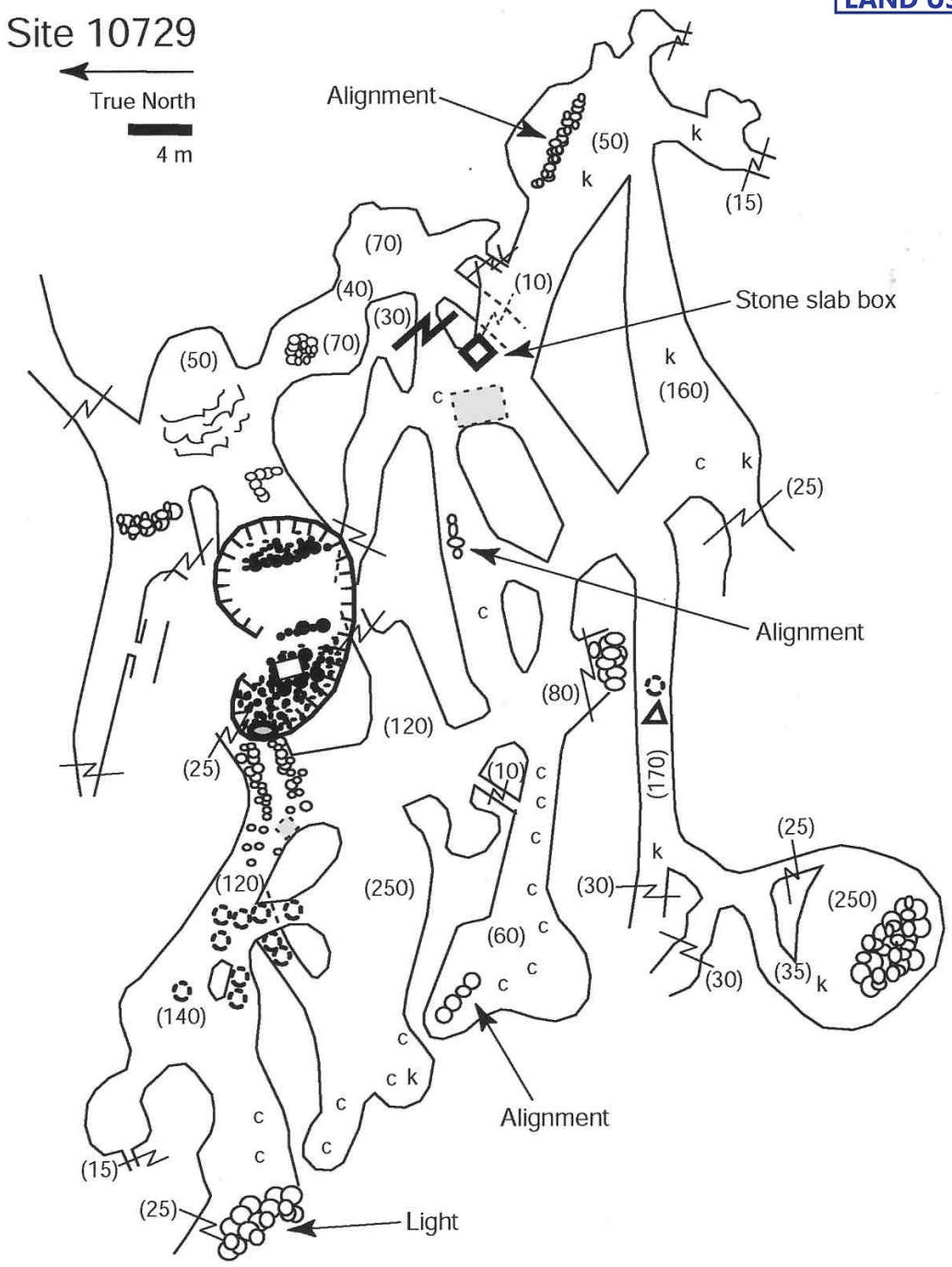

Figure 123. Site 10729 plan view.

SITE 10730

This site was recorded and excavated by Barrera (1985, 1991). The information from this work is summarized here.

Site 10730 consists of 16 features within an 1.0-acre area bounded to the east, north, and west by portions of the historic wall network encircling the Walled Fields area. The site is bounded to the south by portions of the *kuaiwi* network designated Site 10716 (see Figure 42, Site 10693). One remnant cross-slope terrace, also part of Site 10716, divides this habitation site complex into two, roughly equal portions: an upper area (to the east), consisting mostly of open fields and a few mounds; and, a lower area, consisting of a habitation enclosure (designated Feature 1), a terrace (designated Feature 2), and numerous mounds (see Figure 42, Site 10693). The mounds in the lower area can be further subdivided into two groups (see below). The habitation enclosure is located in the extreme southwestern corner of the site complex.

All 16 of the features at Site 10730 are formally described below, including results of subsurface testing and analysis of material finds, where applicable. Five trenches were excavated (two at Feature 1, one each at Features 8, 9, and 14). Recovered materials included a small amount of traditional artifacts, consisting mostly of stone tool debitage, and a small amount of midden. One hydration rind date of A.D. 1618–1642 was obtained from the habitation enclosure (Feature 1) at Site 10730, suggesting a late pre-Contact occupation for this site.

FEATURE 1

Feature 1 is an enclosure measuring 4.9 m by 5.8 m, with maximum heights ranging from 70 cm above the ground surface (upslope side) to 100 cm above the ground surface (downslope side). A wall measuring 1.7 by 2.0 m is attached to the northwest corner of the enclosure (see Figure 42, Site 10693). The enclosure and the wall were constructed of dry-stacked, angular, basalt cobbles and small boulders resting directly on the *pāhoehoe* bedrock.

Ten 1.0 by 1.0 m test units, eventually joining up to form one T-shaped (perpendicular) trench, were excavated at Feature 1 (Figure 124). Excavation yielded a single, unstratified deposit, up to 30 cm in thickness, at the base of the enclosure walls (Figure 125). The deposit consisted of cobbles and boulders in a soil matrix, including a modest sample of traditional artifacts and midden.

Cultural materials recovered in excavation included: three specimens of volcanic glass debitage, one basalt adze fragment, two basalt flakes, and one basalt manuport.

A small amount of midden was recovered in excavation at Feature 1, including 31.6 grams of shell, 7.0 grams of *kukui* (*Aleurites moluccana*), and 0.6 grams of charred *kukui* nut shell. Charcoal was relatively abundant (141.0 g), but no bone remains were recovered.

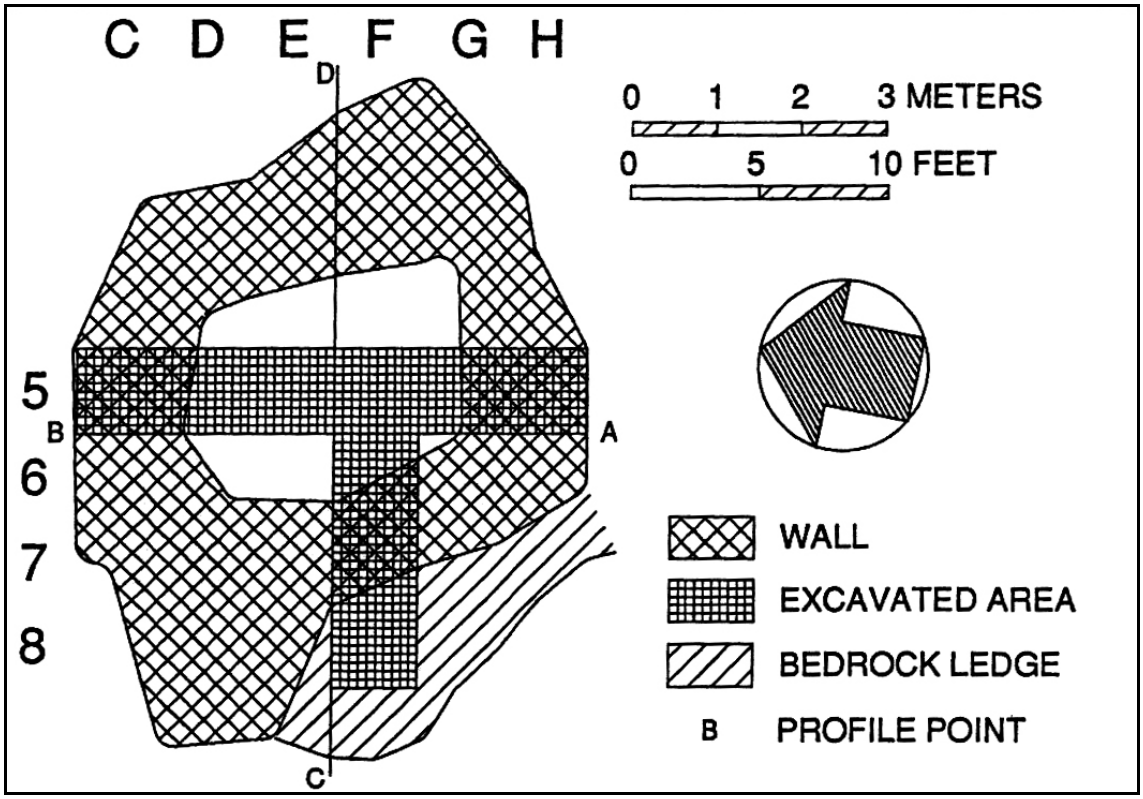

Figure 124. Plan View of Site 10730 (Feature 1), Showing Locations of Excavation Units (from Barrera 1991:25).

