

Chapter 3

Upland Forest Periphery Subsistence and Settlement in the *Ahupua'a* of Kīpapa, Nakaohu, and Nakaaha: A Preliminary Assessment

Boyd Dixon, Patty J. Conte, Valerie Nagahara,
and W. Koa Hodgins

Introduction

The 1995-96 State of Hawai'i Historic Preservation Division (SHPD) survey of archaeological remains within the current Hawaiian Home Lands houselot development area in Kahikinui, Maui, has covered 2,000 acres between approximately 2,100 feet above sea level (fasl) and the forest reserve boundary at 4,000 fasl, with a narrow corridor of nine houselots extending down to 1,600 fasl along the present access road to Pi'ilani Highway (Figure 3.1). This survey recorded 499 archaeological features across the three *ahupua'a* or traditional community land units of Kīpapa, Nakaohu, and Nakaaha (Table 3.1), within roughly one half of the 125 Kuleana Homestead parcels. Based on preliminary results, several ideas were developed about archaeological patterns and the old community food growing/gathering activities in the upland forest periphery¹ between the 2,100-2,800 fasl zone.

One key to understanding the nature of subsistence and settlement in Kahikinui is to determine the function of every feature and the period of occupation for each archaeological site. The preliminary functional evaluation of these 499 features was begun in February 1996 with a program of subsurface test excavations. A map showing the placement of these features on the plan of the proposed house lots is presented in Figure 3.1. Since the subsurface testing program is still underway, both Table 3.1 and Figure 3.1 should be considered incomplete and subject to change. The interpretations

¹ For the purposes of this report, use of the term "upland forest periphery" will refer to the entire project area above 2,100 fasl, although it should be understood that the dryland *hala pepe* (*Pleomele* spp.) zone which is located below the wetter *koa* and *'ōhi'a* forest appears to begin at approximately 2,700 fasl, judging from its remnants in Nakaohu Ahupua'a.

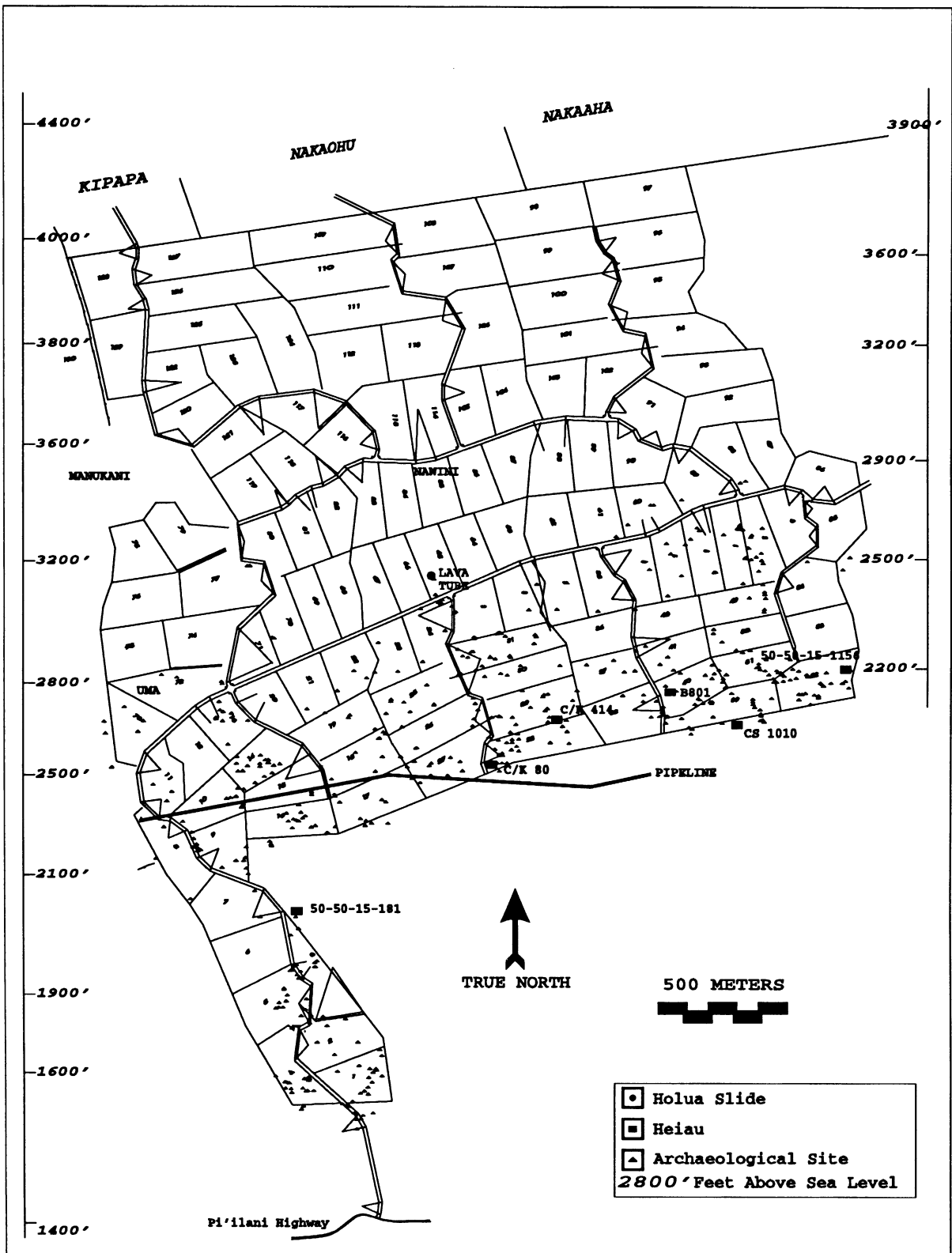


Figure 3.1 Archaeological site distribution within the Department of Hawaiian Home Lands Kahikinui house lots.

Table 3.1 Archaeological features by descriptive type.

Feature Type	Number
Alignment	5
Cairn	15
C-Shape	36
Enclosure	56
Enclosed Rock Shelter	9
Garden Enclosure	4
L-Shape	42
Lava Tube	10
Mound	7
Platform	8
Prepared Surface	8
Planting Circle	2
Rock Shelter	29
Terrace	97
Terraced Platform	23
U-Shape	36
Wall	75
Walled Terrace	32
Total	499

presented here should also be treated as preliminary until the analysis of the testing program results is completed.

This preliminary report first describes the function of groups of archaeological remains encountered during field-work. Preliminary observations on the nature of subsistence activities and the patterning of sites in the pre- and post-contact period are then presented. Methods employed during the survey, results of the subsurface testing program, the assignment of site boundaries, and an evaluation of site significance will be the subject of a detailed SHPD Archaeological Inventory Survey report to be prepared in 1997.

Preliminary Survey Results

The 499 features recorded during the 1995-96 survey are discussed below by broad functional categories. Before the results of the subsurface testing program are analyzed, these preliminary evaluations have to be based primarily on the form and size of each feature, and in some cases the presence of surface artifacts and midden (food remains).

Agricultural Features

This category of remains is perhaps the most varied in the field, as these features range from fairly substantial constructions to rather ephemeral bedrock modifications and are frequently obscured by low but dense vegetation. Different geographical areas appear to have distinct types of architecture,

presumably in part due to environmental factors such as exposure to the prevailing winds, moisture runoff and retention, degree of slope, underlying geology, and soil depth. Other types of features appear to cluster only within one *ahupua'a*, perhaps reflecting a political or social choice of agricultural methods and zones of exploitation. Areas of even deeper soils with moderate slope and no surface bedrock strata (such as Uma described below) may also have been exploited agriculturally with minimal construction efforts, perhaps under a rotating swidden (slash and burn) regime if they were originally under upland forest cover. With all these features, it is assumed that the primary crop being grown above 2,100 feet was the sweet potato (*'uala, Ipomoea batatas*), although it is probable that dryland taro and other foods were also grown in these field systems.

Unpaved Terraces

Features falling into this possible agricultural category were mostly found in the eastern portion of the survey area in Nakaohu Ahupua'a, on slopes in and around major aa flows. Such features contained a relatively flat surface leveled with small cobbles behind rough retention walls, cobble alignments, and/or modified bedrock outcropping. Few if any smaller paving stones were present and the surface was frequently broken or jumbled in appearance. In most cases, these features were fairly small and amorphous shaped with retention walls under 6 m long and under 50 cm in height. There was a general absence of soil within the terrace construction fill because it is presumed that the presence of loosely spaced stones allowed for better percolation of moisture within a leaf mulch around sweet potatoes, while protecting tubers from the rigors of direct sunlight and prevailing wind. The jumbled appearance of the surface might then be the result of deliberate rock removal for potato harvest, or the result of pigs rooting in the vines after harvest—a natural mulching practice encouraged by Native Hawaiian planters according to Handy and Handy (1972:137). Considerable evidence of modern pig rooting is evident as well.

