of waterworn and branch coral are present within the depression. Site 25619 is interpreted as a possible shrine with the depression potentially supporting an idol based on its formal type and appearance and on the presence of the coral. It is unaltered and in good condition.

Site 25620

Site 25620 is an overhang located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 21 ft elevation. The entrance to the overhang is comprised of sloping rubble that slopes down to the west. The entrance measures 5.4 to 8.0 m long (north-northeast and south-southwest) with the dripline ranging in height from 0.8 to 1.8 m (Figure 124). This opens onto an irregularly-shaped chamber that is 9.75 m in length (north-northeast by south-southwest) and from 0.41 to 5.4 m wide. The floor in the overhang is comprised of bare lava with scattered roof fall, with the ceiling heights ranging from 0.5 to 0.9 m. A *Cellana sp.* shell and a fragment of waterworn coral are present outside the entrance to the overhang. A concentration of gourd fragments and a large *Cellana sp.* shell are present at the dripline in the southern portion of the interior. There is a small concentration of ash (0.3 m long - north-south by 0.27 m wide) with a fragment of unidentified marine shell located in the southern portion of the overhang.

The entrance to a lower chamber is located adjacent to the dripline in the central portion of the overhang. A fragment of waterworn coral is located above the entrance to the lower chamber to the south. The entrance to the chamber is 1.35 m long (north-south) and 0.6 m in height and opens onto a small oval-shaped chamber that is 2.65 m long (north-south) and 1.15 m wide. The floor of this chamber is bare lava and the ceiling height averages 0.45 m. No cultural remains are present in this portion of the site.

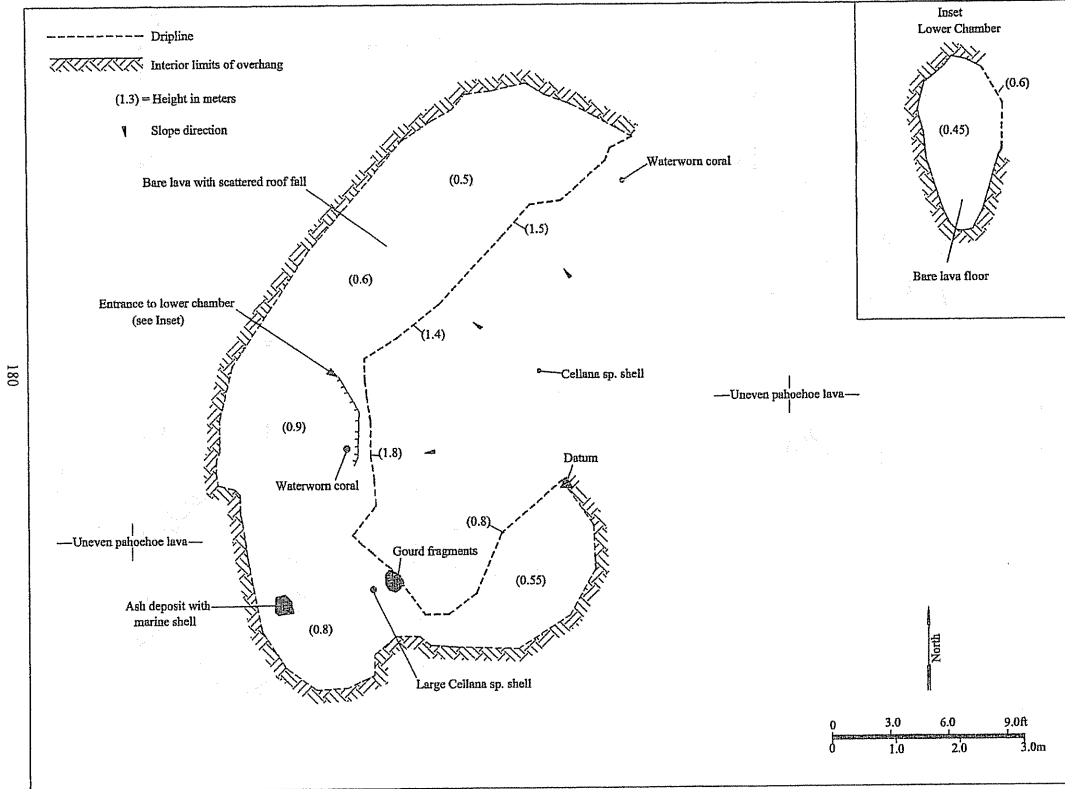


Figure 124. Site 25620 Plan Map

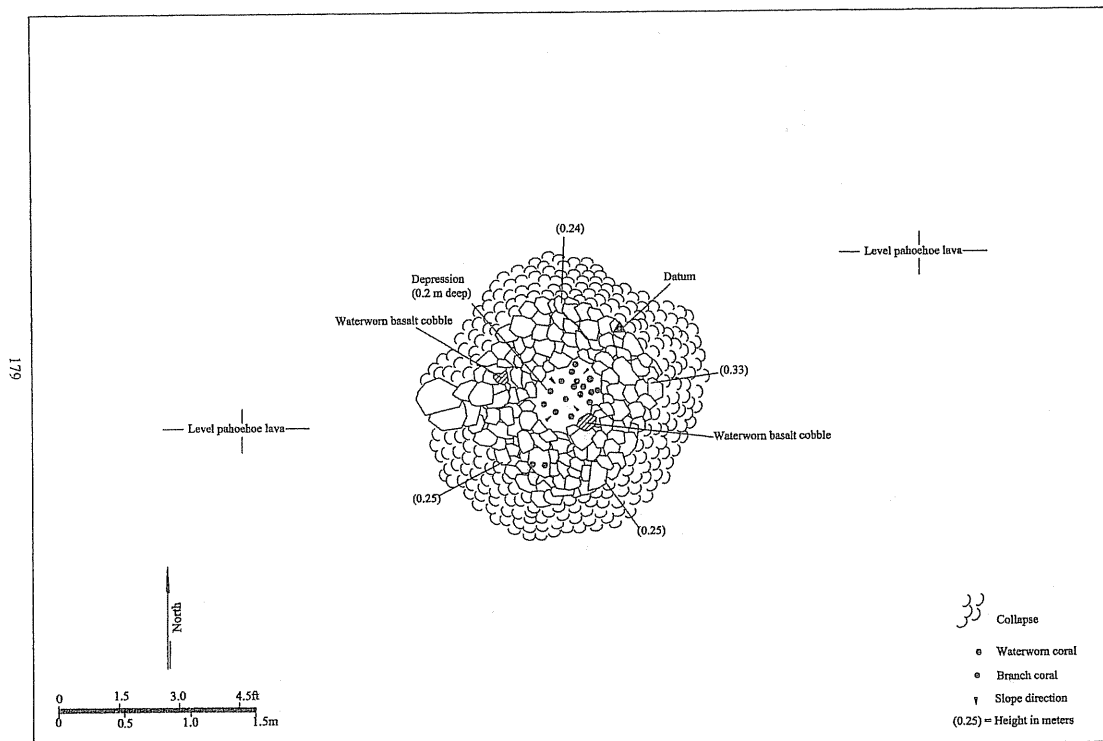


Figure 123. Site 25619 Plan Map

Site 25620 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25621

Site 25621 is a complex of two features located along the southwestern side of a pahoehoe ridge in the Land of Kealakēhe at c. 21 ft elevation. The features consist of a wall (Feature A) and an overhang (Feature B), located in an area 13.5 m long (northwest by southeast) and 8.0 m wide (Figure 125). The area below the ridge to the west is comprised of uneven pahoehoe lava.

The Feature A wall is located at the southeastern end of the site built on bare lava on the side of the pahoehoe ridge. The wall is linear in shape and measures 1.65 m long (north-south), from 0.35 to 0.6 m wide and from 0.6 to 0.7 m in height. It is constructed of one to two courses wide of cobbles and small boulders stacked two to four courses in height. No cultural remains were present.

The Feature B overhang is situated 7.5 m to the northwest of Feature A. The entrance to the overhang is located along the base of the ridge. It measures 2.45 m long (west-northwest by east-southeast) and 1.15 m in height. The entrance opens onto an oval-shaped chamber that is 5.95 m long (west-northwest by east-southeast) and 2.77 m wide, with a bare lava floor and ceiling heights that range from 0.6 to 0.7 m. A coral sweatshirt is present inside the overhang in the western portion.

A small hole is present in the floor of the overhang that leads to a lower chamber. This hole is 0.68 m long (east-west), 0.45 m wide and 0.8 m in depth and it opens onto an oval-shaped chamber that is 4.15 m long (east-west) and from 2.0 to 3.5 m wide. The floor in the lower chamber consists of bare lava with the ceiling heights ranging from 0.6 to 0.9 m. An *Isognomon* sp. shell and a fragment of waterworn coral are present within this chamber.

Site 25621 is interpreted as a temporary habitation site. The Feature B overhang likely functioned as a shelter based on its formal type and on the presence of the shell and coral. The Feature A wall is likely associated with the overhang due to its close proximity. The sweatshirt in the Feature B overhang indicates that this feature also had a modern period of use. The site is unaltered and in good condition.

Site 25622

Site 25622 is an overhang located along the northern base of a pahoehoe ridge in the Land of Kealakēhe at c. 21 ft elevation. The area to the north of the overhang is comprised of uneven pahoehoe lava. The entrance to the overhang is 4.4 m in length (northwest by southeast) with a dripline height of 0.6 m (Figure 126). This opens onto an irregularly-shaped chamber that is 9.3 m in length (northwest by southeast) and from 0.68 to 3.28 m wide. The floor of the overhang is comprised of bare lava with ceiling heights that range from 0.1 m at the eastern end to 0.5 m in the central portion. A fragment of waterworn coral represents the only cultural material present inside the overhang. Site 25622 is interpreted as a possible temporary habitation shelter based on its formal type and on the presence of the coral. The site is unaltered and in good condition.

Site 25623

Site 25623 is an overhang located along the northern base of a pahoehoe ridge in the Land of Kealakēhe at c. 21 ft elevation 35.0 m north of Site 25620. The area to the north of the overhang is comprised of uneven pahoehoe lava. The entrance to the overhang measures 9.3 m in length (northwest by southeast) with a dripline height that ranges from 0.8 to 1.57 m (Figure 127). The entrance opens onto an irregularly-shaped chamber that is 10.5 m in length (northwest by southeast) and from 0.65 to 2.25 m wide. The floor of the overhang is comprised of bare lava with ceiling heights that range from 0.5 to 0.9 m. Two waterworn coral fragments are located outside the entrance to the north and a *Cypraea* sp. shell is present inside the dripline in the eastern portion. A goat bone is located to the east of the marine shell. Site 25623 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

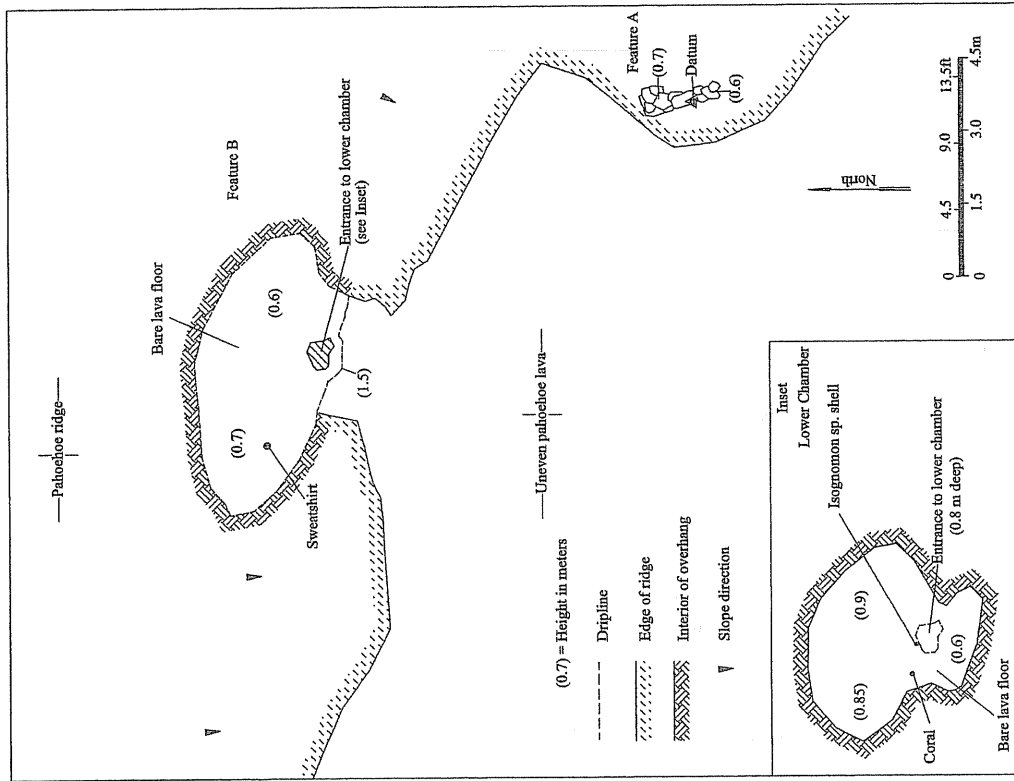


Figure 125. Site 25621 Plan Map

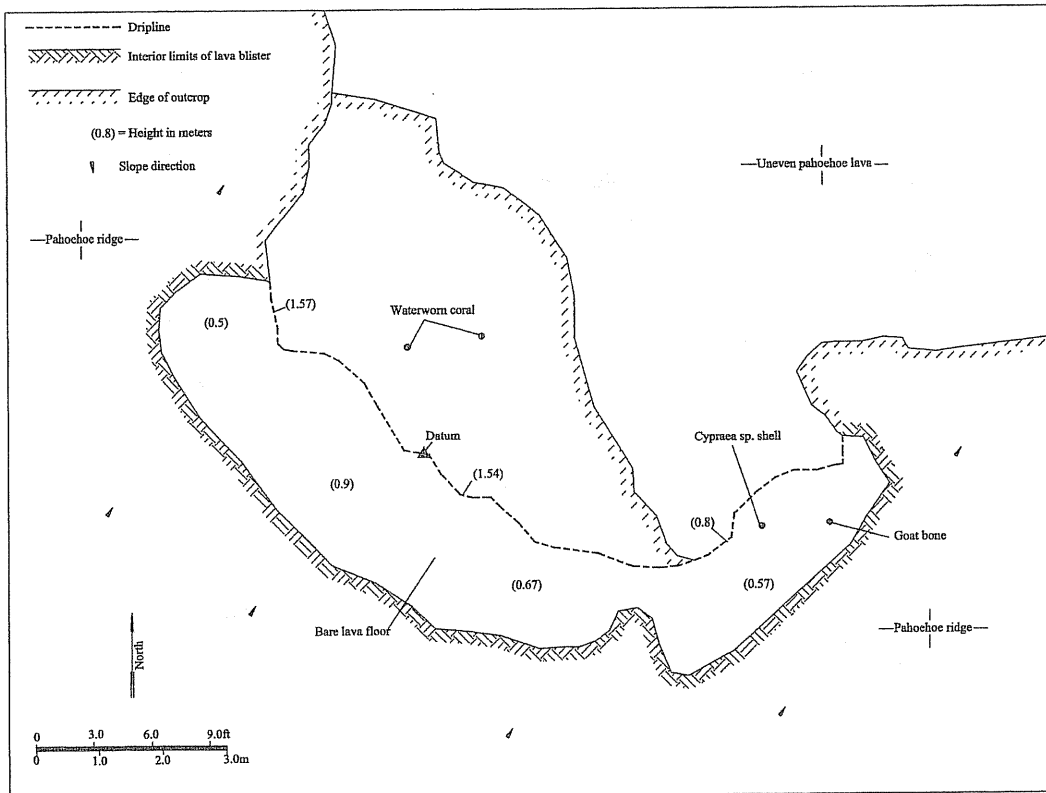


Figure 127. Site 25623 Plan Map

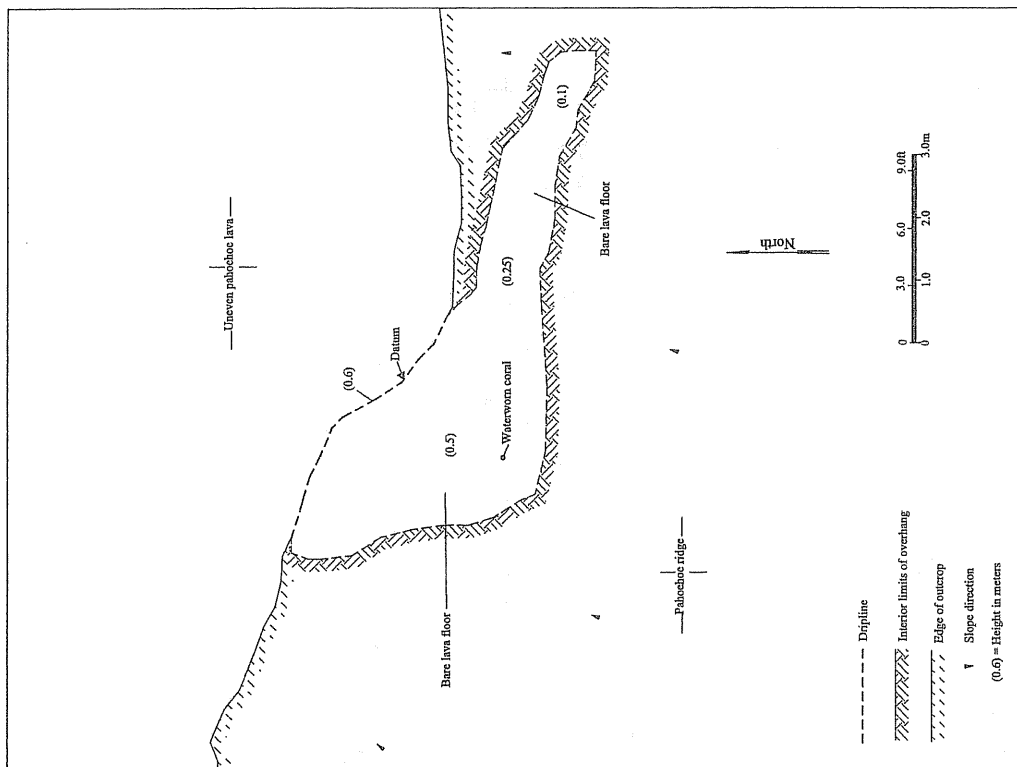


Figure 126. Site 25622 Plan Map

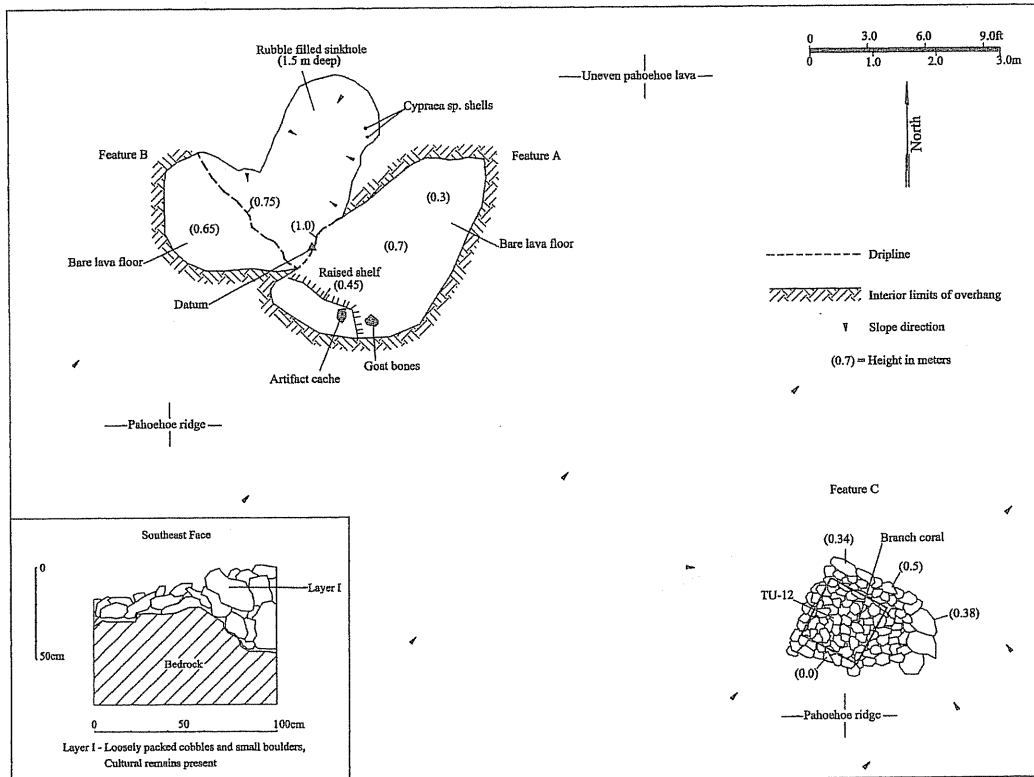


Figure 128. Site 25625 Plan Map and TU-12 Southeast face Profile

Site 25624

Site 25624 is a cairn located on a pahoehoe ridge at c. 2.1 ft elevation in the Land of Kealahou, 22.5 m west-southwest of Site 25623. The cairn is comprised of three subangular basalt cobbles stacked one on top of the other. It measures 0.3 m long (north-south), 0.19 m wide and 0.35 m in height. No cultural remains were found in association with the cairn. Site 25624 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

Site 25625

Site 25625 is a complex of three features located in on top of a pahoehoe ridge in the Land of Kealahou at c. 1.9 ft elevation. The features are comprised of two lava blisters (Features A and B) and a terrace (Feature C) situated in an area 14.4 m long (northwest by southeast) and 4.6 m wide (Figure 128). The Feature C terrace potentially corresponds to one of the features of Emory and Soehren's Site D11-13, which they describe as follows:

Scattered over a wide area to the east of the Northeast Range Marker steel tower [Site 25633] are traces of half a dozen small paved terraces, which are probably burials. Most are built against a natural slope of pahoehoe with a low wall forming two or three sides, and sand and coral covering the surface (1971:12).

No map of the site is presented in the report. The area was systematically inspected on three occasions and Feature C was the only terrace that could be relocated.

The Feature A and B lava blisters are accessed through an irregularly-shaped rubble filled sinkhole located at the western end of the site. The sink is 2.8 m long (north-south), from 1.35 to 2.4 m wide and 1.5 m in depth below the surrounding ground surface. The Feature A blister extends to the southeast from the sink and Feature B extends to the southwest. The entrance to Feature A is 1.05 m long (northeast by southwest) and 1.0 m in height. This opens onto an oval-shaped chamber that measures 3.95 m in length (northeast by southwest) and from 1.1 to 2.1 m wide. The floor in this chamber is uneven bare lava and the ceiling heights range from 0.3 to 0.7 m. A raised shelf is situated along the southern end of the chamber. It is 1.45 m long (northwest by southeast), 0.52 m wide and 0.45 m in height above the floor of the blister. A cache of artifacts is present on this shelf. A concentration of goat bones is present below the shelf on the floor of the blister.

The cache is comprised of complete and incomplete shell fishhooks, a pig tusk, dog teeth, a basalt adze, waterworn basalt pebbles. The fishhooks consist of a complete shell hook (Acc.# 73.003 - 26.8mm long, 16.2mm wide, 2.7 mm thick, 0.4 g), an incomplete shell fishhook (Acc.# 73.004 - 24.1mm long, 16.44mm wide, 2.7mm thick, 0.9 g), two prepared shell fishhook tabs (Acc.#73.006 - 40.3mm long, 22.5mm wide, 4.2mm thick, 4.1g and Acc.# 73.005 - 24.4mm long, 20.9mm wide, 3.2mm thick, 3.4 g) and an unfinished rough-out shell fishhook tab (Acc.# 73.007 - 53.3mm long, 32.3mm wide, 3.9mm thick, 6.9g). The worked pig scapula (Acc.# 73.008) is 99.2mm long, 26.3mm wide, 14.6mm thick, and weighs 15.0g. These artifacts are depicted in Figure 129. The basalt adze is 64.5mm long, 27.2mm wide, 13.3 mm thick, and weighs 40.5g; and the pig tusk is 75.4mm long, 40.7mm wide, 12.7mm thick and weighs 25.8g (Figure 130). Also present in the cache are four waterworn basalt pebbles (Acc.# 73.002 - 49.5 g) and three dog teeth (Acc.# 73.010 - 0.6 g).

The entrance to the Feature B lava blister is 2.35 m wide and 0.75 m in height. This opens onto an oval-shaped chamber that measures 2.3 m long (northeast by southwest) and 1.23 m wide. The floor is comprised of uneven bare lava and the ceiling heights averages 0.65 m. No cultural remains were present within this chamber.

The Feature C terrace is located 9.5 m southeast of the entrance to Feature A. The terrace is roughly rectangular in shape and measures 2.26 m long (west-northwest by east-southeast) and 1.52 m wide. The northeast and east sides of the terrace are bordered by roughly stacked cobbles and small bould-

ders, ranging in height from 0.34 to 0.5 m. The remaining sides of the structure are level with the uneven pahoehoe terrain. The surface is comprised of relatively level but unpaved cobbles and pebbles. A fragment of branch coral is present on the surface of the terrace.

A 1.0 by 1.0 m test unit (TU-12) was excavated into the center of the terrace, revealing a single layer over bedrock (see Figure 128). Layer 1 consisted of 0.11 to 0.46 m of loosely packed cobbles and small boulders. Cultural remains from this layer consisted of two waterworn coral cobbles (97.4g), one rodent bone (0.5g), and one *hukui* nut shell (6.7g).

Site 25625 is interpreted as a complex of temporary habitation features. The Feature A and B lava blister likely functioned as shelters due to their formal types and on the presence of the cultural remains in Feature A. The Feature C terrace potentially served as the foundation for a temporary habitation structure based on its formal type, relatively informal construction and small area (3.9 sq m). The site is unaltered and in good condition.

Site 25626

Site 25626 is a complex of two features located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 18 ft elevation. The features are comprised of an overhang (Feature A) and a midden scatter located in an area 8.95 m in length (north-south) and 4.8 m wide (Figure 131). The Feature A overhang is located at the south end of the site. The entrance to the feature is located along the southern side of a pahoehoe ridge. This entrance is 3.75 m in length (northeast by southwest) and 1.3 m in height. The interior of the overhang is roughly oval in shape and measures 4.55 m long (northeast by southwest) and from 2.35 to 3.6 m wide. The floor inside the feature is comprised of bare lava with ceiling heights that range from 0.55 to 1.15 m. Cultural remains present on the floor consists of scattered waterworn coral, *Cypraea* sp. and *Cellana* sp. shells, with a waterworn basalt cobble present in the southern corner.

A crude pile of cobbles and small boulders is located outside the entrance to the overhang to the south, extending between the sides of the surface bedrock outcrop. This pile is 2.9 m long (northeast by southwest), 0.7 to 1.35 m wide and 0.4 to 0.42 m in height.

The Feature B midden scatter is situated on uneven bare pahoehoe lava 5.5 m north of Feature A. This feature consists of a dense concentration of waterworn coral pebbles, *Cypraea* sp. and *Cellana* sp. shells and several waterworn basalt pebbles located in an area 2.2 m long (east-west) and 1.65 m wide. Scattered subangular basalt cobbles are located around the concentration.

Site 25626 is interpreted as a temporary habitation site. The Feature A overhang likely functioned as a shelter based on its formal type and on the presence of the cultural remains. The Feature B midden scatter likely represents an associated activity area based on its proximity to Feature A. The site is unaltered and in good condition.

Site 25627

Site 25627 is a lava blister located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 16 ft elevation. The entrance to the blister is through an oval-shaped sinkhole that measures 5.75 m long (north-south), from 2.45 to 2.95 m wide and 1.5 to 2.1 m in depth below the surrounding ground surface (Figure 132). The interior of the blister is roughly oval in shape with overall dimensions of 9.45 m long (north-south) and from 2.45 to 6.85 m wide. The ceiling heights in the main portion of the interior vary from 1.0 to 1.5 m. A raised shelf extends along the northwest, north, east and southeast sides of the interior, ranging in width from 0.85 to 2.0 m wide. The surface of the shelf is bare lava with the ceiling heights in this area varying from 0.6 to 0.9 m. There are three areas of ash present on the shelf with adjacent areas of midden comprised of *Cypraea* sp., *Cellana* sp., *Drupa* sp., *Nerita* sp. and *Logrionon* sp. shells, urchin body fragments and spines, *kukui* nut shells, waterworn coral, a waterworn basalt cobble and a wooden button. The button has four holes and measures 13mm in diameter and 4 mm thick. Site 25627 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site

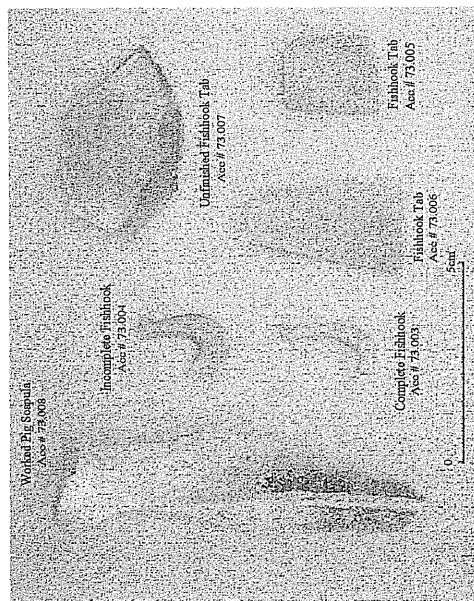


Figure 129. Artifacts from Site 25625, Feature A

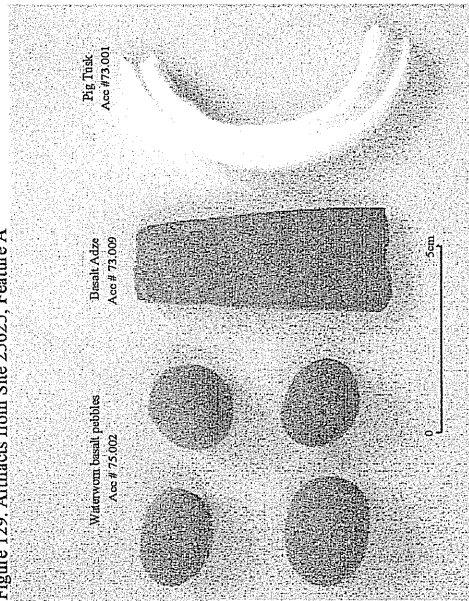


Figure 130. Artifacts from Site 25625, Feature A

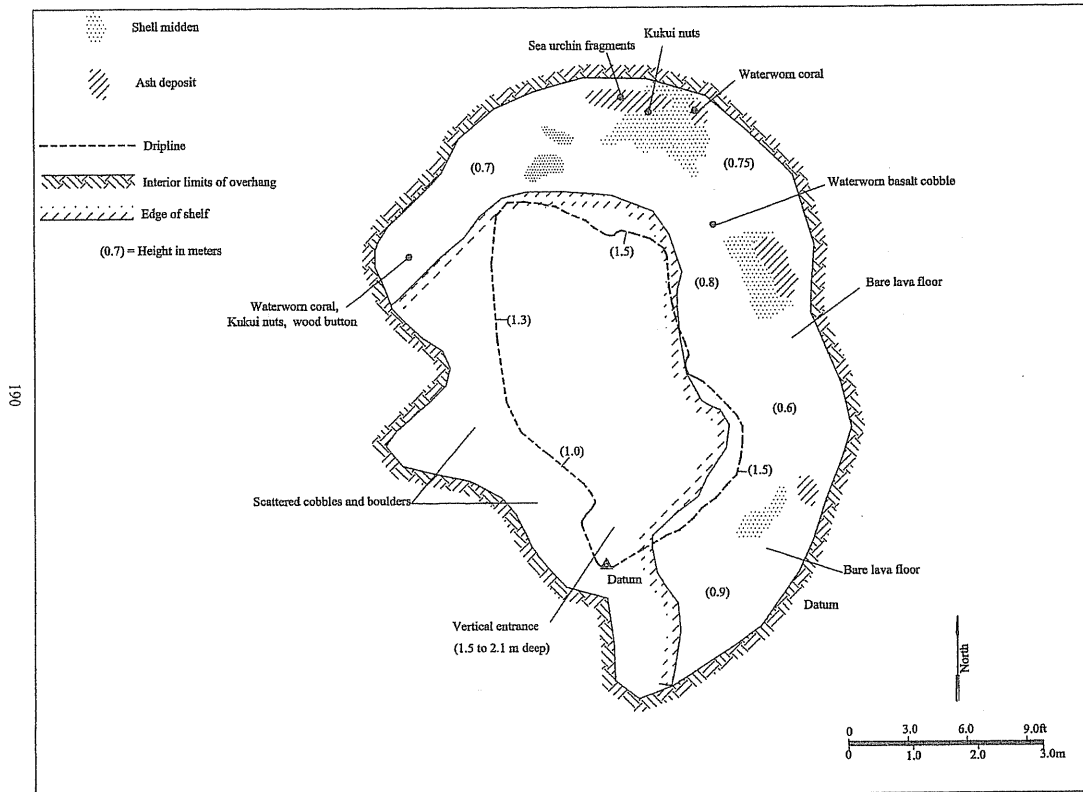


Figure 132. Site 25627 Plan Map

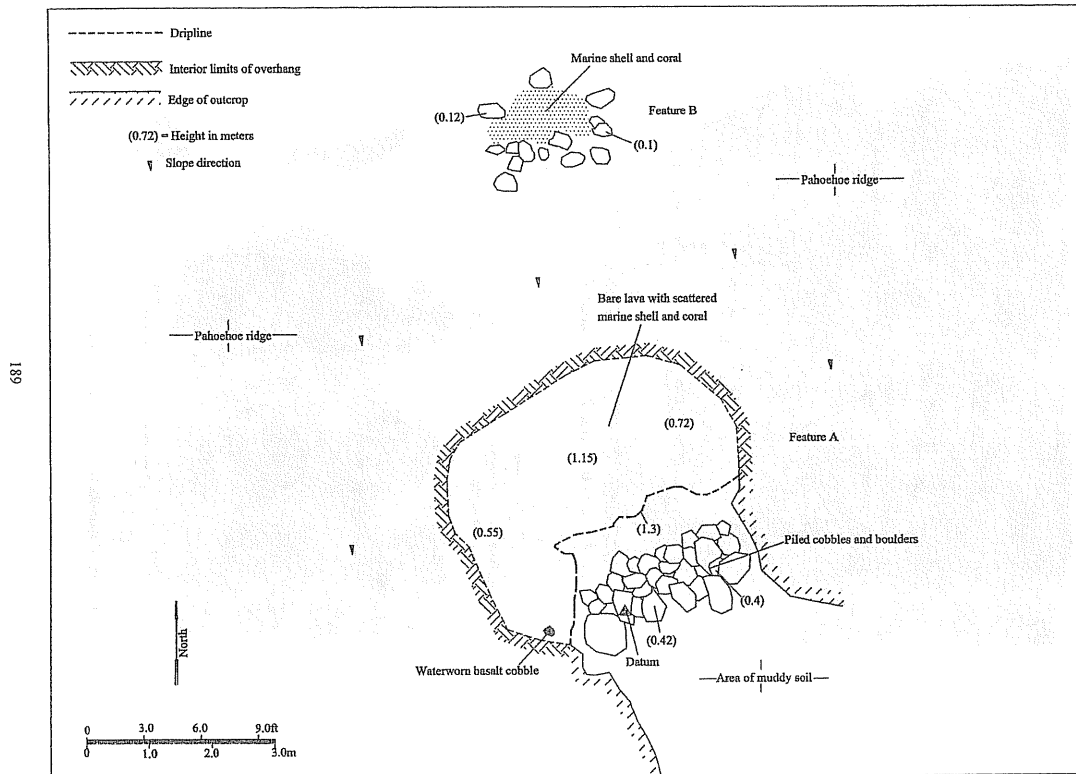


Figure 131. Site 25626 Plan Map

was likely used prehistorically with a subsequent historic period of use based on the presence of the button. The site is unaltered and in good condition.

Site 25628

Site 25628 is a complex of two features located on a pahoehoe ridge in the Land of Keiakihe at c. 13 ft elevation. The site is comprised of an overhang (Feature A) and a cairn (Feature B) located in an area 15.5 m in length (north-south) and 4.45 m wide (Figure 133). The Feature A overhang is located at the northern end of the site. The entrance to the overhang is located along the base of the ridge, to the west of an area of uneven pahoehoe lava. The entrance is 5.8 m in length (north-northwest by south-southeast) and from 0.57 to 1.13 m in height. This opens onto a roughly oval-shaped chamber that measures 0.85 m long (north-northwest by south-southeast) and from 0.88 to 2.95 m wide. The ceiling heights range from 0.42 to 1.24 m.

The floor in the north and south portions of the interior consists of bare lava with an area of thin soil with scattered cultural remains present in the central portion of the overhang, along the southwestern edge and outside the dripline to the east. The cultural remains consist of *Isatis* nut shells, waterworn coral, Echinoid body fragments, *Cypraea* sp. shells, charcoal and goat bones. There is an oval-shaped area of ash situated on the floor in the northern portion of the overhang measuring 1.22 m long (east-west) and 0.85 m wide. Scattered subangular basalt cobbles and two waterworn basalt cobbles are located to the south of the ash deposit.

The Feature B cairn is located 10.7 m south of the southern end of Feature A, built on the bare lava ridge. The cairn is comprised of two subangular basalt cobbles stacked one on top of the other. It measures 0.3 m long (northeast by southwest), 0.28 m wide and 0.51 m in height. No cultural remains were present.