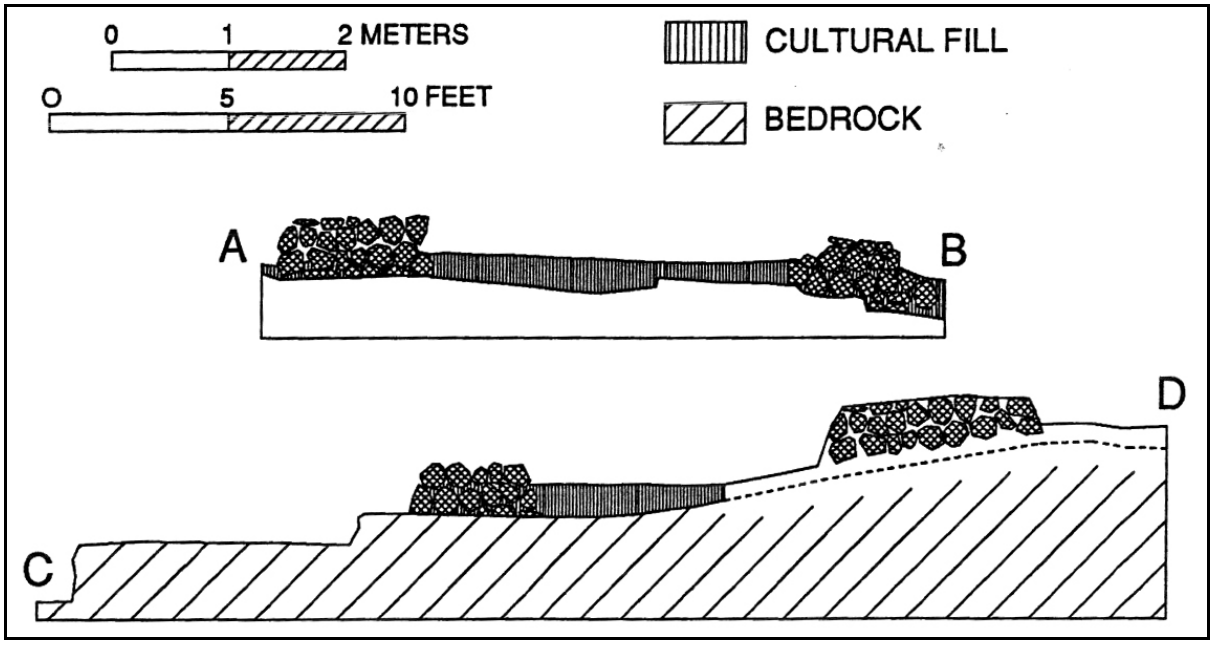

Figure 125. Section View (Trench Excavation) of Site 10730 (Feature 1) (from Barrera 1991:25).

The single hydration rind date of A.D. 1618–1642 was obtained from 0–30 cmbs within the enclosure (Feature 1) at Site 10730, suggesting a late pre-Contact occupation for this site.

FEATURE 2

Feature 2, the largest structure at Site 10730, is a terrace located 25 m east-northeast of the habitation enclosure. The terrace measures 10.7 m (length) by 1.8 m (width), with a maximum height range of 30 cm above the ground surface (upslope side) and 100 cm above the ground surface (downslope side).

No excavation or feature dismantling was conducted at the terrace designated Feature 2.

FEATURES 3 AND 4

Two adjacent mounds, designated Features 3 and 4, are located in the uppermost (eastern) portion of Site 10730, several meters north of a 25-m *kuaiwi* (see Figure 42, Site 10693). Feature 3 measures 1.8 m by 2.4 m, with a maximum height of 60 cm above the ground surface. Feature 4 measures 3.1 by 3.2 m, with a maximum height of 40 cm above the ground surface.

No excavation or feature dismantling was conducted at the terrace designated Features 3 and 4.

FEATURES 5 THROUGH 8

Four adjacent mounds, designated Features 5 through 8, are located within a 100 m^2 area just north-northeast of the terrace (Feature 2) and north-northwest of a cross-slope terrace (a portion of Site 10716) (see Figure 42, Site 10693). One trench was excavated at Feature 8, but no cultural material or midden were recovered (see below).

Feature 5 measures 2.1 by 2.7 m, with a maximum height range of 40 cm (upslope side) to 120 cm (downslope side) above the ground surface. Feature 6 measures 1.5 by 1.8 m, with a maximum height of 50 cm above the ground surface. Feature 7 measures 1.8 by 4.3 m, with a maximum height of 50 cm above the ground surface. Feature 8 measures 1.7 by 3.5 m, with a maximum height of 60 cm above the ground surface.

One trench was excavated through the middle of the mound designated Feature 8 (Figure 126), revealing a single course of angular, basalt cobbles and small boulders directly overlying a deposit of angular, basalt cobbles and small boulders in a soil matrix. This lower layer was 20 to 60 cm thick, and directly rested on *pāhoehoe* bedrock.

No cultural materials were recovered in excavation at the mound designated Feature 8.

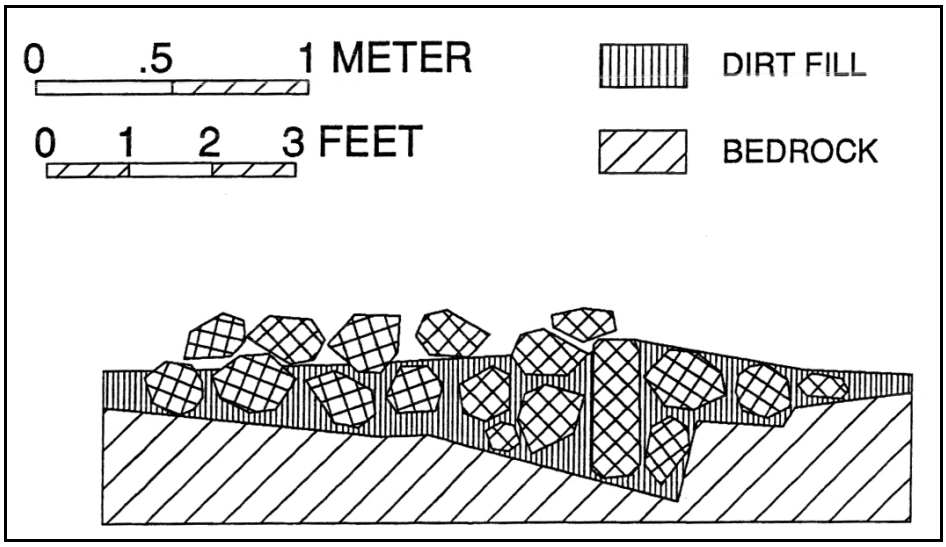

Figure 126. Section View (Trench Excavation) of Site 10730 (Feature 8) (from Barrera 1991:24)

FEATURES 9 THROUGH 16

Eight additional mounds, designated Features 9 through 16, are located in the area west (downslope) of the terrace (Feature 2), north of a *kuaiwi* (portion of Site 10716), and east, northeast, and north of the habitation enclosure (Feature 1) (see Figure 42, Site 10693). One trench was excavated at Feature 9; one trench was excavated at Feature 14 (see below). A total of one piece of volcanic debitage was recovered in these two trenches. No hydration rind dates were obtained for these features.

Feature 9 measures 2.0 by 3.1 m, with a maximum height range of 50 cm (upslope side) to 100 cm (downslope side) above the ground surface. Feature 10 measures 1.8 m by 1.8 m, with a maximum height range of 30 cm (upslope side) to 60 cm (downslope side) above the ground surface. Feature 11 measures 1.9 by 3.1 m, with a maximum height of 50 cm above the ground surface. Feature 12 measures 1.5 by 2.1 m, with a maximum height of 50 cm above the ground surface.

Feature 13 measures 1.7 by 1.8 m, with a maximum height of 30 cm above the ground surface. Feature 14 measures 3.4 by 4.6 m, with a maximum height range of 40 cm (upslope side) to 100 cm (downslope side) above the ground surface. Feature 15 measures 2.4 by 3.1 m, with a maximum height of 30 cm above the ground surface. Feature 16 measures 2.7 by 4.0 m, with a maximum height of 120 cm above the ground surface.

One trench was excavated through the middle of the mound designated Feature 9 (Figure 127), revealing an architectural layer of angular, basalt cobbles and small boulders resting directly on the *pāhoehoe* bedrock in the center, and resting upon and within a thin layer of soil matrix at the edges of the mound. One piece of volcanic glass debitage was recovered in excavation. No other cultural materials or midden were recovered.

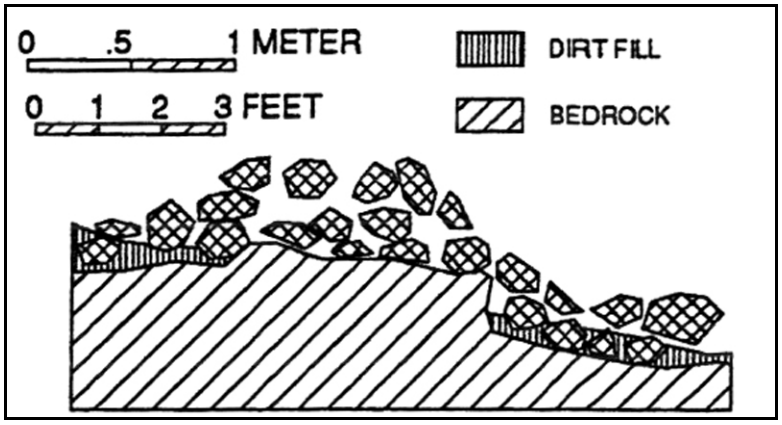

Figure 127. Section View (Trench Excavation) of Site 10730 (Feature 9) (from Barrera 1991:24).