Soil Filled Terraces

These features are more easily recognized as agricultural in function, since they consist of a low retention wall approximately 1 m high with an interior earthen surface up to 1.5 m wide. Some of these smaller features were built into the base of bedrock outcrops for protection from the prevailing winds while benefiting from both rain runoff and the heat reflective qualities of the bedrock. Given the obvious differences of scale and construction techniques between this type of terracing and the unpaved kind described above, it is tempting to postulate that a different crop was being cultivated.

Besides sweet potato, *kī* (*Cordyline fruticosum*) roots and dryland taro would seem to do well in this type of leeward environment (e.g., Dixon et al. [1994] on Moloka'i), but such hypotheses are best tested with excavated botanical materials. Another type of soil-filled terrace was exposed during initial testing within a large bowl-shaped swale between steeper ridge slopes. Here, a low retention wall of cobbles was built across the slope to retard downslope soil erosion behind a low berm, creating an arable terrace area at least 2-3 m wide above and below the wall. Topographical features like this terrace have also been noted on the surface of a few other pockets of eroded soils in the project area (*Uma* for example), and it is possible that these too may be the remains of similar constructions.

Prepared Surfaces

Another class of terrace-like construction is referred to here as "prepared surfaces," amorphous shaped areas of slightly paved bedrock which have been roughly leveled with smaller stones, but which contain no retaining walls. These features have little symmetry, and often flow from one level to another with the undulations of the underlying bedrock. One example of this type of feature recorded in the project area was part of a larger residential complex along the eastern fence line. Here, a total of four such features ranged from 10 x 50 m down to only 2 x 3 m in size. As with the more rudimentary possible terracing observed elsewhere in the survey area, the majority of these prepared surfaces were not systematically recorded (due to their problematical nature), but their occurrence seems to be restricted to the aa flows in Nakaohu and Nakaaha Ahupua'a. While use as planting piles is possible, it has also been postulated that some of these surfaces may have served as drying floors for tubers harvested during the wet winter months at higher elevations. Such areas may also have been the locus of clinker paving production involving the reduction of raw aa cobbles into smaller, more evenly sized stones.

Planting Circles and Garden Enclosures

The most ubiquitous agricultural features in the survey area were stone piles, amorphous mounds, small clearings, mini-terraces, and rough planting circles resulting from the modification of ridge top soils and rocks for planting sweet potatoes, the piles and mounds perhaps being deliberately built for planting as well. Given the dense lantana and grass cover in other probable areas of sweet potato planting (i.e., swales and lower slopes between aa flows), it is assumed that these types of low features were also present there, but not observed due to the difficulty of recognition in the field. As with prepared surfaces and rudimentary bedrock terracing, such areas were mostly noted in the eastern portion of the survey area in Nakaohu and Nakaaha Ahupua'a, and clusters of these

features were sometimes delineated by low amorphous garden enclosure walls generally incorporating natural bedrock outcrop alignments. Few of these features appeared to be taller than 50 cm or over 2 m in diameter, and many have been disturbed by recent animal activities.

Uma

One area of probable agricultural activity remains to be discussed, although it was defined archaeologically during the 1995 survey more by the absence of architectural features. This area is designated as *Uma* on the 1983 Luialua Hills topographic map (U.S.G.S. 7.5 minute series), located in Kipapa Ahupua'a at an approximate elevation of 2,700 fsl, just south and downslope of Manukani Hill (Figure 3.1). *Uma* measures approximately 200 m east-west by 100 m north-south and contains fairly deep soils and few bedrock outcrops, with a large pocket of non-indigenous weeds growing in a shallow depression near its geographical center. Given the location of this somewhat anomalous soil regime in an area otherwise dominated by bedrock outcrops, and its location at an elevation which receives more moisture than the slopes below, it would seem to be an attractive setting for pre-contact dryland taro production.

Residential Sites

These features were easier to identify in the field, although confirming habitation at some of these site types (i.e., terraces and rock shelters) must await subsurface testing, as must the final assessment of the intensity and/or duration of occupation. Since surface evidence for domestic activities being conducted within these residential features was often lacking, specific functional inferences will be rather restricted.

Terraces, Walled Terraces, and Terraced Platforms

These habitation features contained a prepared floor of crushed aa clinkers enclosed by at least one retention wall or face, creating a comfortable activity surface in front of a clearing supporting the house (Figure 3.2). Terraces with the addition of side walls on top for a house structure were termed "walled terraces", while "terraced platforms" contained one or two additional retention faces as well. The hypothesized residential function of these features is suggested by the presence of light midden (coral and marine shell fragments), occasional basalt flakes, and the deliberate leveling of a rock-free area up to 40 m² immediately behind the terrace, with dimensions adequate for the construction of a *pili* grass structure. The quality and overall symmetry of construction on these features over 1 m tall is also notably different from the majority of agricultural terracing in the study area, being bigger

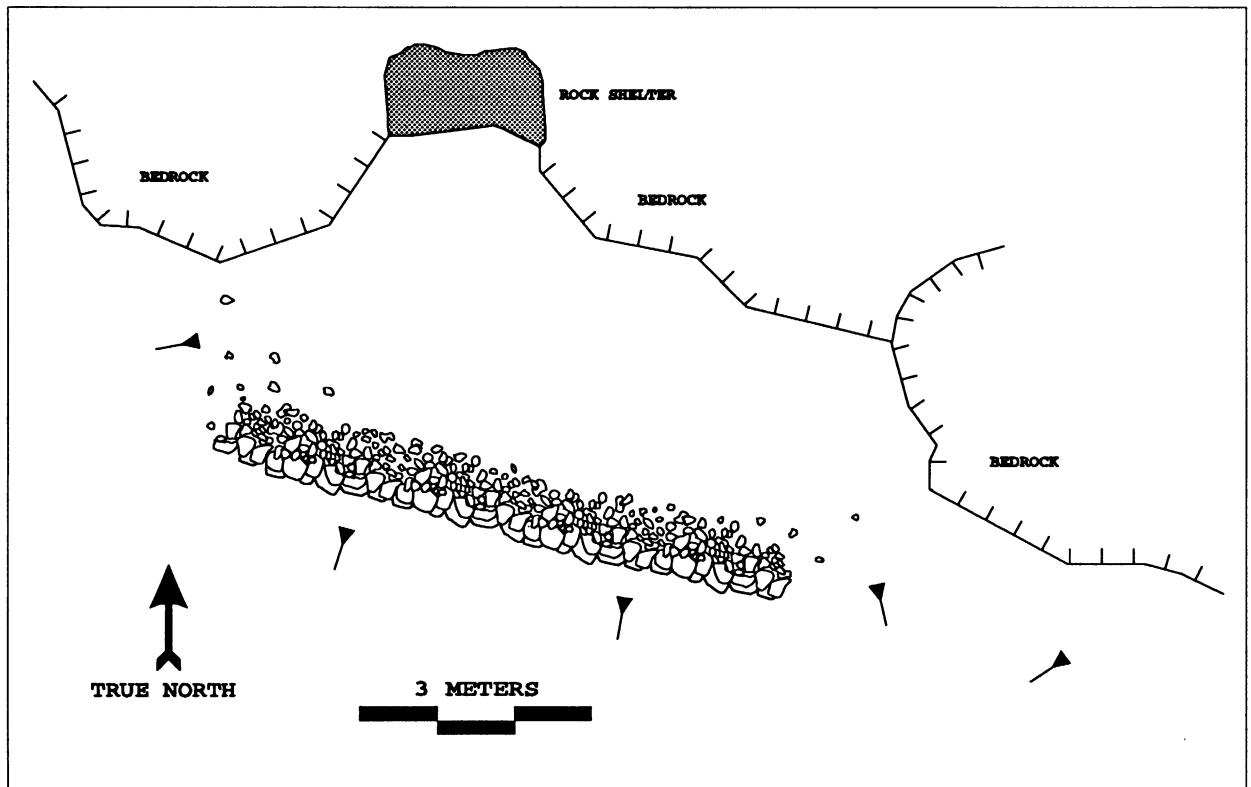


Figure 3.2 Feature B406 T1, habitation terrace, plan view.

and having a nearly vertical stacked facing with more uniformly sized cobbles. Habitation terraces in the survey area are not always associated directly with any other features, although all form part of larger more dispersed clusters of features. Their size relative to the majority of smaller residential architecture in the project area suggests a substantial dwelling, but some may also represent ritual structures such as *hale mua* (mens' houses) associated with individual family units farming a certain aa flow ridge. In addition, some such sites had small rock shelters located directly behind the leveled habitation area which would have served as convenient storage features.