The Feature A overhang is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The Feature B cairn is interpreted as a marker based on its formal type and appearance. The site is unaltered and in good condition.

Site 25629

Site 25629 is an enclosure located in an area of relatively level pahoehoe lava in the Land of Keiakihe at c. 18 ft elevation. The enclosure is oval in shape and measures 3.75 m long (northeast by southwest) and 3.2 m wide with no entrance into the interior (Figure 134). The walls of the structure are built of roughly stacked and piled subangular basalt cobbles and small boulders and range in width from 0.63 to 0.77 m and in height from 0.15 to 0.55 m. Scattered rubble is present along the interior and exterior sides of the enclosure and there are two flat pahoehoe slabs located along the eastern side. The interior of the enclosure is comprised of bare lava with scattered *Cypraea* sp., *Nerita* sp. and *Dryas* sp. shells and fragments of Echinoid body. Site 25629 is interpreted as a possible temporary habitation structure based on its formal type, insubstantial construction (roughly stacked and piled walls) and area (12.0 sq m). The site is unaltered and in poor condition.

Site 25630

Site 25630 is a complex of two features located on top of an uneven pahoehoe ridge in the Land of Keiakihe at c. 9 ft elevation. The features are comprised of a platform (Feature A) and an adjacent cairn (Feature B; Figure 135). The Feature A platform is roughly rectangular in shape with collapse present along the north, southwest and southeast sides. The feature appears to have originally measured 2.9 m in length (north-northwest by south-southeast) and 1.05 m wide. The sides of the feature range in height from 0.3 to 1.1 m and the surface is comprised of level but unpaved cobbles and small boulders. The surface of the platform is covered with numerous metal fragments.

The Feature B cairn is located adjacent to Feature A to the west. The stones from this feature appear to have been removed from Feature A. The cairn is 0.76 m in length (northeast by southwest), 0.62 m wide and 0.53 m in height. A plastic pipe extends vertically from the surface of the cairn, supporting a

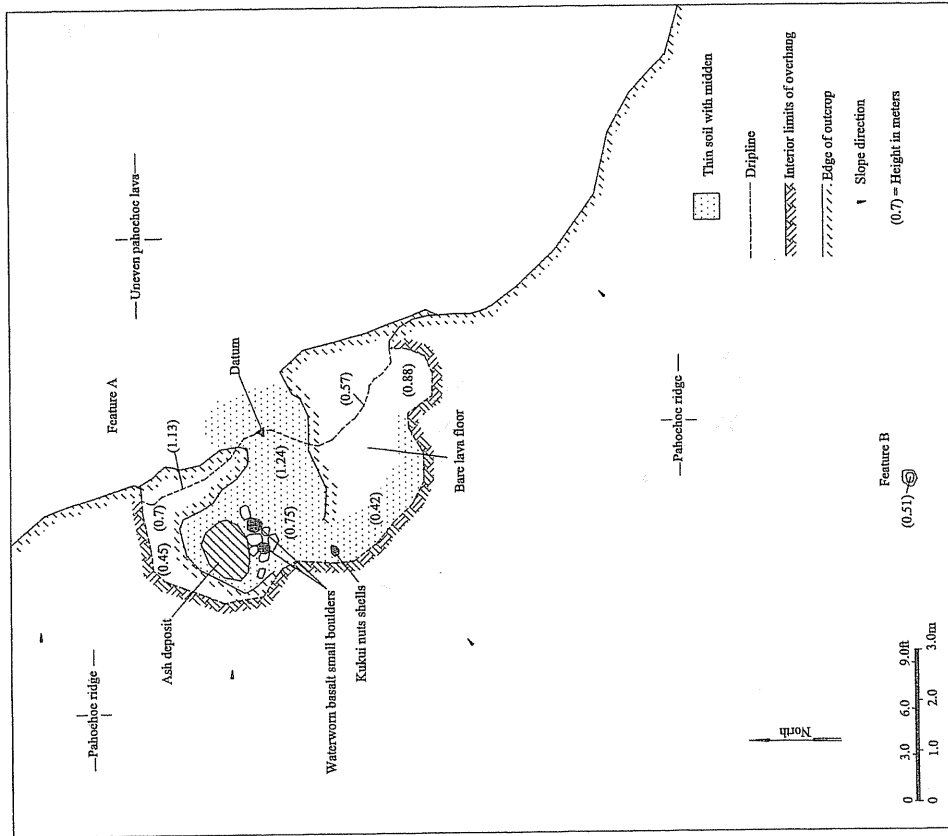


Figure 133. Site 25628 Plan Map

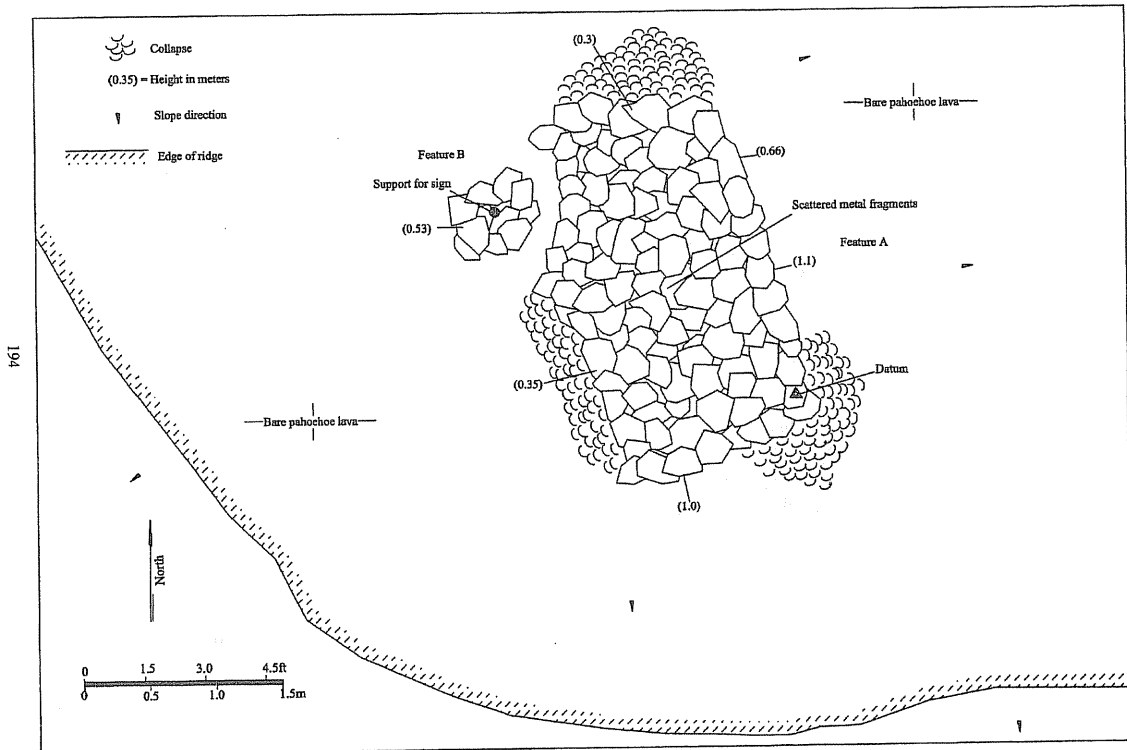


Figure 135. Site 25630 Plan Map

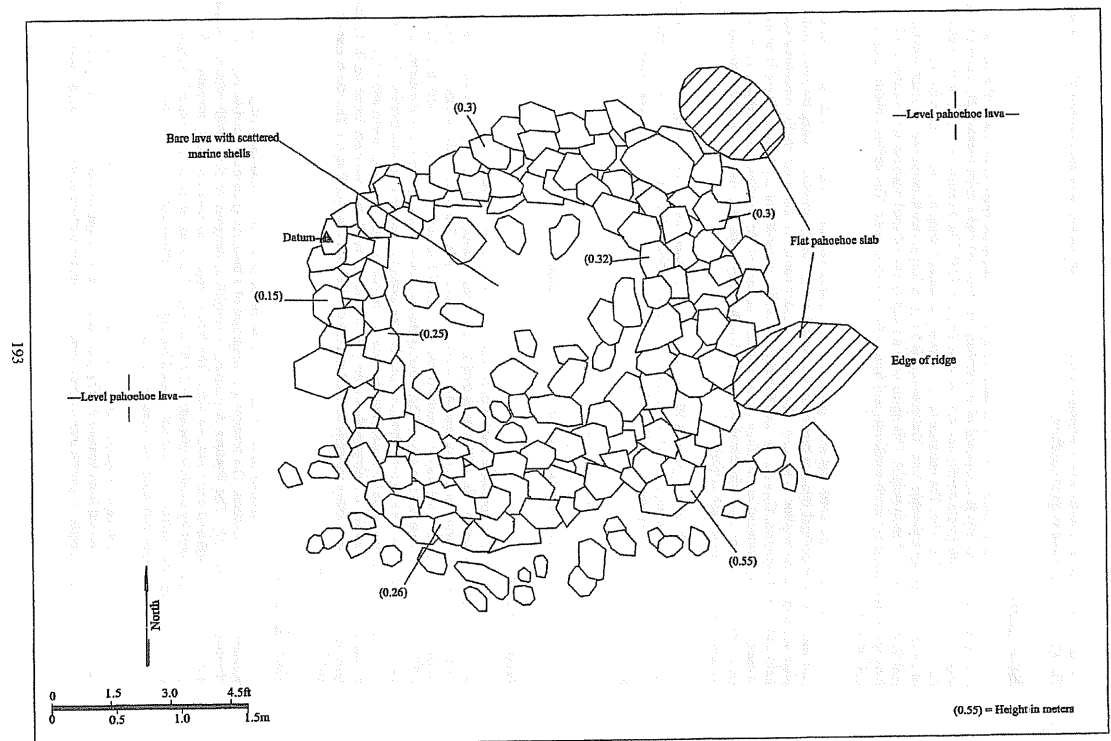


Figure 134. Site 25629 Plan Map

modern yellow metal sign with an "AQ" in a red circle imprinted on it with a red line through it (Figure 136). According to DLNR Boating Division Staff, this sign is associated with the Kona International Airport. No cultural remains were present.

The Feature B cairn and sign is an obvious modern construction that is associated with the adjacent harbor activity. The Feature A platform is interpreted as a probable historic marker that likely also once supported a metal sign based on the abundance of rusted metal on its surface and its location adjacent to the current sign. The site is unaltered and in fair condition.

Site 25631

Site 25631 is a cairn located in an area of uneven coastal pahoehoe lava in the Land of Kealahou measuring 0.85 m long (east-west), 0.8 m wide and 0.6 m in height (Figure 137). No cultural remains were found in association with the cairn. Site 25631 is interpreted as a marker based on its formal type and appearance. It is unaltered and in good condition.

Site 25632

Site 25632 is a complex of six features located on the crest and sides of a pahoehoe ridge in the Land of Kealahou at c. 12 ft elevation. The features are comprised of an overhang (Feature A), a lava tube (Feature B), two terraces (Features C and F), an enclosure (Feature D) and a filled crack (Feature E) situated in an area 39.0 m long (north-south) and 24.5 m wide (Figure 138).

The Feature A overhang is located at the southwest end of the site. The entrance to the tube is a sloping entrance on the side of a pahoehoe outcrop that is 5.4 m long (west-northwest by east-southeast) and from 0.85 to 1.2 m in height. This opens onto an irregularly-shaped chamber that is 11.2 m in length (northwest by southeast) and from 0.75 to 5.25 m wide. The floor inside the overhang is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.7 to 1.4 m. Scattered waterworn coral cobbles are present on the floor along with several waterworn basalt cobbles. There is a raised shelf present in the southeastern portion of the overhang that 4.45 m long (northwest by southeast) and 0.55 to 2.5 m wide. The surface of the shelf is comprised of bare lava with the ceiling height averaging 0.5 m. There is a concentration of ash present on top of the shelf that contains a waterworn coral pebble, *Calliana sp.* shells and a fragment of *Isogonomon sp.* shell.

The entrance to the Feature B lava tube is located 5.0 m east of the Feature A entrance. The entrance is comprised of an irregularly-shaped vertical hole that is 5.4 m long (north-south), from 0.4 to 3.0 m wide and 1.4 to 1.8 m in depth below the surrounding ground surface. This opens onto an irregularly-shaped chamber that measures 18.9 m long (north-south) and from 0.4 to 3.45 m wide. The floor inside the tube is comprised of bare lava with scattered roof fall and the ceiling heights range from 0.2 to 1.5 m. There is an area cleared of surface stones present in the northern portion of the tube that is 12.1 m long (north-south) by 2.0 m wide. Scattered *Cypraea sp.* and *Calliana sp.* shells are present in this cleared area along with modern debris consisting of a candle in a glass container, a towel, a swimsuit, a plastic bottle and aluminum foil. Several fragments of waterworn coral are present to the southwest of the cleared area.

The tube narrows to 0.4 m wide in the southern portion, with the tube sloping down to the south. There is a hole in tube floor to the north of this sloping area that is 1.4 m deep. Standing brackish water is present at the base of the hole. A fragment of waterworn coral is present on the floor of the feature at the south end.

The Feature C terrace is located 7.0 m to the northeast of the Feature B entrance. The feature appears to represent the remnant of a small terrace, bordered along the southwest and southeast sides by aligned subangular basalt cobbles and small boulders. It measures 1.8 m long (northeast by southwest) and 1.4 m wide, with the aligned stones ranging in height from 0.29 to 0.41 m. The feature is built on bare pahoehoe lava and there is a concentration of marine shells (*Cypraea sp.* and *Calliana sp.*) located on the



Figure 136. Site 25630, Feature B Sign and Cairn, view to west

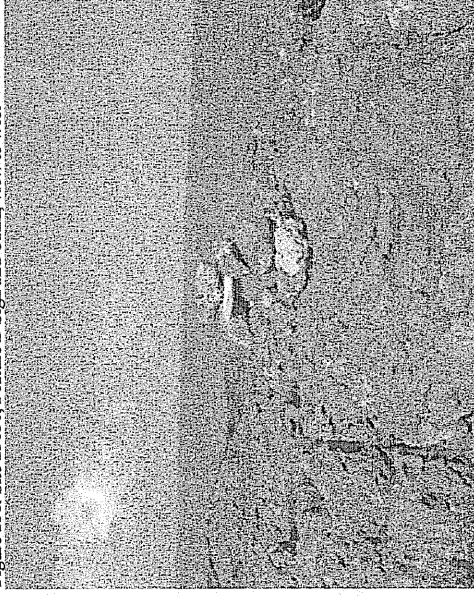


Figure 137. Site 25631 Cairn view to west

northern side. There is a fissure in the surface bedrock that extends to the north-northwest from the terrace, partially filled with cobbles and small boulders. No cultural remains were noted within the blister.

The Feature D enclosure is located 3.5 m to the northeast of Feature C. The enclosure is roughly U-shaped and is open to the southwest. It measures 3.5 m in length (north-northwest by south-southeast) and 2.0 m wide. The alignment is comprised of aligned subangular basalt cobbles and small boulders that range in height from 0.2 to 0.59 m. A projection extends to the north-northwest from the northwest end of the enclosure, measuring 1.9 m long, 0.8 m wide and 0.2 to 0.55 m in height. The interior of the enclosure is comprised of a thin cobble pavement. Scattered *Cypraea sp.* and *Callana sp.* shells and waterworn coral fragments are scattered over the surface.

The Feature E filled crack is situated 9.0 m north of Feature D. This crack is linear in shape and measures 5.8 m long (east-west), from 0.2 to 0.45 m wide and from 1.5 to 1.9 m in depth. Subangular basalt cobbles and small boulders have been placed within this crack. No cultural remains were observed.

The Feature F terrace is situated 5.4 m to the northwest of Feature E. It is rectangular in shape and is 4.3 m long (north-northwest by south-southeast) and from 1.4 to 2.0 m wide. A stacked and faced retaining wall extends along the east and north sides ranging in height from 0.45 to 0.68 m. The west and south sides vary in height from 0.23 to 0.32 m. Portions of the north, east and south sides have collapsed. The surface is comprised of level roughly paved with cobbles. An area of marine shells (*Cypraea sp.*) and waterworn coral is present along the western side of the surface.

Site 25632 is interpreted as a permanent habitation complex with an associated burial function. The Feature D enclosure and the Feature F terrace may have served as the foundations for permanent habitation special purpose structures based on their formal type, substantial construction (Feature D = paved surface, Feature F = faced sides, paved surface) and areas (Feature D = 7.0 sq m, Feature F = 8.6 sq m). The Feature C terrace remnant may have functioned as an ancillary feature used as an activity area. Alternatively, the Feature D and the Feature C terrace may represent the remains of a foundation for a dwelling that also utilized the intervening pahoehoe bedrock surface. This area is c. 31 sq m in area and falls within the range of typical permanent habitation dwellings. The Feature A overhang and the Feature B lava tube potentially served as associated sleeping or storage area due to their proximity to the other features of the site. The Feature E filled crack was created in 2000 by Kaloko-Honokohau National Park Service staff and others, who identified human remains within the fissure and placed stones in it to conceal the bones (NPS staff, pers. com. 2006). The site is unaltered and in fair to good condition.

Site 25633

Site 25633 is a complex of two features located on top of a pahoehoe ridge in the Land of Kealahou at c. 17:19 ft elevation. The features are comprised of an overhang (Feature A) and a metal range marker (Feature B) located in an area 13.1 m long (north-northwest by south-southeast) by 7.5 m wide (Figure 139). The Feature A overhang is located at the southern end of the site, along the base of the pahoehoe ridge. The area to the east of the entrance is comprised of uneven pahoehoe lava. The entrance to Feature A is 6.35 m in length (north-south) and from 0.65 to 1.3 m in height. This opens onto an irregularly-shaped chamber that measures 8.3 m long (north-south) and from 0.56 to 4.55 m wide. The floor throughout the overhang is comprised of bare lava with scattered roof fall. The ceiling heights range from 0.2 m at the southern end to 1.6 m at the highest point.

There are five concentrations of midden present on the floor of the feature, containing marine shells (*Cypraea sp.*, *Callana sp.*, *Nerita sp.*), urchin parts, *kuku* nuts and sparse ash. Several waterworn basalt cobbles and waterworn coral fragments are scattered across the floor. There is a raised shelf present along the western side of the overhang. It is 1.8 m in length (north-south), 0.78 m wide and 0.5 m in height above the floor of the overhang. The surface of the shelf consists of bare lava and contains a waterworn basalt cobble.

The Feature B metal range marker tower is situated 6.7 m northwest of the northern end of the Feature A overhang. The tower is constructed of a 1.22 m square metal frame built of beams and cross

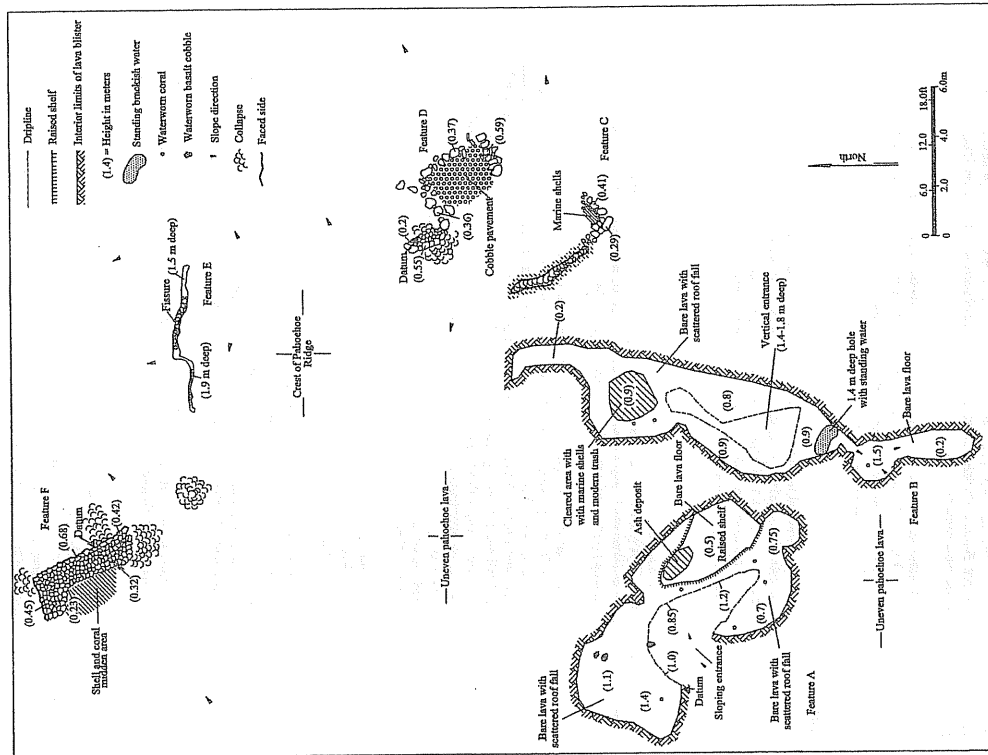


Figure 138. Site 25632 Plan Map

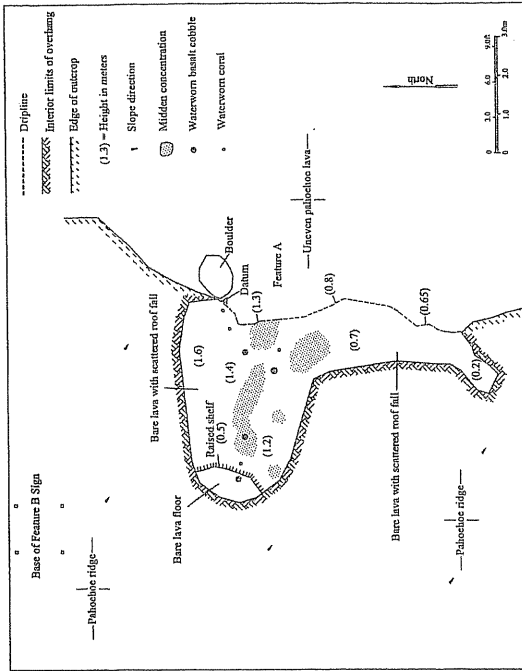


Figure 139. Site 25633 Plan Map

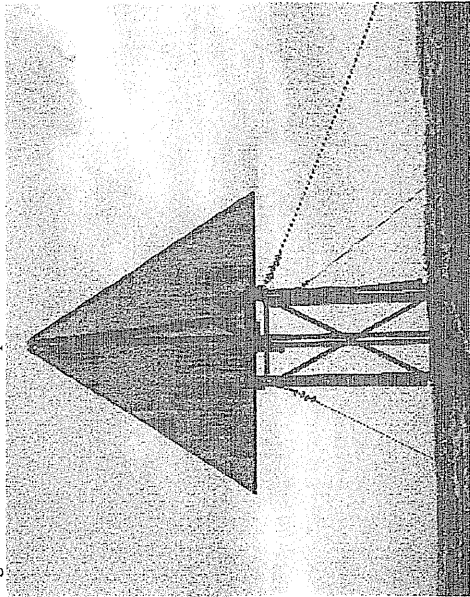


Figure 140. Site 25633, Feature B Tower, view to north

members bolted together that support a large triangular corrugated metal tower (Figure 140). The frame is supported by metal wires that extend from each side and which are bolted into the surrounding pahoehoe lava. The base of the tower is 4.3 m in height above the surrounding ground surface with the top of the sign measuring an additional 3.0 m in height. The marker is comprised of corrugated metal that appears to have originally been painted red and white. Currently the marker is rusted with only traces of these colors present. Scattered rusted metal cans are located around the base of the sign. This sign is depicted in Plate 3b in Emory and Soehren (1971:43) and is described as the "Northwest Range Marker steel tower" (1971:12).

The Feature A overhang is interpreted as a prehistoric temporary habitation shelter based on its formal type and on the presence of the cultural remains. The Feature B metal sign is interpreted as an historic nautical range marker. The site is unaltered and in fair to good condition.

Site 25634

Site 25634 is an overhang located along the north and west sides of a rubble filled sinkhole in the Land of Kealahou, in an area of uneven pahoehoe lava at c. 15 ft elevation. The sinkhole is irregularly shaped and is 7.2 m long (north-south), from 1.0 to 4.8 m wide and 1.0 to 1.6 m in depth below the surrounding ground surface (Figure 141). The interior of the overhang is 8.2 m long (northeast by southwest) and from 0.84 to 2.3 m wide. The floor within the overhang is comprised of uneven bare lava with ceiling heights that range from 0.4 to 1.3 m. There are two concentrations of *Cypraea sp.* shell present along the west side of the overhang with two waterworn basalt pebbles located 1.3 m to the east. Fragments of waterworn coral are present in the northeastern portion of the interior, with two waterworn basalt cobbles situated 2.0 m to the northwest. A *Merita picea* shell is located adjacent to the southern most waterworn basalt cobble to the west. Site 25634 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25635

Site 25635 is a complex of a lava blister (Feature A) and an overhang (Feature B) located in the Land of Kealahou located along the base on of a north-south trending pahoehoe ridge at c. 21 ft elevation. The features are located in an area 9.3 m in length (north-south) and 3.25 m wide (Figure 142). The Feature A lava blister is located at the south end of the site. The entrance is comprised of a vertical opening that is 1.45 m long (northwest by southeast), from 0.6 to 0.77 m wide and 0.9 m in depth. This opens onto a roughly oval-shaped chamber that measures 4.75 m long (north-south) and from 1.2 to 3.2 m wide. The floor is comprised of rough bare lava and the ceiling heights vary from 0.68 to 0.86 m. Modern trash (paper and plastic) is scattered over the floor, along with fragments of waterworn coral, a waterworn basalt cobble and a concentration of marine shells (*Cypraea sp.* and *Callana sp.*). There is a charcoal concentration present on the floor of the blister to the north of the entrance.

The main Feature B overhang is located 4.6 m to the north of Feature A. The entrance extends along the base of the pahoehoe ridge, with an area of level pahoehoe lava located to the west. The entrance is 1.3 m long (northwest by southeast) and 0.36 m in height. This opens onto an irregularly-shaped chamber that is 4.05 m long (north-northwest by south-southeast) and from 0.73 to 2.3 m wide. The floor in the overhang is comprised of rough bare lava with the ceiling heights ranging from 0.44 to 0.6 m. A concentration of *Cypraea sp.* and *Callana sp.* shells is located in the southern portion of the overhang, with two fragments of waterworn coral located to the north. A small skylight entrance is present above the marine shells, measuring 0.35 m long (north-south), 0.33 m wide and 0.93 m in depth below the outside ground surface.

Site 25635 is interpreted as a complex of temporary habitation shelters. This is based on the features formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25636

Site 25636 consists of a sand deposit surrounded by bare coastal pahoehoe lava located in the Land of Kealahou at elevations that range from 10-11 ft. The site encompasses an area 24.5 m long

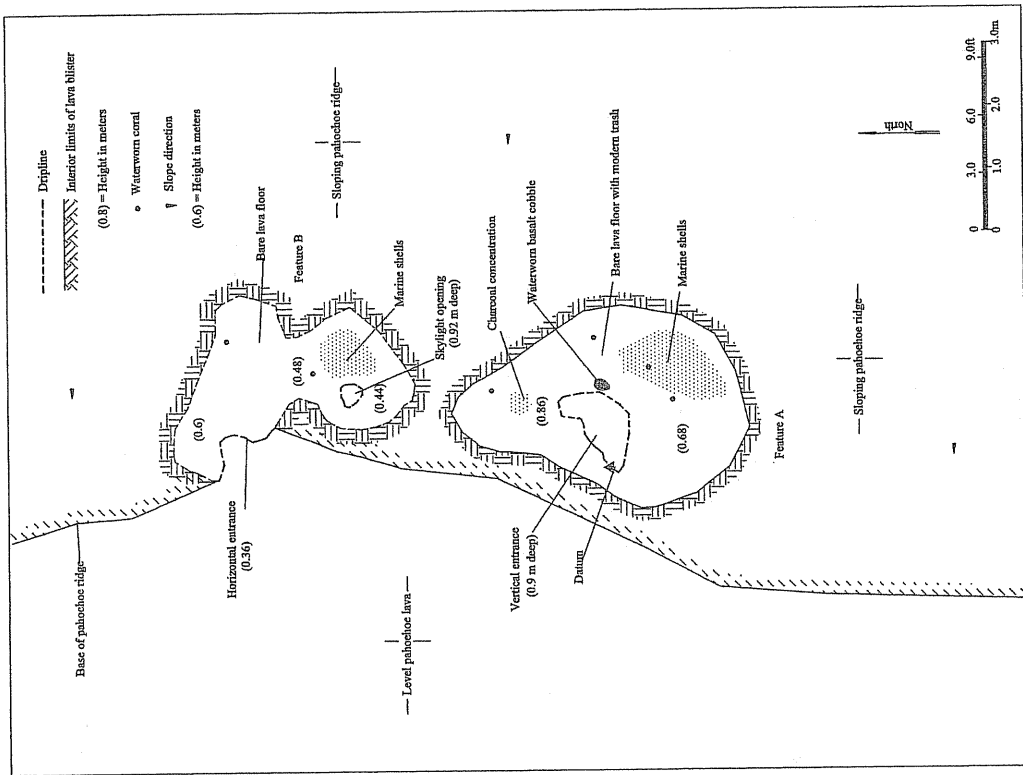


Figure 142. Site 25635 Plan Map

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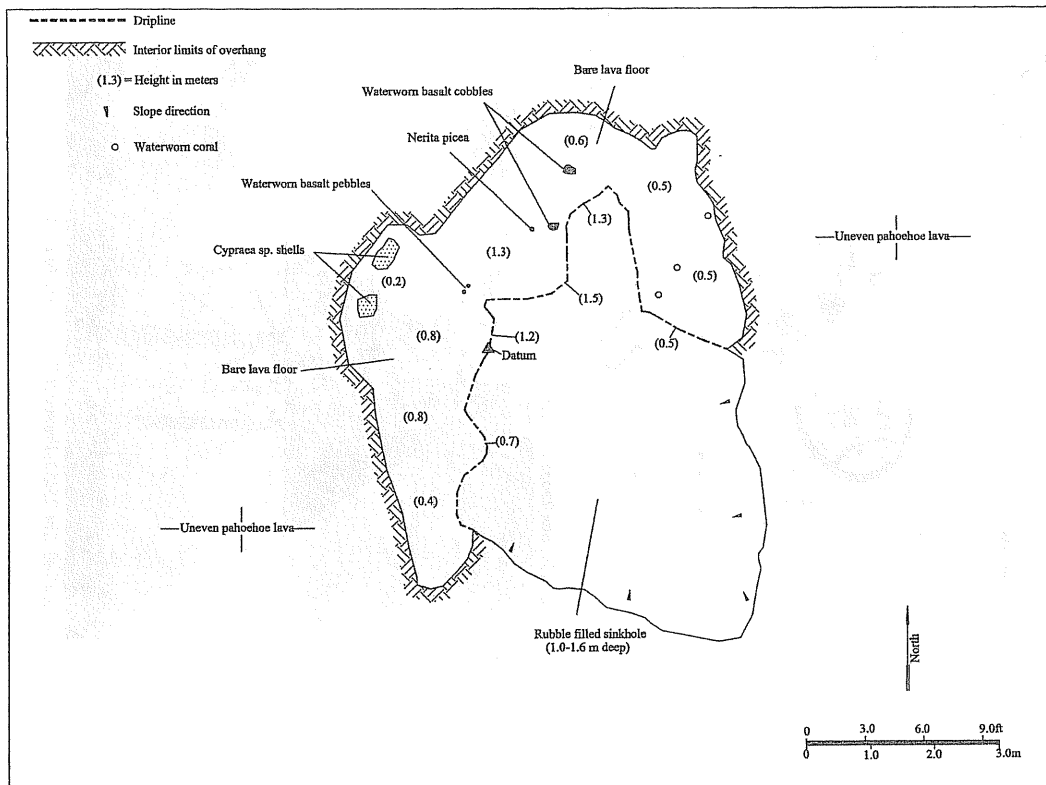


Figure 141. Site 25634 Plan Map

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(northwest by southwest) and 17.9 m wide and is comprised of level sand (see Figure 7 and Figure 143). Sun-bleached marine shells and fragments of waterworn coral are scattered over the sand surface.

A 1.0 by 0.5 m test unit (TU-15) was excavated into the sand in the approximate center of the area, revealing two layers over bedrock (Figure 144). Layer I consisted of 0.25 to 0.29 m of loosely compacted light brownish gray (10YR 6/2) sand. Cultural remains from this layer consisted of marine shells (*Cypraea granulata* [n=1, 0.2g], *Cypraea sp.* [n=2, 0.3g], *Littoraria pinnata* [n=11, 2.4g], *Nerita picea* [n=11, 4.8g], *Cellana sp.* [n=7, 1.6g], *Thalassidae sp.* [n=6, 2.4g], *Trochus interius* [n=5, 0.1g], *Barbatia renella* [n=3, 0.2g], *Isognomon sp.* [n=3, 0.3g], *Spondylus sp.* [n=8, 1.5g], waterworn marine shells [n=30, 4.5g], urchin body fragments (n=16, 2.4g), urchin spine fragments (n=18, 2.3g), and waterworn coral fragments (n=7, 1.6g).

The Layer II deposit consisted of a loosely compacted gray (10YR 6/1) sand with several waterworn basalt cobble and small boulder inclusions. TU-15 was excavated 0.51 to 0.54 m into this deposit at which point the water table was encountered. Cultural remains from Layer II was comprised of marine shells (*Conus litigylus* [n=1, 0.5g], *Conus sp.* [n=12, 4.1g], *Cypraea sp.* [n=2, 0.7g], *Littoraria pinnata* [n=25, 9.2g], *Nerita picea* [n=21, 6.4g], *Cellana sp.* [n=1, 0.7g], *Tellina palatum* [n=2, 0.8g], *Trochus interius* [n=4, 0.2 g], waterworn marine shells [n=14, 3.9g], urchin body fragments (n=18, 4.6g), urchin spine fragments (n=29, 12.5g), charcoal fragments (n=234, 95.6g), and a fragment of waterworn coral (0.4g).

Site 25636 is interpreted as a habitation site based on the nature of the cultural remains noted in TU-15. It is possible that pole and thatched roofed structures may have once existed in the sand area. The site is unaltered and in good condition.

Site 25637

Site 25637 is a small midden scatter located in the Land of Kealahie in an area of uneven pahoehoe lava at c. 10 ft elevation. The midden is located in an area 2.05 m long (north-south) and 1.4 m wide and is comprised of c. 50 sun-bleached *Cypraea sp.* and *Cellana sp.* shells and c. 100 waterworn coral pebbles. The site is located 27.5 m northeast of the Site 25628, Feature A temporary habitation overhang and 20.5 m west of the Site 25640 temporary habitation lava blister. Site 25637 is interpreted as a possible temporary habitation site based on its small area and close proximity to the two temporary habitation shelters. The site is unaltered and in fair condition.

Site 25638

Site 25638 is a lava blister located in the Land of Kealahie in an area of uneven pahoehoe lava at c. 10 ft elevation. The entrance to the blister is through the north side of a small oval-shaped sinkhole that is 3.2 m long (northeast by southwest), 1.85 m wide and 1.3 m in depth below the surrounding ground surface (Figure 145). The entrance to the blister is 2.45 m wide and 1.1 m in height and opens onto an irregularly-shaped chamber that measures 6.6 m long northeast by southwest and 6.3 m long north by south-east. The blister ranges in width from 1.1 to 2.4 m and in height from 0.2 to 0.7 m. The floor is comprised of rough bare lava. Two waterworn basalt cobbles are present against the northwest wall of the blister and there is concentration of *Ankar* nuts and several unidentified marine shell fragments adjacent to the diaphane to the north. A waterworn coral fragment is located adjacent to the *Ankar* nuts and shell to the west. Site 25638 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in fair condition.