One trench was excavated through the mound designated Feature 14 (Figure 128), revealing an upper architectural layer of angular, basalt cobbles and small boulders some 30 to 45 cm thick, directly overlying a layer of angular, basalt cobbles and small boulders in a soil matrix some 30 to 60 cm thick. No cultural materials or midden were recovered in excavation at Feature 14.

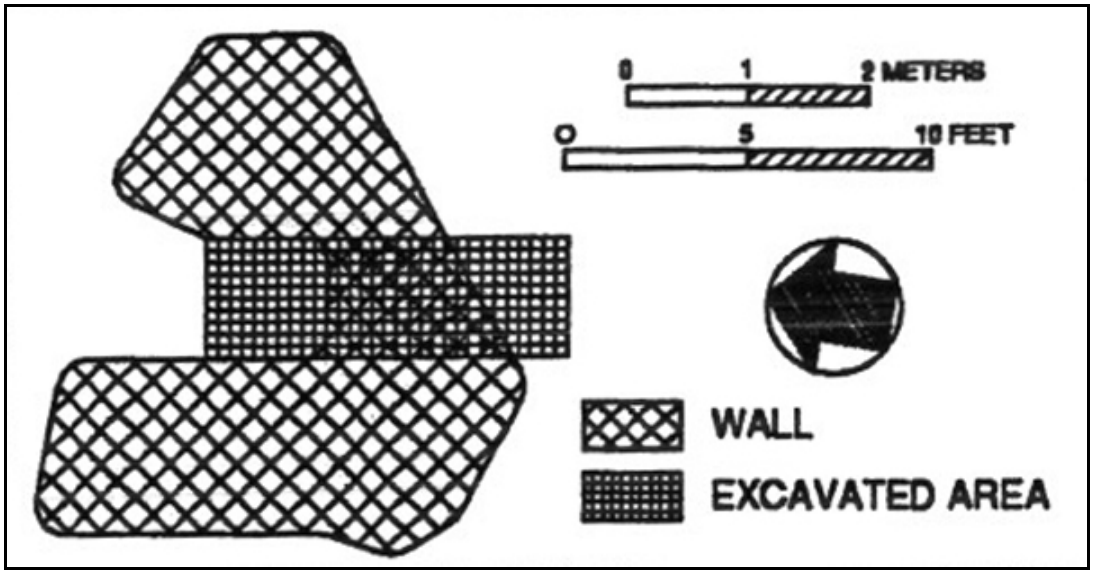

Figure 128. Plan View of Site 10730 (Feature 14), Showing Trench Location (from Barrera 1991:26).

SITES 10731 AND 10732

Site 10731 and Site 10732 are caves associated with a platform in Kohanaiki Ahupua‘a at 830 ft. elevation (Figure 129). Site 10731 is a cave directly below a

platform. Portions of the cave's floor exhibit possible paving. This natural cave originally continued further to the east, but that entire area has been filled and modified with stones that serve as the foundation for the platform. Marine shell and a broken water-worn stone are possible evidence of temporary habitation. Passages in the Site 10732 cave are also blocked with a wall in one chamber, and loosely piled rocks in another chamber. No artifacts were found within Site 10732. The blocked chamber in Site 10732, and the platform foundation and paving in Site 10731, block and fill passages in these two small caves. It is not clear whether the chambers continue beyond these blocked areas. It is probable that the function of these caves is directly related to the adjacent platform. A temporary habitation area is a likely explanation of the cultural modification. No excavation was conducted at these sites and no radiocarbon date was obtained.

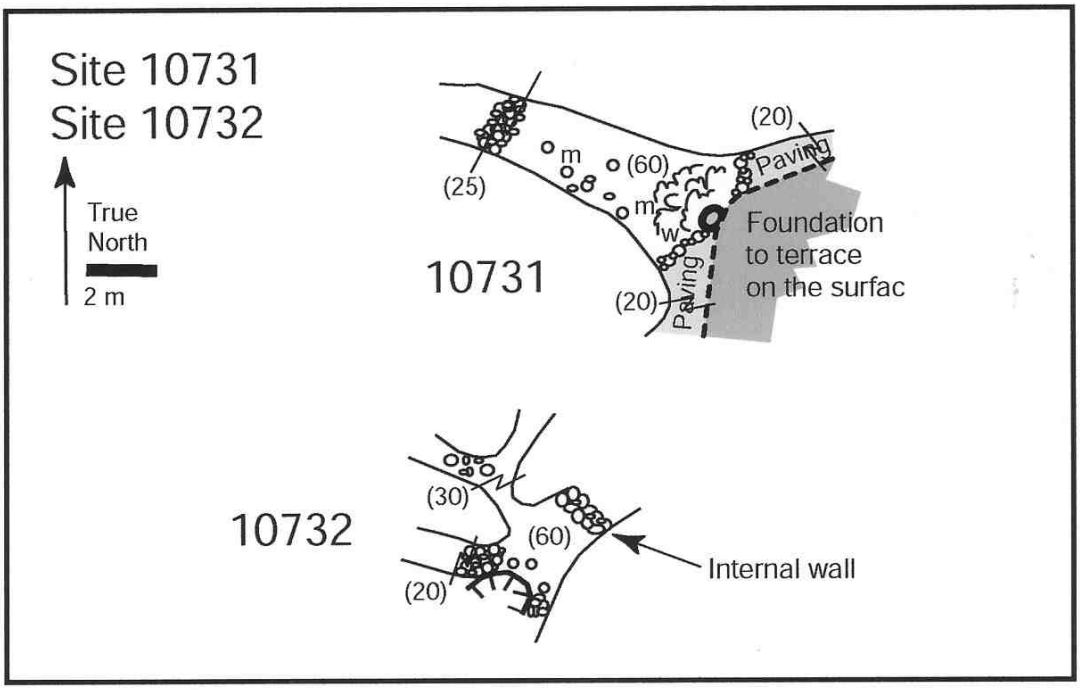

Figure 129. Site 10731 and Site 10732, plan views.

SITE 10733

Site 10733, in Kohanaiki Ahupua‘a, is a single-chamber cave connected to the west side of a large, unmodified sinkhole. The opening is large (4.0 by 2.0 m) and easily accessible (Figure 130). The only obvious modifications in the cave are a rough paving of rocks that fill in a natural channel near the cave opening, and another rough paving of rocks that also fills in a low spot in the cave floor. A narrow side chamber (Chamber 2) connects to a small opening in the ground that is shared with the Site 10742 cave. The chamber is too narrow, and the opening is too small to pass through. Consequently, Sites 10733 and 10742 are physically connected, but they are distinct from one another with regard to movement of people.