Rectangular Enclosures

These most obvious of habitation features were found to be distributed mostly below 2,400 fasl and they seem to be found at lower elevations across all of Chapman and Kirch's 1966 survey area as well (see Chapter 2). The dimensions of these features generally ranged from 2-6 m on a side (up to 36 m² in internal size) and the walls were rarely over 1 m tall (Figure 3.3). Many were less than 100 percent complete (lacking part of one side), suggesting the presence of doorways as part of these *pili* grass house foundations. It is

assumed that these enclosures may represent permanent or long-term habitation, although this hypothesis will be tested by the analysis of subsurface remains within the study area. Some of these features have limited surface evidence of domestic residence in the form of light midden and basalt flakes or coral fragments. Internal features such as fire hearths and post holes were also occasionally noted.

L-shaped Enclosures

These features range from a simple L-shaped wall to more substantial core-filled and faced constructions with a low terrace in front. The wall was generally on the east side of the clearing blocking the winds, and appeared to enclose enough leveled space to support a *pili* grass house 2-4 m long (up to 16 m² in internal size). Associated with some of these L-shaped structures are lower terraces which may have functioned as an outdoor work space in front of the house. Several of these L-shaped enclosures with lower terraces were found to contain limited midden debris and stone or coral fragments suggesting intensive domestic use. Their presence near probable areas of dryland agriculture is also consistent with all habitation remains in the study area.

C-shaped Enclosures

These enclosures are abundant in the study area above 2,100 feet elevation across all three *ahupua'a*. They provide protection from the prevailing winds and the majority seemed to have their opening downwind. No midden was found on the surface of these features, although less would be expected than in the rectangular enclosures and habitation terraces if these C-shapes were in fact more temporary unroofed habitations. The size of these C-shapes, generally under 2 m in internal diameter, does suggest that only one person would fit comfortably inside. Their walled construction, often under 1 m tall, would have been easily built by one person in less than an hour in some cases, perhaps being better suited for daytime windbreaks than for overnight habitation. The majority of C-shaped enclosures in the project area were found near zones of bedrock modification and rudimentary terracing, or around soil pockets such as at Uma, suggesting a strong association with dryland agricultural pursuits. Some

C-shapes are part of larger more permanent habitation complexes, apparently functioning as windbreaks or small structures protecting associated cooking areas.

U-shaped Enclosures

U-shaped enclosures are often slightly larger than C-shapes and can be more elongated in ground plan, sometimes appearing more similar to rectangular enclosures without one wall. The larger and more rectangular of these features may well be the remains of permanent housing. This is especially the case in Nakaohu and Nakaaha Ahupua'a where they are frequently found in association with clusters of other habitation features including more substantial rectangular enclosures. However, many smaller isolated U-shapes found in association with planting fields at higher elevations may be temporary habitations, perhaps similar to a "*Lau* house," a traditional term applied to structures constructed in a more rudimentary fashion with a roof woven of sweet potato vines and *kī* leaves, a

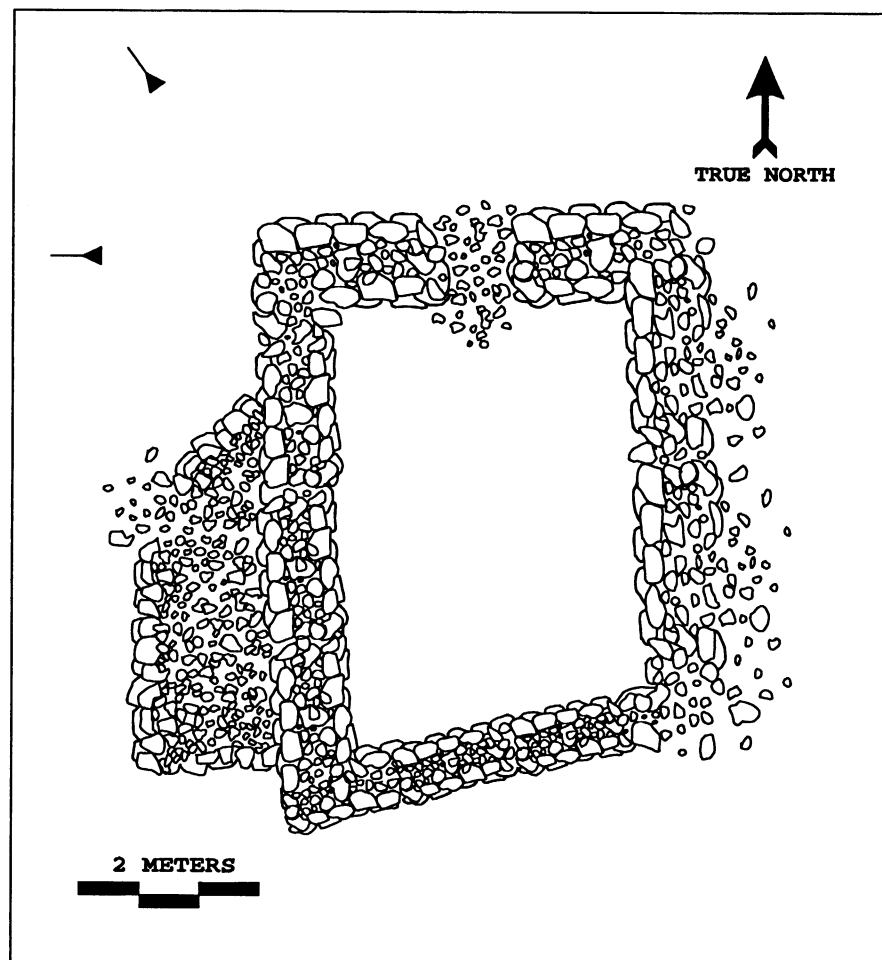


Figure 3.3 Feature B201 E1, rectangular habitation enclosure, plan view.

dwelling “. . . fairly common with the farmers . . . and those who catch the *uwa'u* [petrel] birds in the mountains” (Waialeale 1834:6).

Windbreak Walls

These probable habitation remains are also quite prevalent in the study area, consisting of short sections of wall under 1 m tall which generally vary between 3-8 m in length. As with the C-shaped enclosures, some of these shorter walls could have provided adequate shelter from prevailing winds for one or two persons without the need of a roofed structure, as most are oriented roughly north-south so as to block the winds. Other windbreak walls are more substantial and probably represent the windward wall foundation for a grass house, especially when found in association with a cleared flat area immediately to leeward. More effort is generally invested in the construction of these larger features, as they are frequently found to have core-filled, stacked walls and sometimes a leveled terrace to the *makai* side. In fact, these particular windbreak walls bear more of a resemblance to L-shaped structures, lacking only a short perpendicular wall extension usually on the *mauka* or windward side. In smaller cases, the absence of walls on three sides appears similar to the description of more temporary structures such as an “*Auolo* house,” in which only the back was thatched with an open row of posts in front. In traditional terms, “this is a house for the mountain” (Waialeale 1834:7).

Storage and Shelter

There was a general absence of clearly constructed storage features in the study area, in spite of expectations based on other leeward agricultural settings such as on the island of Moloka'i (Weisler and Kirch 1985; Dixon and Major 1992), east Maui (Kolb 1995; Gosser et al. 1996), and Lana'i (Dixon et al. 1995). A few habitation and agricultural features were found to contain much smaller rock shelters which may have been slightly modified to provide shade, and it is expected that this was the preferred method of temporary storage in areas used for seasonal subsistence. Small constructed niches found in the corners of some residential enclosures appear to have functioned as cupboards, although those found in the northeastern corners have been suggested to be ritual in nature (P. V. Kirch, personal communication, 1996).

Rock Shelters

Natural rock shelters were found across the project area, but most frequently in zones of abrupt basalt or pahoehoe escarpments which overlay deposits of more crumbly aa along steeply eroded gulches. Some of these small rock shelters

(under 2 m²) were recorded because of their surface contents, generally bones of small birds, rodents, and medium sized mammals, although such surface remains could easily be accounted for by the activities of rodents and owls. Several larger, natural rock shelters (up to 10 m² or more) were located in the gulches of Nakaohu and Nakaaha Ahupua'a and are large enough to have sustained overnight habitation for more than one individual. Only one small rock shelter was recorded during the survey of the 2,800-4,100 fasl portion of the study area, although other rock shelters were observed in the forest above and in the gulches to the east. These may well have served as temporary hunting camps for inhabitants residing below, although their location at the base of eroded stream beds suggests they were periodically scoured by flash floods.