Site 25639

Site 25639 is a complex of two features located in an area of uneven pahoehoe lava in the Land of Kealahie at c. 8 ft elevation. The features are comprised of a lava blister (Feature A) and a midden scatter located in an area 18.0 m long (east-northeast by west-southwest) and 12.4 m wide (Figure 146). The Feature A lava blister is located in the western portion of the site. It is accessed through an oval-shaped rubble filled vertical entrance that measures 10.5 m long (north-south), from 2.1 to 5.9 m wide and 2.4 m in depth below the surrounding ground surface. The lava blister extends around the perimeter of the entrance and is



Figure 143. Site 25636 Sand Area, view to west

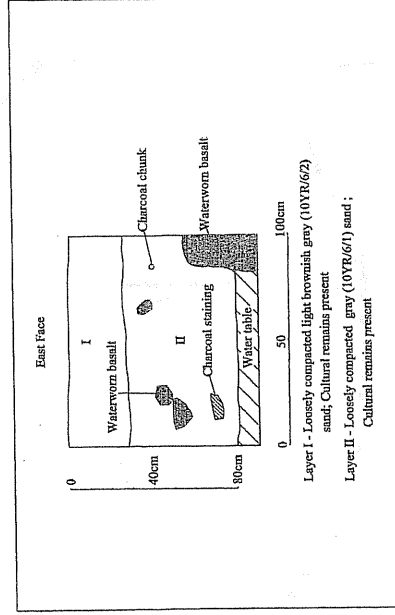


Figure 144. Site 25636, TU-15 East Face Profile

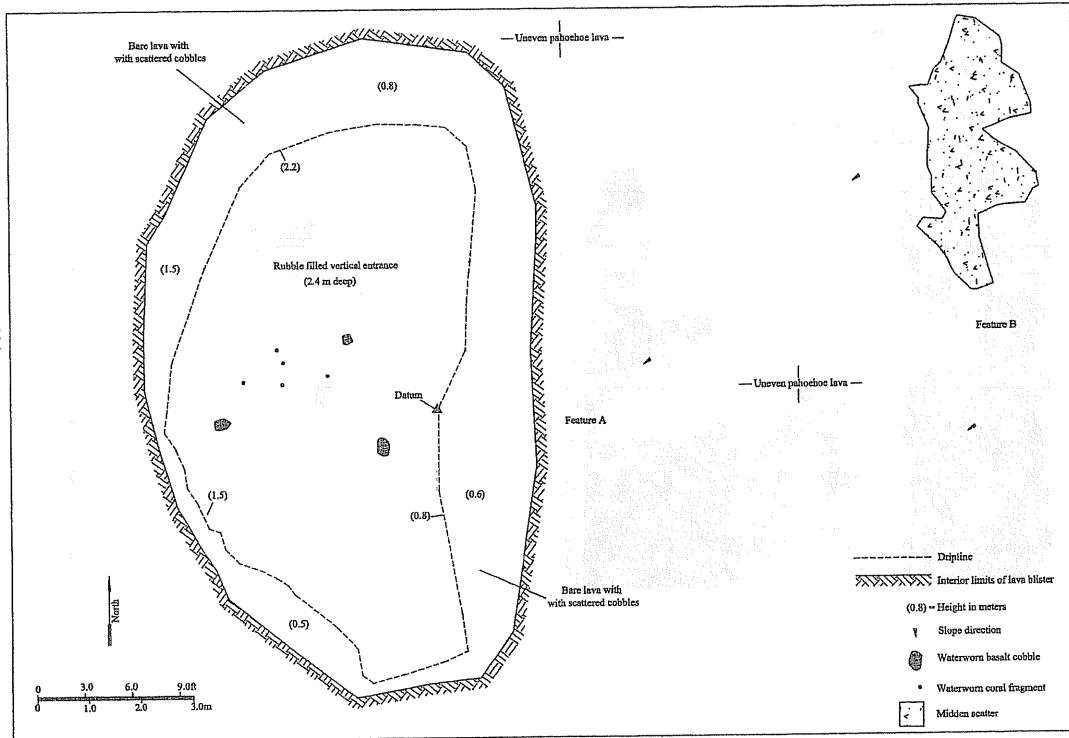


Figure 146. Site 25639 Plan Map

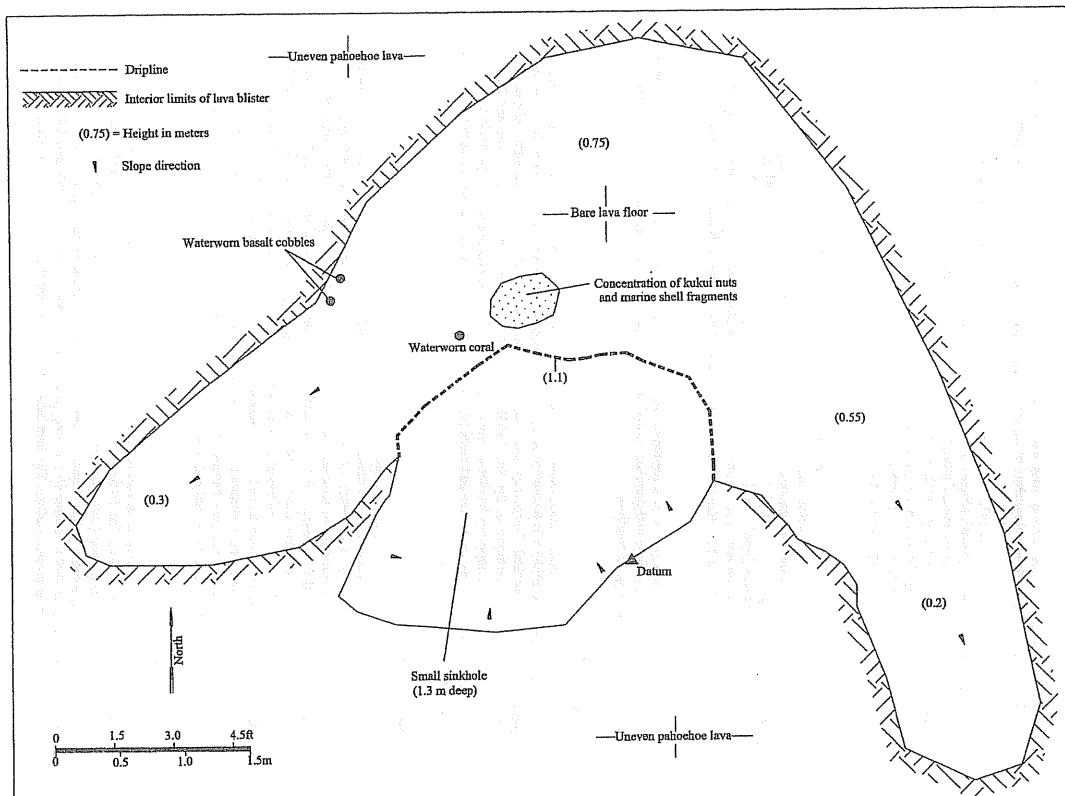
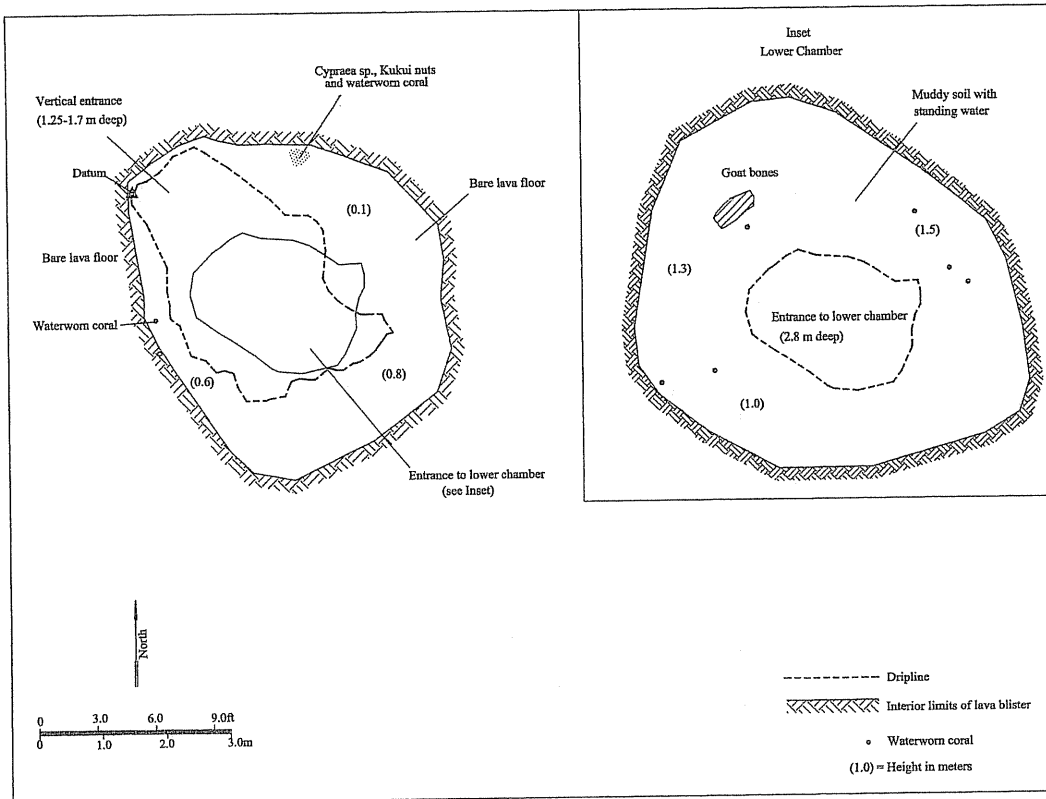


Figure 145. Site 25638 Plan Map



12.4 m long (north-south) and 7.4 m wide. The floor in the feature is comprised of bare lava with scattered cobbles and the ceiling heights range from 0.5 to 1.5 m. Three waterworm basalt cobbles and five fragments of waterworm coral are present in the floor of the entrance.

The Feature B midden scatter is located 9.25 m to the east of the eastern side of the Feature A entrance. This feature is comprised predominantly of a scatter of waterworm coral fragments with several *Cypraea* sp. and *Cellana* sp. shells present. The scatter encompasses an irregularly-shaped area that is 5.2 m long (north-south) and from 0.62 to 2.0 m wide. Site 25639 is interpreted as a temporary habitation complex. The Feature A lava blister likely functioned as a shelter based on its formal type and cultural remains with the Feature B midden serving as an associated activity area. The site is unaltered and in good condition.

Site 25640

Site 25640 is a lava blister located in the Land of Kealahou in an area of uneven pahohoe lava at c. 10 ft elevation. The entrance to the blister is comprised of a vertical, roughly oval-shaped hole that measures 4.3 m long (northwest by southeast), from 1.45 to 2.85 m wide and 1.25 to 1.7 m in depth below the surrounding ground surface (Figure 147). The entrance opens onto an oval-shaped chamber that is 5.5 m in length (northwest by southeast) and 4.55 m wide, with a bare lava floor and ceiling heights that range from 0.1 to 0.8 m. A concentration of *Cypraea* sp. shells, *kuku'i* nut shells and waterworm coral are present along the north wall of the chamber, with a fragment of waterworm coral present along the western wall.

There is a vertical hole in the floor of the chamber below the entrance. This hole is 2.6 m long (east-west), 2.0 m wide and 2.8 m in depth. This leads to a second, lower chamber that is 6.3 m long (northwest by south-southeast), and 5.8 m wide. The floor in this lower chamber is comprised of a muddy soil with areas of standing brackish water and the ceiling heights range from 1.0 to 1.5 m. Goat bones and several waterworm coral fragments were observed within the lower chamber. Site 25640 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25641

Site 25641 is a complex of two lava blisters located in the Land of Kealahou in an area of uneven pahohoe lava at c. 12 ft elevation. The site encompasses an area 16.1 m long (northwest by southeast) and 6.4 m wide (Figure 148). The Feature A lava blister is located at the northwest end of the site. The entrance to the feature is comprised of an irregularly-shaped vertical hole in the surface lava that is 3.5 m long (northwest by southeast), 2.7 m wide and 1.9 to 2.3 m in depth. This opens onto an oval-shaped chamber that measures 7.25 m long (north-south) and 2.65 to 4.5 m wide. The floor is comprised of bare lava with ceiling heights that range from 0.5 to 1.1 m. There is a concentration of *Cypraea* sp., *Cellana* sp. and *Nerita* sp. shells located on the floor of the blister in the northern portion. Several *kuku'i* nut shells and waterworm coral fragments are present in the southern portion. An area of shallow standing brackish water is present in the central portion of the blister below the entrance.

The entrance to the Feature B lava blister is located 6.8 m to the southeast of Feature A. The entrance consists of an irregularly-shaped vertical hole that is 3.65 m long (north-south), 1.5 to 2.4 m wide and 1.8 to 2.7 m in depth below the surrounding ground surface. This opens onto an oval-shaped chamber that is 7.3 m long (north-south) and 4.3 to 4.8 m wide. The floor throughout the chamber is comprised of bare lava with the ceiling heights ranging from 0.7 to 1.5 m. The northern portion of the blister contains a raised shelf that varies 0.5 to 0.6 m in height above the main floor. A concentration of ash and a *Cypraea* sp. shell are present on this shelf in the eastern portion. Scattered fragments of waterworm coral are present below the entrance and an area of shallow standing brackish water is situated in the southwestern portion of the interior.

Site 25641 is interpreted as a complex of temporary habitation shelters. This is based on the features formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25642

Site 25642 is an overhang located in the Land of Kealahou in an area of uneven pahoehoe lava at c. 10 ft elevation. The site is located to the south of a large brackish water pond. The overhang is located along the northeast, northwest and southwest sides of a natural depression that angles down to the north (Figure 149). A fissure extends to the southeast from the east end of the overhang. The entrance varies in height from 1.1 to 1.7 m with the interior measuring 9.0 m long northeast by southwest and 4.6 to 4.7 m long northwest by southeast. The interior of the overhang ranges in width from 0.4 to 2.0 m wide with the ceiling heights ranging from 0.3 to 0.7 m. The floor of the overhang is comprised of bare lava. Concentrations of *Ceclana* sp. shells are present; one along the northwest interior wall and one located outside the dripline to the south. A cluster of *Merita picea* shells is located below the dripline with a fragment of waterworn coral located 0.8 m to the south. Several *Cypraea* sp. shells are located outside the overhang on top of an outcrop that borders the natural fissure. There are areas of shallow standing water located in the northern portion of the interior and along the outcrop that borders the figure, outside the overhang to the south. Site 25642 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition.

Site 25643

Site 25643 is a stone alignment situated in the Land of Kealahou in an area of relatively level pahoehoe lava at c. 7.5 ft elevation. The alignment is comprised of one to two courses of pahoehoe slabs aligned in a roughly oval-shaped configuration that is 2.56 m long (north-south) and 2.18 m wide (Figure 150). The majority of the slabs are situated flat on the ground although three are positioned vertically on edge. The individual stones range in length from 0.08 to 0.79 m and in width from 0.05 to 0.44 m. The flat slabs range in thickness from 0.15 to 0.21 m and the vertical slabs are from 0.45 to 0.58 m in height. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25644

Site 25644 is a lava blister situated in the Land of Kealahou in an area of uneven pahoehoe lava at c. 32 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The entrance to the blister is through an irregularly-shaped vertical hole in the surface lava that is 1.38 m long (east-west), 1.05 m wide and 1.85 m in depth (Figure 157). This opens onto a roughly oval-shaped chamber that measures 10.2 m long (west-northwest) and from 1.72 to 5.5 m wide. The ceiling heights inside the blister range from 0.3 to 0.9 m. The floor in the western portion is comprised of bare lava with scattered roof fall cobbles and one large roof fall slab. A crude pile of cobble and boulder roof fall is located to the north of the entrance. This pile is 1.75 m long (east-west), 0.8 m wide and 0.3 to 0.35 m in height. The floor in the eastern portion of the blister is comprised of rough bare lava. Cultural remains within the blister consist of sparse *Cypraea* sp. shells and *kukui* nuts. Site 25644 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains.

Site 25645

Site 24645 is a stone alignment situated in the Land of Kealahou in an area of relatively level pahoehoe lava at c. 28 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The alignment is comprised of one to two courses of subangular basalt cobbles and small boulders and one slab set on edge (Figure 152). The alignment is irregularly-shaped and measures 2.4 m long (east-west) and 0.81 m wide. The individual stones range in length from 0.08 to 0.4 m and in width from 0.07 to 0.29 m. The height of the subangular stones range from 0.11 to 0.23 m and the vertical slab is 0.31 m in height. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

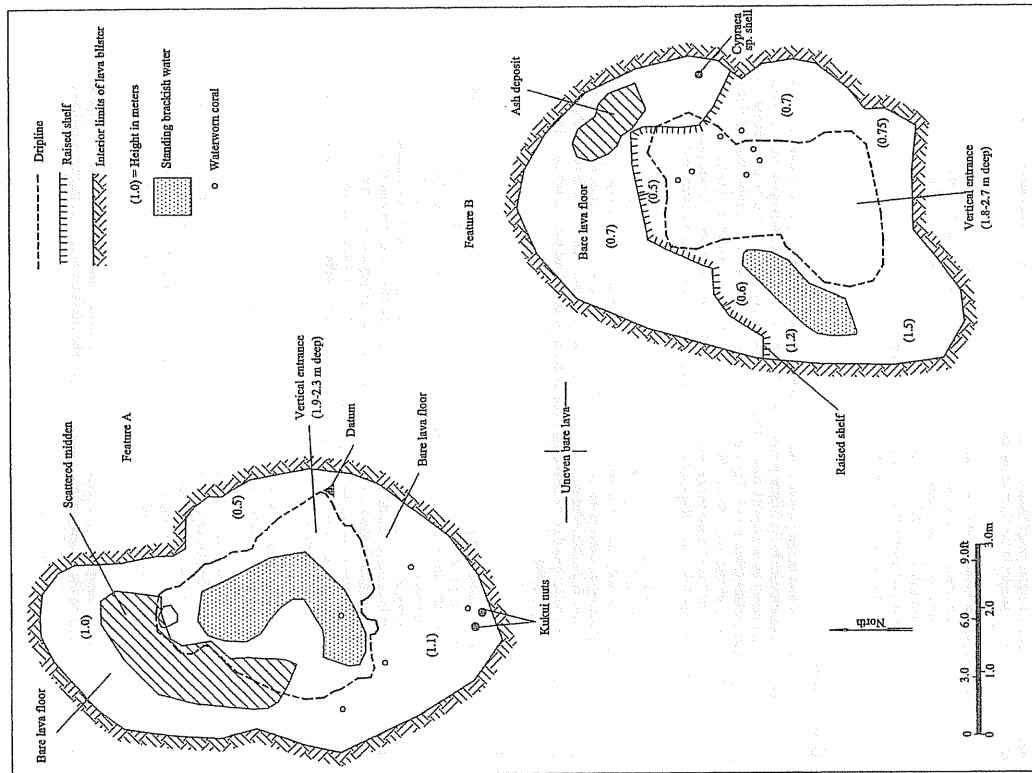


Figure 148. Site 25641 Plan Map

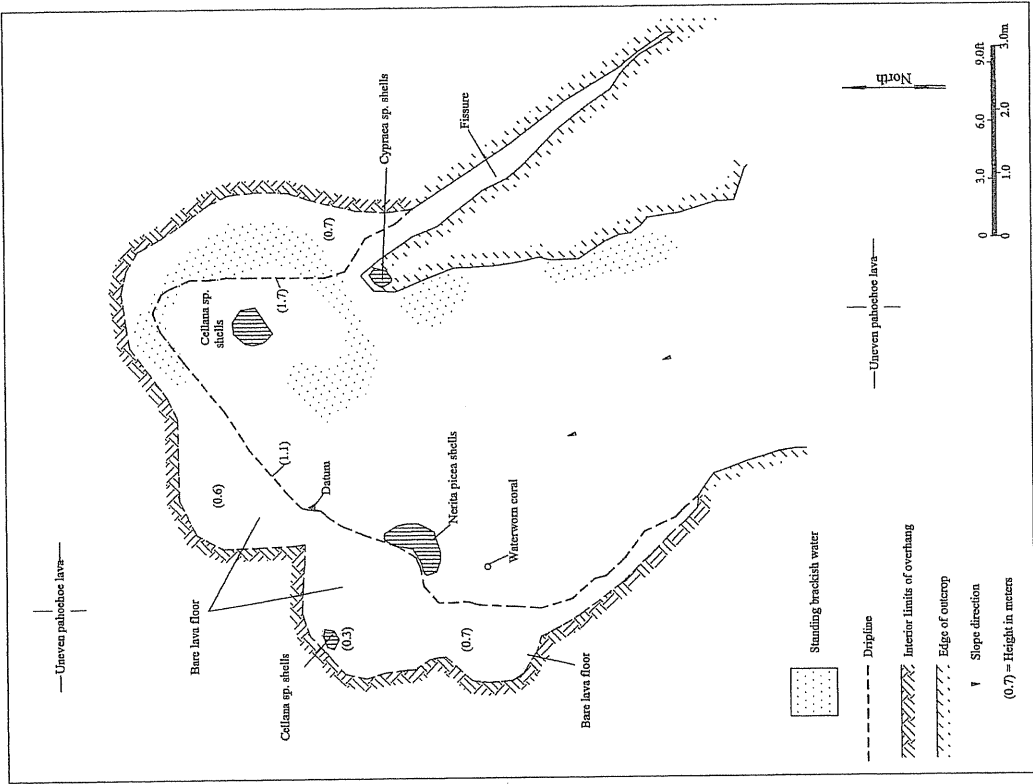


Figure 149. Site 25642 Plan Map

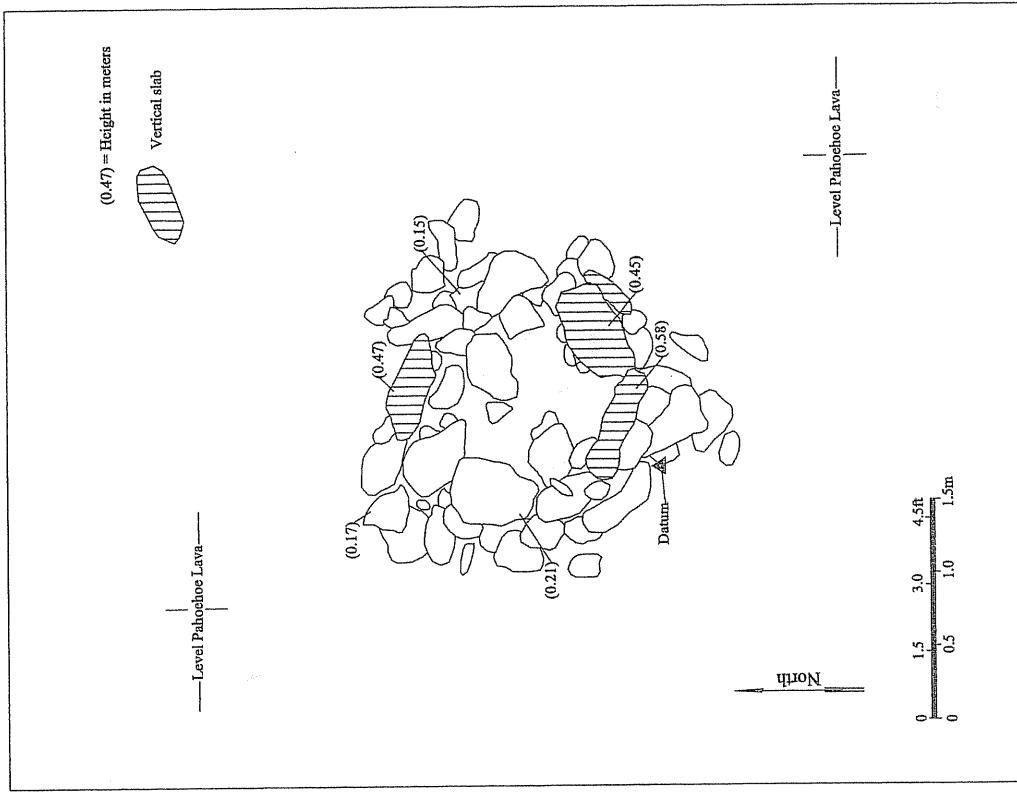


Figure 150. Site 25643 Plan Map

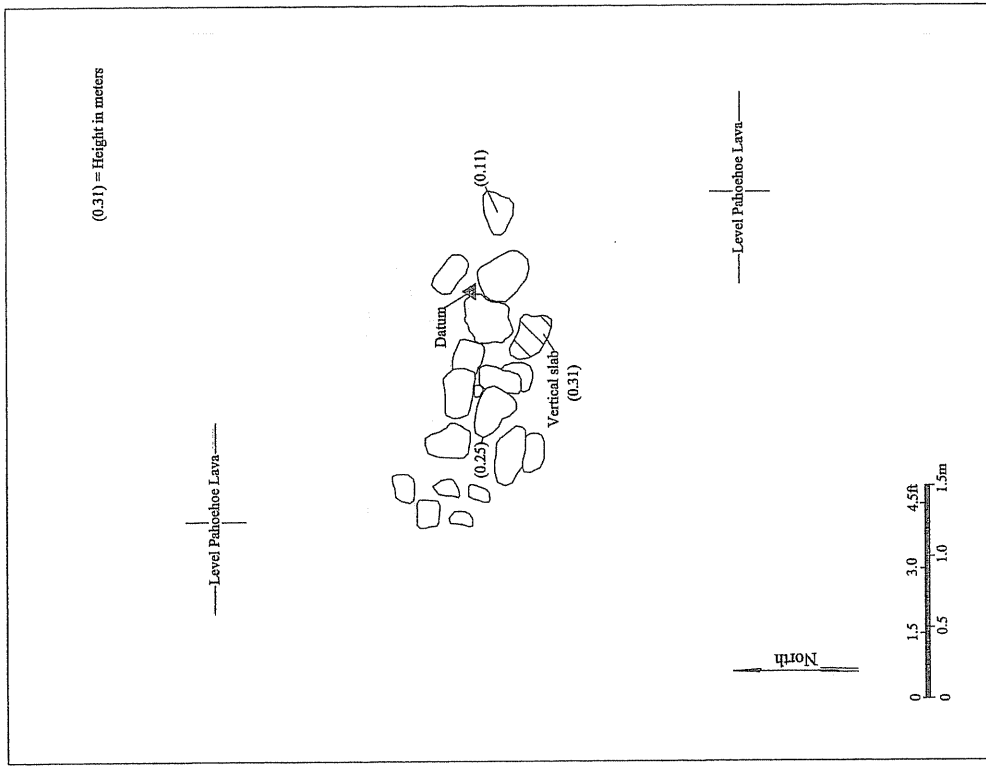


Figure 151. Site 25644 Plan Map

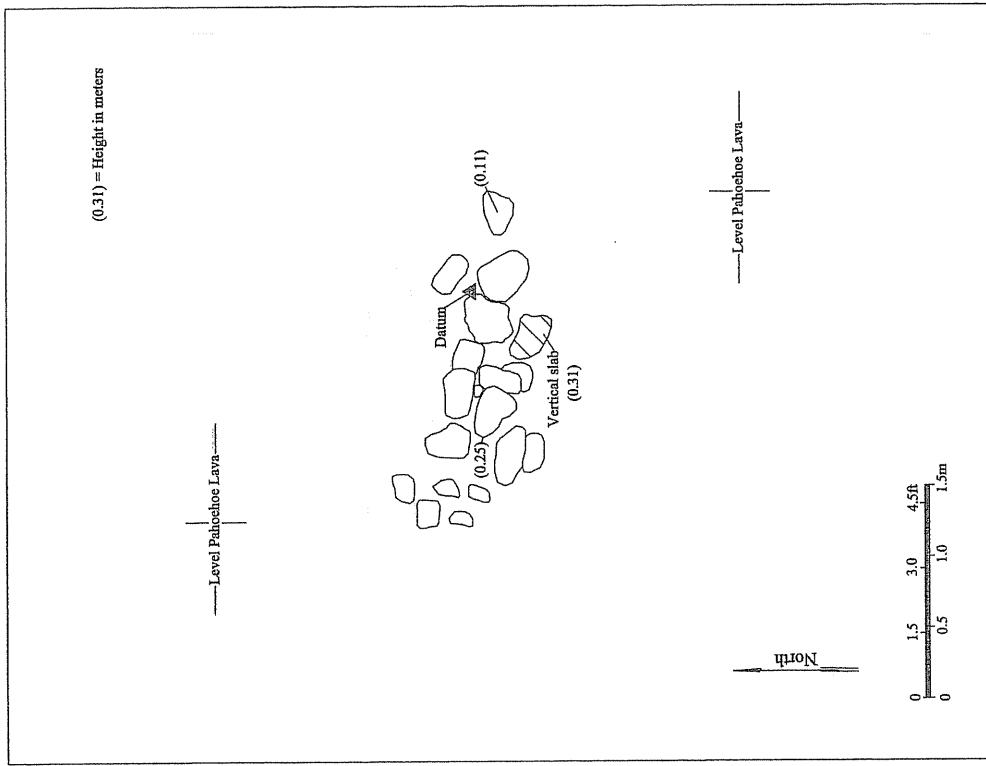


Figure 152. Site 25645 Plan Map

Site 25646

Site 25646 is a stone alignment situated in the Land of Keahuolu in an area of relatively level pahoehoe lava at c. 28 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The alignment is comprised of one to two courses of subangular basalt cobbles pebbles and small boulders aligned in a roughly U-shaped configuration that is 2.7 m long (northwest by southeast) and 1.92 m wide (Figure 153). The individual stones range in length from 0.04 to 0.54 m, in width from 0.03 to 0.39 m and in height from 0.05 to 0.3 m. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25647

Site 25647 is a complex of two stone alignments located in the Land of Keahuolu in an area of relatively level pahoehoe lava at c. 25 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The features are located in an area 14.5 m long (northeast by southwest) and 3.0 m wide (Figure 154). The Feature A alignment is located at the southern end of the site. The alignment is U-shaped and measures 1.9 m long (east-west) and 1.73 m wide. It is comprised of a single course of flat pahoehoe slabs with the individual stones ranging in length from 0.1 to 0.55 m, in width from 0.08 to 0.35 m and in height from 0.06 to 0.1 m.

The Feature B alignment is situated 9.2 m northeast of Feature A. This feature is irregular in shape and is comprised of one course of flat pahoehoe slabs. The feature is 3.4 m long (northeast by southwest) and 2.69 m wide. The stones range in length from 0.06 to 0.56 m, in width from 0.04 to 0.36 m and in height from 0.03 to 0.7 m. No soil or cultural remains were present in association with the either of the alignments. The function of the features is undetermined. It is unaltered and in fair condition.

Site 25648

Site 25648 is a crude, partially collapsed cairn located Land of Keahuolu in an area of relatively level pahoehoe lava at c. 21 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The site is constructed of roughly stacked and piled cobbles and small boulders, measuring 1.1 m long (east-west), 1.0 m wide and 0.35 m in height (Figure 155). No cultural remains were found in association with the site. Site 25648 is interpreted as a possible marker based on its formal type and appearance. The site is unaltered and in poor condition.

Site 25649

Site 25649 is a stone alignment situated Land of Keahuolu in an area of relatively level pahoehoe lava along the northwest side of a low outcrop at c. 19 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The alignment is comprised of one to two courses of pahoehoe slabs and subangular basalt cobbles, pebbles and small boulders aligned in a roughly oval-shaped configuration that is 3.6 m long (north-east by southwest) and 2.73 m wide (Figure 156). The individual stones range in length from 0.07 to 0.62 m, in width from 0.05 to 0.35 m and in height from 0.08 to 0.46 m. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined. It is unaltered and in fair condition.

Site 25650

Site 25650 is a complex of two crude mounds located in the Land of Keahuolu in an area of sloping pahoehoe at c. 18 ft elevation. This site is located within the area previously surveyed by Donham (1990b), but it could not be correlated with any sites previously recorded in this area. The features are situated in an area 7.6 m in length (north-south) and 2.5 m wide (Figure 157).

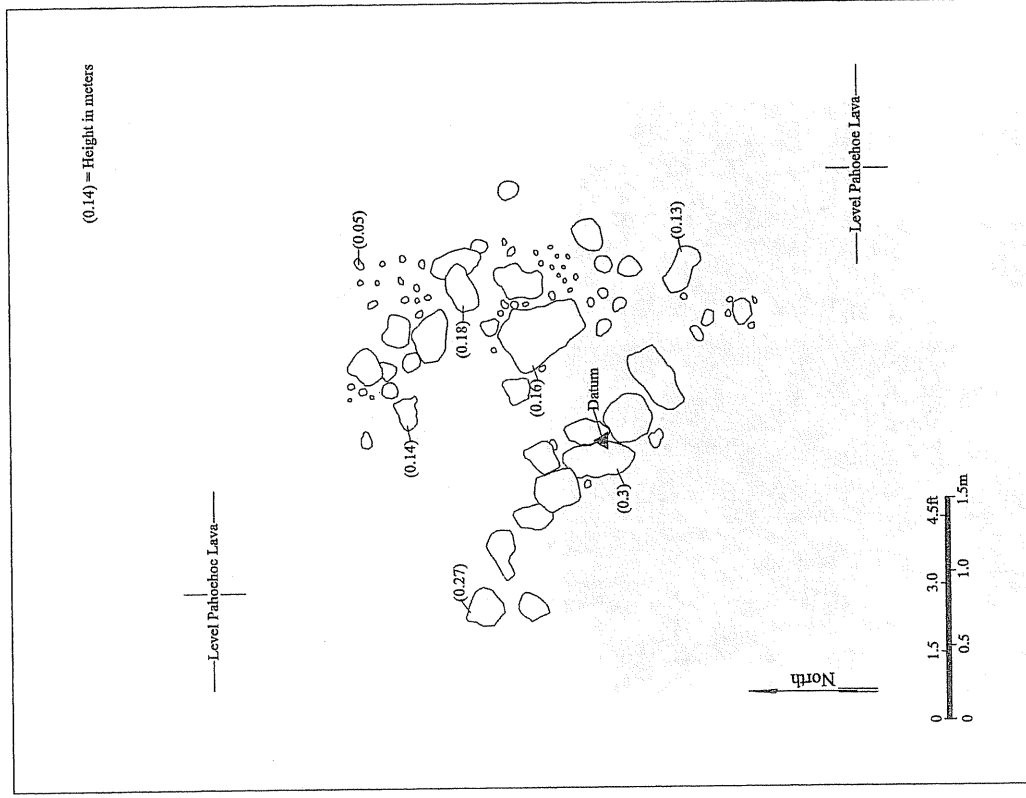


Figure 153. Site 25646 Plan Map

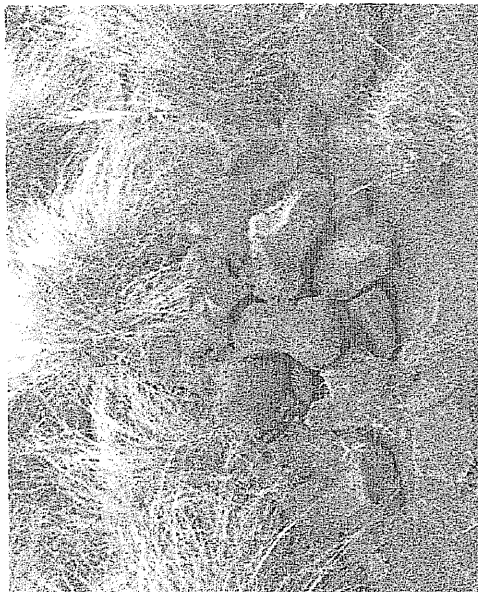


Figure 155. Site 25648 Cairn, view to west

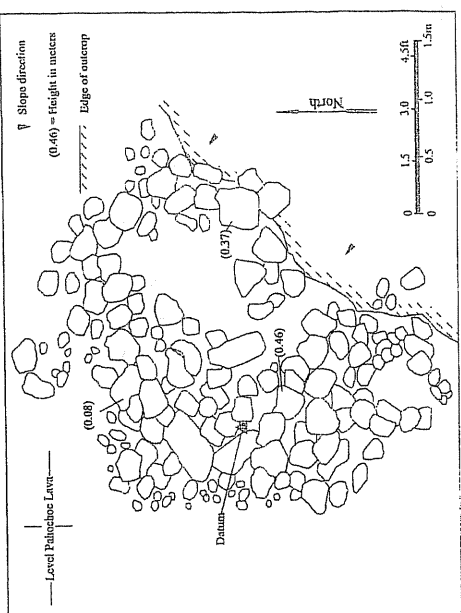


Figure 156. Site 25649 Plan Map

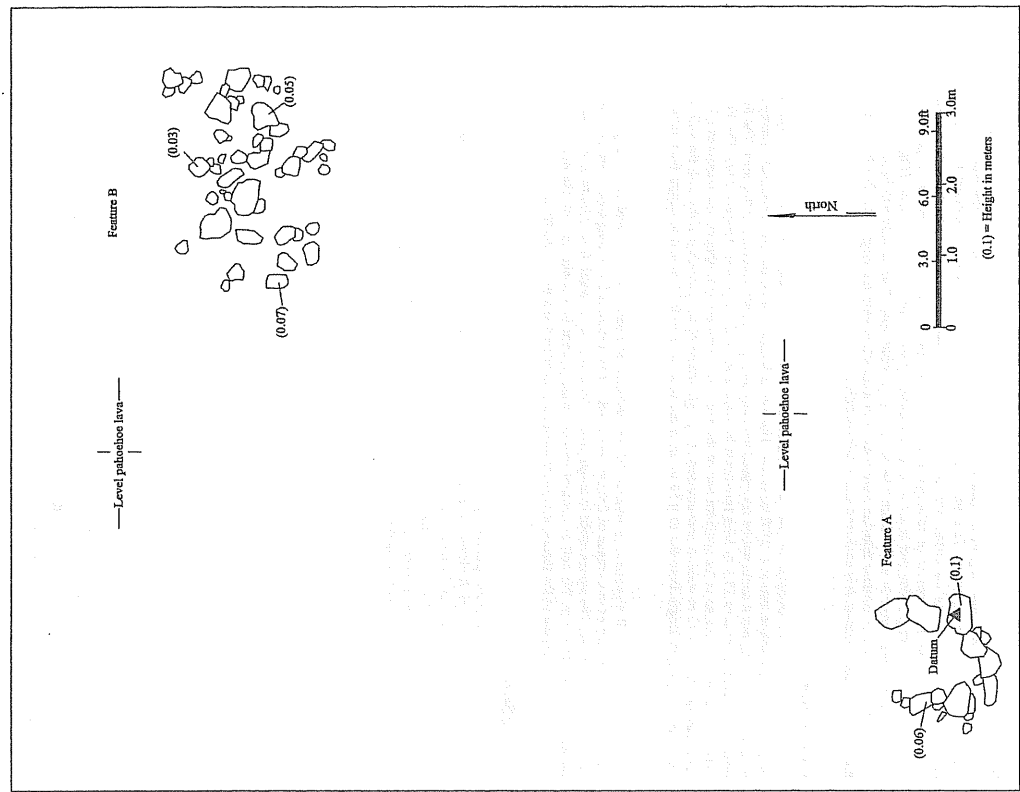


Figure 154. Site 25647 Plan Map

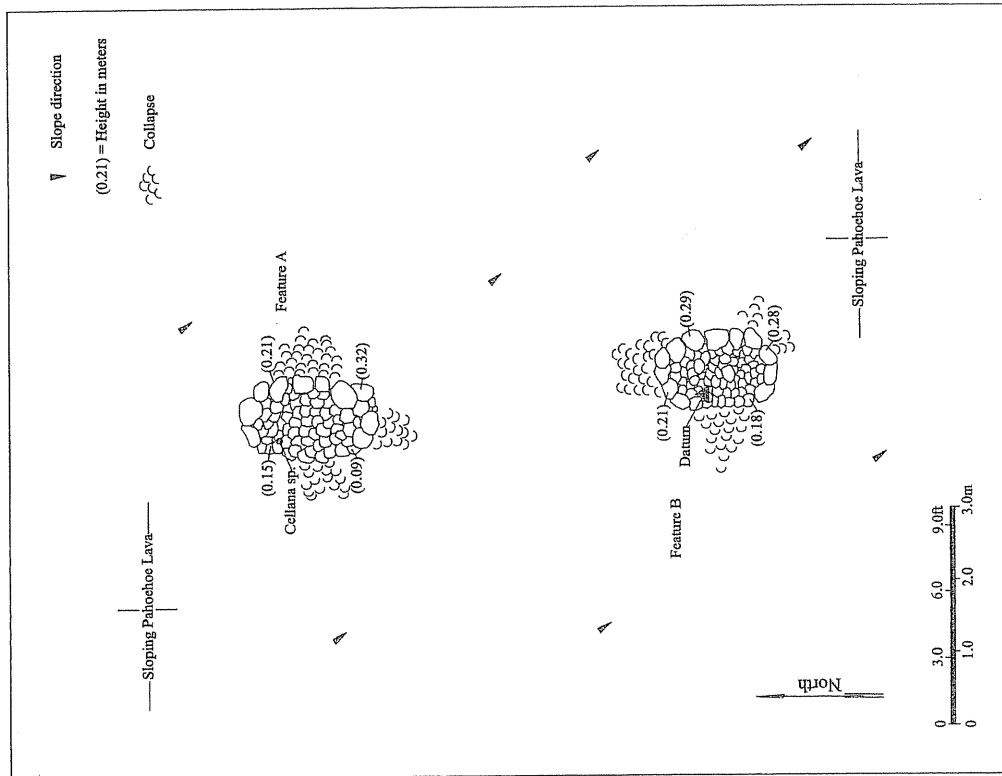


Figure 157. Site 25650 Plan Map

The Feature A mound is located at the northern end of the site. It is roughly oval in shape and measures 1.9 m in length (north-south) and 1.27 m wide. It is constructed of piled cobbles, small boulders and slabs, with areas of collapse present along the east, west and south sides. The surface of the mound is uneven and irregular and varies in height from 0.09 to 0.32 m. A *Cellama sp.* shell is present on the surface at the northern end.