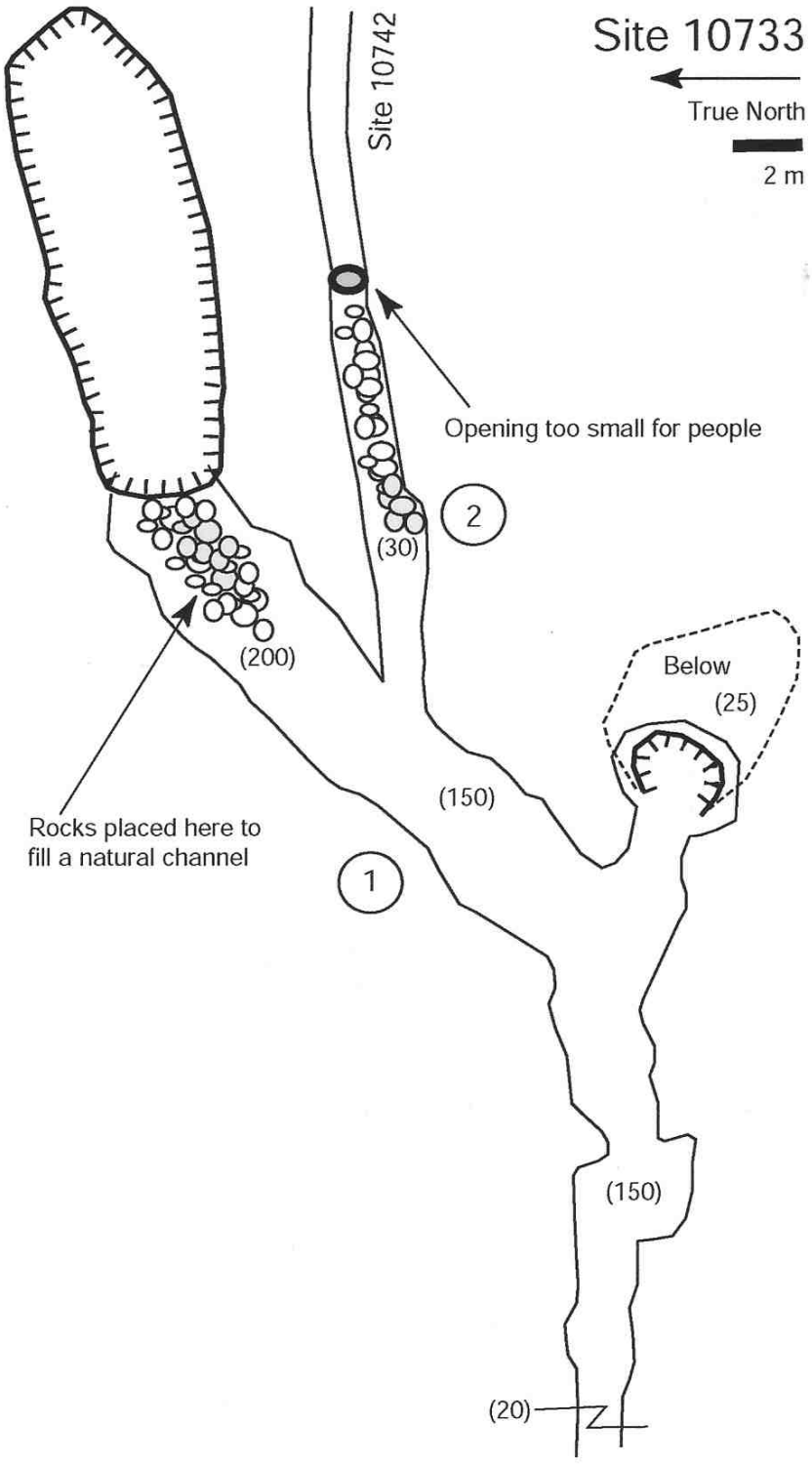

Figure 130. Site 10733 plan view.

This medium-sized cave was lightly used. There are no artifacts within the cave, and the only evidence of use is the positioning of rocks to fill low spots in the cave floor. It is the presence of this fill that leads to the interpretation that the cave may have been utilized for temporary habitation. No excavation was conducted at this site and no radiocarbon date was obtained.

SITE 10734

This site was recorded and excavated by Barrera (1988, 1991). The information from this work is summarized here.

Site 10734 consists of 12 features within an 0.3-acre area bounded to the east, north, and west by portions of the historic wall network encircling the Walled Fields area, and bounded to the south by part of the *kuaiwi* network designated Site 10716 (see Figure 42, Site 10693). Barrera (1988, 1991) interpreted this site complex as a habitation complex, and recovered a relatively abundant sample of traditional artifacts and midden. The habitation complex is centered on two main features, a modified lava dome/platform (Feature 1) and an enclosure (Feature 2) (see Figure 42, Site 10693). With the exception of one collapsed wall (Feature 3), the remaining features are all mounds, and a remnant portion of *kuaiwi* (part of Site 10716) is located 5 to10 m south-southwest of the site, separating it from another possible habitation complex (*i.e.,* Site 10700).

All 12 of the features at Site 10734 are formally described below, including results of subsurface testing and analysis of material finds, where applicable. Three trenches were excavated (two at Feature 2, one at Feature 10), and 29 1.0 by 1.0 m test units, totaling 29.0 m^2, were excavated at the modified lava dome (Feature 1). In addition, one mound (Feature 6) was partially dismantled.

Eight hydration rind dates were obtained from two features at Site 10734. Seven dates from the modified lava dome/platform (Feature 1) range from the late 15th century to the middle 17th century. A single date of 1468-1496 was obtained from the mound designated Feature 10.

FEATURE 1

Feature 1, the largest structure at Site 10734, is a modified lava dome measuring 7.3 by 7.3 m, with a maximum height of 90 cm above the ground surface (see Figure 42, Site 10693). Dry-stacked rock walls, 1 to 2 m wide, were built around three sides of the lava dome, acting as retaining walls and serving to create a platform surface of some 53 m^2 (Figure 131). Feature 1 was constructed of dry-stacked, angular, basalt pebbles, cobbles, and small boulders, resting directly on the lava dome surface, itself, or on the adjacent *pāhoehoe ,* from which the dome rises.

Twenty-nine 1.0 by 1.0 m test units were excavated at the lava dome/platform designated Feature 1; 23 test units were excavated within the structure itself; six test units were excavated just outside the structure, to the west. Excavation revealed a single, unstratified, cultural layer of varying thickness, composed of angular basalt pebbles and

cobbles, midden, and traditional artifacts. Thickness of the layer varied from zero, where the underlying lava dome was at the surface, to 70 cm, where relatively deep pockets in the lava occurred.

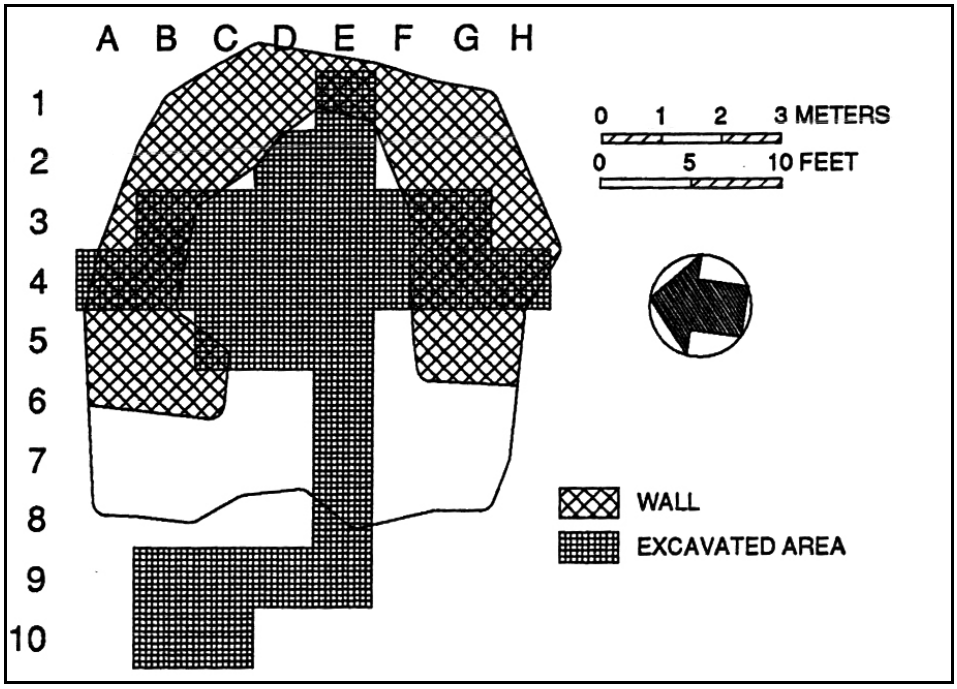

Figure 131. Plan View of Site 10734 (Feature 1), Showing Locations of Excavation Units (from Barrera 1991:30).

Cultural materials recovered in excavation included: 1,972 pieces of volcanic glass debitage, angular waste, and utilized flakes, one nodule of volcanic glass, four basalt adze fragments, one basalt adze-reduction flake, nine basalt flakes, two basalt manuports (*i.e.,* unmodified, water worn cobbles), and one drilled dog (*Canis familiaris*) tooth ornament. Material was recovered from both within and outside of the lava dome/platform structure.

A total of 1,555.0 g of invertebrate remains was recovered in excavation at Feature 1. The vast majority (1,510.0, or 97%) was shell, with smaller amounts of sea urchin (Echinoidea) (43.9 g) and crab (Crustacea) (1.1 g). With the exception of 62.5 g of *Theodoxus vespertinus*—a brackish-water species, the shells all represent marine species, including at least ten different taxa (see Appendix B). Floral remains included: 320.1 g of charcoal, 1447.8 g of *kukui* (*Aleurites moluccana*) nut shell (some of it burned), a small amount (27.2 g) of carbonized *kukui* nut shell, and 1.9 g of indeterminate material.

Vertebrate remains recovered in excavation at Feature 1 included non-diagnostic fish (0.3 g), bird (2 specimens), pig (*Sus scrofa*) (2 specimens), horse (*Equus caballus*) (2 specimens), cow (*Bos taurus*) (5 specimens), rat (*Rattus* sp.), and other non-diagnostic

mammal (9 specimens) and vertebrate (6 specimens). Of these, the horse and the cow are clearly historicly-introduced species, and the pig and the rat may be. These faunal data are suggestive of a historic-era component (*i.e.,* site occupation) at Site 10734.

Seven hydration rind dates were obtained from a single test unit ('E-6') within the modified lava dome/platform. The dates were obtained from volcanic glass recovered from seven successive levels (*i.e.,* 0–10, 10–20, 20–30, 30–40, 40–50, 50–60, and 60–70 cmbs), and the results are generally in agreement with the level designations (*i.e.,* older dates are deeper than younger dates). The dates range from the late 15th century to the middle 17th century.

FEATURE 2

Feature 2 is an enclosure measuring 4.9 by 5.2 m, with a maximum height of 120 cm above the ground surface. The enclosure was constructed of dry-stacked, angular, basalt cobbles and small boulders. A small opening in the enclosure 75 cm wide was located in the southwest corner. Excavation demonstrated that some of the cobbles and boulders comprising the base of the feature were placed directly on the *pāhoehoe* bedrock, while other 'base stones' were placed upon a thin soil layer.

Two trenches were excavated in the interior of the enclosure (Figure 132). The shorter trench measured 4.0 m in length; the longer trench measured 6.0 m, and breached both the east and west sides of the enclosure. The longer trench showed a thin (<10 cm) soil layer underlying portions of the enclosure walls.