Enclosed Rock Shelters

Rock shelters which contained enclosing walls across their entrance were encountered primarily in Nakaohu and Nakaaha Ahupua'a, and it is assumed that the smallest examples were modified to function as temporary storage shelters. The most pronounced example of such a feature was constructed by stacking cobbles against the outside of a small rock shelter to create an arched wall greater than 1 m tall, almost completely blocking access. The presence of bird bones and a drilled dog tooth on the surface of the shelter suggests its use in domestic storage activities, perhaps associated with nearby habitation enclosures. The majority of enclosed rock shelters, however, were larger in size and were probably used for temporary shelter as well as storage. These natural features contained low walls enclosing the shaded area inside (Figure 3.4) and often had a level surface immediately outside for associated activities. Their size was generally large enough to fit one or two people comfortably (2-6 m²) and their interior surface dry enough to provide shelter during the most inclement weather. In fact, many such shelters had ashy soils and stone tools or debitage on their surfaces, indicating use as cooking areas and lithic workshops. These natural rock shelters also appear more likely to have been modified if they were located relatively close to other above-ground habitation features.

Cairns, Boundary Walls, and Alignments

One focus of research during the present survey was to reconstruct possible pre- and early post-contact land unit boundaries within and between upland *ahupua'a* in the ancient Kahikinui district. Of all these boundaries, only those of Auwahi Ahupua'a appear to have ever been recorded by government surveyors in the 19th century, presumably due to

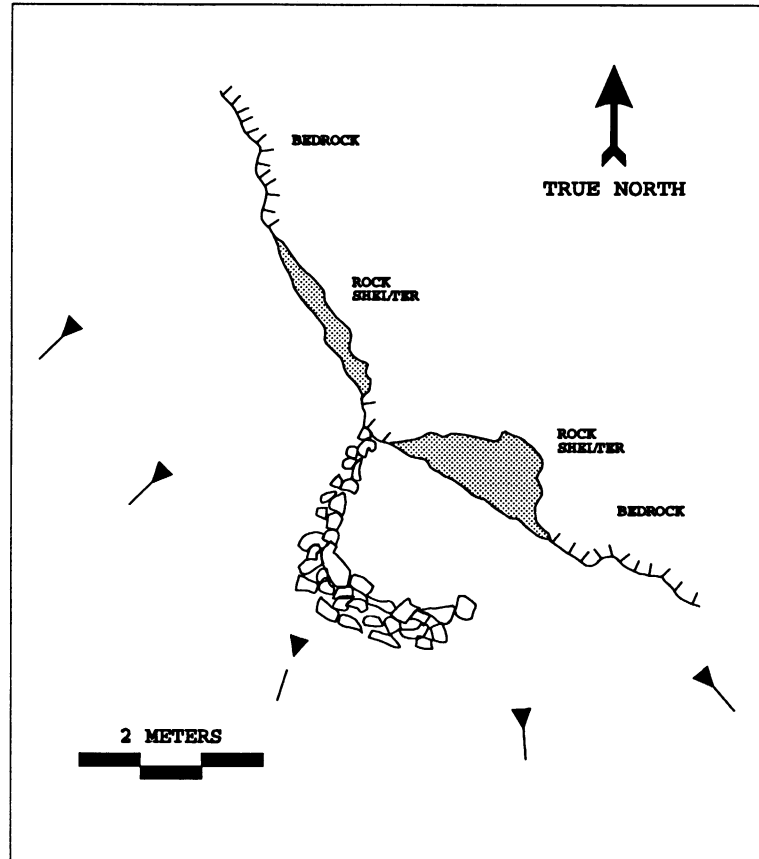


Figure 3.4 Feature B826 ER1, enclosed rock shelter, plan view.

Kahikinui being government land at the time of the 1848 Māhele and the virtual abandonment of the landscape by the late 1800s (Matsuoka n.d.; see Kirch, Chapter 1). During the cattle-ranching period, fencing and wall building may have paralleled earlier land divisions, especially if the stone masons and *paniolo*s were local Hawaiians cognizant of pre-contact boundaries. In other cases, major bedrock ridge lines may have functioned as effective boundaries through time, obviating the need for fencing with the introduction of cattle.

Cairns

Several small stone cairns (*ahu*) were recorded in the study area although there was no clear distributional pattern observed, nor did they all appear to be boundary markers. All were about 1 m tall or less and were built of piled cobbles up to four or five courses high, generally constructed on top of bedrock outcropping. In some cases these features appear to have been of post-contact or even modern construction, one containing the remains of an eroded survey stake. Government surveyors in the 1883 survey of Auwahi Ahupua'a placed iron pins within stone cairns (Box 2, Vol. D #2, pg. 232; Hawai'i

State Archives, Honolulu), while using some named preexisting *ahu* as landmarks. One cairn was situated on a narrow ridge top close to the stone boundary wall forming the western boundary of the study area, and this particular feature would be a good candidate for a pre-contact *ahu* marking the boundary of Kīpapa and Alena Ahupua'a—presumably one of many easily dismantled for later wall construction. Another cairn seemed to mark the location of a nearby lava tube (large enough to have sustained overnight habitation for a small group of people), while yet another was quite near a terrace and rock shelter used in the extraction of volcanic glass tools from the surrounding bedrock outcropping. Other cairns were found near agricultural modifications and may have marked the boundaries between family planting areas.

Walls and Alignments

Wall construction demarcating internal land divisions within the project area does appear to have occurred in pre-contact times between 2,100-2,800 fadl, despite the relative sparsity of habitation remains when compared to lower elevations. These features should not be confused in scale or

symmetry with wall systems such as those associated with more intensive leeward field systems on the island of Hawai'i (Rosendahl 1994; Cordy and Kashko 1980). Nevertheless, most walls in the project area probably did delimit individual or family planting zones or garden areas, judging from the presence of agricultural modifications found in the vicinity. The largest of these wall systems consists of a series of linear core-filled and stacked constructions up to 1 m tall and 1 m wide (Figure 3.5), oriented roughly east-west and running for several hundred meters across the slopes of almost the entire Nakaohu Ahupua'a (e.g., Site B415 W1). These walls in turn have shorter, occasional perpendicular spurs which join the main wall line at right angles running either up or down slope (e.g., B414 W1), and the east end of this wall system appears to connect with a *mauka-makai* wall line originating near Heiau C/K 414 (Figure 3.1).

This wall system most likely represents the partitioning of specific land use parcels for local residents, although the dispersed settlement pattern in the vicinity suggests that perhaps some of these land units were plots farmed by families residing further downslope. Such a local land use pattern is also suggested by the 1848 Māhele claims

of Makaole, a farmer in Luala'ilua Ahupua'a who claimed two house lots, one *kula* or pasture plot, and 15 sweet potato patches in five different named areas (Native Register, Vol. 6:286; Foreign Testimony, Vol. 8:227; Native Testimony, Vol. 5:360). Given the proximity of this wall system to the *hōlua* slide and associated ritual features described below, it is also possible that some of these walls may define agricultural lands set aside for the support of particular *ali'i* under the supervision of a local *konohiki* or appointed land manager. As the *hōlua* slide and the wall system are only present in this *ahupua'a* within the project area, Nakaohu may have been the residence of a high ranking family within the district.

Ranching

The *mauka-makai* stone wall forming the western boundary of the 2,000 acre study area is assumed to be post-contact in construction due to its inclusion of a cattle corral (Figure 3.6), although the orientation of this major ranch wall appears to closely parallel the approximate boundary between Kīpapa and Alena Ahupua'a. In fact, the wall line is actually interrupted by the corral in a manner that suggests that they are