The Feature B mound is located 4.0 m south of Feature A. The mound is oval in shape and is 1.72 m long (north-south), 1.05 m wide and from 0.18 to 0.29 m in height. The features are also built of roughly piled cobbles, small boulders and slabs with areas of collapse present along the north, west and southeast sides. The surface is uneven and irregular and no cultural remains are present. Site 25650 is assigned an indeterminate function based on the crude method of construction and paucity of cultural remains. The site is unaltered and in fair condition.

Site 25651

Site 25651 is a filled crack located in an area of uneven pahoehoe lava in the Land of Kealahou at c. 12 ft elevation. There are several natural cracks in the area, several of which contain subangular basalt cobbles and small boulders (Figure 158). The main crack is irregularly-shaped and is 3.3 m long (north-northeast by south-southwest) and 0.12 to 0.6 m wide. Stones have been placed within the crack, though an 0.8 m deep gap between the stones is present at the north end. Additional cracks are located to the west and southwest both averaging 0.6 m deep. The crack to the west has several stones piled inside it, with no stones present in the southwest crack. A low non-cultural overhang is situated adjacent to the crack to the south, measuring 3.9 m long, 0.45 to 0.8 m wide and 0.4 m in height. The floor in overhang is bare lava and the drip-line averages 0.6 m. A waterworn basalt small boulder is located outside the overhang to the west.

Human remains were documented within the main crack by National Park Service personnel in 2000 (personal communication). Apparently the remains were observed in the partially stone filled crack and additional stones were added to better conceal the bones. The remains were not visible during the present study. The site is unaltered and in good condition.

Site 25652

Site 25652 is a complex of 142 pahoehoe excavations that are scattered throughout the Land of Kealahou (see Figure 7). These features are interpreted as resource procurement loci that were potentially created for one of two purposes. The majority of the excavations (n=113 or 79.5%) appear to represent efforts to obtain sea bird nestlings from crevices in the lava, with the remaining 29 features (20.5%) consisting of quarries created to obtain scoriaeous lava for the manufacture of abraders. The distribution of the two types of pahoehoe excavations identified in Kealahou is presented in Figure 159 and their physical characteristics are summarized in Table 13.

As stated, most of the excavations appear to have been created during efforts to obtain the seabird nestlings. These are listed as Type A features in Table 13. These features were created by breaking open or expanding the fissures and holes, resulting in scattered, informal stones surrounding the excavated area. These excavations often expose the underlying blue rock.

The Type A features have been further classified into two sub-categories. The Type A1 features consist of horizontal excavations in the sides of overhangs and blisters. The Type A2 features are comprised of vertically-excavated pits or depressions that were created by enlarging fissures in the lava. There are 31 Type A1 excavations (27%). These features range in length from 1.5 to 10.0 m (averaging 4.65 m long), in width from 0.65 to 6.0 m (averaging 2.63 m wide) and in depth from 0.1 to 0.8 m (averaging 0.42 m).

Large waterworn cobbles and small boulders that apparently were used as studge hammerstones in the excavation process were found in association with 14 of the Type A1 features (features C, E, AA, AL,



Figure 159. Distribution of Site 25652 Pahoehoe Excavations

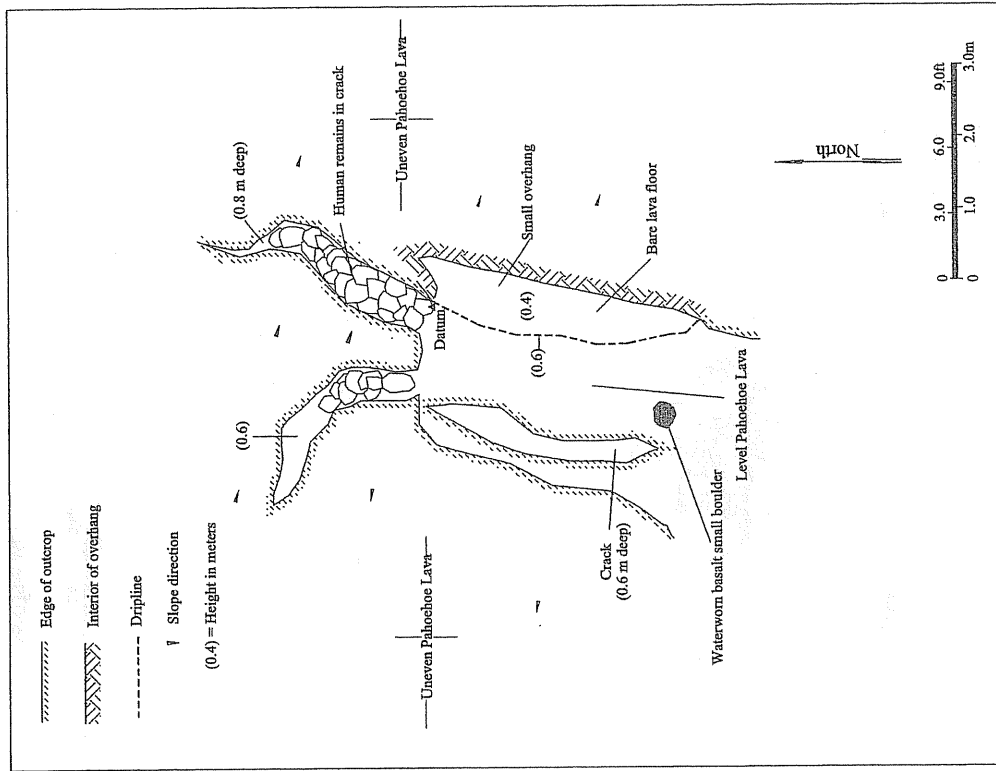


Figure 158. Site 25651 Plan Map

AN, BC, BF, BM, CB, CW, DL, DU, DK and ED). These stones range in length from 0.13 to 0.4 m long, 0.16 to 0.30 m wide and 0.07 to 0.18 m thick. The hammerstones are composed of a denser basalt than the stone removed from the excavations. Most examples are elongate and exhibit evidence of battering on one or more ends. The size of the stones indicates that using them would require holding the stones with both hands as a sledge hammer, or dropping the stones. No other cultural remains were present at the Type A1 excavations. Examples of Type A1 excavations with associated hammerstones are depicted in *Figures 160 and 161*.

There are 82 Type A2 features (73%), comprised of fissures and depressions in the pahoehoe lava that have been expanded by breaking the edges and removing the stones. These features range in length from 1.0 to 24.5 m (averaging 5.03 m), in width from 0.6 to 6.4 m (averaging 2.35 m) and in depth from 0.05 to 0.8 m (averaging 0.38 m). Basalt hammerstones were observed in association with 34 of the Type A2 excavations (Features B, D, J, K, L, M, T, W, AB, AC, AE, AF, AI, AP, AU, AV, AQ, AS, BB, BI, BJ, BX, BZ, CE, CV, DA, DB, DM, DN, DR, DT, DX, DY and EL). Twenty-two of these features contain one hammerstone, six contain two, five contain one and one contains four. These stones range in length from 0.15 to 0.6 m, in width from 0.12 to 0.37 m and in thickness from 0.08 to 0.23 m. No additional cultural remains were present. Examples of Type A2 excavations are presented in *Figures 162 and 163*.

The (29) possible abrader quarries are listed as Type B features in *Table 13*. The Type B features range in length 0.5 to 29.0 m (averaging 7.28 m), in width from 0.5 to 12.0 m (averaging 4.02 m) and in depth from 0.05 to 0.32 m (averaging 0.12 m). Waterworn basalt hammerstones were noted at four of the quarry sites (Features AW, CD, DW and ER). Features AW, CD and DW each contained one basher, with two noted at Feature ER. The stones ranged in length from 0.19 to 0.4 m, in width from 0.18 to 0.24 m and in thickness from 0.08 to 0.19 m. No other cultural remains were found in association with any of the quarries. Examples of the Site 25652 quarry features are depicted in *Figures 164 and 165*. Site 25652 is unaltered and in good condition.

Site 25653

Site 25653 is a complex of 27 pahoehoe excavations that are located within the road corridor that extends through the Land of Keahuolu (see *Figure 7*). These features similar to those discussed above in Kealahoe and are summarized in *Table 14*. The majority of the 27 features (77 %) are Type A2 excavations, comprised of expanded fissures and depressions. These features range in length from 2.3 to 15.0 m (averaging 5.2 m long), in width from 1.3 to 4.3 m (averaging 2.92 m) and from 0.2 to 2.0 m in depth (averaging 0.63 m). Hammerstones were observed at three of the Type A2 features (Features O, P and X), ranging in length from 0.26 to 0.34 m, in width from 0.18 to 0.26 m and in thickness from 0.12 to 0.2 m. No other cultural remains were found in association with the Type A2 excavations.

The remaining six pahoehoe excavations consist of three Type A1 and three Type B excavations. The Type A1 excavations (Features M, R and Q) range in length from 2.9 to 6.0 m (averaging 4.28 m), in width from 2.4 to 4.0 m (averaging 3.12 m) and in depth from 0.15 to 0.5 m (averaging 0.3 m). The Type B excavations vary in length from 3.0 to 6.2 m (averaging 4.68 m), in width from 3.0 to 5.0 m (averaging 4.12 m) and in depth from 0.2 to 0.3 m. No hammerstones or cultural remains were found in association with the Type A1 or B excavations. Site 25653 is unaltered and in good condition.



Figure 160. Site 25652, Feature CW, Type A1 Pahoehoe Excavation, view to east

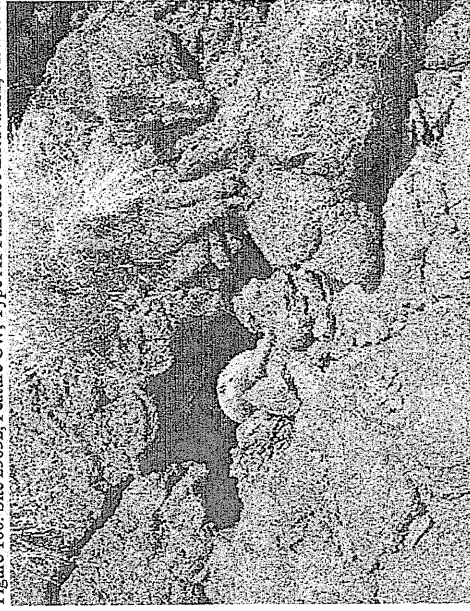


Figure 161. Site 25652, Feature DL, Type A1 Pahoehoe Excavation, view to northwest



Figure 162. Site 25652, Feature DV, Type A2 Pahoehoe Excavation, view to east



Figure 163. Site 25652, Feature EA, Type A2 Pahoehoe Excavation, view to east

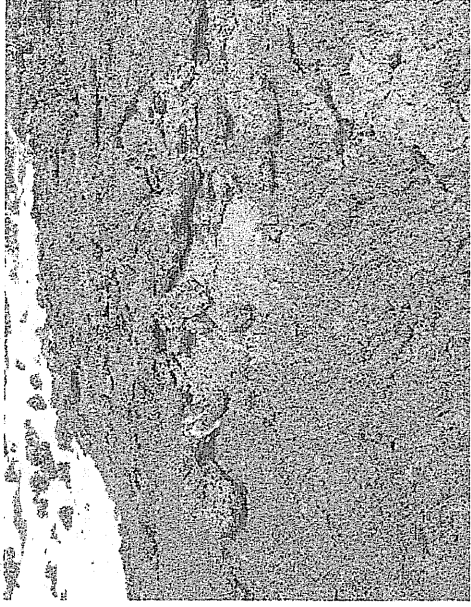


Figure 164. Site 25652, Feature P, Type B Pahoehoe Excavation, view to east



Figure 165. Site 25652, Feature BG, Type B Pahoehoe Excavation, view to northwest

CONCLUSION

Discussion

The identified site and component features conform to the traditional Hawaiian site/feature types expected in the Coastal and Middle Zones as defined by Cordy et al. (1991). As expected, permanent habitation sites, ritual architecture, and burials are present along the coast. Cordy et al. (1991) defined their coastal zone as extending inland to 15 ft elevation; however, in the project area the coastal sites are situated below 25 ft elevation within 200 m of the shoreline. This difference in elevation probably is a reflection of the generally more gradual slope of the coastal terrain in Kaloko compared to Kealahou and indicates a potential refinement in the proposed elevation range for the zone to make it more applicable to the region.

Permanent habitation features interpreted to be the foundations for dwellings are clustered in two areas. One cluster consisting of four sites (1885, 1886, 1887, and 25579) is situated on the southern coast of Kealahou just north of the boundary with Keahuolu. This cluster includes six potential foundation features. Alternatively, it is possible that two of the features (A1 and I1) at Site 1885 may have functioned as canoe sheds based on the feature's linear form, both are more than 13 m long; however, canoe sheds typically are U-shaped with an open end. Both features are attached to probable habitation features, a characteristic that also is atypical for canoe sheds. The cluster includes one feature interpreted as a possible *heiau* (Site 1885, Feature E1).

The northern cluster is situated on the northern coast surrounding a small beach and cluster of braakish water pools. The cluster includes seven dwelling foundations at three sites (1895, 1898, and 1900). The cluster also includes a possible canoe shed (Site 1898, Feature H) and Makooio Heiau (Site 1898, Feature A). The remaining coastal permanent habitation sites are scattered along the coast between these two clusters. Five ritual sites, including Hale o Kane Heiau, and five sites with burials also are scattered in this intervening area.

Temporary habitation sites are concentrated in the north coastal portion of the project area between 100 m and 400 m from the shoreline spanning the Coastal and lower Middle Zones as defined by Cordy et al. (1991). A second more diffuse cluster of temporary habitation sites is situated inland off the central coast between 150 m and 400 m from the shoreline. Three isolated temporary habitation sites are situated along the road corridor and in the inland portion of the project area north of the harbor access road. Two permanent habitation sites also are situated in the latter area.

As expected, temporary habitation sites and trails were present in the Middle Zone. One trail identified by thorough background research could not be relocated. The 1880s Emerson map (see *Figure 5*) shows a road or trail extending from the south toward Kailua to the coast at Homokohau. The trail appears to pass through the portion of project area situated north of the harbor access road, but no evidence of it was identified during the survey. It is possible that there is simply no physical evidence of the trail because this area consists of nearly level pahoehoe lava.

Seven trail segments are oriented in generally inland-seaward directions and one is oriented parallel to the coastline (Site 7704). The trail segments at Sites 25572 and 25574 probably are parts of the same trail. Similarly, the trail segments at Sites 2572 and 25574 potentially are parts of one trail. The Site 7704 trail is a historic 19th Century trail. The absence of abrasion on the lava associated with this very straight trail led Soehren to conclude that it represented "preliminary route selection" for a nineteenth century horse trail that was subsequently abandoned, perhaps in favor of the "Old Mamalahou Trail" farther inland (1980:E2).

The function of the twenty-six stone alignments is enigmatic. The features are typically composed of oval to U-shaped alignments of pahoehoe slabs. All of the features are present on bare pahoehoe lava with no soil or other cultural remains present. The features are too small and low to have been tempo-

rary habitation shelters. The overall area of the features is just over six square meters with an internal area usually less than two square meters.

Many of the alignments are made from slabs of vesicular lava that may have been raw material for abrader manufacture; however, most the features are scattered throughout the south central portion of the project area and are not consistently spatially associated with pahoehoe excavations. One possible explanation for the features would be that the alignments represent a location for stone tool manufacturing activity. The small area of most of the features is sufficient for a single individual to sit in the center; however, there is no evidence of debris from lithic reduction or abraded surfaces used to shape abraders.

Pahoehoe excavations are the most numerous feature type documented. The majority of the excavations are interpreted as the remains of efforts to extract seabird nestlings from crevices in the lava surface. The pahoehoe excavations are present throughout the area, both adjacent to habitation sites, and in areas remote from them. Large cobble to small boulder-size hammerstones are associated with the pits and are present at several habitation sites.

The remaining excavations are interpreted to be the result of quarrying activity to obtain vesicular lava for the manufacture of abraders. The quarried stone resembles the raw material found in the extensive abrader quarrying and production sites are documented at 'Amaeho'omahu where the entire process from raw material extraction to abrader shaping occurred in the same locale; however, unlike the sites at 'Amaeho'omahu no abraded surfaces created during abrader shaping were identified. This suggests that either the manufacturing activity occurred elsewhere, or the excavations are the result of prospecting activity that did not yield suitable material.

Significance Assessments

Pursuant to DLNR (1998) Chapter 275-6 (d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified and relocated during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR 1998:Chap. 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a": Be associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b": Be associated with the lives of persons important in our past;
3. Criterion "c": Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
4. Criterion "d": Have yielded, or is likely to yield, information important for research on prehistory or history; and
5. Criterion "e": Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

Based on the above criteria, all 126 sites are assessed as significant under Criterion "d" (*Table 15*). The sites have yielded information important for understanding prehistoric to historic land use in the project area. Three sites (1885, 1894, and 1898) are also assessed as significant under Criterion "c" as good site type examples. Four sites that include ceremonial features (Sites 1889, 1896, 1896, and 25619) have

associations with traditional Hawaiian beliefs important to Hawaiian history and cultural identity and are additionally assessed as significant under Criterion "c". Sites 1890, 1893, 25511, 25632, and 25651 are additionally assessed as culturally significant because probable pre-contact burials are present.

Recommended Treatments

The mapping, written descriptions, photography, and test excavations at fifty-four sites adequately documents them and no further work or preservation is recommended (see *Table 15*). Forty-seven sites are recommended for mitigation through data recovery. The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval. Twenty-five sites are recommended for preservation in accordance with a Site Preservation Plan prepared for DLNR-SHPD review and approval. These preservation sites include thirteen sites within the legislative boundary of Kaloko-Honokohau National Landmark that the developer intends to preserve. The specific plans for preservation and maintenance of the burial features at Sites 1890, 1893, 25511, 25632, and 25651 would be detailed in a Burial Treatment Plan prepared for DLNR-SHPD and the Hawaii Island Burial Council (HIBC) review and approval.

Table 15. Site Significance and Recommended Treatment

SNIP Number	Type	Function	Significance Criteria	Recommended Treatment+
1884	Complex (2)	Temporary Habitation	d	DR
1885	Complex (7)	Ceremonial, Permanent Habitation	c, d, e	DR
1886	Terrace	Permanent Habitation	d	DR
1887	Complex (2)	Permanent Habitation	d	DR
1888	Upright	Ceremonial	Not relocated	DR
1889	Walled Terrace	Ceremonial	d, e	PR
1890	Platform	Probable Burial	d, e	PR
1891	Enclosure	Permanent Habitation	d	DR
1892	Complex (4)	Ceremonial	d, e	PR
1893	Complex (7)	Ceremonial, Probable Burial, Marker	d, e	PR*
1894	Complex (5)	Permanent Habitation, Rock Art	c, d	PR*
1895	Platform	Permanent Habitation	d	PR*
1896	Complex (2)	Ceremonial	d, e	PR
1898	Complex (10)	Ceremonial, Permanent Habitation	c, d, e	PR*
1899	Complex (3)	Livestock control/Temp. Habitation	d	PR*
1900	Complex (4)	Permanent Habitation	d	PR*
7704	Trail	Transportation	d	NFW
13271	Complex (2)	Indeterminate	d	NFW
23019	Complex (3)	Quarry, Indeterminate	d	NFW
23022	Cairn	Marker	d	NFW
23024	Alignment	Indeterminate	d	NFW
23033	Overhang	Temporary Habitation	d	DR
25549	Trail	Transportation	d	NFW
25550	Cairn	Marker	d	NFW
25551	Alignment	Indeterminate	d	NFW
25552	L-shape	Temporary Habitation	d	NFW
25553	Cairn	Marker	d	NFW
25554	Enclosure	Permanent Habitation	d	NFW
25555	Enclosure	Permanent Habitation	d	DR
25556	Alignment	Indeterminate	d	NFW
25557	Alignment	Indeterminate	d	NFW
25558	Alignment	Indeterminate	d	NFW
25559	Cairn	Marker	d	NFW
25560	Complex (4)	Indeterminate	d	NFW
25561	Cairn	Marker	d	NFW
25562	Cairn	Marker	d	NFW
25563	Trail	Transportation	d	NFW
25564	Complex (3)	Indeterminate	d	NFW
25565	Complex (2)	Marker	d	NFW
25566	Cairn	Marker	d	NFW
25567	Cairn	Marker	d	NFW
25568	Alignment	Indeterminate	d	NFW
25569	Complex (2)	Marker, Indeterminate	d	NFW
25570	Cairn	Marker	d	NFW
25571	Lava tube	Temporary Habitation, Burial	d, e	PR
25572	Trail (5 features)	Transportation	d	NFW
25573	Lava Blister	Temporary Habitation	d	NFW
25574	Trail (8 features)	Transportation	d	NFW
25575	Cairn	Marker	d	NFW
25576	Cairn	Marker	d	NFW
25577	Cairn	Marker	d	NFW
25578	Lava Blister	Temporary Habitation	d	DR
25579	Complex (2)	Permanent Habitation, Marker	d	DR
25580	Complex (2)	Temporary Habitation	d	DR
25581	Artificial Scatter	Indeterminate	d	DR
25582	Cairn	Marker	d	NFW
25583	Terrace	Temporary Habitation	d	NFW
25584	Alignment	Indeterminate	d	NFW
25585	Cairn	Marker	d	NFW
25586	Lava Blister	Temporary Habitation	d	NFW
25587	Lava Blister	Temporary Habitation	d	NFW
25588	Complex (2)	Temporary Habitation, Marker	d	DR
25589	Alignment	Temporary Habitation	d	NFW
25590	Complex (2)	Temporary Habitation	d	DR
25591	Cairn	Marker	d	NFW



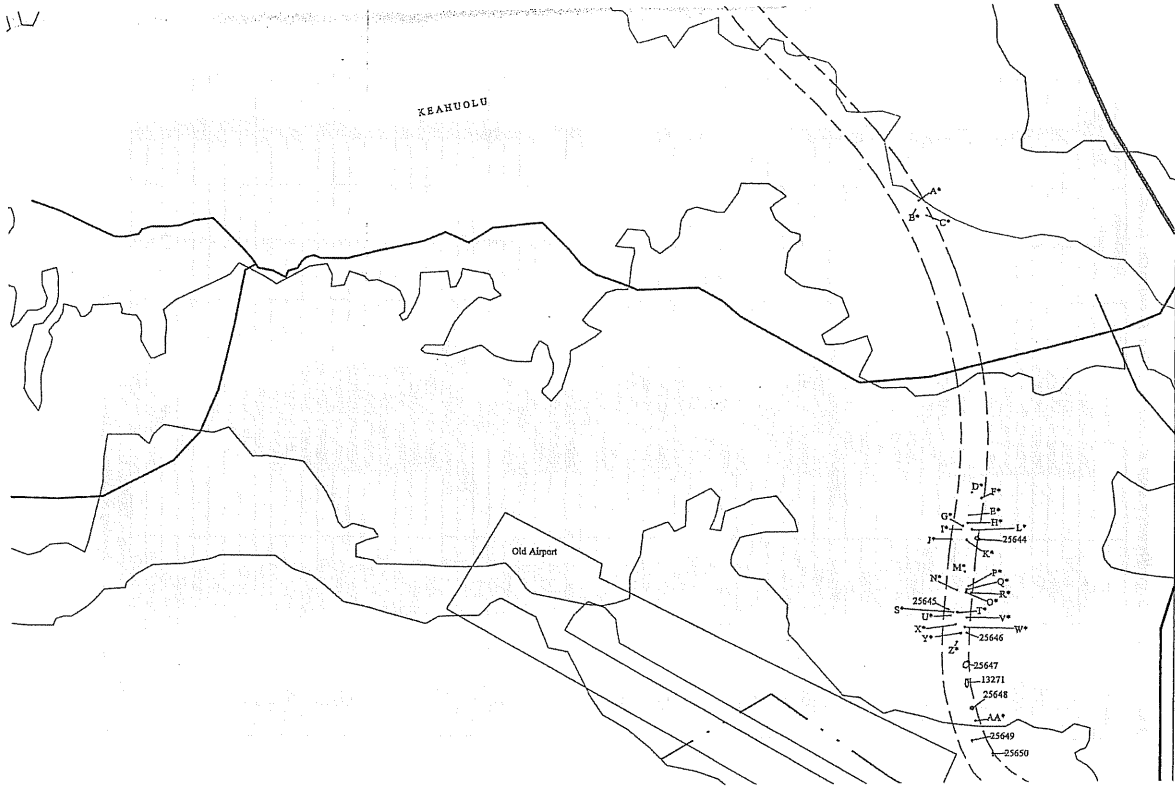
Table 15. Site Significance and Recommended Treatment (cont.)

SHIP Number	Type	Function	Significance Criteria	Recommended Treatment
25592	Overhang	Temporary Habitation	d	NFW
25593	Midden scatter	Temporary Habitation	d	DR
25594	Overhang	Temporary Habitation	d	DR
25595	Lava Blister	Permanent Habitation	d	DR
25596	Enclosure	Permanent Habitation	d	DR
25597	C-slope	Permanent Habitation	d	DR
25598	Lava Blister	Temporary Habitation	d	DR
25599	Overhang	Temporary Habitation	d	DR
25600	Overhang	Temporary Habitation	d	DR
25601	Overhang	Temporary Habitation	d	DR
25602	Trail (11 features)	Transportation	d	NFW
25603	Complex (2)	Temporary Habitation	d	DR
25604	Complex (5)	Permanent Habitation	d	DR
25605	Alignment	Indeterminate	d	NFW
25606	Overhang	Temporary Habitation	d	DR
25607	Trail	Transportation	d	NFW
25608	Complex (2)	Temporary Habitation, Marker	d	DR
25609	Overhang	Temporary Habitation	d	DR
25610	Sand Area	Permanent Habitation	d	DR
25611	Sand Area	Permanent Habitation	d	DR
25612	Trail	Transportation	d	NFW
25613	Complex (2)	Permanent Habitation	d	DR
25614	Complex (4)	Temporary Habitation	d	DR
25615	Lava Blister	Temporary Habitation	d	DR
25616	Midden scatter	Temporary Habitation	d	DR
25617	Lava Blister	Temporary Habitation	d	DR
25618	Lava Blister	Temporary Habitation	d	DR
25619	Cairn	Possible ceremonial	d, e	PR
25620	Overhang	Temporary Habitation	d	DR
25621	Complex (2)	Temporary Habitation	d	DR
25622	Overhang	Temporary Habitation	d	DR
25623	Overhang	Temporary Habitation	d	DR
25624	Cairn	Marker	d	NFW
25625	Complex (3)	Temporary Habitation	d	DR
25626	Complex (2)	Temporary Habitation	d	DR
25627	Lava Blister	Temporary Habitation	d	DR
25628	Complex (2)	Temporary Habitation, Marker	d	DR
25629	Enclosure	Temporary Habitation	d	PR*
25630	Complex (2)	Marker	d	PR*
25631	Cairn	Marker	d	PR*
25632	Complex (6)	Permanent Habitation, Burial	d, e	PR*
25633	Complex (2)	Temporary Habitation, Marker	d	PR*
25634	Overhang	Temporary Habitation	d	PR*
25635	Complex (2)	Permanent Habitation	d	PR*
25636	Sand Area	Permanent Habitation	d	PR*
25637	Midden scatter	Temporary Habitation	d	PR*
25638	Lava Blister	Temporary Habitation	d	PR*
25639	Complex (2)	Temporary Habitation	d	PR*
25640	Lava Blister	Temporary Habitation	d	DR
25641	Complex (2)	Temporary Habitation	d	DR
25642	Overhang	Temporary Habitation	d	DR
25643	Alignment	Indeterminate	d	NFW
25644	Lava Blister	Temporary Habitation	d	DR
25645	Alignment	Indeterminate	d	NFW
25646	Alignment	Indeterminate	d	NFW
25647	Complex (2)	Indeterminate	d	NFW
25648	Cairn	Marker	d	NFW
25649	Alignment	Indeterminate	d	NFW
25650	Complex (2)	Indeterminate	d	DR
25651	Filled crack	Burial	d, e	PR*
25652	Complex (142)	Resource Procurement	d	NFW
25653	Complex (27)	Resource Procurement	d	NFW

*NFW=NOC Further work or preservation, DR=Data Recovery, PR=Preservation
 *Site situated within Legislative Boundary of Kaialoa-Honolulu National Landmark

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Appendix M-2

Archaeological Inventory Survey 2001

By Haun & Associates

SUMMARY

ARCHAEOLOGICAL INVENTORY SURVEY
DEPARTMENT OF HAWAIIAN HOME LANDS
COMMERCIAL/INDUSTRIAL DEVELOPMENT
LAND OF KEALAKEHE, NORTH KONA DISTRICT
ISLAND OF HAWAII (TMK: 7-4-08: [POR. 3])

At the request of PBR Hawaii on behalf of their client the Department of Hawaiian Home Lands (DHHL), Haun & Associates conducted an archaeological inventory survey of the 200-acre DHHL Commercial/Industrial Development project area (TMK: 7-4-08: por. 3) situated in the Land of Kealahou, North Kona District, Island of Hawaii. The objective of the survey was to satisfy current historic preservation regulatory review requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules (DLNR 1998). The survey was conducted in conjunction with the preparation of an Environmental Impact Statement (EIS) for the project.

The inventory survey identified 58 sites with 123 features. Two trails (Sites 7704 and 13194) identified during previous surveys have been destroyed since the sites were initially recorded. The sites include 41 single feature sites and 15 complexes of features. The identified features consist of pahoehoe excavations, stone alignments, cairns, mounds, petroglyphs, enclosures, trails, and one each of the following: cave, overhang, platform and trail. Functionally the features are comprised of quarries, markers, agricultural features, rock art, temporary habitations, transportation routes, a possible shrine, and stone alignments and mounds of indeterminate function.

The identified site and component features, except the stone alignments and pahoehoe excavations, conform to the traditional Hawaiian site/feature types expected in the Middle Zone (Cordy et al. 1991) based on previous archaeological work and historic documentary research. As expected, temporary habitations sites and trails were present. The only surviving trail is apparently segment of a "branch trail" (Cordy et al. 1991). Use of the temporary habitations sites was of very limited duration, probably for temporary shelter from the elements for a period of hours as opposed to days, because food remains are absent. Other traditional Hawaiian sites consist of several petroglyphs and a possible shrine.

An important finding of the survey is the identification of numerous pahoehoe excavations and stone alignments. The excavations identified during the current study are all interpreted to be quarries for obtaining either scoriaceous lava or fine-grained basalt for basalt tool manufacture. The function of the numerous stone alignments is enigmatic.

All fifty-eight sites are assessed as significant under Criterion "d". These sites have yielded information important for understanding prehistoric and early historic land use in the project area. Four sites are additionally assessed as significant under Criterion "e" because the sites consist of petroglyphs and a possible shrine. The mapping, written descriptions, photography, and excavations at 54 sites adequately document them and no further work or preservation is recommended. The petroglyphs and possible shrine are recommended for preservation. The specific plans for preservation and maintenance of the sites would be detailed in a Preservation Plan prepared for DLNR-SHPD review and approval.

By:

Alan E. Haun, Ph.D.

and

Dave Henry, B.S.

Prepared for:

PBR Hawaii
101 Aupuni Street, Suite 310
Hilo, Hawaii 96720

September 2001

Haun & Associates
Archaeological, Cultural, and Historical Resource Management Services
HCR 1 Box 4730, Keauhou, Hawaii 96749 Phone: 982-7755 Fax: 982-6343

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INTRODUCTION

At the request of PBR Hawaii on behalf of their client the Department of Hawaiian Home Lands (DHHL), Haun & Associates conducted an archaeological inventory survey of the 200-acre DHHL Commercial/Industrial Development project area (TMK: 7-4-08: por. 3) situated in the Land of Kealahou, North Kona District, Island of Hawai'i (Figure 1). The objective of the survey was to satisfy current historic preservation regulatory review requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 13, State Historic Preservation Rules (DLNR 1998). The survey was conducted in conjunction with the preparation of an Environmental Impact Statement (EIS) for the project.

The survey fieldwork was conducted August 3-12, 2001, under the direction of Dr. Alan Haun. Described in this final report are the project scope of work, field methods, background research, survey findings, and significance assessments of the sites with recommended treatments.

Scope Of Work

Based on DLNR-SHPD rules for inventory surveys the following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct background review and research of existing archaeological and historical documentary literature relating to the project area and its immediate vicinity—including examination of Land Commission Awards, *ehupia'a* records, historic maps, archival materials, archaeological reports, and other historical sources;
2. Conduct a high intensity, 100% pedestrian survey coverage of the project area;
3. Conduct detailed recording of all potentially significant sites including scale plan drawings, written descriptions, and photographs, as appropriate;
4. Conduct limited subsurface testing (manual excavation) at selected sites (a) to determine the presence or absence of potentially significant buried cultural deposits or features, and (b) to obtain suitable samples for radiocarbon age determination analyses;
5. Analyze background research and field data; and
6. Prepare and submit Final Report.

Project Area Description

The project area consists of a c. 200-acre parcel that is bordered by the Queen Ka'ahumanu Highway on the east, on the south by the Kailua Wastewater Treatment plant and access road, on the north by the road leading to Honokohau Harbor, and on the west by a large berm comprised of basalt boulders. The parcel ranges in elevation from 30 ft to 83 ft above sea level. Vegetation in the parcel consists of low buffer grass (*Sterotaphrum secundatum* (Walt.) Ktze.), low, scattered *Koa haole* (*Leucaena leucocephala* [Lam.] de Witt), scattered *kiawe* (*Prosopis pallida* [Humb. & Bonpl. Ex Willd.] HBK.), and *pariini* cactus (*Opuntia megacantha* Salm-Dyck).

Soil maps presented in Sato et al. indicate that the entire project area is located within an area of pahoehoe lava (1973: Sheet Number 75). According to Sato et al. this land unit is dominated by a smooth

surface with periodic hummocks and pressure domes (1973:34). Examination of the project area during the survey found several a'a lava flows present within the parcel along the eastern boundary. These flows consist of jagged a'a with no vegetation.

Portions of the survey area have been impacted by modern construction activity. The perimeter of the entire parcel has been bulldozed, likely associated with road construction activity. The northeastern corner of the project area has been bulldozed flat, extending as much as 80 m seaward of the Queen Kaahumanu Highway. A large berm of stones and areas that have been bulldozed are present along the seaward boundary of the project area.