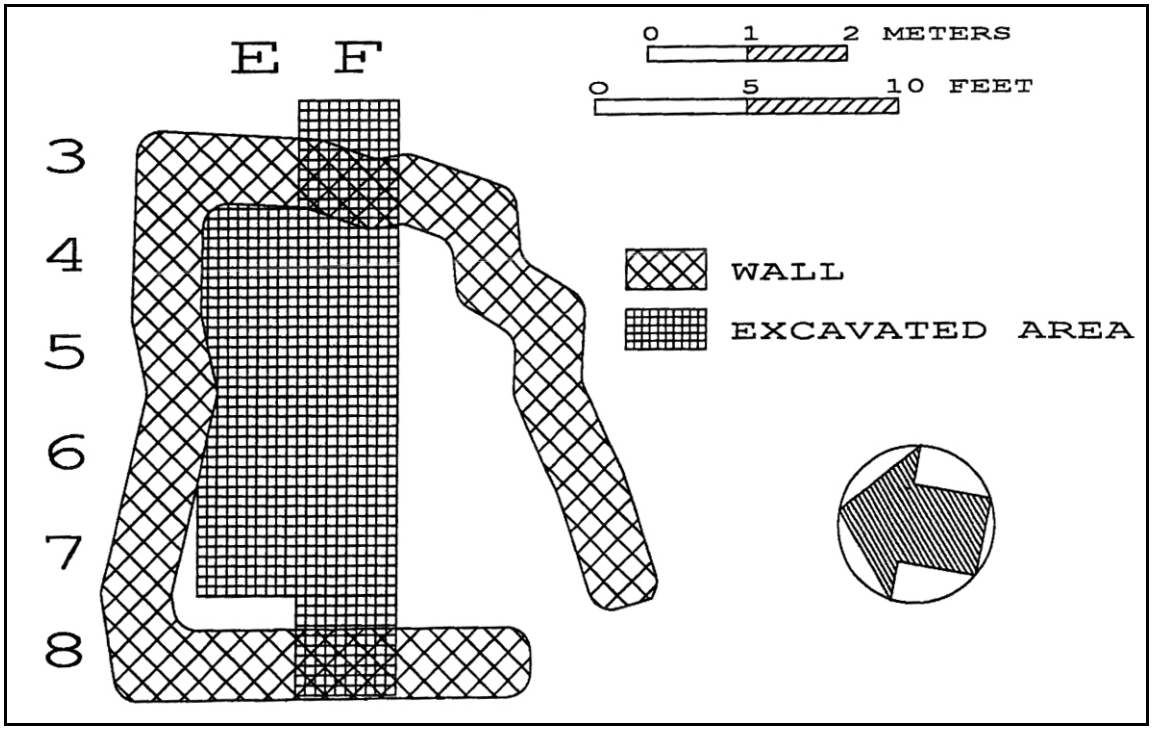

Figure 132. Plan View of Site 10734 (Feature 2), Showing Locations of Excavation Units (from Barrera 1991:28).

A modest amount of midden and artifacts was recovered in excavation at Feature 2. Midden consisted of 13.9 g of shell (*Cypraea caputserpentsis, Cypraea* sp., and non-diagnostic) and 0.7 g of *kukui* (*Aleurites moluccana*) nut shell. Four pieces of volcanic glass debitage were also recovered.

No hydration rind dates were obtained for Feature 2 at Site 10734.

FEATURE 3

Feature 3 is a collapsed wall measuring 11.0 m in length and 2.0 m in width, with a maximum height of 50 cm.

FEATURES 4 THROUGH 12

The remaining features at Site 10734 are all mounds. Excavation was conducted at Feature 10, which yielded a modest amount of midden, traditional artifacts, and a single hydration rind date (see below). Feature 6 was partially dismantled (see below).

Feature 4 is a mound measuring 1.2 by 2.1 m, with a maximum height of 60 cm above the ground surface. Feature 5 is a mound measuring 1.3 by 5.8 m, with a maximum height of 80 cm above the ground surface. Feature 6 is a mound measuring 1.0 by 1.6 m, with a maximum height of 70 cm above the ground surface. Feature 7 is a mound measuring 2.1 by 1.5 m, with a maximum height of 70 cm above the ground surface. Feature 8 is a mound measuring 3.1 by 2.7 m, with a maximum height of 50 cm above the ground surface. Feature 9 is a mound measuring 3.1 by 2.2 m, with a maximum height of 80 cm above the ground surface. Feature 10 is a mound measuring 2.7 by 2.7 m, with a maximum height of 90 cm above the ground surface. Feature 11 is a mound measuring 2.0 by 2.6 m, with a maximum height of 70 cm above the ground surface. Feature 12 is a mound measuring 2.4 by 3.7 m, with a maximum height of 80 cm above the ground surface.

The west half of Feature 6 was dismantled, revealing a structure of angular, basalt cobbles resting directly on the *pāhoehoe* bedrock. The only find from this dismantling was a small amount (3.8 g) of charcoal. This material was not dated.

One trench was excavated through the center of Feature 10 (Figure 133), exposing a soil matrix at the base of the feature. A single hydration rind date of A.D. 1468–1496 was obtained from the lower half of the soil matrix. Angular, basalt cobbles, a modest amount of midden, and several traditional artifacts were mixed into the matrix, which varied from 20 to 65 cm thick. Midden consisted of 159.7 g of *kukui* (*Aleurites moluccana*) nut shell, 7.0 g of charred *kukui* nut shell, 21.2 g of charcoal, one charred seed of *Canavalia* sp. (jackbean, pea Family), and one non-diagnostic (vertebrate) bone specimen. The traditional artifacts consisted of a total of eight pieces of volcanic glass debitage.

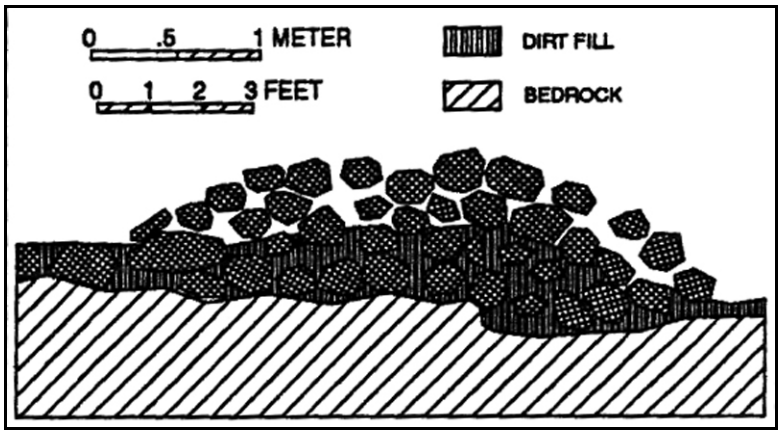

Figure 133. Section View (Trench Excavation) of Site 10734 (Feature 10) (from Barrera 1991:31).

SITE 10735

Site 10735 is located within the Kohanaiki Ahupua‘a at the 790 ft. elevation contour. Vegetation in this area is dominated by *alahe`e* (*Psydrax odorata*), christmasberry (*Schinus terebinthifolius*) and *haole koa* (*Leucaena leucocephala*).

Site 10735 is a permanent habitation site covering an area 15.0 by 40 m. All of these features are located directly *makai* of a complex of caves (Sites 10733, 10742 and 10744). Site 10735 and the nearby caves are situated within the modified landscape of the Kona Field System. No excavation was conducted at this site and no radiocarbon date was obtained.

There are two sinks associated with the cave in Kohanaiki at 800 ft. elevation (Figure 134). The western sink is entirely modified with terracing that levels the surface within the sink. The opening to the west connects to a small chamber (Chamber 1) that has been entirely modified with terracing and cleared areas.

There is a wall that blocks entrance to the chamber (Chamber 2) that connects to the western portion of the sink. The opening is vertical and connects to a constructed ramp in the cave interior. A wall of boulders spans the width of the chamber a meter further west of the ramp. The only potentially cultural debris on the cave floor was *kukui*.

Chamber 1 is most likely a habitation area. Light can reach the chamber interior, and there is no constriction at the entrances to this area. The terraces and cleared areas within the chamber are similar to living areas ubiquitous on the ground surface.