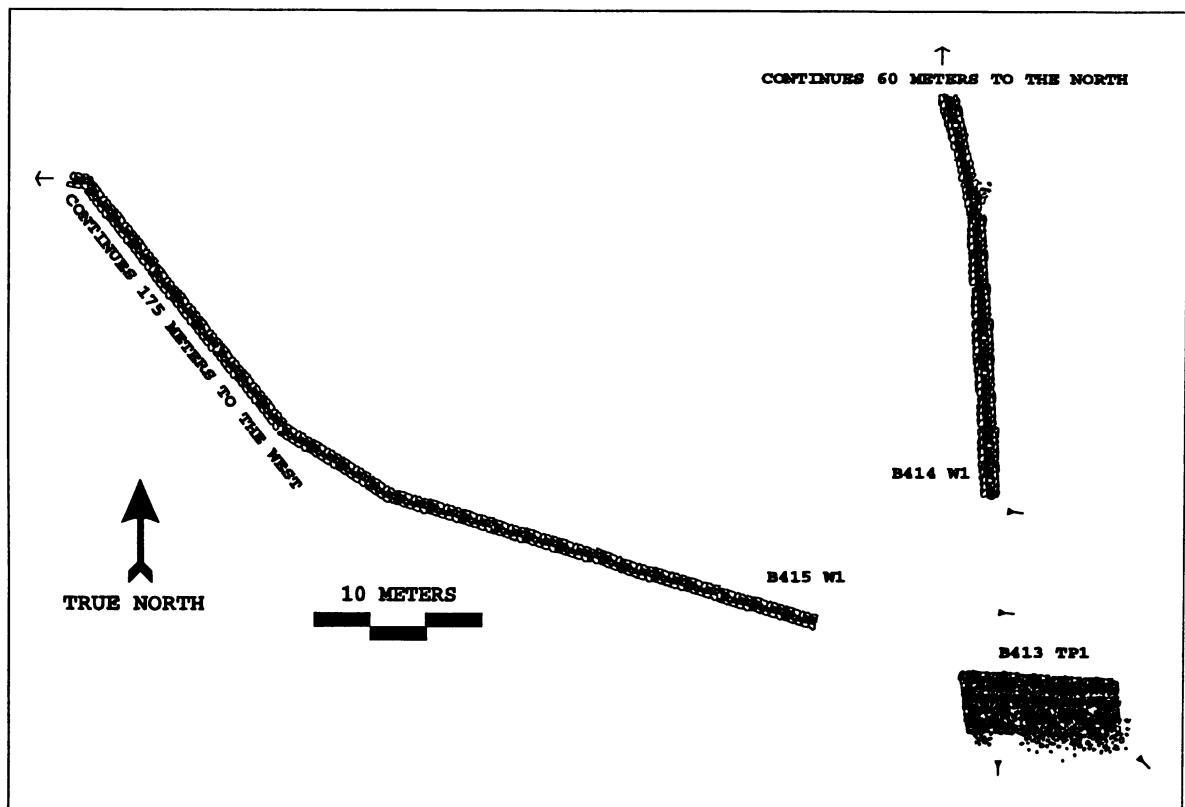


Figure 3.5 Features B414 W1 and B415 W1, pre-contact boundary walls and associated feature B413 TP1.

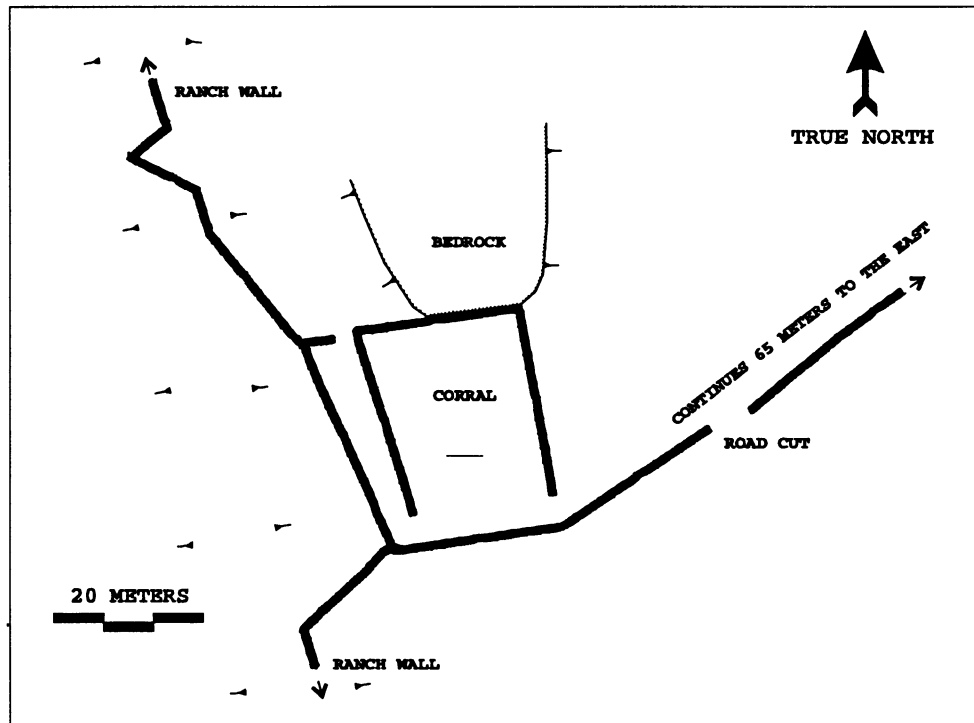


Figure 3.6 Feature A211 W1, post-contact corral and ranch walls, plan view.

contemporaneous and would therefore date no earlier than the mid-1800s. This wall was found to terminate just north of Manukani hill at approximately 3,700 fasl with the construction of a fence line continuing toward the north. By the 1860s when indigenous populations declined drastically in the district, it would seem likely that fencing became the only practical alternative to wall building.

The only other feature types associated with ranching in the survey area above 2,100 fasl are one circular water tank platform and two cement cattle troughs near the corral in Kīpapa Ahupua‘a, the metal water pipeline crossing the southern boundary of the survey area (Figure 3.1), and an abandoned wooden watering trough at 2,800 fasl in Nakaohu Ahupua‘a. Another circular water tank platform is located just below spur road three at 1,800 fasl, and a cement cattle trough is found just below Heiau CS-1010² outside the boundary of the proposed homeland tract. These features probably date to the use of Kahikinui as part of ‘Ulupalakua Ranch up until 1923 (Janion 1976:55), although cattle roundups continued at the Kahikinui Ranch house (State Site 50-50-17-1536) and adjacent corrals in Nakaohu Ahupua‘a (Bartholomew

1994:118) under various leases, even after control of the area was assumed by the Department of Hawaiian Home Lands (DHHL).

Possible Burials and Lava Tubes

No definite human remains were encountered during survey of the study area, probably due to the fact that much of the architecture recorded during 1995-96 was not part of permanent family residential compounds. It is expected, however, that some burials may well exist within hidden lava tubes and will probably be encountered beneath structural remains upon subsurface testing. Given the negative evidence of habitation above 2,800 fasl in elevation, however, even the latter scenario is considered unlikely for most of the project area.

Mounds/Platforms

Several features were constructed in such a manner to suggest that they were burial platforms. These were recorded as rectangular shaped mounds, usually 1 m tall by no more than

²The use of site number prefixes C/K (Chapman and Kirch 1979), K/V (Kirch and Van Gilder 1996), CS (Cultural Surveys Hawai‘i - Hammatt and Folk 1994), or any other letter refers to temporary site numbers. Permanently assigned State Site numbers will begin with 50-50-15 and the sites’s unique number.

2 m in length and width, with stacked walls and a leveled surface. Their size was too small to have provided much of a living surface and they were more nicely built than the prepared surfaces or rudimentary terraces used in agricultural pursuits.

Lava Tubes

Only one lava tube was recorded as a possible burial shelter since the entrance appeared to have been intentionally filled in with small cobbles. No human remains were observed from outside the collapsed entrance, but the diameter of the tube would have been sufficient (approximately 1 m wide) to serve as a burial chamber. Other lava tubes were recorded in the study area and these plus some of the rock shelters may in fact contain burials hidden away, but no human remains were observed during survey. The majority of lava tubes in the current DHHL Kuleana housing area appear to have been used as temporary shelters for overnight habitation, with minimal modification to the entrance or interior. One narrow tube, for example, had two stone alignments placed perpendicularly across the floor to impede downslope soil movement within the cave, thus creating two level possible sleeping areas. Another tube contained a walled entrance and a possible sleeping platform in the rear (Figure 3.7), directly below a small natural vent or “window”. Excavation of this feature and the surrounding floor zone encountered several fire hearths and a probable 19th century whiskey bottle on the surface, so it appears unlikely this lava tube would have functioned as a burial cave at the same time. The general lack of lava tube fortifications in the project area suggests that this portion of Kahikinui was never the scene of any major events of armed conflict, in spite of the fact that Kalani’opu’u and the young Kamehameha occupied nearby Kaupō during their first attempt to conquer Maui in 1775 (Kamakau 1992).

Hōlua Slide Complex

One linear platform encountered at the *mauka* limit of settlement in western Nakaohu Ahupua’a has been interpreted as a *hōlua* slide. This feature measures approximately 4.5 m wide by 1 m tall and extends over 30 m down a natural slope at a 35 degree angle (Figure 3.8), curving slightly toward the east. The *hōlua* platform (B904 P1) is roughly paved with small fist-sized stones and appears to have been constructed in segments using much larger boulders, although no pre-structural remains were found upon testing. The paved platform then gives way to a natural earthen and grass surface leading down and across the base of the slope. Beyond this area, the sledding trajectory apparently passes across another paved surface between two parallel walls 5 m apart on a more gradual

ridge top (B601 W2-3), before providing access to a series of grassy slopes below. Several features in the immediate vicinity of the *hōlua* slide may be related to the sledding area as well, since they are all relatively isolated from the residential settlement pattern and agricultural zone below.