Field Methods

The project area was subjected to a 100% surface examination with surveyors spaced at 10-15 m intervals. Transsects were oriented in a roughly northwest by southeast direction, or parallel to the Queen Kaahumanu Highway. The identified sites and features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map. Most features within site complexes are less than 20 m apart; however, in a few cases features, which were as much as 30-40 m apart, were included within a site. If the site was confined to a distinct landform such as a pressure ridge or large depression.

The sites were subjected to detailed recording consisting of the preparation of scaled plan maps, the completion of standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the scaled plan maps. The location of all sites and features was determined by using a Garmin Global Positioning System (GPS) III+.

Subsurface testing during the survey consisted of the excavation of two test units at two sites. The excavation units were dug in arbitrary levels within stratigraphic layers and were terminated on bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. The soil removed during the excavations was screened through 1/4" mesh. Portable remains were only recovered from one site consisting of pieces of waterworn branch coral. The coral was not collected, but was photographed. Following the excavation of the test units, a section drawing depicting the stratigraphy was prepared, post-excavation photographs were taken, and the units were backfilled.

ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Historical Documentary Research

The project area is located within the *ahupua'a* of Kealahou, in the district of North Kona (Figure 2). Kealahou is literally translated as "the winding path" (Pukui et al. 1976). Kealahou is situated at the southern end of the lava-covered land north of Kailua called *Kakaha*, which "describes a dry, sun-baked land" (Kelly 1971:2). Silva (in Hammatt et al. 1987) and Smith (in Donham 1990) conducted archival research on Kealahou and found no specific references to the *ahupua'a* in legendary or traditional accounts.

Ellis (1963) reported the observations of the Reverends Thurston and Bishop during a walk along the coast north from Kailua in 1823. They described houses along the coast built on lava and small gardens in the lava where sweet potatoes, watermelon, and tobacco were grown.

During the Great Mahele, Kealahou was retained as government land, but preserved the rights of native tenants. These Land Commission Award (LCA) *kaulea* claims are listed in Table 1. The locations of the awarded parcels are shown in Figure 2. The Waiohona 'Aina (2000) Mahele Database, which is a compilation of data from the indices of Awards (Indices 1929), Native Register (NR n.d.), Native Testimony (NT n.d.), Foreign Register (FR n.d.), and Foreign Testimony (FT n.d.); lists twenty-three LCA claims by sixteen claimants for sixty-seven parcels within Kealahou. Seven claimants had two LCA claims. Seventeen

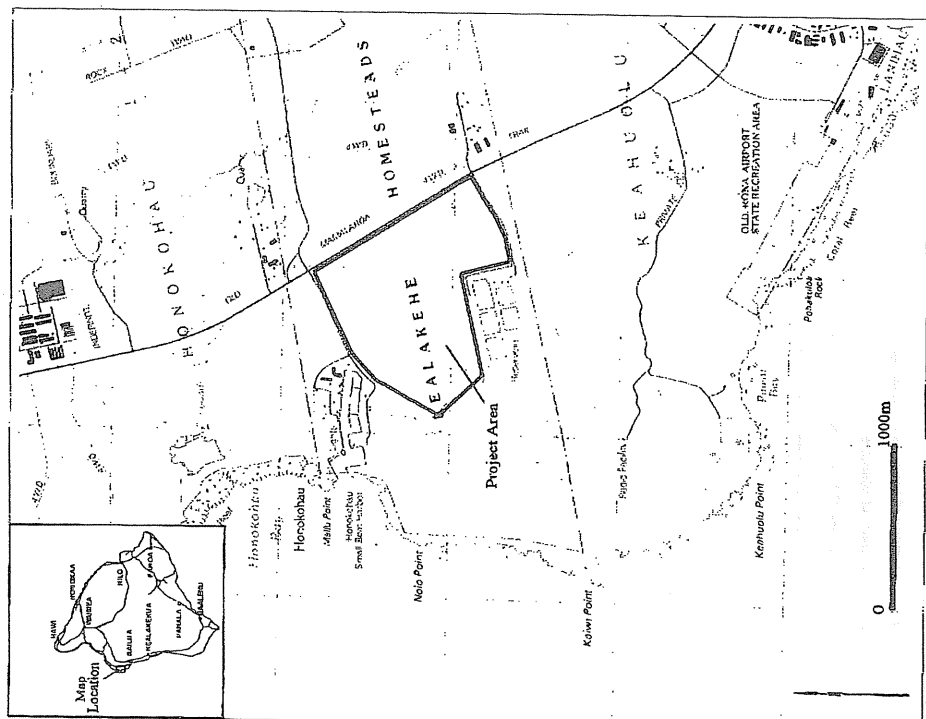


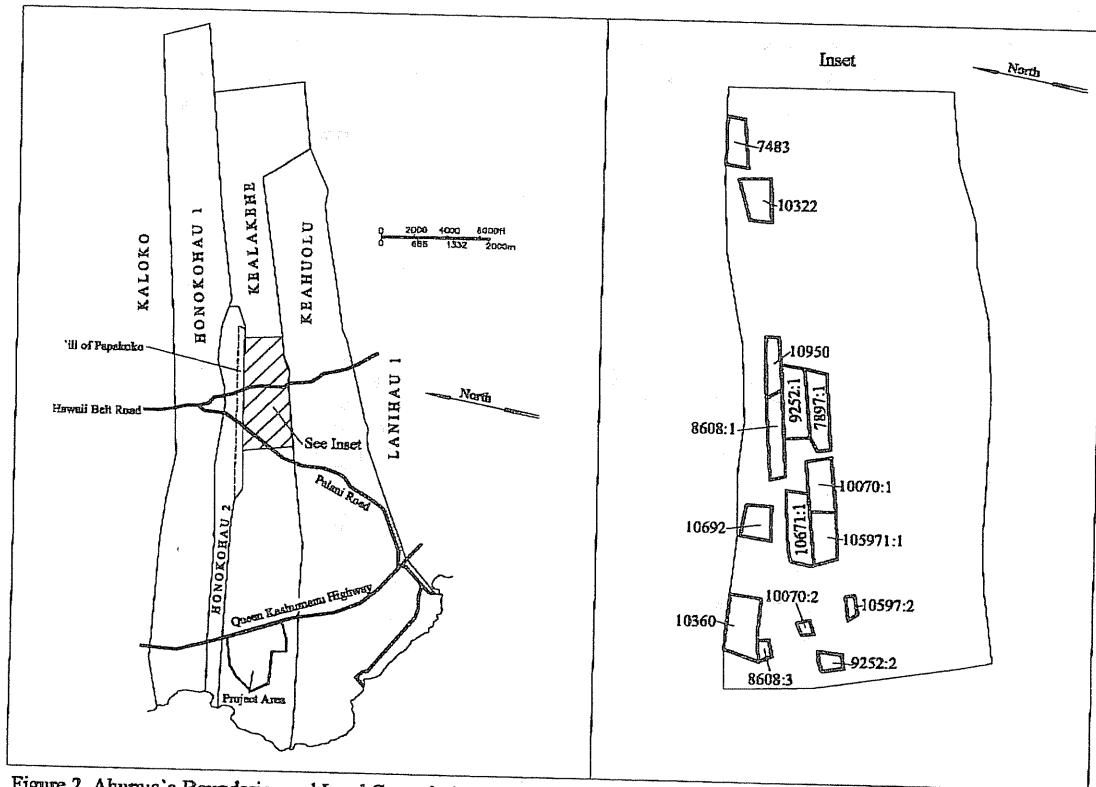
Figure 1. Portion of Keahole Point Quadrangle Showing Project Area

Table 1. Land Commission Award Claims in Kealahou

LCA	Claimant	Apana claimed	Apana awarded	Other claims	Section No.	Ill	Land Use	Boundary Mauka	Boundary Kauhā	Boundary Ikaika	Boundary Kohala	Data Rec'd	Glvr	Acres	Royal Patent	Sources	Comment
7483	Koia	3	1	0			mauka banana patch, north & south boundaries are kula					1843	Piko	2.80	404D	NR 44340, NT 54144	
					1	Koehne	cultivated kīhāpai	Idle land	Puho	Kaahū	Makaliōle III						
					2	Makaliōle	cultivated kīhāpai	Kahei	Puho	Peel	Koehne						
					3	Makaliōle	1 house, cultivated kīhāpai	Nuhū	Koehne	Koehne	Iloa						
7718B	Nahemā Kapau	3	0	0		Koehne, Kailā, Hāhāione	house lot	N/D	N/D	N/D	N/D	1832	N/D	0.00	none	NR 50648	line for Kuapāne
7894	Kaawa	4	0	0		Iloa						Kam. I line	patent	0.00	none	NR 48390, NT 58464	claimed in extending from coast to inland forest
					1		2 cultivated kīhāpai	Māi	Nuhū	Koehne	Papaikōhō II						
					2		1 cultivated kīhāpai	Koehne	Nuhū	Pepe	Papaikōhō II						
					3		1 cultivated kīhāpai	Koehne	Nuhū	Pepe	Papaikōhō II						
					4		house lot	Koehne	Māi	Koehne	Nuhū						
7895	Kūkaōle	2	0	0		Koehne, Makaliōle	10 kīhāpai, 1 sweet potato kīhāpai	N/D	N/D	N/D	N/D	Kam. I line	N/D	0.00	none	NR 61148, FT 08448	
7896	Kahuna 2	1	0	0		N/D	house lot	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 45148	
7897	Kahuna 2	5	2	0		Koehne, Kailā, Kailā 2, Kailā 3	house lot, partially cultivated	N/D	N/D	N/D	N/D	Kam. I line	patent	4.00	4002	NR 45148, NT 54464	awarded 2 apna
8608	Kaahū	5	2	1			4 taro and 3 potato kīhāpai, 2 house lots					Kam. I line	Kapua	3.90	5225	NR 48240, NT 54464	awarded 2 apna
					2	Puho	1 partially cultivated kīhāpai	Koehne	Hāhāione II	Koehne	Kaehā III						
					3	Kūkaōle	1 cultivated kīhāpai	Koehne	Hāhāione	Kaehā	Kaehā III						
					4	Kailā	1 cultivated kīhāpai	Koehne	Koehne	Koehne	Kaehā III						
					5	Iloa	1 cultivated kīhāpai	Kaawa	Makaliōle	Māi	Kaawa						
					6	Koehne	house lot (partially enclosed, no house)	Idle land	Idle land	Idle land	Idle land						
9131	Nahemā Kapau	1	0	0		Alā	house lot	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 64248	
9132	Kaehā	1	0	0		Koehne	house lot	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 48248	
9133	Koehne	2	0	0		Alā	2 house lots	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 48248	

N/D=No Data

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Figure 2. Ahupua'a Boundaries and Land Commission Awards

Table 1. Land Commission Award Claims in Keelakehe (cont.)

LCA	Claimant	Apana claimed	Apana awarded	Other claims	Section No.	Ill	Land Use	Boundary Maaka	Boundary Kau	Boundary Maaka	Boundary Kohala	Date Rec'd	Given	Acres	Royal Patent	Source	Comment
10671	Pepa	5	2	0								1844	Keawe	4.90	4007	NR 484v8, 544v4	awarded 2 apana
						Iliaa	2 kihapai					1844	Keawe				
						Halalano	5 kihapai					1844	Keawe				
						Kukulomino	1 kihapai					1844	Keawe				
						Kanohala	2 kihapai					1844	Keawe				
						N/D	houses lot (enclosed) 2 houses					1848	Keawe				
10692	Peai	3	1	0								1843	Keawe	2.80	4004	NR 485v4, NT 544v4	
						Puahu	10 kihapai	N/D	N/D	N/D	N/D						
						Iliaa	1 kihapai	N/D	N/D	N/D	N/D						
						Kaohia	2 kihapai	N/D	N/D	N/D	N/D						
10950	Waiwaike	2	1	0								Kam. I time	N/D	2.00	5123	NR 488v8, NT 545v4	
						KeoNa	4 cultivated sections	N/D	N/D	N/D	N/D						
						Pouhe	house lot (not enclosed)	N/D	N/D	N/D	N/D						
10666	Waiwaote	1	0	0		Keohia	house lot	konohiki	konohiki	konohiki	konohiki	1818	paheke	0.00	none	NR 808v8, NT 852v8	

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Table 1. Land Commission Award Claims in Keelakehe (cont.)

LCA	Claimant	Apana claimed	Apana awarded	Other claims	Section No.	Ill	Land Use	Boundary Maaka	Boundary Kau	Boundary Maaka	Boundary Kohala	Date Rec'd	Given	Acres	Royal Patent	Source	Comment
9235	Hapooe	5	0	0		Halalano, Kauhia, Kukulomino	13 kihapai	N/D	N/D	N/D	N/D	Kam. I time	N/D	0.00	none	NR 484v8, NT 545v4	
9252	Keohia	3	2	0		Puahu, Kaohia, Kanohala	house lot, 9 cultivated kihapai	N/D	N/D	N/D	N/D	Kam. I time	Keawe	5.70	4005	NR 485v8, 545v4	awarded 2 apana
10068	Maii	4	0	1								N/D	N/D	0.00	none	NR 473v8, NT 489v4	
					1		4 partially cultivated kihapai	Idle land	Nakapalehuhu	Kalohewano	Waii						
					2		cultivated kihapai	Idle land	Mie land	Nakapalehuhu	Karohia						
					3		2 cultivated kihapai	konohiki	Nakapalehuhu	konohiki	Karohia						
					4		2 cultivated kihapai	konohiki	Nakapalehuhu	konohiki	Aweemala						
10070	Mioi	8	2	0										4.40	4000	NR 473v8, NT 547v4	awarded 2 apana
					1	Iliaa	2 cultivated section	Keawe	Idle land	Keawe	Pepa	N/D	N/D				
					2	Iliaa	1 uncultivated kihapai	Pepa	Nuii	Keawe	Pepa	N/D	N/D				
					3	Kanohala	2 cultivated kihapai	Nuoa	Keawe	Pepa	Pepa	N/D	Nuoa				
					4	Kanohala	1 cultivated kihapai	konohiki	konohiki	konohiki	konohiki	N/D	Nuoa				
					5	Kanohala	1 cultivated kihapai	Nuoa	Kukulomino Ill	konohiki	Halalano	N/D	Nuoa				
					6	Kukulomino	1 cultivated kihapai	konohiki	Pepa	konohiki	Pepa	N/D	grand-papers				
					7	Kukulomino	N/D	N/D	N/D	N/D	N/D	N/D	grand-papers				
					8	Iliaa	house lot	konohiki	Kahuna	Pepa	Keawe	N/D	N/D	0.00	none	NR 470v8, NT 547v4	
10286	Mioi	1	0	0		Iliaa	house lot	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 470v8, NT 547v4	
10308	Nuoa	1	1	0		Kanohala	cultivated	N/D	N/D	N/D	N/D	Kam. I time	grand-papers	5.25	4408	NR 478v8, NT 542v4	
10222	Huii	8	1	0		Makaliia, Kakuu, Kaehi, Keohia, Kumeu, Kanohala	house lot, 20 cultivated plots	N/D	N/D	N/D	N/D	1844	Keawe	4.75	6054	NR 478v8, 543v4	
10337	Nuoa	1	0	0		Kanohala	house lot	N/D	N/D	N/D	N/D	N/D	N/D	0.00	none	NR 483v8	
10397	Pepa	2	2	0								Kam. I time	Keawe	4.12	6235	NR 484v8, NT 542v8	awarded 2 apana
						Kukulomino	6 kihapai	N/D	N/D	N/D	N/D						
						Kalohewano	house lot, 4 kihapai	N/D	N/D	N/D	N/D						

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parcels were awarded to eleven claimants. These parcels range from 2.00 to 5.78 acres in area with an average of 4.13 acres. All, except six awards, consist of a single awarded parcel. The remaining awards consisted of two awarded parcels.

The testimonies refer to at least twenty-two *iti* land divisions. Nine *iti* are mentioned two or more times. Multiple referenced *iti* consist of Kukuomino (10 references), Ililoa (8), Kaohia (6), Kanihoale (6), Makakioha (4), Puhoe (3), Halelono (2), and Kaniohala (2).

The majority of claimed land parcels were conveyed to the claimants between 1819 and 1846. Nine claims were for parcels conveyed during the reign of Kamehameha I. Five claims were conveyed by Kaahui, four by Keawe, and three by Nuole suggesting that these individuals were chiefs or *konohiki*. The remaining parcels were conveyed by the claimants' parents or grandparents.

The awarded parcels are all situated inland between approximately 900 ft and 1,900 ft elevation. Land use described in the LCA claim testimony consists of house lots and cultivated plots. Twenty claimed included house lots with at least 20 houses. Enclosing walls are described for two house lots. The testimonies refer to 128 *kihapai* and cultivated parcels. Six *kihapai* are described as partially cultivated and one was uncultivated. Four taro and four sweet potato *kihapai* are the only crops referenced. LCA 7483 describes the inland boundary of one claimed parcel as being a mountain banana patch. The northern and southern boundaries of a second parcel are described as being *kua'iwi*.

The awarded parcels are situated within the upper *kau'i'uhi* zone and *'apa'a* zone of the Kona Field System, SHP Site 6601 (Newman 1970, Kelly 1983, Schilt 1984, Cordy 1995). This site extends north to Kau Ahupua'a, south to Honanau, and from the coastline to the forested slopes of Hualalai. The area was intensively cultivated and served as the resource base for the large number of chiefs and retainers that occupied the Kailua-Keanihou coast. The characteristics and general locations of the elevation zones of the system described by Newman (1970) have been confirmed and elaborated on by subsequent ethnohistorical investigations (Kelly 1983). Much of the *kau'i'uhi* zone and lower *kau'i* zone of the field system did not extend into Kealahene based on Newman's map of the system (1970; Map 12).

The *kau'i'uhi* zone extends from 500 to 1,000 ft elevation. The zone was used for cultivating sweet potatoes, paper mulberry, and especially breadfruit. Archaeologically, this zone is not distinguishable from the adjacent *'apa'a* zone (Cordy 1995). The *'apa'a* zone is situated between 1,000 and 2,500 ft elevation. This zone traditionally was used for dryland cultivation of taro, sugar cane, sweet potato, and ti. Permanent habitations were present in the *'apa'a* zone, but were infrequent (Cordy 1995, Burtchard 1995). Dwellings were observed by early historic chroniclers, but most were probably for temporary use in conjunction with agriculture, bird hunting, and collecting of plant resources. Burials and ritual sites are rare in the upper elevation zones (Kawachi 1989).

Kua'iwi are prominent agricultural features of the *kau'i'uhi* and *'apa'a* zones (Cordy 1995; Newman 1970). These are broad, linear piles of rocks built from stones cleared from the adjacent slopes that also served as field boundaries. *Kua'iwi* are oriented inland-seaward often interconnected with perpendicular, soil-retaining walls and terraces forming rectangular grid pattern of fields. *Kua'iwi* also served to control rainfall runoff (Kirch 1985). These formal fields contrast with more informal garden areas characterized by scattered agricultural features in very rocky areas, such as young lava flows, and much of the *kau'i* zone.

The following summary of mid- to late 1800s developments in Kealahene is taken from Sihva (in Hammatt et al. 1987) and Smith (in Donham 1990). Their research focused on Interior Department correspondence. In 1853, Kaahui, the claimant for LCA 8608, made a partial payment of \$15 for 153 acres of Kealahene. In 1874, Keelikoiani paid \$51 for a one-year lease on land in Kealahene.

An Interior Department assessment of government lands dated September 5, 1865 describes Kealahene as follows:

Kealahene contains in all about 2000 acres, mauka of Gov't. Road some 400 Ac. covered with Auhi, firm [sic], & scattering Ohia. 2nd rate soil for this part of Kona. Makai of Gov't. Road 200 Ac. has been surveyed and sold to Kahenui, he bought this piece of Sheldon and says that he has payed him \$50, but got nothing for it. Kahenui has payed to me \$100, towards this land. Within this 200 Ac. piece, are 10 Kuleleas containing in all 43. Ac. Leaving 157 Ac. This land was valued at \$1. per Ac. Meikai of this is about 1400 Ac. 300 of which will do for a goat pasture, balance nothing but rocks.

The Homestead Act of 1884 directed the Minister of the Interior to make land available for homesteads. The lots were to be no more than 20 acres in area and the homesteaders had five years to comply with conditions necessary for obtaining title to the parcels. In 1886, King Kalakaua executed a 20-year lease for lands in North Kona, including portions of Kealahene, to the Interior Department for homesteads. The homestead lands in Kealahene included two blocks (1st and 2nd series) situated between approximately 500 ft elevation and 1,400 ft elevation, seaward of the inland Government Road. A letter from the Minister of the Interior dated May 15, 1889 dispatched the surveyor Emerson to layout the homestead lots at Kealahene.

George McDougall submitted several offers to purchase lands in Kealahene. A March 9, 1893 application stated:

There is a remnant of Gov't. land in Kealahene, left unsold - Kealahene lies north of Kailua about 3 miles in North Kona, Hawaii. This unsold part that I refer to above, extends from the homesteads to the seashore and contains an area of 15 or 16 hundred acres, fully one half of that is pure pahohoe, almost without a crack, and is worthless. The mauka half consists of large beds of black aua [sic], with a few bushes between and is of very little value, but what makes it valuable to me, my land is on both sides of it. I pay rent by the quarter at present to the Gov. agent.

I beg to offer \$300 - as an upset price if the Gov. will put it up for Sale - more on account of its situation than its real value, as it would take more than all it is worth to fence it in.

The Government Surveyor recommended that the parcel not be sold for less than \$500. N.H. Greenwell owned land inland of the Government Road that was used for coffee cultivation in 1888. A letter to the Minister of the Interior dated December 29, 1894 from W.P. Fennell offered to purchase 400 to 500 acres of Kealahene for \$1.50 per acre.

Emerson's 1880s map of Kailua (Figure 3) shows the seaward boundary of the forest at approximately 1,000 ft elevation in Kealahene. Emerson's field notebook describes the land inland of the forest edge as "lava covered with scattering forest and dense masses of ki [ti] root (Kelly 1983:38). The map shows four roads or trails extending across Kealahene. The inland road corresponds to the present Mamalahoa Highway. The next road seaward follows the route of Palani Road. A road extending from the south towards Kailua branches immediately south of the Kealahene boundary. One branch extends to the fishpond at Honokohau and the other extends to the northern boundary of Honokohau 2. The inland end of Kealahene above the upper road is labeled Grant 1571 to Kaahui. The grant is probably the 153 acre parcel Kaahui made a \$15 payment on in 1853.

The Honokohau Harbor is situated in Kealahene on the north side of the project area. The harbor was authorized by the River and Harbor Act of 1905. The harbor was completed in 1970. The facility was expanded between 1978 and 1980. Excess rock from the work was deposited in a large depression that was situated on state land approximately 1,000 ft south of the harbor. Based on the inventory survey, there is no evidence for current use of the project area.

Previous Archaeological Research

At least twenty archaeological survey and excavation projects have been conducted in Kealahou. Figure 4 shows the locations of the projects and Table 2 summarizes the projects. Not included in the figure or table is the general study by Stokes (Stokes and Dye 1991), which focused on major sites, primarily *heiau*, throughout Hawaii Island. Stokes reported that Luapauwila Heiau was a "walled structure on the 'Eiemaikale homestead, Grant No. 3765, 3.5 miles from the sea" (1991:40); however, he apparently did not visit the site.

The surveys of Soehren (1980), Bonk (1987), and Borhwick et al. (1993) included areas adjacent to the present project area. Soehren (1980) conducted a survey of the sewage treatment plant site that forms the southern boundary of the project area. He identified a trail (Site 7704) extending perpendicular to the coast in a north-south orientation. He described the trail as follows:

It is delineated by coral pebbles ranging in size from one inch to six inches and spaced five to ten feet apart... The trail appears to join the village and pond at Honokohau with the small settlement at Pawai in Keaholu... It was traced for 1600 ft across the natural basin in which the project is located; to the north it has been obliterated by a small boat harbor... The trail, or alignment of coral pebbles, is about as straight as a man on foot could make it, and pays little regard to irregularities in the terrain which make following it precisely rather difficult in places. In the absence of any abrasion of the lava surface, kerbstones, causeways over low places or other evidence of frequent use, it probably represents a "preliminary route selection" for a nineteenth century horse trail (Apple 1965) subsequently abandoned, perhaps in favor of the "Old Mamalahoa Trail" farther inland (1980:2).

Bonk (1987) conducted a "walk-through" survey of over 1,800 acres of Kealahou including the current project area. No sites were identified in the project area. Borhwick et al. (1993) surveyed an area along both sides of the Queen Ka'ahumanu Highway a short distance south of the road to Honokohau Harbor. They identified an inland-seaward oriented trail (Site 13194) that extended into the edge of the project area adjacent to the highway. The trail consisted of a cleared and packed path across an area with paohoe steppingstones.

The projects in Table 2 cover over 3,500 acres identifying 231 sites with more than 1,378 features. To aid in reconstructing settlement patterns, features were quantified by probable age and function, and the studies are ordered by elevation. Traditional Hawaiian features were categorized as habitation, agricultural, burial (including possible burials), and ritual. Features not assignable to these categories were categorized as miscellaneous/indeterminate. Traditional sites in this category include *paoponu*, petroglyphs, salt pans, and *ohu*. Habitation sites are further subdivided into temporary and permanent for studies making this distinction. Density values are given for sites, features, and habitation and agricultural features. Overall, the studies have identified more than 75 habitation features, 1,121 agricultural features, 49 burials (including possible burials), 38 trail segments, and 8 ritual features, which include two *heiau* on the coast. Historic features were not segregated by function. The majority of the historic features are ranch walls.

Density values for the surveys do not show any consistent trends by elevation, except agricultural feature density is low near the coast and dramatically increases above 700 ft elevation. Overall feature density values, excluding surveys of less than 15 acres, range from 0 to 2.87 features per acre. Habitation feature density for areas larger than 10 acres ranges from 0 to 0.27 features per acre. Agricultural feature density ranges from 0 to 2.5 features per acre with an average of 0.66.

Twenty-nine radiocarbon dates are reported in the studies by Donham (1990), O'Hare and Goodfellow (1994), and Buggett and Rosendahl (1992). Most of the age determination results produced multiple age ranges or long single age ranges between the 1600s and 1950. When all potential age ranges are exam-

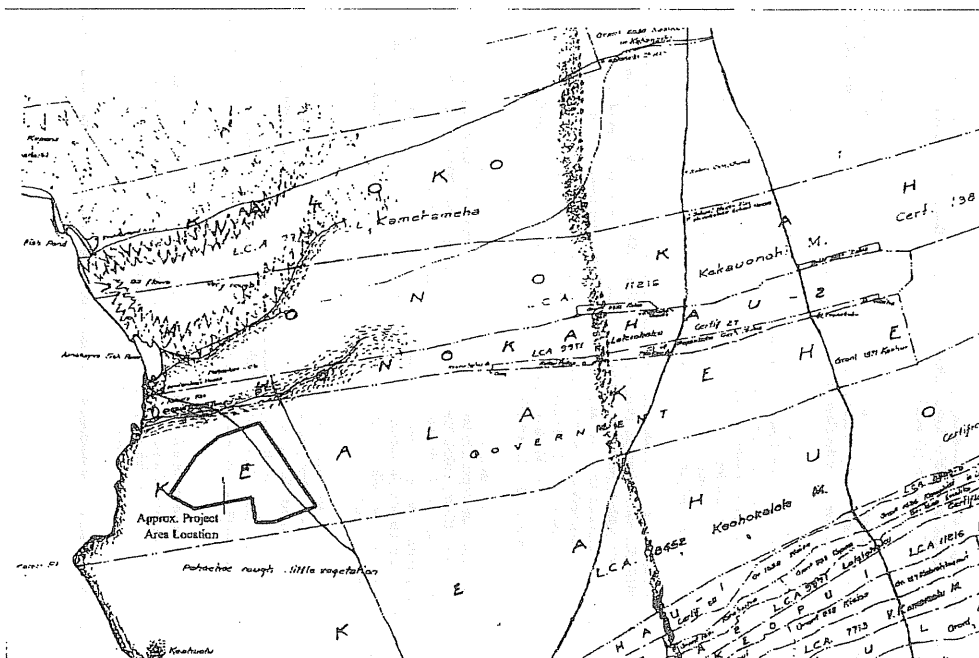


Figure 3. Portion of Emerson's 1880s Map of Kailua

Table 2. Summary of Previous Archaeological Work

Author	Date	Land	Study Type*	Elevation	Acres/age	No of sites	Sites/acre	No of Feat.	Feat/acre	Hab Feat.	Hab Feat./acre	Perm Hab Feat.	Temp Hab Feat.	Ag Feat.	Ag Feat./acre	Burial Feat.	Ritual Feat.	Trail	Misc. & Indet. Feat.	Historic Feat.	Comment	
Reinecke/Emery and Soehren/Sekido	1930/1971/1968	Kaloka, Honokohau and Kealahou	RS	0-80	52	27	6.52	30	0.58	13	0.25				0.00	10	2		2		only sites in Kealahou portion of survey area are tabulated	
Soehren	1981	Kealahou	RS	0-40	43	3		4	0.09	2	0.05				0.00	1	1				Survey did not quantify sites	
Benk	1987	Kealahou	RS	0-70	1855																Survey did not quantify sites	
Sinoto	1975	Kealahou	RS	30-60	100	3		4	0.04	1	0.01				0.00				1	2	papaumu, 2 historic salt basins	
Walsh and Hammatt	1995	Keahuolu to Kaleoa 1-4	IS	40-140	120	17	0.14	29	0.24	6	0.05		5	4	0.03			8	9	2	misc. features incl. 2 petroglyphs	
Soehren	1980	Kealahou	RS	40-80	70	1		1	0.01		0.00				0.00				1			
Borthwick et al.	1993	Kealahou	RS	50-80	86	2		2	0.03		0.00				0.00			2			only newly identified sites in Kealahou portion of survey area	
Sinoto	1977	Kealahou	RS	60-190	223	4		4	0.02	3	0.01				0.00					1		
Henry and Graves	1993	Kaleoa 4-onihau	IS	70-80	10	2		2	0.20		0.00				0.00			2			only sites in Kealahou tabulated	
Donham/Burgett and Rosendahl/O'Hare and Goodfellow	1990/1992/1994	Kealahou and Keahuolu	IS/DR	5-0-888	950	128	0.13	1188	1.23	37	0.04			1015	1.07	32	5	24	45	10	only a sample of agricultural features tabulated	
Hammatt	1984	Kealahou	RS	840-740	24	0		0	0.00		0.09				0.00							
Hammatt, Shiller and Borthwick	1987	Kealahou	RS	700-800	16	18	1.20	32	2.13	4	0.27		4	27	1.80					1		
Hammatt	1987	Kealahou	RS	700-800	16	18		43	2.67	4	0.27			29	1.83	6		1		3	many ag features not counted	
Walker and Rosendahl	1988	Kealahou	IS/EX	300	2	1	0.50	10	5.00	5	2.50	5		5	2.50							
Rechtsman et al.	2000	Kealahou	IS	1480-1600	22	9		49	2.23		0.00			41	1.86					8		
Totals/Averages					3597	231	6.50	1378	1.05	75	0.25	5	10	1121	8.68	48	8	38	67	27		

*IS=Inventory Survey, RS=Reconnaissance Survey, FI=Field Inspection, DR=Data Recovery, EX=Excavations

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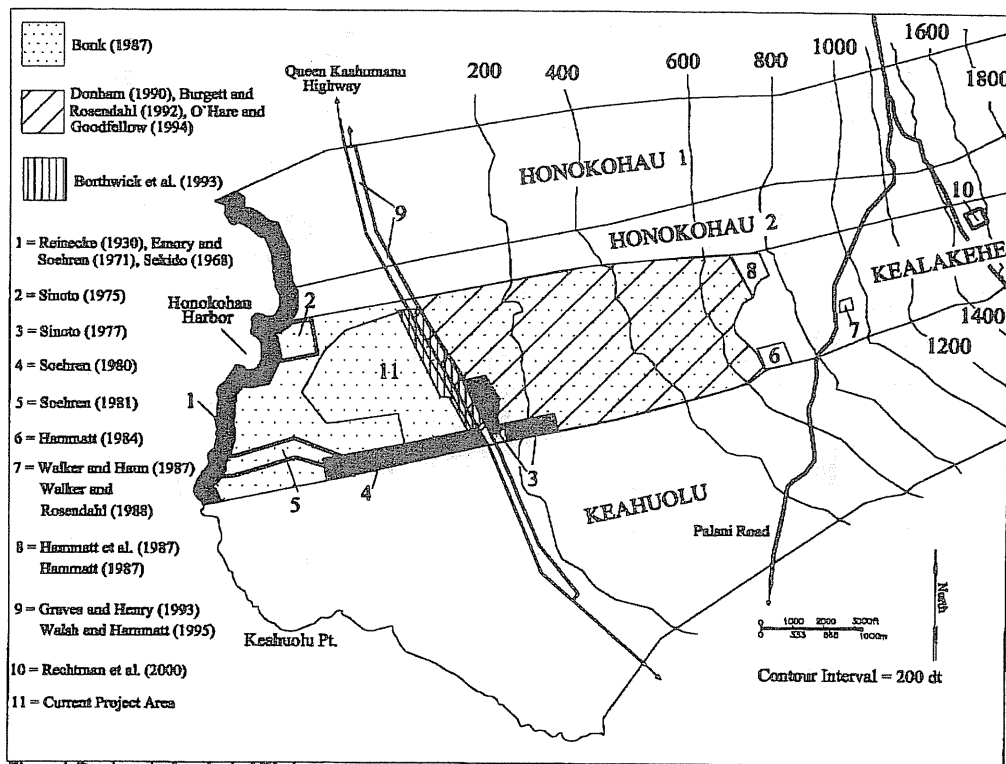


Figure 4. Previous Archaeological Work

ined only two span the AD 1200s, five span the 1300s, fourteen include the 1400s, fifteen include the 1500s, twenty-three span the 1600s, 20 include the 1700s, and 18 span the 1800s. The results indicate initial use of the area in the 1200s to 1300s, followed by a gradual increase during the 13th and 16th centuries. The most intensive use dates from the 1600s to early historic period.

As mentioned previously, the seaward half of Kealahou lies outside the boundaries of the Kona Field System and the field system land use model is not applicable to the area. Environmentally, the area is very similar to the neighboring *ahupua'a* of Honokohau and Kaloko. Cordy et al. (1991) describe their *ahupua'a*-wide study of Kaloko conducted in the early 1970s and summarize the work of Reinecke (1930) and Emory and Soehren (1971) in the coastal portion of Kaloko. The study included a survey of the entire *ahupua'a* seaward of the Queen Kaahumanu Highway and sample areas inland of the highway. Excavations were conducted at 20 sites near the coast, 11 sites between 98 ft and 800 ft elevation, and five upland sites. Cordy et al. (1991) utilized four environmental zones to characterize settlement patterns in Kaloko that are applicable to Kealahou (a) the Coastal Zone from sea level to 15 ft elevation, (b) the Middle Zone from 15 ft to 800-900 ft elevation, (c) the Lower Upland Zone from 900 ft to 1500 ft elevation, and (d) the Upland-Forest Zone between 1,500 and 6,000 ft elevation.

Based on their data, the authors believe the *ahupua'a* was permanently settled between AD 900 and 1200. Most of the sites were presumed to have been occupied in late prehistory in the 1600s and 1700s and this period is used to generate the settlement pattern model. Many sites also had a historic component. A *heiau*, coastal trail, *ahupua'a* boundary shrine, and permanent habitation sites, including the residence of at least one chief and four men's houses, were clustered next to the shoreline and around a fishpond. Temporary habitation sites were also present in the coastal zone. Branch trails linked habitation sites with subsistence sites and water sources along the coast. Subsistence sites included the fishpond at the coast and animal enclosures and agricultural complexes in the lower portion of the middle zone. A series of *maka-maka* trails extend from the coast inland. Burials were concentrated in a cemetery in the lower middle zone and individual burials were present at two coastal sites.

Inland of the lower Middle Zone adjacent to the Coastal Zone, sites were widely scattered and primarily consisted of trails leading to the uplands associated with markers (cairns) and temporary habitations, primarily in lava tubes. Settlement pattern data for the Upland Zone were derived from historic records. In the early to mid-1800s, the zone was used for agriculture and scattered habitations. This pattern is assumed to have prevailed in late prehistory as well. By the 1870s and 1880s, residential sites were more common and agricultural use continued as a small community developed near the upper road. This coincided with the near abandonment of the coastal habitations. In the late 1800s to early 1900s, the focus of land use shifted to large-scale ranching.

The Upland-Forest Zone was characterized by an extensive field system consisting of formal walled fields from 900 ft elevation up to approximately 2,300 ft, which was believed to be the lower limit of the late prehistoric forest edge. The major field boundary walls were perpendicular to the coast. Other agricultural features included terraces, depressions, mounds, and probable pigpens. Temporary habitation sites were scattered among the fields and at least one small shrine was present. Below 900 ft and above 2,300 ft elevation agricultural features were present, but were scattered and informal. By the mid-1800s, the forest edge was reported to be at the 1,700 ft elevation, leading the author's to conclude that much of the area was abandoned coincident with depopulation between European Contact and the 1850s.