Chamber 2 was lightly used, or used more heavily in a manner that did not leave any artifacts behind. The constricted entrance, built ramp, and wall spanning the chamber indicates that a substantial effort was put into creating a certain kind of space in this chamber. It is conceivable that Chamber 2 represents a refuge space that was under

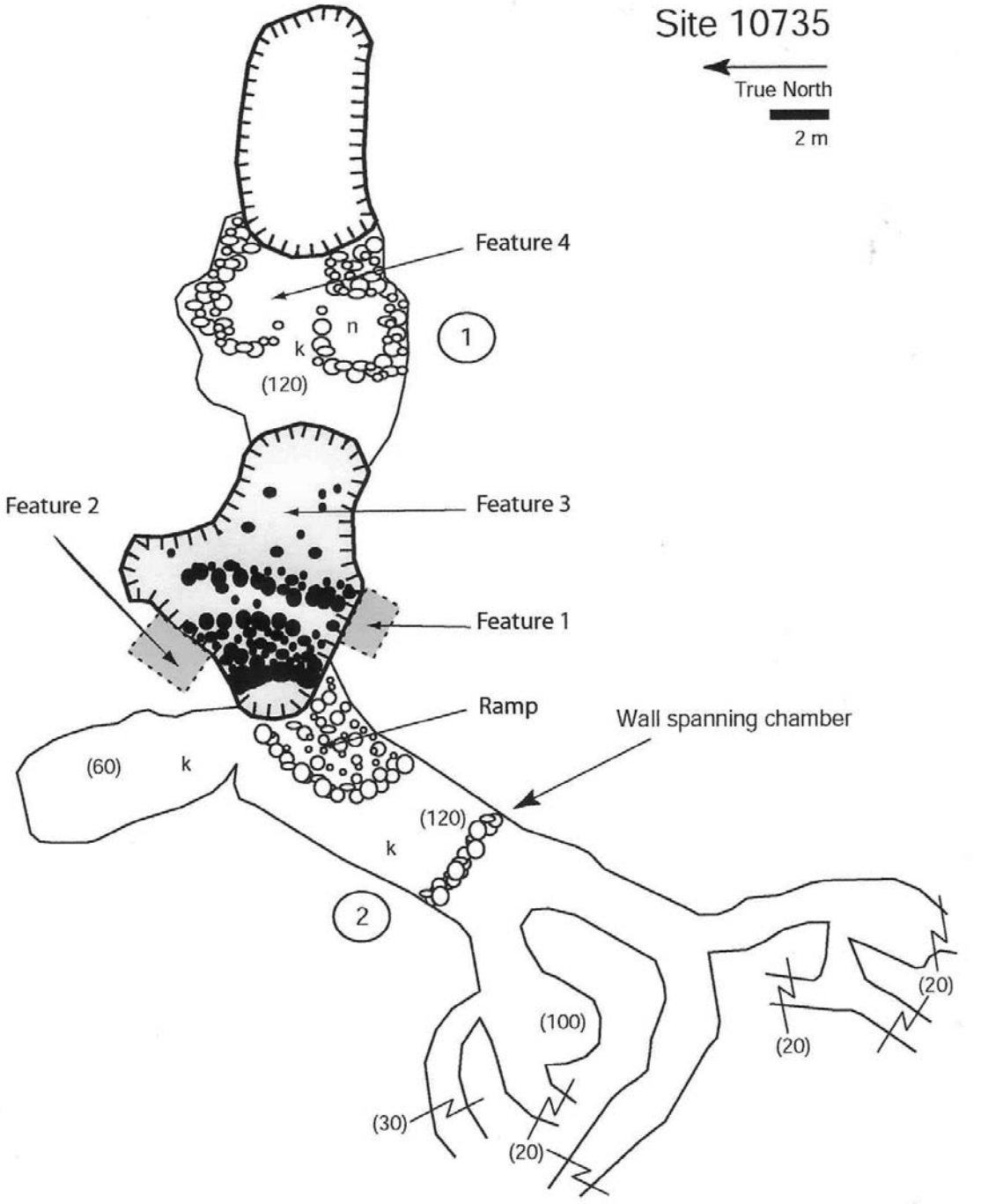

Figure 134. Site 10735 plan view.

the control of, and perhaps designed solely for, the inhabitants, or users, of Chamber 1. In a similar vein, Chamber 2 may have been used to store perishables that were used by people using Chamber 1 in this medium-sized cave.

FEATURE 1

Feature 1 is a platform situated on the ground above the west sink. The north edge of Feature 1 is incorporated into the edge of the sink, while the other three edges are raised above the surrounding ground directly adjacent to the sink. The north edge of the platform is raised 1.5 meters above the floor of the sink while the other edges of the platform have heights ranging from 10 to 20 cm. The surface of the platform is a rough boulder pavement with a depression near the west center portion. The depression measures 40 by 40 cm with a depth of 25 cm.

FEATURE 2

Feature 2 is another platform with one of its edges incorporated into the edge of the west sink. The east edge of the platform is raised 1.5 m above the floor of the sink while the other three sides are raised above the surrounding ground surface by 20 to 45 cm. The surface of the platform is a rough boulder pavement.

FEATURE 3

Feature 3 is a two-tiered platform in the west sink. The upper tier of the platform is a 5.0 by 4.0 m boulder-paved surface, raised 40 cm above the lower tier. The north, east, and south edges of the upper tier are raised above the surrounding ground surface by 35 cm. The lower tier of the platform is 5.0 by 3.0 m with a boulder slab paved surface. The lower tier is raised 25 cm above the surrounding ground surface.

FEATURE 4

Feature 4 is a platform situated in Chamber 1. This platform is 4.0 by 8.0 m with a cobble pavement. This platform is raised 30 to 90 cm. Directly adjacent to the NE corner of this platform is an inaccessible opening to Cave Site 10742.

Although no cultural material was observed on the surface, the features making up this site are interpreted as non-agricultural. These features may be part of a permanent habitation complex, which also includes Site 10744. This evaluation is based upon the size, form and location of the six features.

SITE 10736

This site was recorded and excavated by Barrera (1985, 1991). The information from this work is summarized here.

Site 10736 is located near the center of the project area, downslope (west) from the Walled Fields, 30.0 m south of the old Mauka-Makai Road. The site consists of a single main feature, a dry-stacked enclosure, with several auxiliary features, including several slab-lined cysts, in an area 10.0 by 12.0 m (Figure 135). In all, six features are formally described below, followed by results of excavation, analysis, and interpretation.

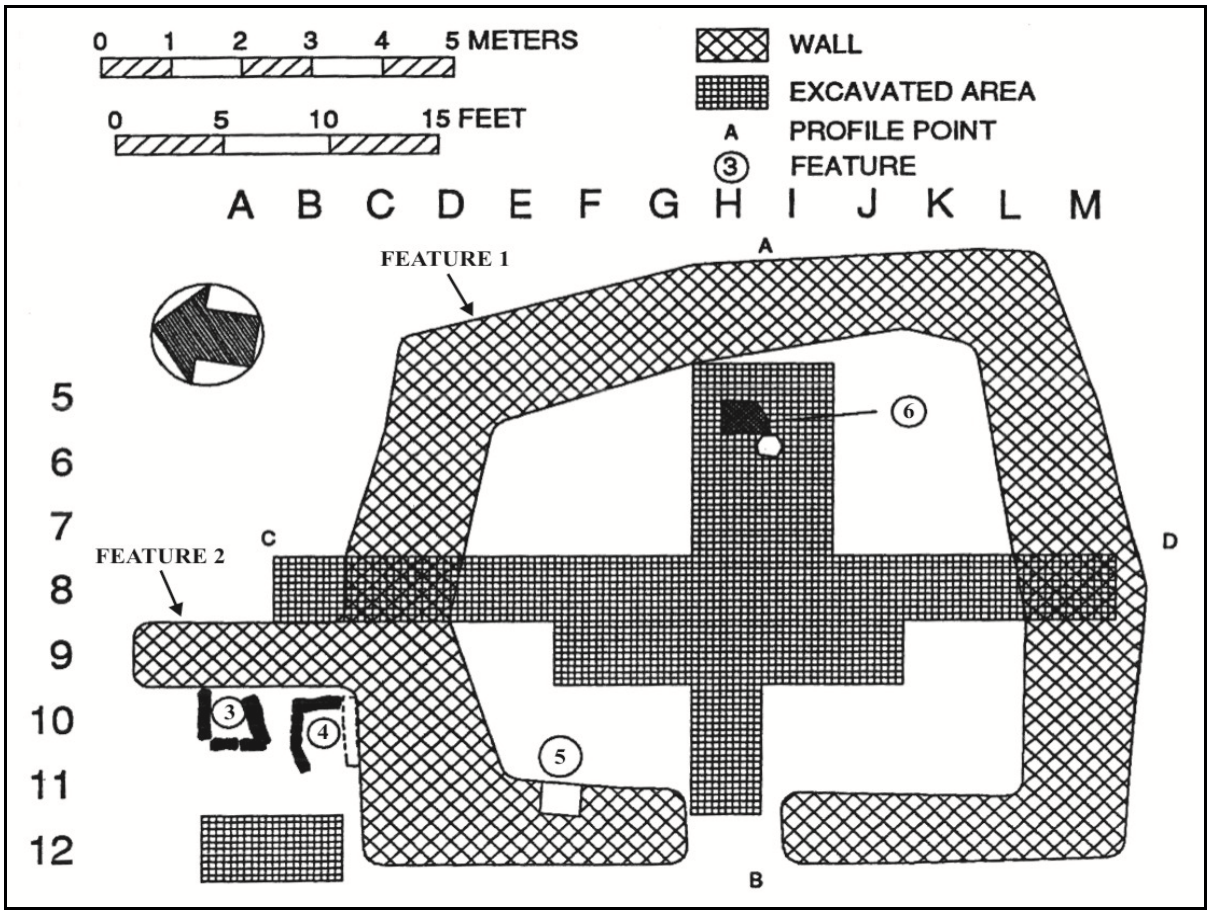

Figure 135. Plan View of Site 10736, Showing Location of Features and Excavation Units (from Barrera 1991:33).

The cysts, in particular, suggest the site is a *heiau.* Excavation yielded a relatively abundant sample of traditional artifacts, including adzes, a bone fishhook blank, and several abraders (both coral and basalt). No historic artifacts were recovered in excavation. Five hydration rind dates were obtained at this site, with calendric date ranges between A.D. 1465–1628, confirming Site 10736's prehistoric use.