A terrace constructed just east of the main sledding platform (B904 T1) may have served as a ritual area judging from the large quantities of carbon recovered during excavation, plus the presence of pig bone and branch coral on the surface, and a *kī* (*Cordyline fruticosa*) plant still growing in front. A notched enclosure immediately west of the parallel walls (B601 E1) may have been the remains of a small workshop associated with wooden *hōlua* sled manufacture or repair, given the large amount of basalt and volcanic glass debitage, a coral file fragment, and *kukui* nutshells found within both rooms during testing, and the absence of midden remains. Two other rudimentary terraces to the west would have been convenient viewing areas, while one walled terrace and two enclosures just beyond the end of the two parallel walls may have been associated habitations, judging from the midden found during excavation. Another possible component to this slide complex may be a large terraced platform (B413 TP1) which was found at the junction of three probable ‘*ili*’ boundary walls, located approximately 100 m downslope from the *hōlua* slide’s “end zone” (Figure 3.5).

Ritual Structures and *Heiau*

At least five possible *heiau* were encountered in or near the study area at roughly 2,200 *fasl* in elevation in Nakaohu and Nakaaha Ahupua’a (Figure 3.1). Only Heiau 50-50-15-181 had been located through local informant information by Walker (1931). Characteristics used in determining that a structure was probably a *heiau* included a combination of the scale and quality of construction (larger and better built than the majority of habitation features), the presence of coral offerings on the surface, and in some cases the presence of an obviously notched enclosure wall (Kolb 1992, 1994). Figure 3.9 provides a relatively small example of one such structure, while possible Heiau C/K 80 is a large multi-terraced platform. It is also acknowledged that other more varied ritual structures probably existed in the project area (Cachola-Abad 1996), such as the possible ritual terrace described next to the *hōlua* slide and the large terraced platform found at the end of the sledding area. Future subsurface testing and analysis of the larger habitation terraces and rectangular enclosures may suggest the existence of mens’ houses or *hale mua* as well.

The three largest of the five probable *heiau* in the project area (CS-1010, C/K-80 and C/K-414) were built in commanding topographic settings or on ridgetops with a view

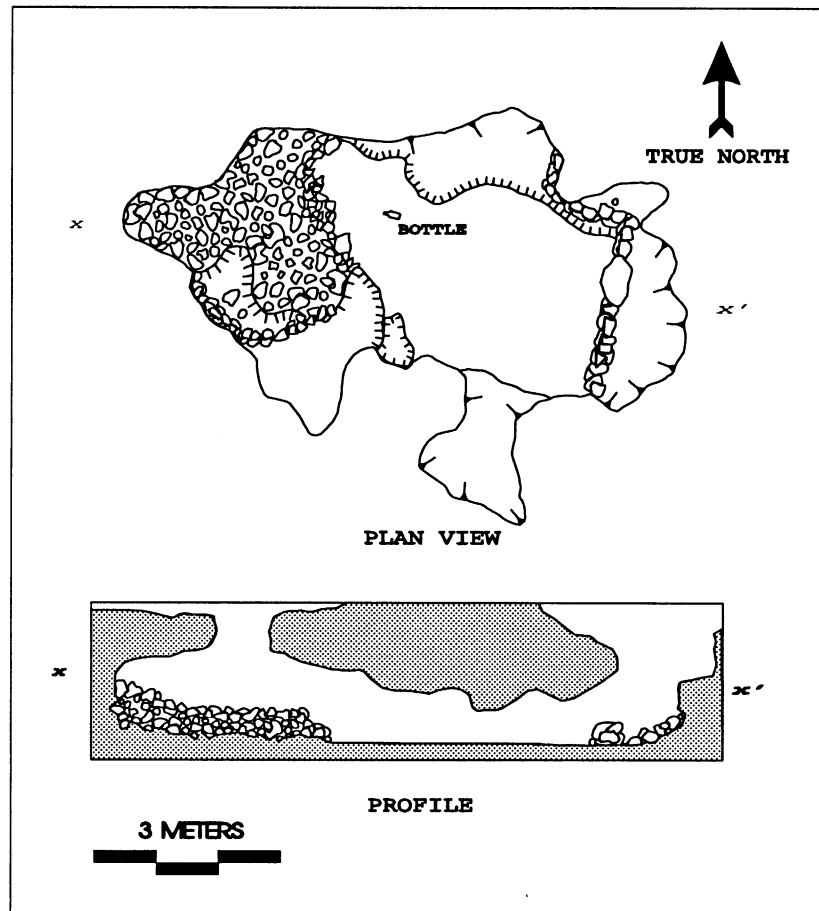


Figure 3.7 Feature D201 LT1, modified lava tube.

of the surrounding landscape and other *heiau* below. The other two smaller structures (B801 and State Site 50-50-15-1156) were placed in more subtle topographic settings and were perhaps meant to integrate more discretely into the cultural and natural landscape, rather than dominating it. It is notable that all four *heiau* in Nakaohu and Nakaaha Ahupua'a were built at the same approximate elevation between 2,100-2,200 *fasl* (Figure 3.1), while previously recorded Heiau Site 50-50-15-181 in Kīpapa Ahupua'a is situated only slightly lower.

Subsurface Features not Associated with Surface Architecture

Several subsurface features were encountered during monitoring of access road construction within the lower half of the 2,000 acre DHHL Kuleana Homestead area. In most cases, the functions of features were determined by the contents visible in the roadway since no testing was possible due to the destruction caused by the bulldozer. In other cases, isolated

artifacts were recorded on the exposed surface but were not found to be directly associated with any visible feature nearby. The majority of these subsurface features were determined to be either small ash-filled firepits or lenses of sparse midden, dense carbon, and burned rock presumably resulting from the raking out of *imu* (earth ovens) after use. The size of these features varied from under 1 m in diameter for firepits to over 10 m in length for the rakeouts. Firepits were generally only 10-15 cm in depth while the largest rakeout was approximately 50 cm in thickness.

Preliminary Observations

Several preliminary observations can be made about Native Hawaiian subsistence and settlement along the upland forest periphery in Kīpapa, Nakaohu and Nakaaha Ahupua'a between 2,100-2,800 *fasl* and above, although verification of these hypotheses will have to await the analysis of the subsurface testing results. At this point, alternate sources of

information must be relied upon and inferences must be made cautiously until all lines of evidence can be compiled and interpreted in the SHPD Archaeological Inventory Survey report.

Forest Periphery Subsistence

The virtual absence of any archaeological remains above 2,800 fasl suggests that this area was not exploited agriculturally to any appreciable extent, in spite of greater precipitation. Several environmental factors may have influenced this avoidance of potential planting areas, including: degree of slope (too steep = increased erosion), temperature (too cool for certain crops), cloud cover (lack of sunlight for

photosynthesis = longer growing season), and perhaps forest density (too thick for easy deforestation). Cultural factors may also have played a part in restricting pre-contact agriculture to the zone below 2,800 fasl including: no population pressure (no need for increased food production), regional exchange (resources were available elsewhere), and perhaps deliberate forest conservation (for firewood, construction materials, ritual resources, birdlife, and medicinal plants). At the moment there is no chronological evidence to date the retreat of the native forest to its present limits around 4,100 fasl, just above the project area.

Bird bones are relatively abundant in some excavated habitation features in the project area below 2,800 fasl, including the limited remains of an extinct *Porzana* sp. [rail]