PROJECT EXPECTATIONS

The project area is situated in the Middle Zone as defined by Cordy et al. (1991). Prehistoric use of the project area is potentially represented by scattered temporary habitation sites associated with trails. Chronologically, sites may have been used as early as the 900-1200s with the most extensive period of use occurring between the 1600s and early historic period.

In the early to mid-1800s, LCA claims indicate that settlement and cultivation was concentrated inland of the project area between 900 ft and 1,900 ft elevation. By the late 1800s to early 1900s, sites as-

sociated with ranching are expected, although this activity may have been limited to goats based on late 1800s descriptions of the area. Ranching activity would potentially be evidenced by stone walls and corals, and later, wire fencing.

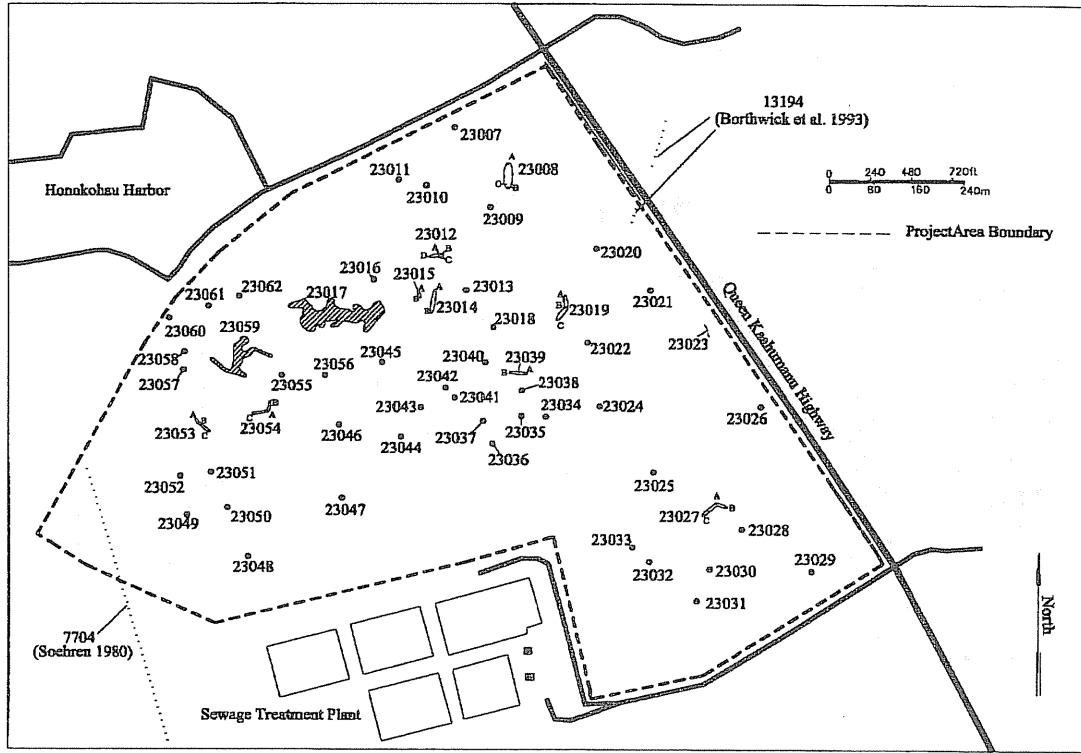


Figure 5. Site Location Map

FINDINGS

The inventory survey identified 56 sites with 121 features (Figure 5). The sites include 41 single feature sites and 15 complexes of features. The identified features consist of pahoehoe excavations (n=55), stone alignments (n=31), cairns (n=16), mounds (n=8), petroglyphs (n=5), enclosures (n=2), and one each of the following: cave, overhang, platform and trail. Functionally the 121 features are comprised of quarry (n=55), marker (n=16), agriculture (n=2), rock art (n=5), temporary habitation (n=4), ceremonial (n=1), transportation (n=1), and stone alignments (n=31) and mounds (n=6) of indeterminate function. The identified sites and features are summarized in Table 3 and are described below.

Two additional sites were previously identified within the project area (Sites 7704 and 13194). No evidence of these trails was noted during the survey. These sites are included in Table 3 and site descriptions are incorporated into the following discussion. Subsurface testing was undertaken in two locations during the project. The tested features consist of an oval-shaped enclosure (Site 23007) and a small platform (Site 23038).

The ten formal feature types identified during the study are defined as follows:

Pahoehoe Excavations are features that consist of excavated holes within either the surface of a pahoehoe lava flow or at the base of pahoehoe ridges, outcrops and knolls. Typically the excavations enlarged natural cracks and collapsed lava blisters. Stone removed from the excavations was piled adjacent to the holes. Several large waterworn basalt cobbles were present next to excavations that were apparently used as sledgehammers during the excavations. These features are interpreted as quarry sites used to obtain raw material for the manufacture of stone tools. Two types of material were apparently sought: (a) fine-grained basalt for adzes or other tools and (b) scoriaceous lava for making abrading implements.

Stone Alignments are comprised of low enclosures constructed of one, and occasionally two, courses of flat pahoehoe slabs, or a combination of flat slabs and subangular basalt cobbles and small boulders. These structures are all built on bare pahoehoe lava with no soil or cultural remains present. Most are oval in shape. The function of these features is undetermined. Most are too small and low to have been temporary habitation shelters. Many of the alignments are made from slabs of scoriaceous lava that may be raw material for abrader manufacture. The small area of most of the features is sufficient for a single individual to sit in the center; however, no evidence of debris from lithic reduction or abraded surfaces used to shape abraders is present.

Cairns are features constructed of stacked subangular basalt cobbles and small boulders, pahoehoe slabs, or a combination of the two materials. These features are typically well-built and are interpreted as markers.

Mounds are features built of piled subangular basalt cobbles and small boulders, pahoehoe slabs, or a combination of the two. These features are informally constructed and evidenced no associated cultural remains. Two mounds within the project area are interpreted as possible agricultural features. Other mounds are either collapsed cairns features or of indeterminate function.

Petroglyphs are images that have been pecked into lava surfaces. The petroglyphs within the project area all consist of small anthropomorphic figures. No cultural remains were found in association with the petroglyphs.

Enclosures are features built of stacked and/or piled subangular basalt cobbles, small boulders, or pahoehoe slabs. The enclosures within the project area are either oval in shape or U-shaped, and are interpreted as temporary habitation structures based on their

Table 3. Summary of Identified Sites (cont.)

SIHP Site No.	Type	Function	No. of Features	Formal Type												Function					Field No.			
				Pahoehoe Excavation	Stone Alignment	Cairn	Mound	Petroglyph	Trail	Enclosure	Cave	Overhang	Platform	Quarry	Indeterminate	Marker	Agriculture	Rock Art	Temporary Habitation	Transportation		Ceremonial		
23037	Complex	Quarry	2	2																				40
23038	Platform	Ceremonial	1																				1	29
23039	Complex	Quarry	2	2																				22, 28
23040	Complex	Quarry/Indeterminate	2	1	1																			27
23041	Pahoehoe Excavation	Quarry	1	1																				36
23042	Petroglyph	Rock Art	2					2															2	39
23043	Stone Alignment	Indeterminate	1		1																			37
23044	Pahoehoe Excavation	Quarry	1	1																				47
23045	Pahoehoe Excavation	Quarry	1	1																				46
23046	Pahoehoe Excavation	Quarry	1	1																				50
23047	Cairn	Marker	1			1																		55
23048	Pahoehoe Excavation	Quarry	1	1																				74
23049	Pahoehoe Excavation	Quarry	1	1																				75
23050	Stone Alignment	Indeterminate	1		1																			73
23051	Stone Alignment	Indeterminate	1		1																			72
23052	Stone Alignment	Indeterminate	1		1																			76
23053	Complex	Indeterminate	3		2	1																		69, 71
23054	Complex	Indeterminate	3		3																			56, 88
23055	Stone Alignment	Indeterminate	1		1																			54
23056	Pahoehoe Excavation	Quarry	1	1																				51
23057	Stone Alignment	Indeterminate	1		1																			79
23058	Cairn	Marker	1			1																		78
23059	Complex	Temporary Habitation/Marker/Quarry/Indeterminate	18	3	5	4	5			1					3	10	4					1		52, 53, 57-62, 65-67
23060	Pahoehoe Excavation	Quarry	1	1																				70
23061	Stone Alignment	Indeterminate	1		1																			64
23062	Stone Alignment	Indeterminate	1		1																			65
Total				123	66	31	16	8	6	3	2	1	1	1	66	37	18	2	6	4	3	1		

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Table 3. Summary of Identified Sites

SIHP Site No.	Type	Function	No. of Features	Formal Type												Function					Field No.			
				Pahoehoe Excavation	Stone Alignment	Cairn	Mound	Petroglyph	Trail	Enclosure	Cave	Overhang	Platform	Quarry	Indeterminate	Marker	Agriculture	Rock Art	Temporary Habitation	Transportation		Ceremonial		
7704	Trail (Destroyed)	Transportation	1																					-
13194	Trail (Destroyed)	Transportation	1																					-
23007	Enclosure	Temporary Habitation	1																					14
23008	Complex	Quarry/Agriculture	3	1			2																	12, 13
23009	Stone Alignment	Indeterminate	1		1																			15
23010	Petroglyph	Rock Art	1					1																23
23011	Petroglyph	Rock Art	2					2																36
23012	Complex	Indeterminate	4		4																			24, 35
23013	Pahoehoe Excavation	Quarry	1	1																				25
23014	Complex	Quarry/Indeterminate	2	1	1																			32, 33
23015	Complex	Marker	2		2																			34
23016	Stone Alignment	Indeterminate	1		1																			43
23017	Complex	Quarry	25	25																				42, 44, 45, 48
23018	Stone Alignment	Indeterminate	1		1																			26
23019	Complex	Quarry/Indeterminate	3	1	2																			5, 11, 16
23020	Pahoehoe Excavation	Quarry	1	1																				7
23021	Cave	Temporary Habitation	1																					6
23022	Cairn	Marker	1			1																		10
23023	Trail	Transportation	1																					2
23024	Stone Alignment	Indeterminate	1		1																			17
23025	Pahoehoe Excavation	Quarry	1	1																				18
23026	Complex	Marker	5			5																		3
23027	Complex	Quarry/Indeterminate	3	2	1																			8, 9
23028	Cairn	Marker	1			1																		77
23029	Pahoehoe Excavation	Quarry	1	1																				4
23030	Pahoehoe Excavation	Quarry	1	1																				19
23031	Pahoehoe Excavation	Quarry	1	1																				20
23032	Pahoehoe Excavation	Quarry	1	1																				21
23033	Overhang	Temporary Habitation	1																					80
23034	Pahoehoe Excavation	Quarry	1	1																				31
23035	Pahoehoe Excavation	Quarry	1	1																				30
23036	Cairn	Marker	1			1																		41

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formal type and lack of substantial construction (faced walls, paving, etc.) following Cordy's (1981) definition.

Overhangs and Caves are features located on the sides of outcrops. The features within this category within the project area evidenced internal modification and are interpreted as temporary habitations.

Platform - Only one platform was identified during the survey. It consists of a well-built, rectangular structure made of stacked and piled pahoehoe slabs and subangular basalt cobbles and small boulders. It was interpreted as a ceremonial structure, probably a small shrine, based on the results of subsurface testing and the presence of branch coral.

Trail - One trail was noted within the project area, extending across a jagged a'a lava flow. It consists of a steppingstone trail of pahoehoe slabs and small cobbles, and is interpreted as a transportation route across the uneven terrain.

Site 7704

Site 7704 is a section of trail that was located near the southwestern portion of the current project area that was previously identified by Soehren (1980) during a reconnaissance survey for the Kailua Wastewater Treatment Plant. The trail was delineated by parallel rows of coral stones, spaced five to ten feet apart (1980:2). Soehren indicates that the trail once connected the village and pond at Honokohau with a settlement at Pawai in Keahuolu. The portion of the trail in the vicinity of the project area has apparently been buried beneath a large boulder berm that extends along the western project area boundary, created during construction of the Honokohau Harbor.

Site 13194

Site 13194 is a section of trail that was situated along the eastern project area boundary that was previously identified by Borthwick et al. (1993). The trail was observed on both sides of the Queen Ka'ahumanu Highway during a survey of the Kealahou Parkway intersection with the Queen Ka'ahumanu Highway. According to Borthwick et al., the trail consisted of a "cleared and packed path through the a'a with spaced pahoehoe slabs which are inset into the a'a (1993:44). A map depicting the location of the trail indicates that it was oriented a roughly inland-seaward direction, and would have been situated in the northeastern corner of the current project area. This area has been extensively disturbed by construction activity, and no evidence of the trail was found.

Site 23007

Site 23007 is a crudely built enclosure located at the northern end of the project area. The area to the north of the enclosure has been impacted by bulldozer activity probably associated with road construction activity. The ground surface in this area is comprised of relatively level pahoehoe lava with scattered surface stones. The enclosure is oval in shape and is 10.2 m long (north-south) and from 3.7 to 5.25 m wide (Figure 6). The walls of the enclosure are constructed of piled subangular basalt cobbles and small boulders. They vary in width from 1.15 to 3.7 m, and in height from 0.25 to 0.38 m. The interior of the enclosure measures 3.9 m long (north-south) by 2.45 m wide. Scattered stones over a dark soil deposit are present inside the enclosure. No cultural remains were observed.

A 0.5 by 0.5 m test unit (TU-1) was excavated inside the enclosure, near the southern end. The excavation of this unit revealed a single soil deposit overlying bedrock. Layer 1 consisted of 0.14 to 0.16 m of a dark brown (10YR 3/3) sandy silt, with no cultural remains present (see Figure 6). Site 23007 is interpreted as a temporary habitation structure. Although larger in area than Cordy (1981) size range for temporary habitation structures, the lack of substantial construction (un-faced walls, lack of paving, etc.) and the features isolation from other habitation features suggests it is a temporary habitation. The site is unaltered and in fair condition.

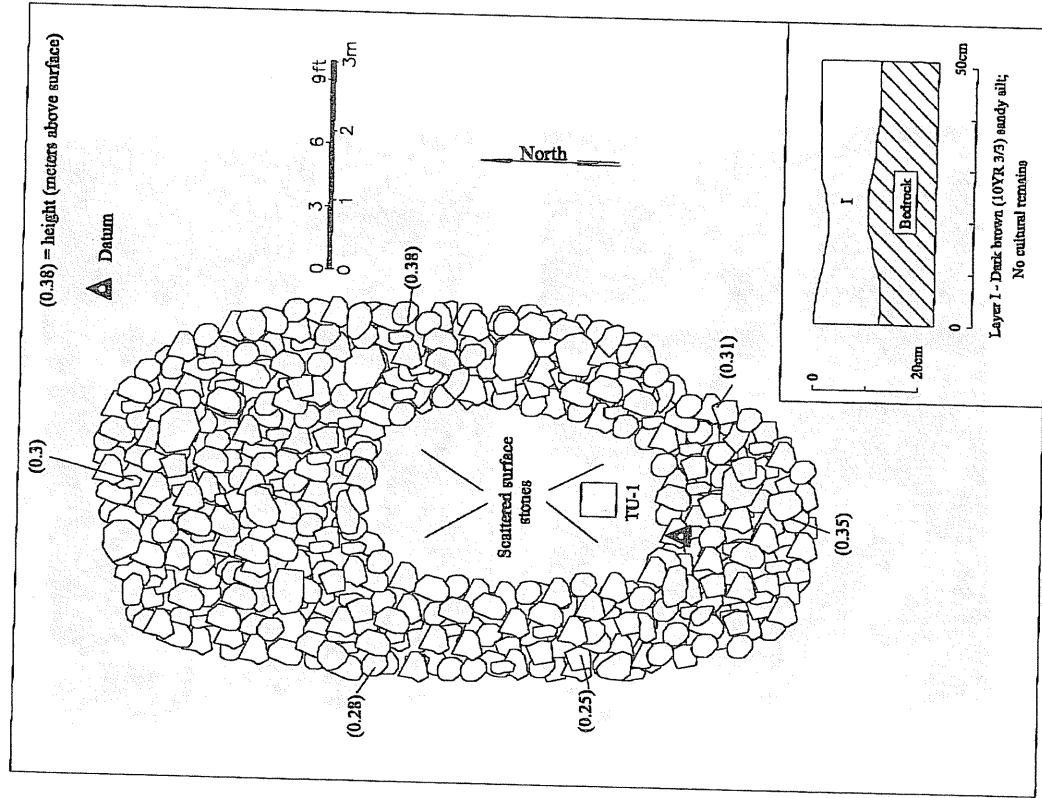


Figure 6. Site 23007 Plan Map and TU-1 North Face Profile

Site 23008

Site 23008 is a complex of three features located at the northern end of the project area 128 m southeast of Site 23007. The ground surface in this area is relatively level with low pahoehoe outcrops surrounded by a brown surface soil. The site consists of a pahoehoe excavation (Feature A) and two mounds (Features B and C). The features are unaltered and in good condition.

Feature A

Feature A is a small pahoehoe excavation located at the northern end of the site. This feature consists of an irregularly shaped hole that has been created by breaking the surface of the lava flow and removing stones. The hole measures 1.45 m long (north-northwest by south-southeast), 0.83 m wide, and 0.35 m in depth. The broken stones, which include pieces of scoriaceous lava, have been informally piled on the west side of the hole in an area 3.6 m long (north-south), 1.2 m wide, and 0.25 to 0.4 m in height. No cultural remains were observed. Feature A is interpreted as a quarry for abrader material based on its formal type.

Feature B

Feature B is an oval-shaped mound located on a low pahoehoe outcrop, 36.5 m south of Feature A. The mound is 3.15 m in length (northeast by southwest), 2.05 m wide and 0.43 m in height (Figure 7), and is comprised of piled subangular basalt cobbles with a few small boulders. No cultural remains were noted on or around the mound. Feature B is assigned an agricultural function based on its formal type and its informal construction.

Feature C

Feature C is a stone mound located on the same low outcrop as Feature B, 1.75 m to the northwest. This mound is oval in shape, and is 2.8 m long (north-south), 2.2 m wide and 0.39 m in height. Feature C is also constructed of piled subangular basalt cobbles and small boulders. No cultural remains were present. Feature C is also interpreted as an agricultural mound.

Site 23009

Site 23009 is a small oval-shaped alignment situated on a level pahoehoe outcrop in the northern portion of the project area. The site is located 55 m southwest of Feature B at Site 23008. The alignment is comprised of a single course of small, flat pahoehoe slabs, aligned in an oval-shaped configuration that is 2.45 m long (east-west) by 1.53 m wide (Figure 8). The individual slabs range in size from 0.15 to 0.4 m long, 0.1 to 0.3 m wide and 0.02 to 0.1 m in thickness. No soil or cultural remains were present in association with the alignment. The function of the feature is undetermined.

Site 23010

Site 23010 is a single petroglyph that has been pecked into the surface of a low pahoehoe outcrop in the northern portion of the project area. The site is situated 122 m south-southwest of Site 23007. The petroglyph consists of an anthropomorphic figure with arms, legs, a torso and a head (Figure 9). One of the arms is angled upward and the other is angled downward. The image is 28 cm in height and 21 cm wide. Site 23010 is unaltered and in good condition.

Site 23011

Site 23011 consists of two petroglyphs that have been pecked into a low pahoehoe outcrop in the northern portion of the project area. The site is located 48.5 m west of Site 23010. The Feature A petroglyph is located at the north end of the site. This image is comprised of what appears to be the image of a person riding a surfboard (Figure 10). The feature consists of a torso with outstretched arms, and one leg,

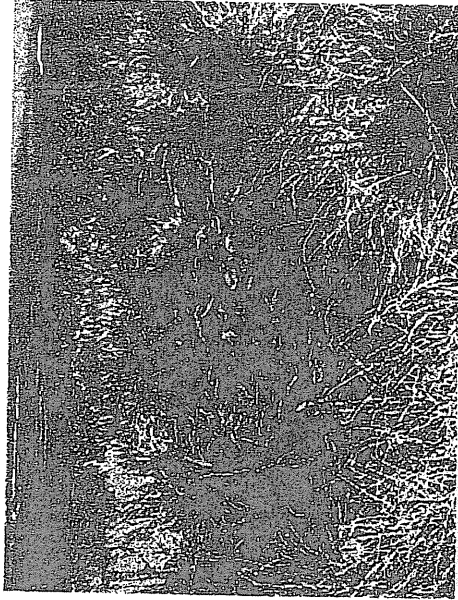


Figure 7. Site 23008, Feature B Mound, view to the east

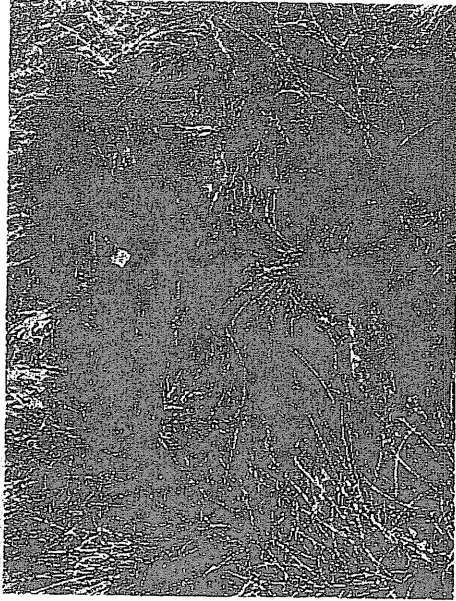


Figure 8. Site 23009 Stone Alignment, view to east-southeast

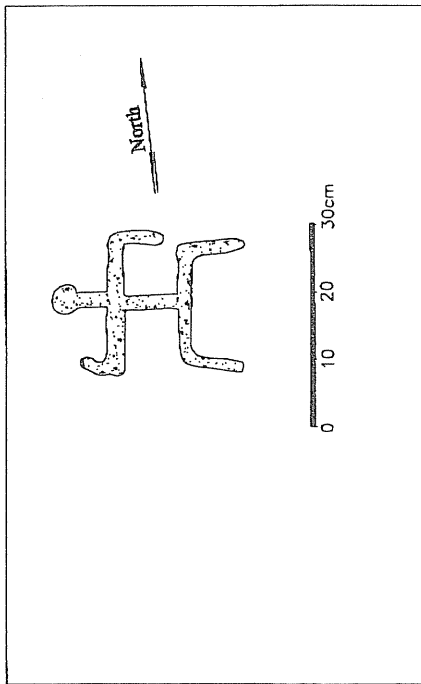


Figure 9. Site 23010 Petroglyph

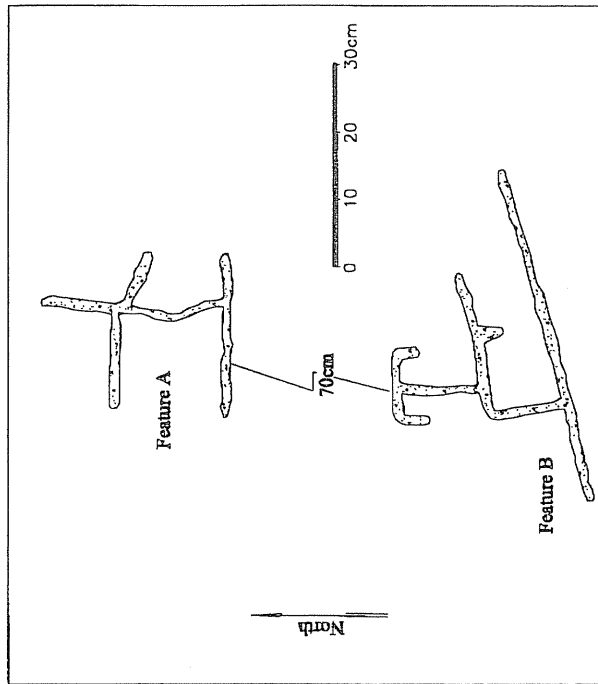


Figure 10. Site 23011 Petroglyphs

with a perpendicularly oriented "surfboard" at the base. The petroglyph measures 27 cm in height and 24 cm in width.

The Feature B petroglyph is located 0.7 m to the south of Feature A, on the same outcrop. This image is less recognizable than Feature A, but may also represent a wave rider figure (see Figure 10). It appears to consist of an anthropomorphic figure with a torso, two arms that angle downward at the elbow, and two legs. One of the legs extends downward to the "surfboard", with the other extended outward. The "surfboard" is oriented parallel to the outstretched leg, and measures 50 cm long. The anthropomorphic figure is 24 cm tall and 12 to 21 cm wide. Site 23011 is unaltered and in good condition.

Site 23012

Site 23012 is a complex of four alignments located in the northern portion of the project area. The site is situated 122 m southwest of Site 23009, along the northern edge of a large, low pahoehoe outcrop (Figure 11). No soil is present and no cultural remains were found in association with the features. The four features are unaltered and in good condition. The function of the features is undetermined.

Feature A

Feature A is an oval-shaped configuration of small, flat pahoehoe slabs, and several subangular basalt cobbles. It is 2.88 m long (east-northeast by west-southwest) and 2.1 m wide. The eastern portion of the feature is comprised of flat slabs with the western portion being constructed of one to two courses high of slabs and cobbles. The height of the slabs varies from 0.05 to 0.12 m with the height of the piled slabs and cobbles ranging from 0.18 to 0.27 m.

Feature B

Feature B is situated 1.45 m to the east-northeast of Feature B. This feature consists of a roughly C-shaped configuration of flat pahoehoe slabs and subangular basalt cobbles and small boulders with a 1.35 m wide opening at the south-southeastern end. The feature measures 3.38 m long (east-northeast by west-southwest), and 2.9 m wide. The majority of the stones are flat slabs, although several subangular basalt cobbles are located at the west end of the feature. The height of the stones ranges from 0.17 to 0.21 m.

Feature C

Feature C is a U-shaped configuration of stones located 9.95 m southwest of Feature A. This feature is comprised entirely of small, flat pahoehoe slabs, with a 1.4 m wide opening at the north-northwestern end. The feature measures 2.9 m long (north-northwest by south-southeast), 2.42 m wide and 0.1 to 0.21 m in height.

Feature D

Feature D is an oval-shaped configuration of stones situated 15.5 m west of Feature A along the northern edge of the outcrop. It is constructed of a single course of flat pahoehoe slabs and small subangular basalt cobbles, and measures 3.65 m long (north-south) by 2.95 m wide. The height of the stones varies from 0.1 to 0.19 m above the surface of the pahoehoe outcrop.

Site 23013

Site 23013 is a pahoehoe excavation located on a low pahoehoe outcrop, 75.0 m southwest of Feature C at Site 23012. The site is comprised of a natural crack in the lava that has been widened by breaking subangular stones from the sides. The crack is linear in shape, measuring 3.55 m long (north-south) and from 0.1 to 0.65 m wide (Figure 12). The base of crack ranges in depth from 0.5 to 0.85 m below the surface of the outcrop.

Subangular basalt cobbles and small boulders, which include pieces of scoriaceous lava, have been removed from the excavation and placed along the eastern and northwestern side of the crack and piled in an oval-shaped mound to the west. The height of the stones ranges from 0.19 to 0.32 m. The pile of cobbles

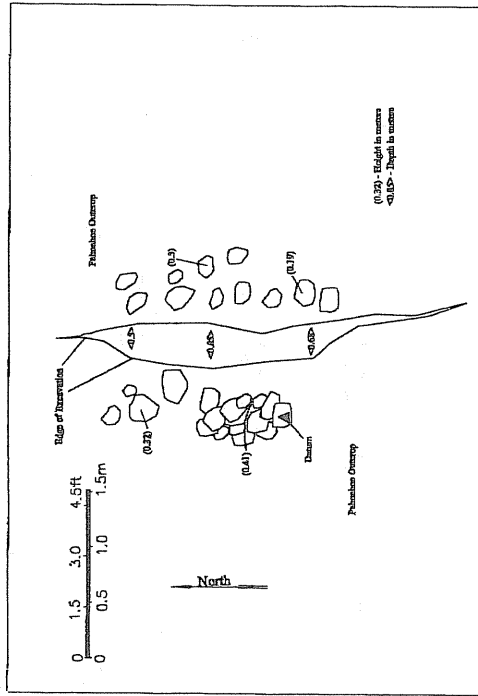


Figure 12. Site 23013 Plan Map



Figure 13. Site 23014, Feature B, Basalt Hammerstone

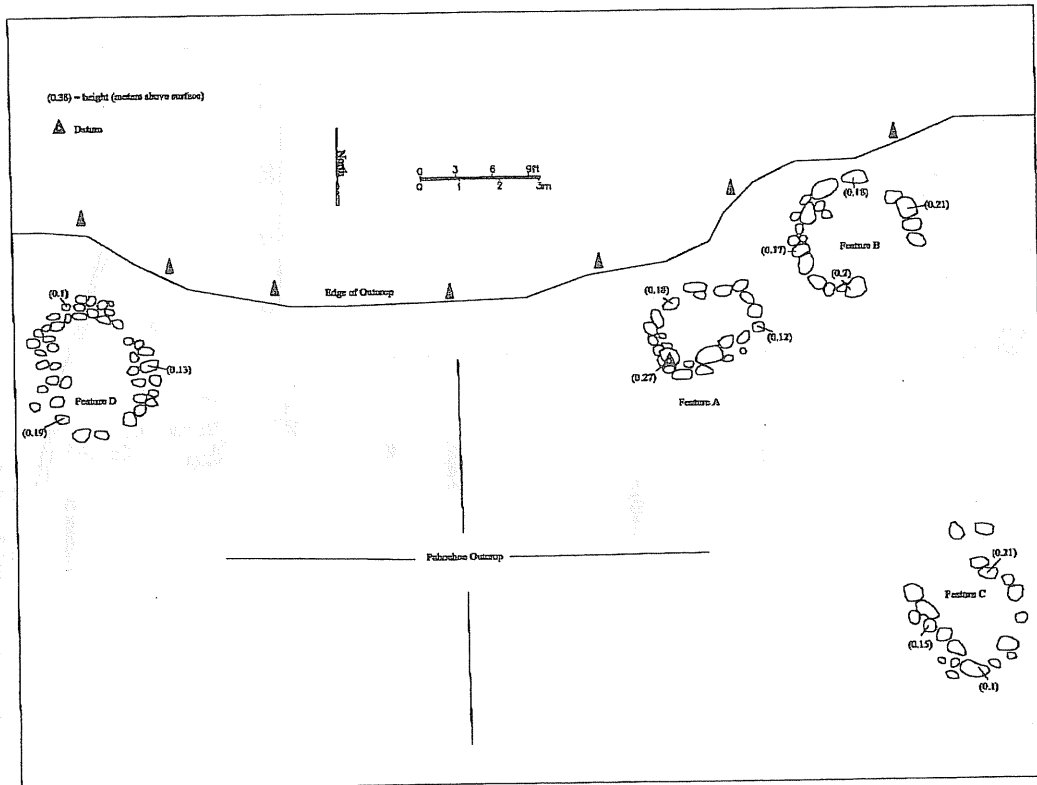


Figure 11. Site 23012 Plan Map

and small boulders measures 0.85 m long (north-south), 0.48 m wide, and 0.41 m in height. No other cultural remains were present. Site 23013 is unaltered and in good condition. It is interpreted as an abrader quarry based on its formal type.

Site 23014

Site 23014 is a complex of two features located 57.0 m west of Site 23013. The site consists of an alignment of stones (Feature A) and a pahoehoe excavation (Feature B). The features are located on a pahoehoe outcrop. The features are unaltered and in good condition.

Feature A

Feature A is an alignment of stones situated on top of a bare pahoehoe outcrop at the northern end. The feature is comprised of as a single course of small, flat pahoehoe slabs, that have been positioned in an oval-shaped configuration that is 1.85 m long (east-northeast by west-southwest) by 1.45 m wide. The slabs range in size from 0.1 to 0.5 m long, 0.08 to 0.35 m wide and 0.07 to 0.13 m in height. No soil was present, and no cultural remains were observed. The function of the feature is undetermined.

Feature B

Feature B consists of a pahoehoe excavation located on the same outcrop as Feature A, 40.0 m to the south-southwest. The feature consists of an irregularly shaped hole that has been broken through the surface lava. The hole is 1.4 m long (northwest by southeast), 0.85 m wide, and 0.35 m in depth. An irregularly shaped pile of stones, which include pieces of scoriaeous lava, removed from the excavation is situated adjacent to the hole to the north. The pile measures 1.1 m long (north-south), 0.85 m wide, and 0.45 m in height.

A waterworn basalt cobble is situated in the excavation. It measures 0.35 m long, 0.22 m wide, and 0.16 m in thickness (Figure 13). A second waterworn cobble is situated 38.0 m to the west-northwest of Feature B, on the seaward side of the outcrop in an area of uneven surface lava. It is 0.29 m long, 0.25 m wide, and 0.19 m in thickness. Both stones evidence impact scars marks at one end and were probably used to excavate the feature. Feature B is interpreted as an abrader quarry based on the features formal type and the presence of the two hammerstones.

Site 23015

Site 23015 is a complex of two features located at the northern end of a level pahoehoe knoll. The features consist of two small stone cairns (Features A and B). The site is situated 32.0 m west of Feature A at Site 23014. The features are unaltered and in good condition, and are interpreted as markers based on their formal type.

Feature A

Feature A is a stacked stone cairn located at the north end of the site. The base of the cairn is oval in shape, measuring 1.65 m long (east-west) by 1.2 m wide. The sides of the feature angle inward from the base with the top measuring 1.1 m long by 0.85 m wide. The top of the cairn is 0.35 m in height above the surface of the knoll. The feature is built of stacked, small pahoehoe slabs. No cultural remains were present.

Feature B

Feature B is a second cairn situated 9.15 m south-southeast of Feature A. This feature measures 1.42 m long (north-northwest by south-southeast) by 0.78 m wide at the base, and 0.9 m long by 0.45 m wide at the top (Figure 14). Feature B is 0.65 m in height and is constructed of stacked, small pahoehoe slabs. No cultural remains were present.

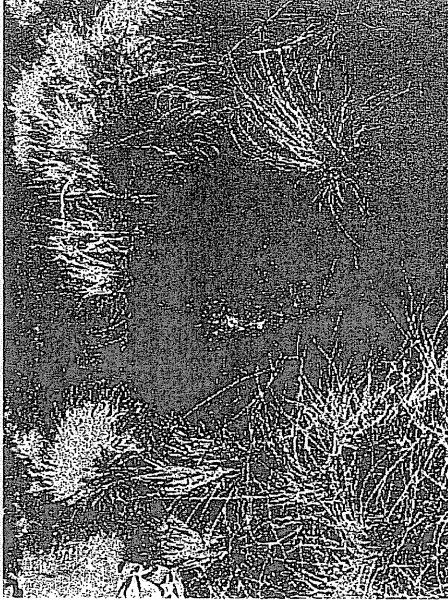


Figure 14. Site 23015, Feature B Cairn, view to northwest



Figure 15. Site 23016 Stone Alignment, view to south

Site 23016

Site 23016 is a stone alignment situated on an area of level bare pahoehoe lava. The site is located 86.0 m west-northwest of Feature A at Site 23015. It consists of an oval-shaped configuration of pahoehoe slabs that is 1.4 m long (east-northeast by west-southwest), and 0.84 m wide (Figure 15). The slabs range in size from 0.18 to 0.66 m long, 0.1 to 0.36 m wide and 0.1 to 0.2 m in height. No cultural remains were present. Site 23016 is unaltered and in good condition. The function of the feature is undetermined.

Site 23017

Site 23017 is a complex of large pahoehoe excavations located on the lower edges of a 2.5 m tall pahoehoe ridge. The ridge is oriented in an inland-seaward direction. The area to the north and south of the ridge is comprised of uneven pahoehoe lava. The ridge measures 173.0 m in length (east-west) and from 20.0 to 62.0 m wide. The surface of the ridge is comprised of bare lava with no soil or cultural remains present.

There are 25 pahoehoe excavations located along the base of the ridge, on both the north and south sides. These excavations consist of holes that have been broken into the lava ridge. Stones removed from the excavations have been piled around the holes. These stones consist predominately of large, angular blocks of fine-grained basalt, which comprises the substratum beneath the surface pahoehoe flow. The excavations range in size from 3.8 to 10.2 m long, 1.5 to 3.5 m wide, and 0.7 to 1.55 m in depth. The piles of stone vary in size from 3.0 to 14.5 m long, 1.65 to 4.0 m wide, and 0.65 to 1.4 m in height. Examples of the Site 23017 pahoehoe excavations are illustrated in Figures 16 and 17. Site 23017 is unaltered and in good condition and it is interpreted as a basalt quarry.

Site 23018

Site 23018 is an alignment of stones located on a low pahoehoe outcrop 84.0 m south-southeast of Site 23013. The site consists of a U-shaped configuration of flat pahoehoe slabs that is open at the southeastern end. It measures 1.85 m long (northwest by southeast), and 1.6 m wide with a 1.35 m wide opening (Figure 18). The pahoehoe slabs vary in size from 0.15 to 0.65 m long, 0.12 to 0.48 m wide and 0.1 to 0.22 m in height. No soil is present in the area and no cultural remains were noted. Site 23018 is unaltered and in good condition. The function of the feature is undetermined.

Site 23019

Site 23019 is a complex of three features located on a low pahoehoe outcrop in the eastern portion of the project area. The site is situated 137.0 m east-northeast of Site 23018. The features consist of a pahoehoe excavation (Feature A) and two stone alignments (Features B and C). No soil was present at the site and no cultural remains were observed. The Site 23019 features are unaltered and in good condition.