FEATURE 1

Feature 1 is a roughly rectangular enclosure measuring (exterior) 9.5 m by 11.3 m, with a maximum height of 1.1 m above the ground surface. Wall thickness varies from 1.0 m near the front (west) entrance to 1.8 m in other portions (see Figure 135). The opening to the enclosure, which faces west-southwest and measures 130 cm in width, had been filled in level with the top of the enclosure wall by the time of Barrera's (1988) survey. Barrera speculated that this had been done to prevent cattle from wandering into the enclosure. Pieces of branch coral were occasionally found in among the cobbles and small boulders comprising the walls. Four of the five total hydration rind dates were obtained from this site, with calendric date ranges between A.D. 1465–1628.

FEATURE 2

Feature 2 is a short (3.1 m) section of wall extending from the northwest side of the enclosure to the north-northwest (see Figure 135). This wall is built in the same construction style (*i.e.*, dry-stacked basalt cobbles and small boulders) as the enclosure. The wall (Feature 2) shelters two slab-lined cysts (Features 3 and 4) located just outside of the main enclosure (Feature 1).

FEATURES 3 AND 4

The slab-lined cysts (Features 3 and 4) are partially free-standing, partially built against the enclosure wall (in the case of Feature 4) and/or the auxiliary wall (in the case of Feature 3) (Figure 136). The cysts, which are constructed of angular, basalt cobbles and small boulders in tabular and blocky shapes, are situated in the lee of the northwest wall of the enclosure (Feature 1). The cysts measure 1.0 by 1.0 by 1.0 m (exterior dimensions), with somewhat smaller interior dimensions. Rock fall from the auxiliary wall (Feature 2) had partially buried the cysts, but both were found to be in excellent condition upon removal of the collapsed stones. One hydration rind date was obtained at this site, with a calendric date range between A.D. 1561–1589.

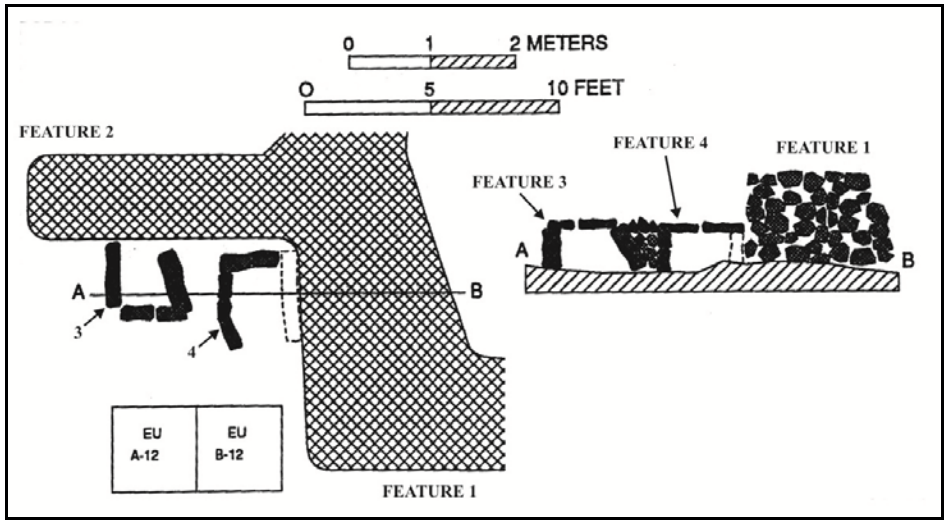

Figure 136. Plan and Section Views of Features 3 and 4, Site 10736 (from Barrera 1991:34).

FEATURE 5

Feature 5 is a cyst built into the interior west wall of the enclosure (see Figure 135). The hole, which is located in the lower portion of the wall (a "cubby hole" of sorts), is roughly square and measures 60 cm on each side. Excavation (see below) demonstrated that Feature 5 was built at the time of the construction of the enclosure.

FEATURE 6

Feature 6 is a natural concavity formed by a bubble in the *pāhoehoe* bedrock "floor" in the eastern interior of the enclosure. A large *pāhoehoe* slab located next to the concavity may have once served as its cover. The concavity is roughly 35 cm in diameter.

SUBSURFACE TESTING

A total of 27 m^2 was excavated in two areas of Site 10736: (1) twenty-five 1.0 by 1.0 m excavation units within the enclosure, including several that partially or completely breached the enclosure walls, and (2) two 1.0 by 1.0 m excavation units outside the enclosure, near the slab-lined cysts designated Features 3 and 4. Note that Feature 6, the concavity located in the floor of the enclosure, was discovered in the course of the excavation described above (Figure 137). In addition to these 25 excavation units, the other cysts (Features 4 and 6) were also excavated—*i.e.,* essentially cleaned of sediment and debris—in a single stratigraphic unit ("feature fill").

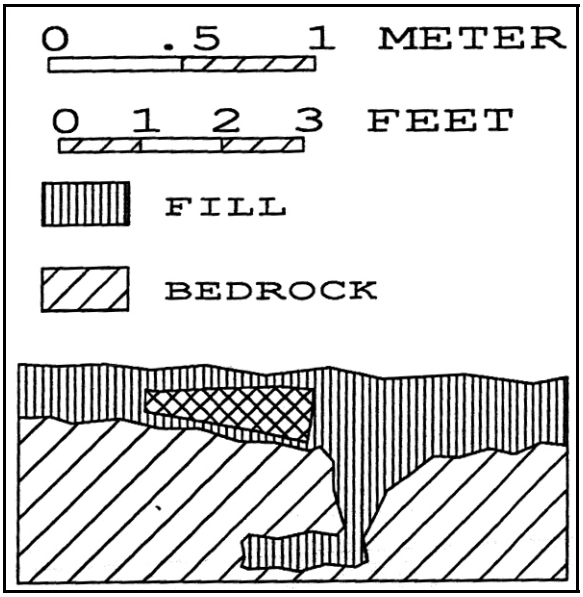

Figure 137. Section View of Excavation Units at Feature 6, Site 10736 (from Barrera 1991:35).

The excavation units revealed a single layer of angular, basalt pebbles and cobbles in a soil-sedimentary matrix, varying in thickness from 5–30 cm (averaging 20–25 cm), resting directly on the *pāhoehoe* bedrock (Figure 138). Deeper pockets of soil-sediment (up to 60 cmbs) were occasionally encountered. Barrera's (1988) stratigraphic profiles demonstrate the enclosure was constructed on top of this cultural layer, rather than directly on the bedrock (Figure 139). Thus, Site 10736 was built upon a prepared surface of local, angular stone. Pieces of branch coral were found in among the cobbles and small boulders comprising this prepared surface. Most of the artifacts were recovered in the upper 20 cm, but some were recovered as deeply as 40 to 50 cmbs, suggesting that the 'prepared surface' was a relatively porous sedimentary layer (a "fill"), rather than a pavement.

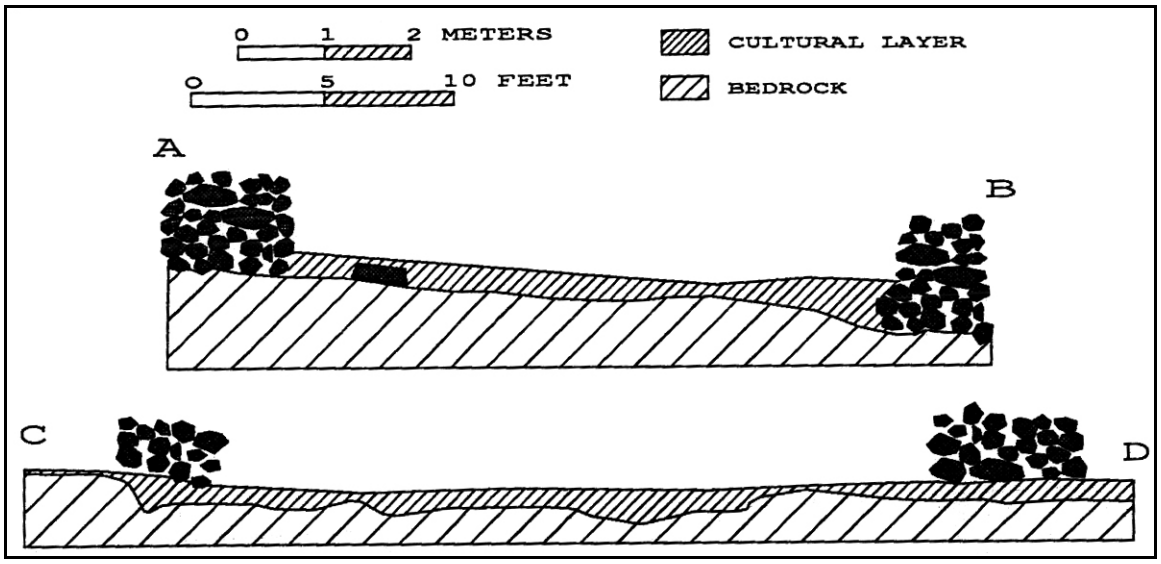

Figure 138. Section Views of Excavation Units Within the Enclosure (Feature 1), Site 10736 (from Barrera 1991:36).