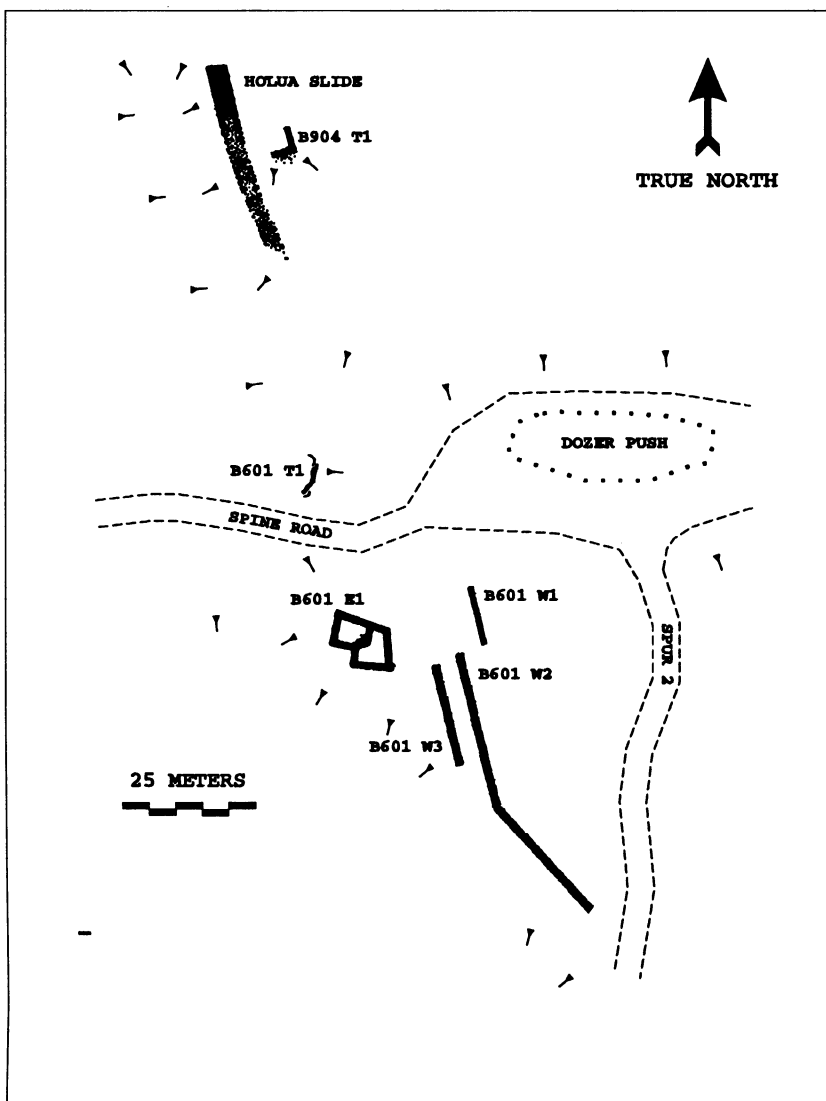


Figure 3.8 Hōlua slide (B904 P1) and associated features, plan view.

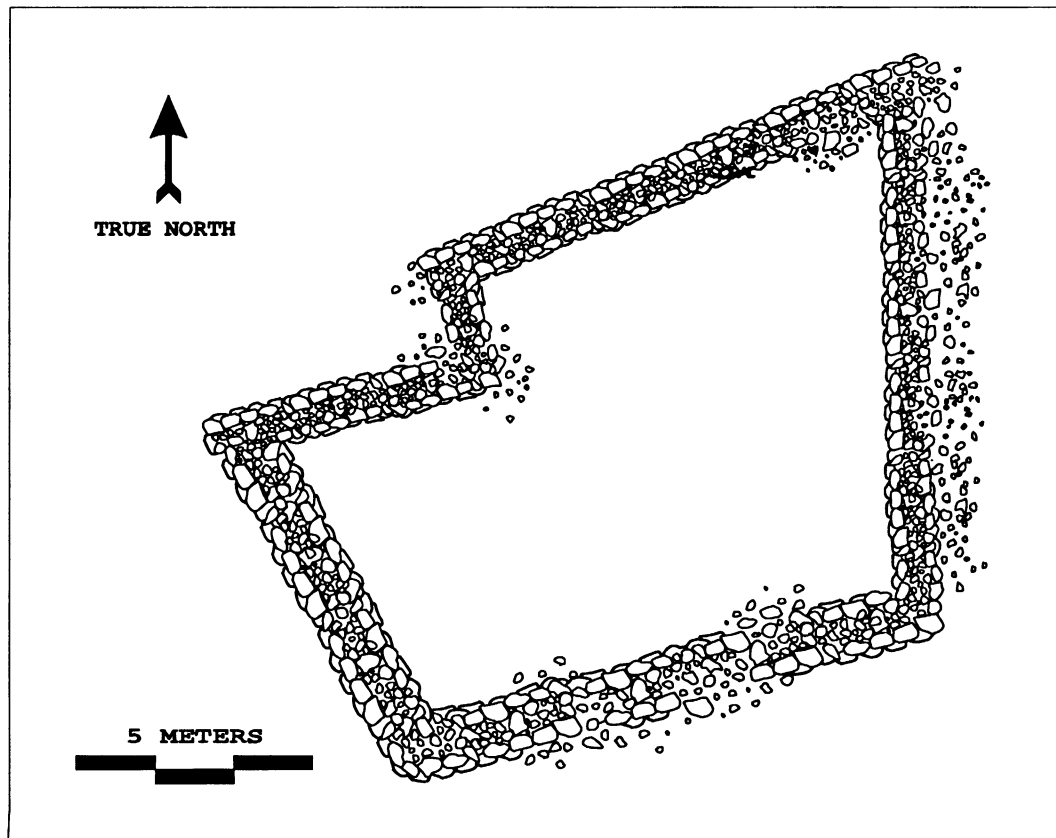


Figure 3.9 Feature B801 E1, notched enclosure, plan view.

and *Corvus* sp. [crow] (Ziegler 1996:4), so it is likely that the upland forest zone was frequented to exploit birds for food and feathers. The importance of birds in the upland forest periphery may also be encoded in the place name “Manukani” or “bird sound” in the Hawaiian language (Pukui and Elbert 1986:128, 239), a prominent hill found in Kipapa Ahupua‘a at 3,607 fasl (Figure 3.1). The possible original place name of Pu‘u Pane at 4,032 fasl to the east of the project area may also have been “Pu‘u ‘Apapane” according to local informants (Donna Simpson, personal communication, 1996). The ‘Apapane bird (*Himatione sanguinea sanguinea*) is a honeycreeper with a deep crimson colored body plumage, known to be endemic to the ‘ōhi‘a forests on the slopes of Haleakalā (Berger 1981:163).

Between 2,100-2,800 fasl, considerable evidence of farming was noted, although whether late in date or not is unclear. It does appear, however, that various farming techniques were adapted to local micro-environments and seem to have been implemented for the planting of crops such as sweet potato and taro, rather than the dominant approach found in at lower elevations which focused on swale soils (Kirch and Van Gilder 1996). These upper elevation techniques are most likely

an adjustment to geographical and geological features such as narrower gullies and steeper rocky slopes. In the absence of large pockets of swale soils, the main focus of agricultural activities seems to have been on small-scale modification of bedrock outcrops on ridge tops and slopes, although such modifications often covered areas up to 100 m² in size. In contrast to these rudimentary terraces, planting piles, clearings, and windbreaks found here, a few open areas of deeper soil accumulation such as at Uma were apparently the focus of larger scale terrace construction. It is assumed that narrow swale soils were farmed above 2,100 fasl as well, although the majority of soil movement (aeolian and alluvial) seems to have benefited the inhabitants at lower elevations where such soils could be more easily trapped.

Fragments of marine midden noted on the surface, and found during testing of habitation features and rockshelters, suggest that a considerable variety of coastal resources were being utilized by upland inhabitants as well. The majority of marine remains are of splash zone mollusk species such as ‘opihi (*Cellana* spp.) and pipipi (*Nerita* spp.), and to a lesser extent leho (*Cypraea* spp.) and other shallow water species. Bones of small-to-medium littoral and pelagic

fish are sometimes found, as are occasional crab claws and sea urchin fragments. Only one fishhook fragment has been found above 2,100 fasl, however, and few coral file fragments were recovered. Bones of domestic dog, pig, and chicken were also present in upland habitation features, but not in quantities approximating coastal resources.

Exchange Networks

The variety of marine remains found above 2,100 fasl (roughly a half-day walk from the coast) suggests that periodic or seasonal visits and/or exchange between members of extended kin groups probably accounts for much of the coastal resources in the uplands. It should also be expected that upland resources (food, animals, wood, stone, feathers, medicinal herbs, and water) were being brought down to coastal families on an equal basis, and a certain amount of both coastal and upland resources were presumably being exported out of the district on ritual occasions. Head coral is rare in the project area except on *heiau*, but fragments of unworked waterworn branch corals are sometimes found in the corners of habitation features, perhaps serving as household offerings or buried as *ho'omānalo* “. . . to remove the bitterness” (Waialeale 1834:2) of house construction in order to ensure its long use and the health and happiness of its occupants.

Another reflection of these hypothetical exchange networks is the presence of basalt and volcanic glass tools and debitage throughout the project area, although their distribution is probably also a reflection of local resource availability. Several outcrops of medium-grained basalt appear to have been exploited on a small scale for the production of adzes, judging from the presence of large primary flakes, blanks or preforms, and battered cobbles. However, few hand-held polishing manuports or bedrock grinding surfaces have been noted in the three *ahupua'a*. Polished basalt adzes have been found at all elevations between 1,600 and 2,800 fasl, but the smaller specimens are more frequently found near habitation remains while the larger versions are often found in nearby zones of modified bedrock outcropping, presumably agricultural fields. As many of the finished adzes do not appear to be of local materials, it is expected that raw material resources in Kahikinui were insufficient to supply all the upland inhabitants' stone tool needs, thereby necessitating involvement in larger exchange networks, perhaps outside the district.