Feature A

Feature A is a pahoehoe excavation located near the northwestern end of the low pahoehoe outcrop. The feature consists of an irregularly shaped hole that is 2.35 m long (north-northwest by south-southeast), 0.89 m wide, and 0.79 m in depth below the surface of the outcrop. A crude, irregular-shaped pile of angular to subangular, fine-grained basalt cobbles and small boulders has been placed adjacent to the excavation on the western side. This pile is 2.8 m long (north-northwest by south-southeast), 1.95 m wide and 0.4 to 0.65 m in height (Figure 19). Feature A is interpreted as a basalt quarry based on its formal type.

Feature B

Feature B is a roughly oval-shaped alignment of stones located on the same low outcrop as Feature A, 20.5 m to the south. The feature is constructed of one course of small, flat pahoehoe slabs. It meas-

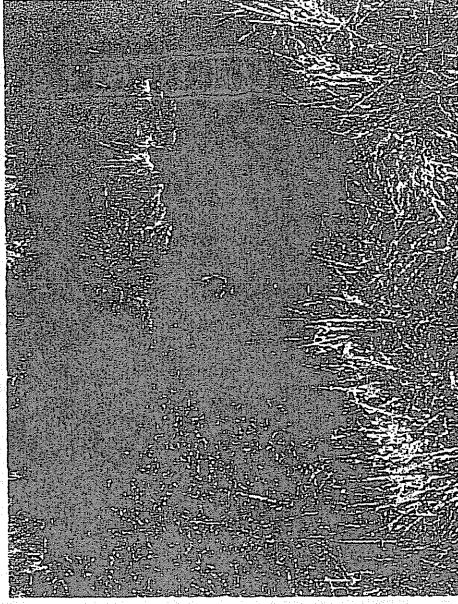


Figure 16. Site 23017 Pahoehoe Excavation, view to west



Figure 17. Site 23017 Pahoehoe Excavation, view to southeast

ures 2.55 m long (east-west), and 1.75 m wide. The stones range in size from 0.12 to 0.45 m long, 0.1 to 0.27 m wide and 0.08 to 0.19 m in height. The function of the feature is undetermined.

Feature C

Feature C is a second stone alignment, located 28.5 m to the southwest of Feature B. The feature is C-shaped and is open at the southern end. The stones used in this feature consist of a single course of small, flat pahoehoe slabs similar in size to those observed at Feature B. The feature measures 2.65 m long (east-west), and 2.05 m wide with the height of the stones varying from 0.09 to 0.17 m. The function of Feature C is undetermined.

Site 23020

Site 23020 is a pahoehoe excavation located on a low pahoehoe outcrop near the eastern project area boundary. The site is situated 103 m northeast of Feature A at Site 23019, in an area of uneven pahoehoe lava. It consists of an irregularly shaped excavated hole that is 2.7 m long (north-south), 1.4 m wide, and 0.42 m in depth. A crude pile of subangular to angular, fine-grained basalt cobbles and small boulders have been removed from the excavation and piled adjacent to the hole on the eastern side. This pile measures 2.2 m long (northwest by southeast), 1.65 m wide and 0.38 m in height. No other cultural remains were present. Site 23020 is unaltered and in good condition and it is interpreted as a basalt quarry based on its formal type.

Site 23021

Site 23021 is a small cave located at the base of a large α flow, on the seaward side. The site is situated 123.0 m southeast of Site 23020. The entrance to the cave opens to the north, and measures 1.19 m wide and 0.75 m in height. The entrance slopes down into the main chamber of the cave, which is roughly oval in shape, measuring 8.35 m long (east-west), and 2.75 m wide (Figure 20). The floor of the cave is bare lava with a domed-shaped ceiling that varies in height from 0.97 to 1.35 m. Scattered subangular basalt cobbles and small boulders are scattered at the western end of the cave, although in the eastern portion of the main chamber, surface stones appear to have been removed from the center of the cave and placed along the edges to create a cleared area.

A small passage extends to the north from the northeastern end of the main chamber. This portion of the site is 3.55 m long (north-south), 1.77 m wide, and 0.55 m tall. There is a low, raised shelf at the southeastern end of the main chamber that is 0.35 m higher than the main cave floor. This shelf is 2.05 m long (northwest by southeast), 1.53 m wide, and 0.7 m in height. The floor of the shelf is also bare lava. Two, stacked basalt cobbles are present on this shelf.

No cultural remains were present within the cave, although it appears to have been modified by clearing surface stones in the main chamber and the stacked cobbles the raised shelf. Site 23021 is unaltered and in good condition. It is interpreted as a temporary habitation based on its formal type and modified interior.

Site 23022

Site 23022 is a well-built cairn situated on a low pahoehoe outcrop 71 m southeast of Feature C at Site 23019. The cairn is constructed of stacked subangular basalt cobbles and small boulders, and is 0.95 m long (northwest by southeast) and 0.91 m wide at the base, and 0.74 m long by 0.67 m wide at the top (Figure 21). The cairn measures 0.73 m in height. It is unaltered and in good condition. No cultural remains were present. Site 23022 is interpreted as a marker based on its formal type.

Site 23023

Site 23023 is a steppingstone trail segment that extends across a rough and jagged α flow near the eastern project area boundary. The northern end of the trail is located 117.0 m southeast of Site 23021. The trail is comprised of 28 small pahoehoe cobbles and small, flat pahoehoe slabs that have been placed

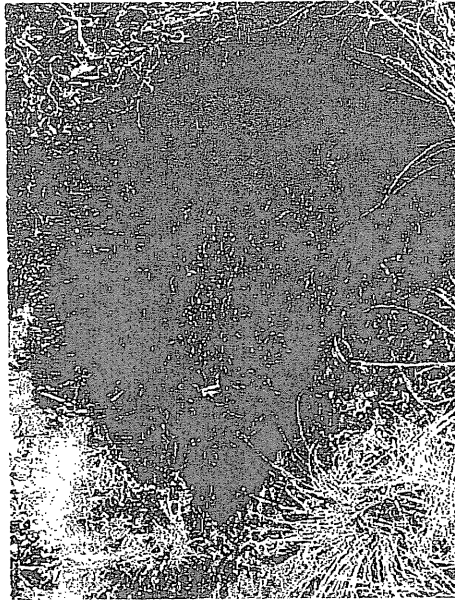


Figure 18. Site 23018 Stone Alignment, view to northwest



Figure 19. Site 23019, Feature A Pahoehoe Excavation, view to north



Figure 21. Site 23022 Cairn, view to southeast



Figure 22. Site 23022 Steppingstone Trail, view to northwest

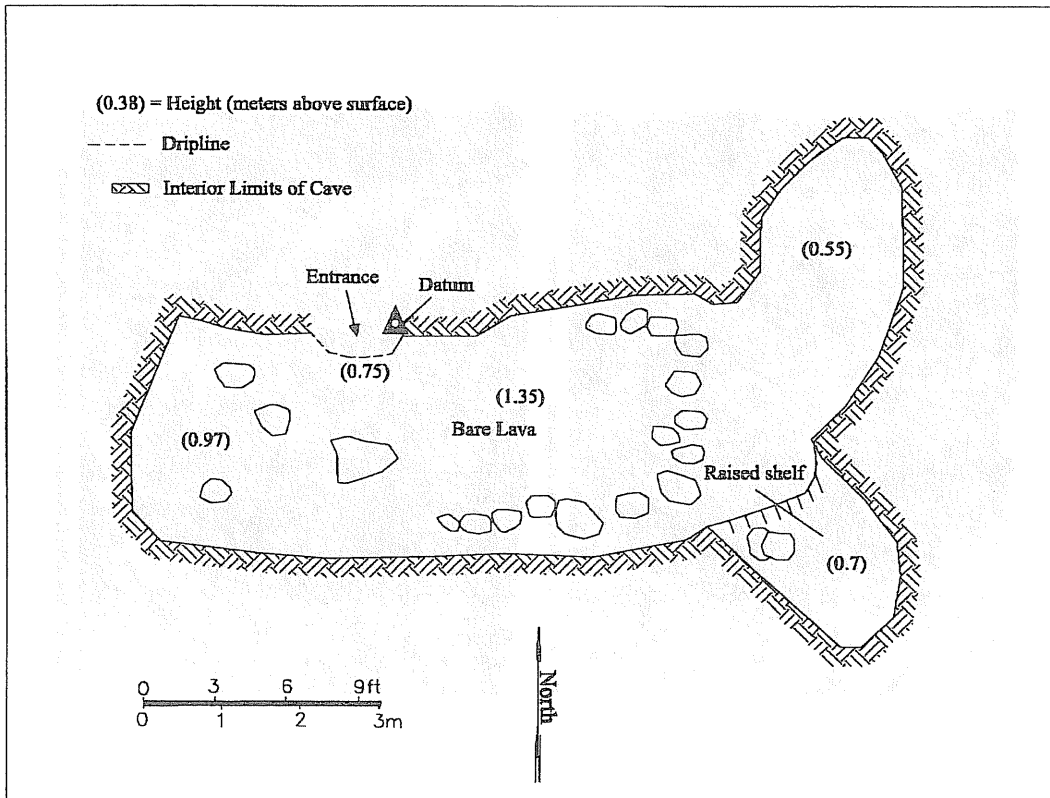


Figure 20. Site 23021 Plan Map

across the surface of the *a* flow at intervals ranging from 0.5 to 2.8 m (Figure 22). The trail has an overall length of 33.0 m (north-northwest by south-southeast). Pahoehoe flows are situated on the north and south sides of the *a* flow. No cultural remains were present. Site 23023 is interpreted as a transportation route across the rough lava based on its formal type.

Site 23024

Site 23024 is an alignment of flat pahoehoe slabs located on a low pahoehoe ridge 119 m south-southeast of Site 23022. The alignment is oval in shape and is comprised of a single course of slabs that range in size from 0.15 to 0.4 m long, 0.1 to 0.35 m wide and 0.08 to 0.15 m in height. The oval alignment measures 3.3 m long (northeast by southwest) and 1.85 m wide. No soil was present on the pahoehoe ridge and no cultural remains were noted. Site 23024 is unaltered and in good condition. The function of the feature is undetermined.

Site 23025

Site 23025 is a pahoehoe excavation located at the base of a pahoehoe ridge on the eastern side, 155.0 m southeast of Site 23024. An irregularly shaped hole has been broken into the base of the ridge. This hole measures 3.2 m long (north-northeast by west-southwest), 1.4 m wide, and 0.85 m in depth (Figure 23). The stones removed from the hole consist of surface pahoehoe and fine-grained basalt. These stones have been crudely piled adjacent to the hole on the southeastern side. The pile measures 1.5 m long (north-northeast by west-southwest), 1.3 m wide, and 0.42 m in height. No other cultural remains were present. Site 23025 is interpreted as a basalt quarry. It is unaltered and in good condition.

Site 23026

Site 23026 is a complex of five cairns located on a level pahoehoe flow near the eastern project area boundary, 292 m east of Site 23024. The features are situated in an area 9.5 m long (northwest by southeast) by 5.0 m wide. The Site 23026 features are unaltered and in good condition, and are interpreted as markers based on their formal type. No cultural remains were present at the site.

Feature A

The Feature A cairn is situated at the eastern end of the site. It consists of five flat pahoehoe slabs stacked on top of each other with a sixth slab leaning up against the western side. The cairn measures 0.68 m long (east-northeast by west southwest), 0.47 m wide, and 0.53 m in height (Figure 24).

Feature B

Feature B is located 0.35 m south of Feature A. This cairn is comprised of six flat pahoehoe slabs stacked on top of each other. Feature B measures 0.58 m long (north-south), 0.49 m wide, and 0.55 m in height (see Figure 24).

Feature C

The Feature C cairn is located 3.7 m south-southwest of Feature B. It is comprised of two flat pahoehoe slabs that are leaning up against each other. The feature measures 0.51 m long (east-west) by 0.41 m wide at the base, angling up to a point at the top. Feature C is 0.44 m in height above the surrounding ground surface.

Feature D

The Feature D cairn is situated 2.1 m to the north-northwest of Feature C. It consists of three flat pahoehoe slabs piled on top of each other. It measures 0.69 m long (northeast by southwest), 0.53 m wide and 0.41 m in height.

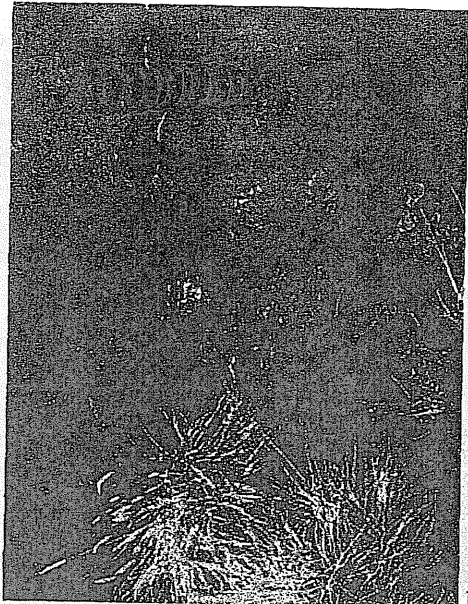


Figure 23. Site 23025 Pahoehoe Excavation, view to northwest



Figure 24. Site 23026, Feature A and B Cairns, view to west

Feature E

Feature E is located 6.3 m north-northwest of Feature D, and 6.5 m northwest of Feature A. It consists of six flat pahoehoe slabs stacked on top of each other with a seventh slab leaned up against the western side. The feature measures 0.72 m long (north-south), 0.65 m wide and 0.43 m in height.

Site 23027

Site 23027 is a complex of three features located on a pahoehoe ridge in the southeastern portion of the project area, 124 m southeast of Site 23025. The site is comprised of two pahoehoe excavations (Features A and B) and an alignment of stones (Feature C). The features are unaltered and in good condition.

Feature A

Feature A is a pahoehoe excavation located at the northern end of the pahoehoe ridge, at the base. It consists of an oval shaped excavation that is 2.1 m long (north-south), 1.7 m wide, and 1.5 m in depth. A pile of surface pahoehoe mixed with fine-grained basalt is present on the western side of the excavation. The pile measures 1.8 m long (north-south), 1.0 m wide, and 0.8 m in height. No other cultural remains were noted. Feature A is interpreted as a basalt quarry.

Feature B

Feature B is a pahoehoe excavation located at the base of the same pahoehoe ridge, on the eastern side. The feature is situated 17.5 m southeast of Feature A. It consists of a large hole that has been excavated into the base of the ridge. The hole is 8.5 m long (east-west), 2.9 m wide, and 1.4 m in depth. Stones removed from the excavation have been piled along the eastern side of the hole. These stones consist of fine-grained basalt and surface pahoehoe. The pile measures 8.5 m long, 1.8 m wide and 0.75 m in height. No other cultural remains were present. Feature B is interpreted as a basalt quarry.

Feature C

Feature C is an oval-shaped configuration of stones located 32.5 m to the southwest of Feature A. The feature is constructed of flat pahoehoe slabs and small subangular basalt cobbles. It measures 2.3 m long (east-west) and 1.55 m wide with the slabs varying in height from 0.07 to 0.23 m (Figure 25). No soil or other cultural remains were present at the feature. The function of the feature is undetermined.

Site 23028

Site 23028 is a cairn situated on a bare pahoehoe outcrop in the southeastern portion of the project area, 50.0 m southeast of Feature B at Site 23027. The cairn is comprised of stacked and piled pahoehoe slabs that measures 1.45 m long (north-northwest by south-southeast) by 1.15 m wide at the base, and 0.95 m long by 0.7 m wide at the top (Figure 26). The cairn is 0.63 m in height. No soil or cultural remains were present at the site. Site 23028 is unaltered and in good condition, and it is interpreted as a marker based on its formal type.

Site 23029

Site 23029 is a pahoehoe excavation situated in the southeastern corner of the project area. The site is located on the southern side of a low pahoehoe knoll, 147 m southeast of Site 23028. A hole measuring 3.2 m long (east-west), 1.6 m wide, and 0.75 m in depth has been excavated into the base of the knoll. Stone removed from the hole have been piled to the south and southeast of the hole. This pile is 2.75 m long (northeast by southwest), 1.5 m wide, and 0.7 m in height. These stones consist of angular fine-grained basalt cobbles and small boulders. No soil or other cultural remains were present. Site 23029 is unaltered and in good condition. It is interpreted as a basalt quarry.

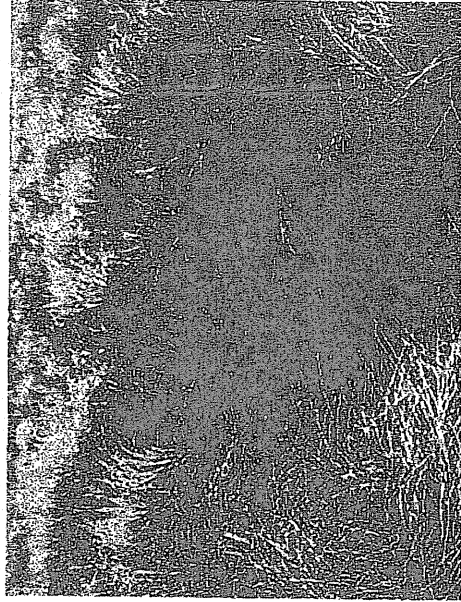


Figure 25. Site 23027, Feature C Stone Alignment, view to northwest



Figure 26. Site 23028 Cairn, view to northwest

Site 23030

Site 23030 is a pahoehoe excavation located in the southeastern portion of the project area, 92 m southwest of Site 23028. The site is situated on the western side of a low pahoehoe ridge and consists of a hole that has been excavated into the base of the ridge. The hole measures 1.95 m long (west-northwest by east-southeast), 1.4 m wide, and 0.85 m in depth. A pile of fine-grained basalt angular cobbles and small boulders is situated adjacent to the excavation on the western side. The pile is 4.2 m long (west-northwest by east-southeast), 1.2 m wide, and 0.45 m in height. No soil or other cultural remains were present. Site 23030 is interpreted as a basalt quarry. It is unaltered and in good condition.

Site 23031

Site 23031 is pahoehoe excavation located in the southeastern portion of the project area, 63 m south-southeast of Site 23030. The site is situated on the western side of a small pahoehoe knoll. It is comprised of a hole that has been excavated into the base of the knoll. The hole is 1.71 m long (north-northeast by west-southwest), 0.7 m wide, and 0.8 m in depth. A pile of angular fine-grained basalt cobbles and small boulders is situated adjacent to the hole on the south side. The pile measures 1.35 m long (north-south), 0.81 m wide and 0.55 m in depth. No soil or other cultural remains were present. Site 23031 is interpreted as a basalt quarry. The site is unaltered and in good condition.

Site 23032

Site 23032 is a pahoehoe excavation located in the southeastern portion of the project area, 111 m west of Site 23030. The site is situated on the western side of a pahoehoe ridge. It consists of an irregularly shaped hole that has been excavated into the base of the ridge. The hole is 1.4 m long (northeast by southwest), 0.75 m wide, and 0.78 m in depth. A pile of angular fine-grained basalt cobbles and small boulders is located adjacent to the hole on the northwestern side. The pile is 1.3 m long (northeast by southwest), 0.8 m wide, and 0.53 m tall. No soil or other cultural remains were present. Site 23032 is unaltered and in good condition, and is interpreted as a basalt quarry.

Site 23033

Site 23033 is a small overhang located on the eastern side of a pahoehoe ridge in the southeastern portion of the project area, 39 m northwest of Site 23032. The entrance to the overhang faces the northeast, measuring 2.05 m long (northwest by southeast) and 1.0 m in height (Figure 27). The interior of the overhang is oval-shaped and is 2.7 m long (northeast by southwest) and 2.5 m wide. The overhang has a domed-shaped ceiling that is 1.3 m in height. The floor of the overhang consists of jagged lava. A series of ten flat pahoehoe slabs have been placed inside the overhang to create a relatively smooth, level surface. These slabs vary in length from 0.3 to 0.65 m, in width from 0.19 to 0.4 m, and in thickness from 0.11 to 0.2 m. No cultural remains were present at the site. Site 23033 is interpreted as a small, temporary habitation based on its formal type and the presence of the pahoehoe slab floor. Site 23033 is unaltered and in good condition.

Site 23034

Site 23034 is a pahoehoe excavation situated on the eastern side of a low pahoehoe ridge, 101 m west-southwest of Site 23024. The site consists of a hole that has been excavated into the base of the ridge, that is 1.4 m long (northwest by southeast), 1.2 m wide and 1.3 m in depth (Figure 28). A pile of angular fine-grained basalt cobbles and small boulders are situated adjacent to the excavation to the east. These stones are situated in an area 1.55 m long (east-west), 0.65 m wide and 0.4 m in height. A small waterworn basalt cobble is located next to the excavation at the southeastern end. The cobble is 21 cm long, 14 cm wide and 12 cm in thickness. Pecking scars are present at one end of the cobble indicating that it was used as a hammerstone. No other cultural remains were noted. Site 23034 is unaltered and in good condition, and is interpreted as a basalt quarry.



Figure 27. Site 23033 Overhang, view to southwest

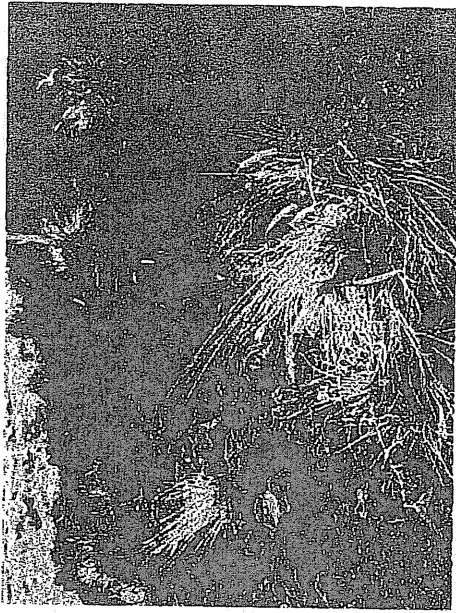


Figure 28. Site 23034 Pahoehoe Excavation, view to south

Site 23035

Site 23035 is a pahoehoe excavation located on the western side of a low pahoehoe outcrop, 45 m west of Site 23034. The site is comprised of a hole that has been excavated into the base of the outcrop, with a pile of stones located adjacent to the hole to the east. The excavation is irregularly shaped and is 1.25 m long (north-south), 0.8 m wide and 0.7 m deep. The pile of stones consists of angular, fine-grained basalt cobbles and small boulders, and measures 1.3 m long (east-west), 0.6 m wide and 0.4 m tall. No other cultural remains or soil was present. Site 23035 is unaltered and in good condition and it is interpreted as a basalt quarry.

Site 23036

Site 23036 is a cairn situated in an area of uneven pahoehoe lava, 73 m southwest of Site 23035. The site consists of two subangular basalt cobbles that have been stacked on top of a spine-like outcrop. The lower stone measures 0.18 m long, 0.15 m wide and 0.09 m in thickness. The upper stone is 0.48 m long, 0.37 m wide and 0.15 m in thickness. The top of the cairn is 1.1 m in height above the surrounding ground surface. No cultural remains were noted. Site 23036 is unaltered and in good condition. It is interpreted as a marker based on its formal type.

Site 23037

Site 23037 is a complex of two pahoehoe excavations (Features A and B) located on the sides of a pahoehoe outcrop, 44 m north-northwest of Site 23036. The features are unaltered and in good condition, and are interpreted as basalt quarrying pits.

Feature A

Feature A is situated on southern side of the outcrop. A hole has been excavated into the base of the outcrop, measuring 2.3 m long (north-south), 1.1 m wide and 0.6 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the hole on the eastern side. The pile measures 2.1 m long (east-west), 1.25 m wide and 0.45 m in height. No other cultural remains were noted.

Feature B

The Feature B pahoehoe excavation is located on the northern side of the outcrop, 3.1 m north of Feature A. A hole has been excavated into the base of the outcrop, that is 2.5 m long (north-northeast by south-southeast), 1.5 m wide and 0.7 m deep. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation to the east. This pile is 3.1 m long (north-south), 1.75 m wide and 0.55 m in height. No other cultural remains were observed.

Site 23038

Site 23038 is a small platform situated on top of a level pahoehoe ridge, 47 m north of Site 23035. The platform is rectangular in shape and measures 1.87 m long (east-west) and 1.35 m wide (Figure 29). It is constructed of stacked and piled subangular basalt cobbles and flat pahoehoe slabs. The structure ranges in height from 0.1 to 0.55 m above the surface of the bare lava ridge. No soil is present in the vicinity of the site.

There is a slight depression located in the center of the platform that is 0.65 m long (north-south), 0.48 m wide, and 0.25 m in depth below the surface of the structure. Three small pieces of waterworn branch coral were observed within the depression. A fourth piece of waterworn branch coral was noted 9.0 m northwest of the platform, on the surface of the ridge.

A 0.5 by 0.5 m test unit (TU-2) was excavated into the center of the platform, within the depressed area (see Figure 29). The excavation of this unit revealed a single layer of loosely packed subangular cobbles and small slabs. Five pieces of small waterworn branch coral were recovered from the excavation

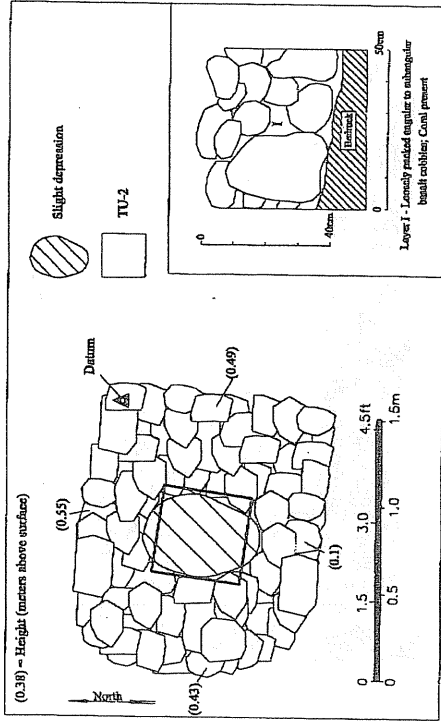


Figure 29. Site 23038 Plan Map and TU-2 East Face Profile

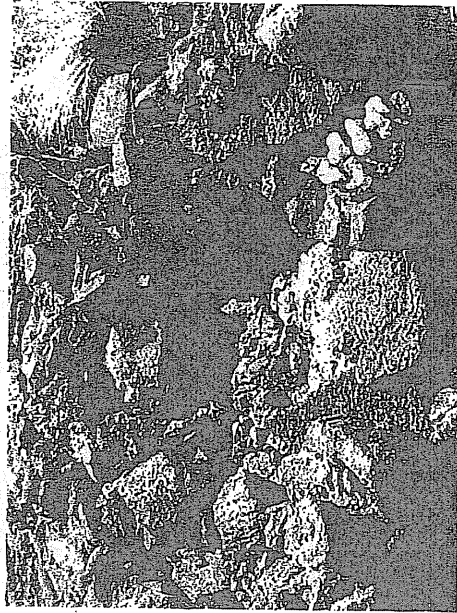


Figure 30. Site 23038, Post Excavation of TU-2, view to northeast

tion on the southwest side. The pile measures 3.7 m long (north-northwest by south-southeast), 0.8 m wide, and 0.66 m in height. No soil or other cultural remains were present. Site 23041 is interpreted as a basalt quarry. The site is unaltered and in good condition.

Site 23042

Site 23042 consists of two petroglyphs that have been pecked into the top of the same pahoehoe ridge that includes Site 23041, 24.5 m to the northwest. The Feature A petroglyph consists of an anthropomorphic figure with two arms, two legs, a torso and, a head. The image measures 26 cm tall and 21 cm wide (Figure 37).

The Feature B petroglyph is located 0.15 m to the south of Feature A. This petroglyph is also an anthropomorphic figure with arms, legs, a torso, and a head. One leg appears to be proportional in size to the rest of the image, although the other leg extends downward from the knee in a sweeping curve (see Figure 37). The main portion of the petroglyph measures 21 cm in long, from the top of the head to the base of the leg, and has an arm span of 18 cm. The curving leg is 26 m in length. No cultural remains were found in the vicinity of the Site 23042 petroglyphs. The images are unaltered and in fair condition.

Site 23043

Site 23043 is an oval-shaped configuration of stones located on the surface of a low, narrow pahoehoe ridge, 37 m southwest of Site 23042. The alignment is comprised predominantly of small subangular basalt cobbles, although several flat pahoehoe slabs have been incorporated into it. It measures 1.1 m in length (northwest by southeast), and 1.0 m wide. The cobbles range in size from 0.15 to 0.3 m long, 0.1 to 0.2 m wide and 0.16 to 0.3 m in height. The pahoehoe slabs vary in length from 0.25 to 0.5 m, in width from 0.2 to 0.4 m, and in height from 0.08 to 0.16 m. No cultural remains or soil were present at the site. Site 23043 is unaltered and in good condition. The function of the feature is undetermined.

Site 23044

Site 23044 is a pahoehoe excavation located on the western side of a pahoehoe ridge, 64 m southwest of Site 23043. The site is comprised of a hole that has been excavated into the base of the ridge, that is 2.5 m long (north-northwest by south-southeast), 2.0 m wide and 1.3 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation on the western side (Figure 32). The pile is 3.6 m long (north-south), 1.75 m wide and 0.65 m in height. No soil or other cultural remains were present. Site 23044 is unaltered and in good condition, and is interpreted as a basalt quarry.

Site 23045

Site 23045 is a pahoehoe excavation located on the western side of a low pahoehoe ridge, 85 m south of the eastern end of the Site 23017 complex, and 108 m northwest of Site 23043. The site is comprised of an irregularly shaped hole that has been excavated into the base of the ridge. The hole is 1.7 m long (north-south), 1.4 m wide, and 0.75 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is situated adjacent to the excavation on the western side. The pile is 4.5 m long (north-south), 2.7 m wide, and 0.65 m in height. No soil or other cultural remains were present at the site. Site 23045 is unaltered and in good condition. It is interpreted as a basalt quarry.

Site 23046

Site 23046 is a pahoehoe excavation located on the western side of a low pahoehoe outcrop, 113 m west-northwest of Site 23044. The site consists of an oval-shaped excavation that has been dug into the base of the outcrop. The excavation is 1.7 m long, 0.85 m wide, and 0.69 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation on the southwest side. The pile measures 1.7 m long (east-west), 1.15 m wide, and 0.5 m in height. No soil or other cultural remains were present at the site. Site 23046 is interpreted as a basalt quarry. The site is unaltered and in good condition.

(Figure 30). No soil was present within the test unit, and the excavation was terminated on bedrock. Site 23038 is unaltered and in good condition. It is interpreted as a possible shrine based on the presence of branch coral. The depression on the top of the platform may have potentially once supported an upright stone or wooden image.

Site 23039

Site 23039 is a complex of two pahoehoe excavations (Features A and B), located on the sides of same pahoehoe ridge as Site 23038, 31.5 m to the north. The features are unaltered and in good condition, and are interpreted as basalt quarry pits.

Feature A

Feature A consists of a hole that has been excavated into the base of the eastern side of a pahoehoe ridge. The excavation measures 2.6 m in length (north-south), 1.8 m wide, and 0.65 m deep. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation to the north-northwest. The pile measures 3.2 m long (northeast by southwest), 1.3 m wide and 0.65 m in height. No other cultural remains or soil were present.

Feature B

The Feature B pahoehoe excavation is located on the western side of the ridge, 27.5 m west of Feature A. It is comprised of a hole that has been excavated into the base of the ridge, that is 1.6 m long (north-northwest by south-southeast), 1.2 m wide and 0.75 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation to the north. This pile is 3.3 m in length (north-south), 2.0 m wide, and 0.7 m in height. No soil or other cultural remains were present.

Site 23040

Site 23040 is a complex of two features located on a low pahoehoe outcrop in the center of the project area, 50 m west-northwest of Feature B at Site 23039. The site is comprised of an alignment of stones (Feature A), and a pahoehoe excavation (Feature B). The features are unaltered and in good condition.

Feature A

Feature A is a roughly U-shaped configuration of flat pahoehoe slabs located on a bare pahoehoe outcrop. The U-shape evidences overall dimensions of 2.5 m long (north-south) by 1.65 m wide, with a 2.3 m wide opening along the eastern side. The slabs range in size from 0.2 to 0.55 m long, 0.12 to 0.38 m wide and 0.09 to 0.17 m in height. No cultural remains were observed. The function of the feature is undetermined.

Feature B

Feature B consists of a pahoehoe excavation located adjacent to Feature A, 1.4 m to the north-northeast. The feature is comprised of an irregularly shaped hole that has been broken into the surface of the outcrop. The hole is 1.6 m in length (north-south), 0.85 m wide, and 0.6 m deep. A crude pile of angular to subangular cobbles and small boulders, which include pieces of scoriaeous lava, is located on the eastern side of the excavation. It measures 1.9 m long (east-west), 1.4 m wide and 0.5 m in height. No other cultural remains were observed. Feature B is interpreted as an abrader quarry.

Site 23041

Site 23041 is a pahoehoe excavation located on the western side of a low pahoehoe ridge, 85 m southwest of Site 23040. The site consists of an oval shaped hole that has been excavated into the base of the ridge. The excavation is 3.5 m long (north-northwest by south-southeast), 2.4 m wide, and 0.65 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation.

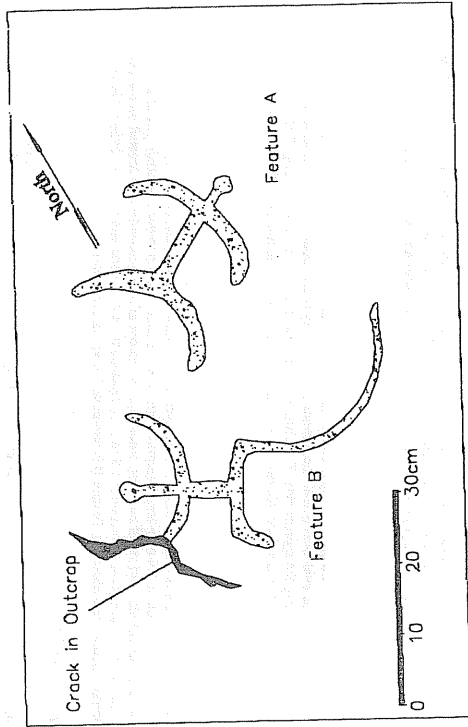


Figure 31. Site 23042 Petroglyphs

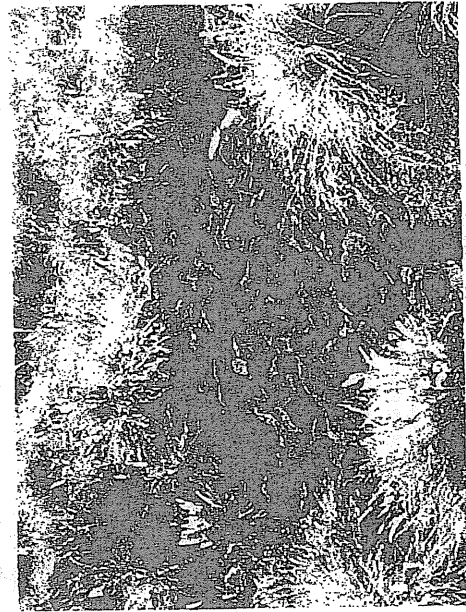


Figure 32. Site 23044 Pahoehoe Excavation, view to north

Site 23047

Site 23047 is a cairn situated on an uneven pahoehoe lava flow, 133 m south of Site 23046. It is comprised of stacked and piled subangular basalt cobbles, small boulders, and flat pahoehoe slabs. The cairn is 0.8 m long (northwest by southeast) and 0.7 m wide at the base. The top of the cairn is 0.63 m long by 0.55 m wide. The feature is 0.61 m in height. The cairn is built on bare lava and no cultural remains were present. The site is unaltered and in good condition. It is interpreted as a marker based on its formal type.

Site 23048

Site 23048 is a pahoehoe excavation located in the southwestern portion of the project area, 200 m southwest of Site 23047. The site is situated on a level pahoehoe flow and consists of an area 15.0 m long (east-west) by 10.5 m wide from which surface pahoehoe slabs have been broken off and scattered throughout the area (Figure 33). No soil is present in the area, and no other cultural remains were observed. The surface slabs may have been broken off to obtain scoriaceous lava, which is visible in the exposed areas. Site 23048 is unaltered and in good condition. The site is interpreted as an abrader quarry.

Site 23049

Site 23049 is a pahoehoe excavation situated on the southern side of a pahoehoe ridge, 134.5 m northwest of Site 23048. The site is comprised of an irregularly shaped hole that has been excavated into the base of the ridge. The excavation measures 1.65 m long (northeast by southwest), 0.85 to 1.0 m wide, and 0.75 m in depth. A crude pile of angular, fine-grained basalt cobbles and small boulders is situated on the western side of the excavation. The pile is 1.3 m long (east-west), 0.85 m wide and 0.45 m in height. No soil or other cultural remains were present at the site. Site 23049 is unaltered and in good condition, and is interpreted as a basalt quarry.

Site 23050

Site 23050 is a stone alignment situated on the surface of a bare pahoehoe lava flow, 75 m east-northeast of Site 23049. The site is comprised of a roughly oval-shaped configuration of flat pahoehoe slabs. The feature is 1.85 m long (northeast by southwest) and 1.35 m wide. The slabs vary in size from 0.15 to 0.52 m long, 0.12 to 0.4 m wide, and 0.1 to 0.18 m thick. No cultural remains were present. The feature is unaltered and in good condition. The function of the feature is undetermined.

Site 23051

Site 23051 is a stone alignment situated in an area of bare pahoehoe, 70 m north-northwest of Site 23050. The site consists of a roughly oval-shaped configuration of flat pahoehoe slabs that is 2.35 m long (east-west) and 1.55 m wide (Figure 34). The slabs range in length from 0.18 to 0.42 m, in width from 0.1 to 0.32 m, and in height from 0.08 to 0.2 m. No cultural remains were present at the site. The function of the feature is undetermined. It is unaltered and in good condition.

Site 23052

Site 23052 is a stone alignment located on a bare pahoehoe lava flow, 56.5 m west of Site 23051. The site consists of an oval-shaped alignment of flat pahoehoe slabs that is 3.25 m long (east-west) and 2.85 m wide. The individual slabs vary in length from 0.2 to 0.65 m, in width from 0.18 to 0.4 m, and in thickness from 0.09 to 0.18 m. No cultural remains were observed. Site 23052 is unaltered and in good condition. The function of the feature is undetermined.

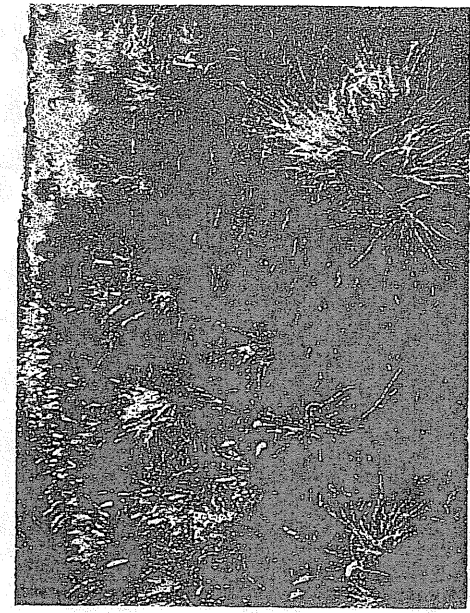


Figure 33. Site 24048 Pahoehoe excavation, view to west

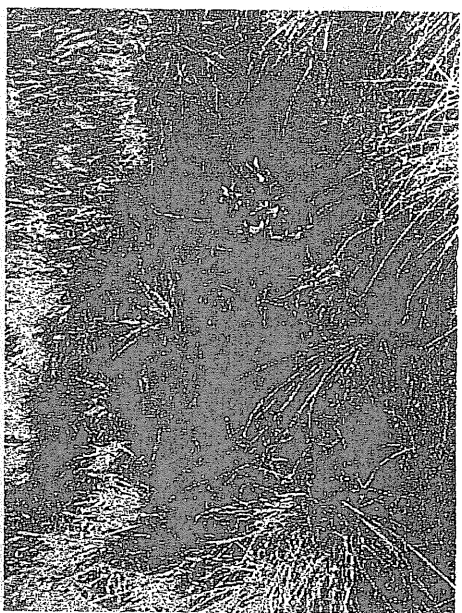


Figure 34. Site 23051 Stone Alignment, view to southeast

Site 23053

Site 23053 is a complex of three features located on a level pahoehoe flow in the southwestern portion of the project area, 103 m northeast of Site 23052. The site is comprised of two stone alignments (Features A and B), and a mound (Feature C). The features are unaltered and in good condition.

Feature A

Feature A is a roughly oval-shaped configuration of flat pahoehoe slabs located at the northwest end of the site. It measures 1.65 m long (east-west) and 1.4 m wide (Figure 35). The slabs range in size from 0.18 to 0.67 m long, 0.15 to 0.5 m wide, and 0.1 to 0.18 m in thickness. No soil is present and no cultural remains were noted. The function of the feature is undetermined.

Feature B

Feature B is an oval-shaped alignment of flat pahoehoe slabs, located 10.7 m southeast of Feature A. This feature measures 1.35 m long (east-west) and 1.2 m in width. The individual slabs vary from 0.2 to 0.7 m long, 0.15 to 0.54 m wide, and 0.10 to 0.16 m in thickness. Most of the slabs are positioned a single course high, although several slabs have been piled on top of each other at the western end to a height of 0.4 m above ground surface. No soil or cultural remains were present. The function of the feature is undetermined.

Feature C

Feature C is a small stone mound located 19.5 m southeast of Feature B. The mound is crudely constructed of piled flat pahoehoe slabs. It measures 0.98 m in length, 0.5 to 0.6 m in width and 0.2 to 0.38 m in height. No soil or cultural remains were present. The feature is either a collapsed cairn or mound of undetermined function.

Site 23054

Site 23054 is a complex of three stone alignments (Features A-C), located on a level pahoehoe lava flow, 110 m east-northeast of Site 23053. The features are unaltered and in good condition. No soil or cultural remains were noted at the site. The function of the features is undetermined.

Feature A

Feature A is situated at the southeastern end of the site. It is roughly oval in shape and is constructed of a single course of flat pahoehoe slabs and subangular basalt cobbles and small boulders. The feature measures 2.28 m long (east-west) and 2.2 m wide. The slabs range in size from 0.15 to 0.5 m long, 0.1 to 0.35 m wide, and 0.07 to 0.17 m in thickness. The basalt cobbles and small boulders vary in size from 0.1 to 0.46 m long, 0.1 to 0.35 m wide, and 0.08 to 0.2 m in thickness.

Feature B

The Feature B stone alignment is situated 16.5 m north of Feature A. The feature is roughly oval-shaped, measuring 1.38 m long (north-northwest by south-southeast) and 1.2 m wide. Feature B is constructed primarily of subangular basalt cobbles and small boulders, although several flat pahoehoe slabs were also present. These stones present at this feature are similar in size to those noted at Feature A.

Feature C

Feature C is located 27.5 m west of Feature A, on the same level pahoehoe flow. The feature is oval-shaped and is 1.78 m long (northeast by southwest) by 1.23 m wide. The feature is constructed of flat pahoehoe slabs (Figure 36). The slabs vary in size from 0.12 to 0.45 m long, 0.1 to 0.28 m wide, and 0.06 to 0.17 m in thickness.

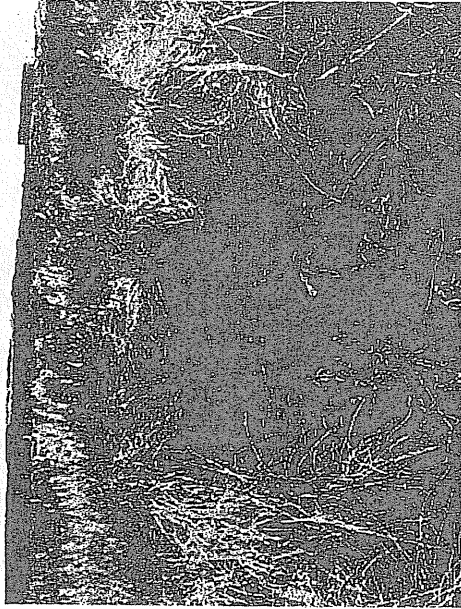


Figure 35. Site 23053, Feature A Stone Alignment, view to west

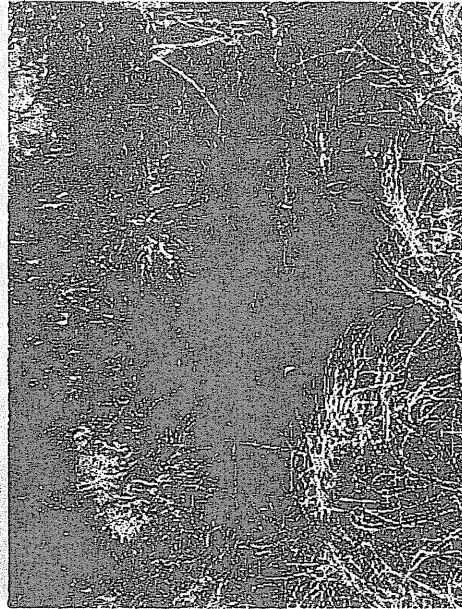


Figure 36. Site 23054, Feature C Stone Alignment, view to west

Site 23055

Site 23055 is a stone alignment situated on a level pahoehoe lava flow, 55 m north of Feature B at Site 23054. The alignment is roughly oval in shape, and is 2.73 m long (east-west) by 2.05 m wide. It is built primarily of flat pahoehoe slabs, although several subangular basalt cobbles and small boulders are incorporated into it. The slabs vary in length from 0.17 to 0.5 m, in width from 0.14 to 0.35 m, and in thickness from 0.09 to 0.15 m. The cobbles and boulders range in size from 0.1 to 0.6 m long, 0.1 to 0.45 m wide, and 0.08 to 0.37 m in height. No soil or cultural remains were present at the site. Site 23055 is unaltered and in good condition. The function of the feature is undetermined.

Site 23056

Site 23056 is a pahoehoe excavation located on the eastern side of a low pahoehoe outcrop, 77 m east of Site 23055. It consists of an irregularly shaped hole that has been excavated into the base of the outcrop. The excavation is 1.65 m long (northwest by southeast), 1.3 m wide, and 1.05 m deep (Figure 37). A pile of angular, fine-grained basalt cobbles and boulders is located adjacent to the excavation to the north-east. The pile measures 3.6 m long (northeast by southwest), 1.5 m wide, and 0.75 m in height. No soil or other cultural remains were present. Site 23056 is unaltered and in good condition, and is interpreted as a basalt quarry.

Site 23057

Site 23057 is a stone alignment located on a level pahoehoe lava flow, 95 m north-northwest of Feature A at Site 23053. The alignment is oval in shape and is comprised of flat pahoehoe slabs. It measures 2.45 m long (east-west) and 1.83 m wide. The slabs range in length from 0.11 to 0.4 m, in width from 0.1 to 0.32 m, and in thickness from 0.08 to 0.13 m. No soil or cultural remains were present. Site 23057 is unaltered and in good condition. The function of the feature is undetermined.

Site 23058

Site 23058 is a low cairn built on a level pahoehoe lava flow, 33 m north of Site 23057. The cairn is comprised of flat pahoehoe slabs stacked on top of each other (Figure 38). It measures 0.44 m long (east-west), 0.39 m wide and 0.25 m in height. No cultural remains were present. Site 23058 is interpreted as a marker based on its formal type. The site is unaltered and in good condition.

Site 23059

Site 23059 is a complex of 18 features located in an area of uneven pahoehoe lava with scattered outcrops, in the northwestern portion of the project area. The site consists of a U-shaped enclosure (Feature J), three pahoehoe excavations (Features A, Q and K), five mounds (Features B-F), five stone alignments (Features L-N), and four cairns (Features G, H, O and P). The distribution of the features is depicted in Figure 39. No soil is present within this area and no cultural remains were observed at any of the features. The component feature are unaltered and in good condition.

Feature A

Feature A is a pahoehoe excavation located at the northern end of the site. The feature consists of an oval-shaped hole that has been excavated into the northern side of a low pahoehoe outcrop. The excavation measures 1.35 m long (east-west), 0.72 m wide, and 1.25 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation on the northern side. The pile is 2.2 m long (east-west), 0.55 m wide, and 0.47 m in height. Feature A is interpreted as a basalt quarry.

Feature B

Feature B is an oval-shaped mound located in a level pahoehoe area 2.5 m east of Feature E. The mound measures 3.2 m long (north-south), 1.35 m wide, and 0.5 to 0.72 m in height. It is constructed of

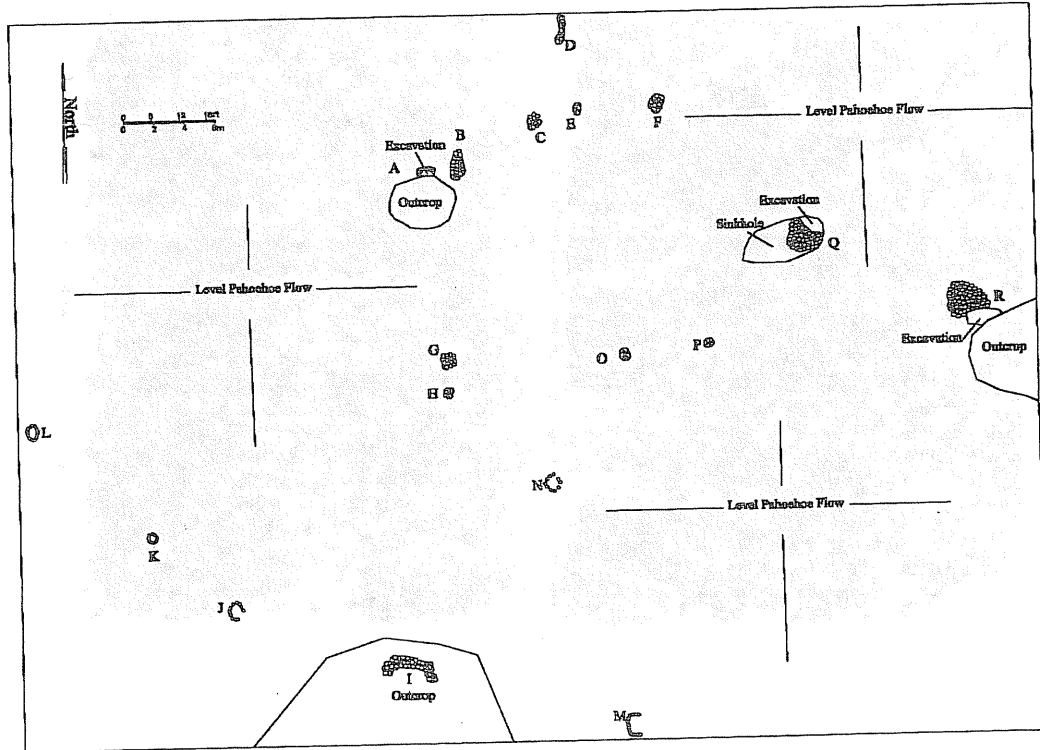


Figure 39. Site 23059 Plan Map



Figure 37. Site 23056 Pahoehe Excavation, view to south

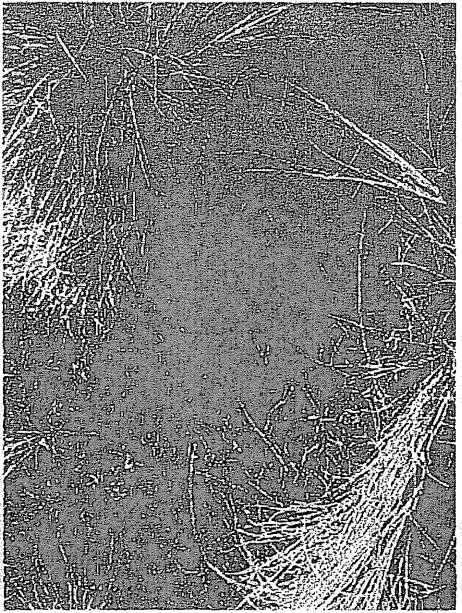


Figure 38. Site 23058 Cairn, view to east

piled subangular basalt cobbles and small boulders, and flat pahoehoe slabs. The feature is probably a collapsed cairn.

Feature C

Feature C is an oval-shaped mound situated 9.0 m east-northeast of Feature B. This mound is 1.85 m long (north-south), 1.35 m wide, and from 0.38 to 0.42 m in height (Figure 40). It is built of piled subangular basalt cobbles and small boulders and flat pahoehoe slabs. Feature C is interpreted as a collapsed cairn.

Feature D

Feature D is a linear mound situated 9.5 m north-northeast of Feature C. This mound is 2.45 m long (north-south), 0.75 m wide and from 0.22 to 0.41 m in height. Feature D is constructed of piled pahoehoe slabs, and subangular basalt cobbles and small boulders. The feature is either a collapsed cairn or mound of undetermined function.

Feature E

Feature E is an oval-shaped mound located 4.3 m east of Feature C. It is built of piled subangular basalt cobbles and small boulders, and flat pahoehoe slabs. It is 1.3 m long (north-south), 0.8 m wide and 0.2 to 0.38 m tall. The feature is either a collapsed cairn or mound of undetermined function.

Feature F

Feature F is an oval-shaped mound situated 8.9 m east of Feature E. It is 2.05 m long (north-south), 1.48 m wide and 0.25 to 0.68 m in height, and is built of piled subangular basalt cobbles and small boulders, and flat pahoehoe slabs. The feature is either a collapsed cairn or mound of undetermined function.

Feature G

Feature G is a small cairn situated on a level pahoehoe flow, 18.9 m south of Feature A. The cairn is constructed of stacked pahoehoe slabs and subangular basalt cobbles. It measures 1.4 m in length (north-south) by 1.32 m wide at the base, 0.8 by 0.65 m at the top, and 0.71 m in height. Feature G is interpreted as a marker based on its formal type.

Feature H

Feature H is a cairn located 2.2 m south of Feature G. It is constructed of stacked subangular basalt cobbles and small boulders, and flat pahoehoe slabs. It measures 1.1 m long (north-south) by 1.0 m at the base, 0.82 by 0.72 m at the top and 0.47 m in height. Feature H is interpreted as a marker based on its formal type.

Feature I

Feature I is a U-shaped enclosure situated on a bare, low pahoehoe outcrop, 27.2 m southwest of Feature H. The enclosure is open along the southern side, and measures 4.2 m long (east-west), and 2.6 m wide (Figure 41). The walls of the enclosure are constructed of stacked and piled subangular basalt cobbles and small boulders and flat pahoehoe slabs. The walls range in width from 0.55 to 1.1 m, and in height from 0.36 to 0.65 m above the surface of the outcrop. The size and shape of this structure suggest it may have functioned as a temporary habitation feature.

Feature J

Feature J is a stone alignment located in a level pahoehoe area, 16.5 m west-northwest of Feature I. It is roughly C-shaped with a 1.3 m wide opening at the southeastern end. The feature measures 2.05 m long (north-south) by 1.61 m wide. The slabs range in size from 0.25 to 0.6 m long, 0.18 to 0.3 m wide, and 0.08 to 0.11 m in thickness. The function of feature is undetermined.



Figure 40. Site 23059, Feature C Mound, view to southwest

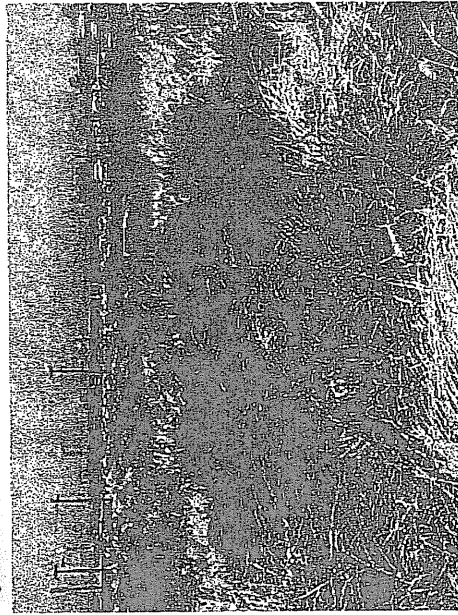


Figure 41. Site 23059, Feature I U-shaped Enclosure, view to north

Feature K

Feature K is an oval-shaped stone alignment situated 10.9 m northwest of Feature J. The feature measures 1.1 m long (north-south), and 1.0 m wide, and is constructed of flat pahoehoe slabs similar in size to those observed at Feature J. The function of feature is undetermined.

Feature L

Feature L is a roughly oval-shaped stone alignment situated 17.5 m northwest of Feature K. It is 1.6 m long (north-south), 1.25 m wide, and is comprised of flat pahoehoe slabs that vary in height from 0.07 to 0.12 m (Figure 42). The function of feature is undetermined.

Feature M

Feature M is a stone alignment located in a level pahoehoe area, 23.2 m east-southeast of Feature I. It is roughly U-shaped, open along the eastern side. The feature is 2.3 m long (north-south) by 1.4 m wide and is constructed of a combination of flat pahoehoe slabs and subangular basalt cobbles and small boulders. The slabs range in size from 0.15 to 0.66 m long, 0.1 to 0.35 m wide, and 0.09 to 0.15 m in thickness. The cobbles and boulders vary in size from 0.12 to 0.4 m long, 0.1 to 0.32 m wide, and 0.07 to 0.2 m in thickness. The function of feature is undetermined.

Feature N

Feature N is a roughly oval-shaped alignment of flat pahoehoe slabs located 13.4 m southeast of Feature H. It measures 1.9 m long (north-south), 1.72 m wide, and is constructed of slabs similar in size to those observed at Features J and K. The function of feature is undetermined.

Feature O

Feature O is a well-built cairn located on a low pahoehoe knoll, 17.3 m east of Feature G. It is constructed of stacked flat pahoehoe slabs and subangular basalt cobbles and small boulders, measuring 1.32 m long (north-northwest by south-southeast) by 1.1 m wide at the base, 1.2 by 1.05 m at the top, and 0.83 m in height (Figure 43). Feature O is interpreted as a marker based on its formal type.

Feature P

Feature P is a cairn located on the northeastern side of the same knoll as Feature O, 8.3 m to the east. It is also built of stacked slabs, cobbles and boulders, and measures 1.12 m long (northeast by southwest) by 0.86 m wide at the base, 0.95 by 0.75 m wide at the top, and 0.61 m in height. Feature P is interpreted as a marker based on its formal type.

Feature Q

Feature Q is a pahoehoe excavation situated in a natural sinkhole, 14.5 m north-northeast of Feature P. A hole has been excavated into the northeastern side of the sinkhole. The excavation is 2.4 m long (northwest by southeast), 1.45 m wide, and 0.6 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is situated in the sinkhole, on the southwest side of the excavation. The pile is 1.75 m long (north-south), 1.1 m wide, and 0.55 m in height. Feature Q is interpreted as a basalt quarry.

Feature R

Feature R is a pahoehoe excavation located on the northwestern side of a low pahoehoe knoll, 27.2 m east-southeast of Feature Q. A hole has been excavated into the base of the knoll. The hole is 3.5 m long (east-west), 1.35 m wide and 1.0 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is located adjacent to the excavation on the northwestern side. The pile is 4.25 m long (northwest by southeast), 3.0 m wide and 0.65 m in height. Feature R is interpreted as a basalt quarry.

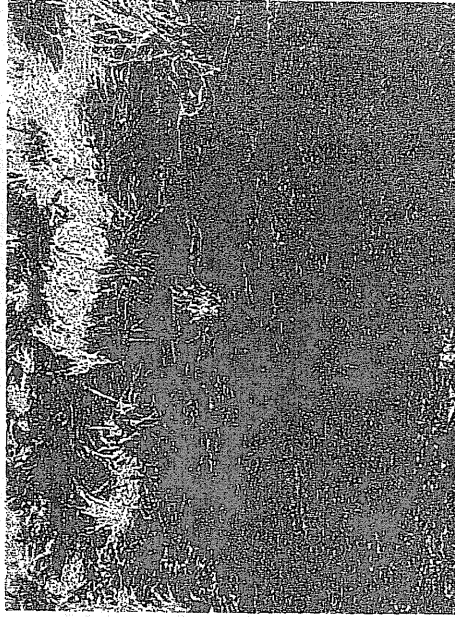


Figure 42. Site 23059, Feature L Stone Alignment, view to north

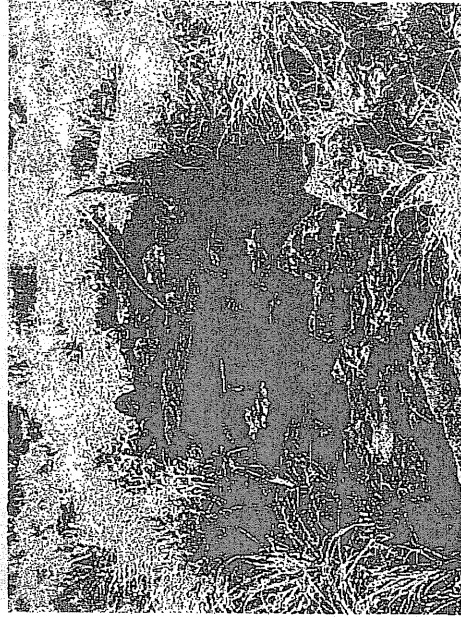


Figure 43. Site 23059, Feature O Cairn, view to southeast

Site 23060

Site 23060 is a pahoehoe excavation located in the northwestern portion of the project area, 68 m north-northwest of Site 23058. The site is situated along the southern side of a natural sinkhole in an area of uneven pahoehoe lava. A hole has been excavated at the base of the sinkhole. The hole is 5.6 m long (east-west), 1.95 m wide, and 1.2 m in depth. A pile of angular, fine-grained basalt cobbles and small boulders is situated adjacent to the hole to the north. The pile is 6.0 m long (east-west), 2.0 m wide and 0.7 m in height. No cultural remains were noted. Site 23060 is unaltered and in good condition, and is interpreted as a basalt quarry.

Site 23061

Site 23061 is a stone alignment located on a level pahoehoe flow in the northwestern portion of the project area, 75 m north-northwest of Site 23060. It consists of flat pahoehoe slabs that have been placed in an oval-shaped alignment that is 2.73 m long (east-west) and 2.05 m wide. The slabs range in size from 0.18 to 0.55 m long, 0.12 to 0.3 m wide, and 0.09 to 0.15 m in thickness. No soil or cultural remains were present at the site. Site 23061 is unaltered and in good condition. The function of feature is undetermined.

Site 23062

Site 23062 is a stone alignment located on a level pahoehoe flow, 58 m east-northeast of Site 23061. It is comprised of flat pahoehoe slabs that have been aligned in an oval-shaped configuration, 1.41 m long (east-west) by 1.29 m wide. The slabs are similar in size to those present at Site 23061. No soil is present in this area and no cultural remains were observed. Site 23062 is unaltered and in good condition. The function of feature is undetermined.

CONCLUSION

Discussion

The identified site and component features, except the stone alignments and pahoehoe excavations, conform to the traditional Hawaiian site/feature types expected in the Middle Zone (Cordy et al. 1991) based on previous archaeological work and historic documentary research. As expected, temporary habitation sites and trails were present. Two of the trails identified by previous researchers have been destroyed. One of these was a probable early historic horse trail that led from the small settlement at Pawai in Kesholu to the village and pond at Honokohau (Soehren 1981). The 1880s Emerson map (see *Figure 3*) shows a road or trail extending from the south toward Kailua to the coast at Honokohau. The trail appears to pass through the project area, but no evidence of it was identified during the survey. It is possible that it is the same trail that Soehren (1980) identified. The other trail was identified by Bordwick et al. (1993). Its orientation suggests it was a remnant of an inland-seaward trail that was only evident on an a'a flow at the inland edge of the project area.

The trail segment, Site 23023, identified during the current project was not oriented in an inland-seaward direction and appears to be a "branch" trail segment as defined by Cordy et al. (1991). These trails were distinguished from major *mauka-maka* and coastal transportation routes because the branch trails facilitated access to resource and subsistence areas. The distribution of cairns, which often mark trail routes, is scattered without any obviously linearity. Most of the project area is bare pahoehoe lava that could be easily traversed without modification.

The temporary habitation sites contained no cultural material. The features consist of two small enclosures and a minimally modified cave and overhang. These characteristics indicate the temporary habitation use was of very limited duration, probably for temporary shelter from the elements for a period of hours as opposed to days, because food remains are absent. Other traditional Hawaiian sites consist of several petroglyphs and a possible shrine.

An important finding of the survey is the identification of numerous pahoehoe excavations and stone alignments. Pahoehoe excavations have been variously interpreted as agricultural features (O'Hare and Goodfellow 1994), quarries for scoriaeous lava for making abraders (Donham 1987), and artificial nesting sites for dark rumped petrels (Nakamura et al. 1998). The latter interpretation was used for excavations situated at high elevations in the saddle region of Hawaii Island that were favored petrel nesting areas, and is not applicable to the project area. The excavations interpreted to be agricultural in function are situated inland of the project area where there is some soil and the features were associated with numerous other agricultural features including terraces, mounds, enclosures, and modified outcrops. Only two features, both mounds at Site 23008, identified during the current study were interpreted as agricultural in function because the mounds were associated with an area at the inland edge of the project area where some soil was present.

The majority of the project area is bare pahoehoe lava with very little vegetation, most of which consists of introduced species. The area consists of a very broad lowland extending inland from Katwi Point that is much wider than areas of similar elevation immediately to the north and south where the distance between the coastline and higher elevations above 100 ft is much less. Mid- to late 1800s accounts attest to the barren nature of the area that was considered to be nearly worthless for any commercial use. Early to mid-1800s evidence from LCA claim testimony indicates that all residential and agricultural use of Kealahou was situated inland between 900 ft and 1,900 ft elevation where there was sufficient rainfall for agriculture. Archaeological surveys of the seaward portion of Kealahou indicate that settlements in this portion of the *aihu* *pa* were restricted to the immediate coastline.

The excavations identified during the current study are all interpreted to be quarries for obtaining either scoriaeous lava (7 features) or fine-grained basalt for basalt tool manufacture (48 features). This interpretation is based on: (a) the presence of large waterworn cobbles that were used as sledgehammers to excavate cracks and lava blisters, (b) the presence of large piles of material including fine-grained basalt and scoriaeous lava from the excavations, (c) the lack of soil and barren nature of the terrain that would

preclude agriculture, and (d) the historic documentary evidence that attests to the barren nature of the area and indicates settlement and agricultural activity was restricted to the shoreline and inland areas. There is no evidence of reducing the raw material suggesting it was transported away from the quarries in large pieces to be the reduced and fashioned into tools elsewhere.

The function of the numerous stone alignments is enigmatic. The features are typically comprised of oval alignments of pahoehoe slabs. All of the features are present on bare pahoehoe lava with no soil or other cultural remains present. Table 4 summarizes the attributes of these features. The features are too small and low to have been temporary habitation shelters. The overall area of the features is just over four square meters with an internal area usually less than two square meters.

Many of the alignments are made from slabs of scoriaceous lava that may have been raw material for abraded manufacture; however, most the features are scattered throughout the central portion of the project area and are not consistently spatially associated with pahoehoe excavations. The only exception to this pattern is a concentration of alignments and excavations in the vicinity of Site 23059. One possible explanation for the features would be that the alignments represent a location for stone tool manufacturing activity. The small area of most of the features is sufficient for a single individual to sit in the center; however, there is no evidence of debris from libric reduction or abraded surfaces used to shape abraders.

Significance Assessments

Pursuant to DLNR (1998) Chapter 275-6 (d), the initial significance assessments provided herein are not final until concurrence from the DLNR has been obtained. Sites identified during the survey are assessed for significance based on the criteria outlined in the Rules Governing Procedures for Historic Preservation Review (DLNR, 1998:Chap 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling, and association and shall meet one or more of the following criteria:

1. Criterion "a": Be associated with events that have made an important contribution to the broad patterns of our history;
2. Criterion "b": Be associated with the lives of persons important in our past;
3. Criterion "c": Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
4. Criterion "d": Have yielded, or is likely to yield, information important for research on prehistory or history; and
5. Criterion "e": Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts--these associations being important to the group's history and cultural identity.

Based on the above criteria, all 58 sites are assessed as significant under Criterion "d" (Table 5). These sites have yielded information important for understanding prehistoric and early historic land use in the project area. Sites 23010, 23011, 23038, and 23042 are additionally assessed as significant under Criterion "e" because the sites consist of petroglyphs and a possible shrine (Site 23038).

Table 4. Summary of Stone Alignments

Site	Length	Width	Area (m ²)	Height	Shape	Orientation	Materials
23009	2.45	1.53	3.75	0.1	Oval	E-W	slabs
23112a	2.88	2.1	6.05	0.27	Oval	ENE	slabs and cobbles
23012b	3.38	2.9	9.80	0.21	C-shape	ENE	slabs and cobbles
23012c	2.9	2.42	7.02	0.21	U-shape	NNW	slabs and cobbles
23012d	3.66	2.95	10.80	0.19	Oval	N-S	slabs and cobbles
23014-a	1.85	1.45	2.68	0.13	Oval	ENE	slabs
23016	1.4	0.84	1.18	0.2	Oval	ENE	slabs
23019-B	2.55	1.75	4.46	0.19	Oval	E-W	slabs
23019-C	2.65	2.05	5.43	0.7	C-shape	E-W	slabs
23024	3.3	1.85	6.11	0.15	Oval	NE	slabs
23040-A	2.5	1.65	4.13	0.17	U-shape	N/S	slabs
23043	1.1	1	1.10	0.3	Oval	NNW	slabs and cobbles
23050	1.85	1.35	2.50	0.19	Oval	NE	slabs
23051	2.35	1.55	3.64	0.2	Oval	E-W	slabs
23052	3.25	2.82	9.17	0.18	Oval	E-W	slabs
23053-A	1.65	1.4	2.31	0.18	Oval	E-W	slabs
23053-B	1.35	1.2	1.62	0.18	Oval	E-W	slabs
23064-A	2.28	2.2	5.02	0.2	Oval	E-W	slabs and cobbles
23064-B	1.38	1.2	1.66	0.2	Oval	NNW	slabs and cobbles
23065	1.78	1.23	2.19	0.17	Oval	NE	slabs
23065-C	2.73	2.05	5.60	0.37	Oval	E-W	slabs and cobbles
23067	2.45	1.83	4.48	0.13	Oval	E-W	slabs
23069-J	2.05	1.61	3.30	0.11	C-shape	N/S	slabs
23069-K	1.1	1	1.10	0.11	Oval	N/S	slabs
23069-L	1.6	1.25	2.00	0.12	Oval	N/S	slabs
23069-M	2.3	1.4	3.22	0.2	U-shape	N/S	slabs and cobbles
23069-N	1.9	1.72	3.27	0.15	Oval	N/S	slabs
23061	2.73	2.05	5.60	0.15	Oval	E-W	slabs
23062	1.41	1.29	1.82	0.19	Oval	NE	slabs
Average	2.23	1.71	4.17	0.20			

Table 5. Site Significance and Recommended Treatment (Cont.)

SIHP Site No.	Type	Function	No. of Features
23051	Stone Alignment	Indeterminate	d
23052	Stone Alignment	Indeterminate	d
23053	Complex	Indeterminate	d
23054	Complex	Indeterminate	d
23055	Stone Alignment	Indeterminate	d
23056	Pahoehoe Excavation	Quarry	d
23057	Stone Alignment	Indeterminate	d
23058	Cairn	Marker	d
23059	Complex	Temporary Habitation/ Marker/Quarry/ Indeterminate	d
23060	Pahoehoe Excavation	Quarry	d
23061	Stone Alignment	Indeterminate	d
23062	Stone Alignment	Indeterminate	d

Table 5. Site Significance and Recommended Treatment

SIHP Site No.	Type	Function	Significance Criteria	Recommended Treatment
7704	Trail (Destroyed)	Transportation	d	NFW*
13194	Trail (Destroyed)	Transportation	d	NFW
23007	Enclosure	Temporary Habitation	d	NFW
23008	Complex	Quarry/Agriculture	d	NFW
23009	Stone Alignment	Indeterminate	d	NFW
23010	Petroglyph	Rock Art	d, e	Preservation
23011	Petroglyph	Rock Art	d, e	Preservation
23012	Complex	Indeterminate	d	NFW
23013	Pahoehoe Excavation	Quarry	d	NFW
23014	Complex	Quarry/Indeterminate	d	NFW
23015	Complex	Marker	d	NFW
23016	Stone Alignment	Indeterminate	d	NFW
23017	Complex	Quarry	d	NFW
23018	Stone Alignment	Indeterminate	d	NFW
23019	Complex	Quarry/Indeterminate	d	NFW
23020	Pahoehoe Excavation	Quarry	d	NFW
23021	Cave	Temporary Habitation	d	NFW
23022	Cairn	Marker	d	NFW
23023	Trail	Transportation	d	NFW
23024	Stone Alignment	Indeterminate	d	NFW
23025	Pahoehoe Excavation	Quarry	d	NFW
23026	Complex	Marker	d	NFW
23027	Complex	Quarry/Indeterminate	d	NFW
23028	Cairn	Marker	d	NFW
23029	Pahoehoe Excavation	Quarry	d	NFW
23030	Pahoehoe Excavation	Quarry	d	NFW
23031	Pahoehoe Excavation	Quarry	d	NFW
23032	Pahoehoe Excavation	Quarry	d	NFW
23033	Overhang	Temporary Habitation	d	NFW
23034	Pahoehoe Excavation	Quarry	d	NFW
23035	Pahoehoe Excavation	Quarry	d	NFW
23036	Cairn	Marker	d	NFW
23037	Complex	Quarry	d	NFW
23038	Platform	Ceremonial	d, e	Preservation
23039	Complex	Quarry	d	NFW
23040	Complex	Quarry/Indeterminate	d	NFW
23041	Pahoehoe Excavation	Quarry	d	NFW
23042	Petroglyph	Rock Art	d, e	Preservation
23043	Stone Alignment	Indeterminate	d	NFW
23044	Pahoehoe Excavation	Quarry	d	NFW
23045	Pahoehoe Excavation	Quarry	d	NFW
23046	Pahoehoe Excavation	Quarry	d	NFW
23047	Cairn	Marker	d	NFW
23048	Pahoehoe Excavation	Quarry	d	NFW
23049	Pahoehoe Excavation	Quarry	d	NFW

*NFW=No Further Work or Preservation

Recommended Treatments

The mapping, written descriptions, photography, and excavations at 54 sites adequately document them and no further work or preservation is recommended. The petroglyphs and possible shrine are recommended for preservation. The specific plans for preservation and maintenance of the sites would be detailed in a Preservation Plan prepared for DLNR-SHPD review and approval.

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