Volcanic glass extraction also appears to have occurred locally, and habitation features near these zones of raw material availability frequently have high quantities of small basalt flakes and unusable volcanic glass fragments. Two of these resource zones occur near the borders between the three *ahupua'a* within the project area, perhaps stimulating

intercommunity exchange in these valuable cutting tools and other upland commodities. The sourcing of lithic tools and the identification of utilized raw material outcrops (Weisler 1990, 1993) will be one focus of research presented in the SHPD Inventory Survey report.

Pre-Contact Settlement

Little can be said about the chronology of settlement in the project area from an archaeological perspective before radiocarbon dating of selected contexts from the subsurface testing program. However, wood carbon from two rock shelters and one lava tube in Kīpapa Ahupua'a has already been dated (Dixon et al. 1996) and the results suggest that the majority of occupation of these particular feature types—and perhaps of the upland forest periphery—occurred in the late pre-contact Period, probably between the early 1600s and late 1700s (Table 3.2). All three radiocarbon samples yielded calibration intercepts in the post-contact period, but the noticeable absence of Euro-American artifacts in almost all 449 archaeological sites between 2,100-2,800 fasl (three C-shapes in Uma and one lava tube below being the only exceptions) suggests that these dates are reliable. Caution must be exercised in concluding that this small sample accurately reflects use of the uplands, however since rock shelters and lava tubes were probably used by periodic visitors to the area well before permanent settlement ever occurred in upland Kahikinui. Many more radiocarbon samples will therefore need to be run from a range of feature types and elevations. These will be presented in the SHPD Archaeological Inventory Survey report.

Permanent habitation features within the 2,000 acre DHHL Kuleana Homestead survey area seem to have been clustered in several geographical zones, with the most dense settlement being found between 2,100-2,400 fasl (Figure 3.1). These areas include three north-south trending ridges in Kīpapa Ahupua'a, three ridges containing Heiau C/K-80, C/K-414, and B801 in Nakaohu Ahupua'a, on the relatively flat plateau between Heiau CS-1010 and Site 50-50-15-1156 in Nakaaha Ahupua'a, and to a lesser extent around the grassy slopes above the same area. Settlement at lower elevations along the access road corridor in Kīpapa Ahupua'a also seems to cluster (Figure 3.1), with groupings of both pre- and post-contact residential structures on three ridge tops and slopes overlooking major swales and agricultural features nearby. If some of these features (particularly larger terraces and enclosures) were in fact inhabited by community members with higher social status (i.e., *konohiki*) as the scale of architecture suggests, then the study of residential architecture may have the potential to shed light on the ranking of socio-political units between *ahupua'a* and within Kahikinui District as a whole. Smaller

temporary habitations such as C- and U-shapes, and windbreak walls, are present throughout the entire survey area, suggesting that many of these features in the upper elevations are agricultural field dwellings.

The apparent absence of ritual structures in upper Kīpapa Ahupua‘a may be explained by the temporary term of residence here, with permanent family residences (including *hale mua*) being located at lower elevations such as along the access road corridor. Nakaohu and Nakaaha Ahupua‘a, on the other hand, appear to contain several examples of ritual structures, the smaller *heiau* (e.g., Figure 3.9) perhaps focusing on localized family subsistence needs while the larger *heiau* and the *hōlua* slide (Figure 3.8) may have served the wider district periodically. Heiau C/K-414 (Figure 3.1), for example, may have been a *Hale o Lono* dedicated to fostering fertility in this dry leeward setting, given its association with a multitude of agricultural modifications nearby. This ritual structure is also located within sight of an even larger notched *heiau* on a ridge top just below the DHHL Kuleana houselots (CS-1010, Hammatt and Folk [1994:35]), the largest such structure recorded in the district to date. Any evaluation of the political primacy of one *ahupua‘a* over another will have to await the results of a district wide study (Dixon and Cordy 1997), although the presence of several *heiau*, the *hōlua* slide, and the network of possible agricultural boundary walls in Nakaohu Ahupua‘a suggests it may have been one seat of regional *ali‘i* authority in Kahikinui.

The few possible burial features recorded in the project area, and the complete lack of subsurface burials encountered during testing, is notable given the presence of permanent habitations between 2,100-2,400 fasl. The lack of indigenous cemeteries is hardly surprising in this rocky environment, however, and this absence suggests that upland

interment activities were probably centered around the use of lava tubes by individual families, the entrances to which were intentionally sealed. The paucity of burial remains also suggests that the range in radiocarbon dates already recovered from the project area (between the early 1500s and late 1700s) may even be wider than that expected for actual permanent settlement of the upland forest periphery, especially since rock shelters and lava tubes could have been used during periodic forays into the forest at any time during Hawaiian history.

Post-Contact Changes

The radiocarbon dates from three excavated rock shelters and lava tubes within the project area, in concert with the paucity of post-contact remains found during testing, suggests that the upland forest periphery above 2,400 fasl was permanently occupied for only a few centuries prior to Euro-American contact and was abandoned not long after. Above 2,100 fasl, the lack of high (over 1 m tall) habitation and garden enclosure walls to exclude imported livestock suggests this abandonment occurred before the effects of loose cattle were felt in forest periphery agriculture or on traditional house construction (Ladefoged 1991; Kirch 1992; Sweeney 1992), although it has been suggested that the introduction of cattle was one cause of the area’s abandonment (McGregor 1989:369).

Judging from the remains of early 19th century Native Hawaiian habitation around Site K/V-728 within the lower access road corridor at roughly 1,700 fasl, and at Site C/K-335 along the coast (Kirch 1996), it appears more likely that upland inhabitants moved *makai* to be closer to coastal commerce and overland transportation routes such as the Pi‘ilani and later Hoapili Trails (Burgett et al. 1995; Moore et

Table 3.2 Radiocarbon dates from Kīpapa Ahupua‘a.

Sample Data	Measured ¹⁴ C Data	¹³ C/ ¹² C Ratio	Conventional ¹⁴ C Age	Calibrated Radiocarbon Age ¹
Beta-92237 Site A401RS1 20-30 cmbs ²	30 ± 60 B.P.	-25	20 ± 60 B.P.	A.D. 1690-1735 A.D. 1815-1925
Beta-92238 Site A116RS1 10-20 cmbs	20 ± 60 B.P.	-10.7	250 ± 60 B.P.	A.D. 1495-1695 A.D. 1725-1815 A.D. 1920-1950
Beta-92239 Site A502LT1 25-35 cmbs	90 ± 50 B.P.	-25.7	80 ± 50 B.P.	A.D. 1675-1770 A.D. 1800-1940

¹ Beta Analytic Radiocarbon Dating Laboratory, 2 sigma range, 95% probability.

² cmbs = centimeters below surface.

al. 1994), as well as one possible center of social and ritual importance near the St. Ynez Catholic church (Kirch and Van Gilder 1996:44). In fact, a population estimate based on the first archaeological survey of coastal sites in Kahikinui stated that “. . . it seems reasonable to assume a population of 1,500 or 1,800 for the south coast” (Walker 1931:66), although the contemporaneity of these sites remains to be tested.

Population estimates from the 1831-32 and the 1836 missionary census do portray a much lower number of residents in Kahikinui than in surrounding districts (Schmitt 1973:18, 36), although this may in part be a reflection of the lack of impact that early Protestant missionaries had in this isolated district. The arrest of local residents Helio Kaiwiloa and Simeon Kaoao in the infamous *pa'a kaula* or “tying with ropes” of 1843 (Schoofs 1978), and the burning of their first grass church at St. Ynez by a Protestant named Keala from Homuala (Ashdown 1973:6) may have discouraged Native Hawaiian Catholic inhabitants of Kahikinui from filing claims before the Lands Commission during the Māhele, a process most frequently benefiting indigenous inhabitants allied to Protestant *ali'i* and missionary families, and government officials of the Hawaiian Kingdom (Sahlins 1992:215;

Kame'eleihiwa 1992). The only individual who was awarded an L.C.A. in the entire Kahikinui district was Makaole of Luala'ilua Ahupua'a who claimed two house sites, one *kula* plot, and 15 potato patches within five named areas in the uplands, plus several salt collecting areas on the coast (Native Register, Vol. 6:286; Foreign Testimony, Vol. 8:227; Native Testimony, Vol. 5:360).

It is also possible that local residents were actively discouraged from claiming land or use rights by outside *ali'i* who supplanted local authority after Kamehameha I took control over the island of Maui in 1795, as the district became government land after the 1848 Māhele. This possibility is suggested by Princess Ruta Ke'elikolani receiving the entire *ahupua'a* of Auwahi in a single land grant during the 1848 Māhele, while others received much smaller land grants such as Helekunihi in Mahamenui Ahupua'a. After this time, the rest of Kahikinui and the project area became part of a large ranching operation perhaps begun by Portuguese immigrant Manuel Pico and his Hawaiian descendants in the 1870s (Ashdown 1973:4), later to become part of the famous 'Ulupalakua Ranch (Janion 1976).