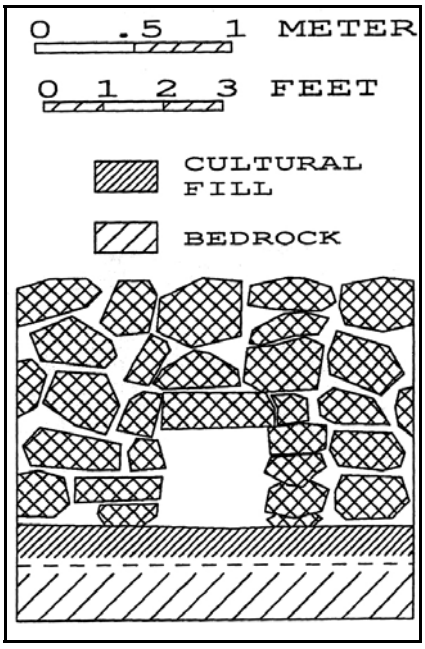

Figure 139. Section View of Feature 4, Site 10736 (from Barrera 1991:35).

ARTIFACTS

Table 46 summarizes the artifacts recovered in excavation at Site 10736. As noted above, all recovered finds were traditional tools. No historic finds were recovered in excavation. A total of 87 traditional artifacts were found; most of these (50 of 87, or 57%) were pieces of volcanic glass debitage. Artifacts were recovered in excavation units within the enclosure and outside of the enclosure; artifacts were recovered from the feature fill of both the slab-lined cysts (Features 3 and 4); no artifacts were recovered

from Feature 5 (the "cubby hole" built into the interior wall of the enclosure) or Feature 6 (the natural concavity in the floor of the enclosure).

In addition to the volcanic glass debitage, finds included: basalt adze fragments (4), basalt adze-manufacturing flakes (13), generic basalt flakes (6), basalt manuports (7), a bone fishhook blank, coral abraders (4), and basalt abraders (2). Also, a large amount (7,942.1 g) of fragmentary branch coral—part of the prepared surface at Site 10736—was also recovered in excavation.

These data show that traditional finds from excavation units within and outside of the enclosure were mostly recovered in the upper 20 cmbs; only 11 artifacts (of the total 78 in excavation units), or 14%< were recovered below 20 cmbs. Adze fragments and adze manufacturing debris (flakes) were only recovered from within the enclosure. The cysts contained abraders (both coral and basalt), manuports, and debitage (volcanic glass only), but no adze fragments or adze manufacturing debris.

MIDDEN

Midden recovered in excavation at Site 10736 included Invertebrates (mostly marine shell), Vertebrates (including several human teeth and phalanges), and Floral Remains (mostly charcoal with some *kukui* net shell). As with the artifacts, most of the midden was recovered from the upper 20 cmbs.

A total of 789.9 grams of shell was recovered in excavation; most of the shell (771.0 g, or 98%) represents marine species (27.9 g are *Theodoxus vespertinus,* a brackish-water species). Including the latter, at least 11 shell taxa are represented in the excavated sample at Site 10736. A small amount of Echinoidea (59.8 g) was also recovered. Invertebrates were recovered both within and outside of the enclosure, as well as from the feature fill of both the slab-lined cysts (Features 3 and 4); no invertebrates were recovered from Feature 5 (the 'cubby hole' built into the interior wall of the enclosure) or Feature 6 (the natural concavity in the floor of the enclosure).

A total of 0.3 g of taxonomically-indeterminate fish bones and 32 (non-fish) bone specimens was recovered in excavation. Taxonomically-diagnostic (non-fish) bones include: human (*Homo sapiens sapiens*) teeth and phalanges (14 specimens), pig (*Sus scrofa*) (4 specimens), and chicken (*Gallus gallus*) (1 specimen). Taxonomically-indeterminate bones include: bird (2 specimens), mammal (3 specimens), and vertebrate (8 specimens). With one exception (a single pig bone), all of the faunal remains were recovered in excavation units *within* the enclosure. No faunal remains were recovered from the cysts (Features 3 through 6).

Table 46. Site 10736, Traditional Artifacts from Previous Excavation (Barrera 1998).

Feature #	Provenience	Depth (cmbs)*	N	Description	Raw Material
1	Various EUs within enclosure	0-10	11	Debitage	Volcanic glass
1	Various EUs within enclosure	10-20	19	Debitage	Volcanic glass
1	Various EUs within enclosure	20-30	6	Debitage	Volcanic glass
1	H-7	0-10	1	Adze-manufacturing flake	Basalt
1	H-7	0-10	2	Flake	Basalt
1	H-8	0-10	2	Adze-manufacturing flake	Basalt
1	I-8	0-10	1	Adze fragment	Basalt
1	I-9	0-10	1	Adze-manufacturing flake	Basalt
1	J-9	0-10	2	Adze-manufacturing flake	Basalt
1	J-9	0-10	2	Flake	Basalt
1	L-8	0-10	1	Manuport	Basalt
1	E-8	0-20	1	Abrader	Coral
1	E-8	0-20	1	Manuport	Basalt
1	F-8	10-20	1	Adze-manufacturing flake	Basalt
1	G-8	10-20	1	Adze-manufacturing flake	Basalt
1	G-8	10-20	1	Flake	Basalt
1	H-10	10-20	1	Manuport	Basalt
1	H-5	10-20	1	Flake	Basalt
1	H-6	10-20	1	Adze fragment	Basalt
1	H-6	10-20	1	Adze-manufacturing flake	Basalt
1	H-6	10-20	1	Manuport	Basalt
1	H-7	10-20	1	Adze fragment	Basalt
1	H-7	10-20	1	Adze-manufacturing flake	Basalt
1	I-8	10-20	1	Adze-manufacturing flake	Basalt
1	I-6	20-30	1	Fishhook blank	Bone
1	I-7	20-30	1	Adze fragment	Basalt
1	I-8	20-30	1	Adze-manufacturing flake	Basalt
1	J-8	20-30	1	Adze-manufacturing flake	Basalt
1	B-8	40-50	1	Abrader	Coral
1	North wall	Fill	1	Manuport	Basalt
3	Feature fill	n.a.	2	Debitage	Volcanic glass
3	Feature fill	n.a.	1	Abrader	Coral
3	Feature fill	n.a.	2	Manuport	Basalt
4	Feature fill	n.a.	1	Debitage	Volcanic glass
4	Feature fill	n.a.	2	Abrader	Basalt
Outside of enclosure	EU A-12 and B-12	0-10	7	Debitage	Volcanic glass
Outside of enclosure	EU A-12 and B-12	0-10	1	Abrader	Coral
Outside of enclosure	EU A-12 and B-12	10-20	1	Debitage	Volcanic glass
Outside of enclosure	EU A-12 and B-12	20-30	1	Debitage	Volcanic glass
Outside of enclosure	EU A-12 and B-12	Wall collapse	2	Debitage	Volcanic glass

* n.a. = not applicable; depth was not recorded, since the entire contents of the feature were excavated in one unit.

One possible explanation for the presence of the human bones, and for the specific skeletal parts represented (*i.e.,* teeth, fingers, and toes), is that they represent items inadvertently left behind when other skeletal material was removed. Certainly, there is no evidence of formal burials at Site 10736, but some human remains, perhaps

stored for their *mana* (*i.e.*, supernatural power), may have originally been present. As stated above, none of the human remains came from the cysts; all were derived from fill comprising the floor of the enclosure.

Finally, floral remains consisted of a large amount of charcoal (2,014.4 g), and more modest amounts of *kukui* (*Aleurites moluccana*) nut shell (61.8 g) and burned *kukui* nut shell (19.8 g). *Charcoal* and *kukui* nut shells were found in all excavated units and in Features 3 and 4 (the slab-lined cysts); charcoal only was recovered in Feature 5 (the 'cubby hole' built into the interior wall of the enclosure); no charcoal or *kukui* was recovered in Feature 6 (the natural concavity in the floor of the enclosure). This site is interpreted as a *heiau* and burial.

SITE 10737

This section deals with a historic permanent habitation documented by Barrera (1988, 1991). The results of his work are summarized here.

Site 10737 may also have been utilized in earlier (*i.e.,* traditional) times, and may therefore represent a multi-component site. As no materials from this site have been dated, additional work involving both stratigraphic observations and chronometric dating will ultimately be necessary to resolve this question.

Site 10737 is located towards the center of the project area, downslope (west) from the Walled Fields, 50.0 m north of the old Mauka-Makai road. The site consists of five main features, including a dry-stacked, rectangular enclosure, within an area of 17.0 by 30.0 m (Figure140). A total of 35 m^2 was excavated within Site 10737. Excavation yielded historic artifacts only. No chronometric dates (*e.g.,* radiocarbon) were obtained at this site.

FEATURE 1

Feature 1 is a rectangular enclosure measuring (exterior) 6.4 m (west-southwest axis) by 9.5 m (north-northwest axis), with a maximum height of 1.6 m. The walls of the enclosure are 1.0 m wide. The opening to the enclosure, located on its west side, is 1.0 m wide.

FEATURE 2

Feature 2 is a slab-lined paving leading to the opening of the enclosure. The paving is roughly L-shaped, with maximum (exterior) dimensions of the two "arms" of the paving of 5.0 by 1.0 m, and 4.5 by 1.5.

FEATURE 3

Feature 3 is a low retaining wall constituting the base of the terraced area in front of the enclosure. The wall extends 17.0 m against a bedrock outcrop, with a maximum height of 90 cm above the ground surface. The terraced area, located to the north and east of Feature 3, was partially filled in with pebbles and cobbles.

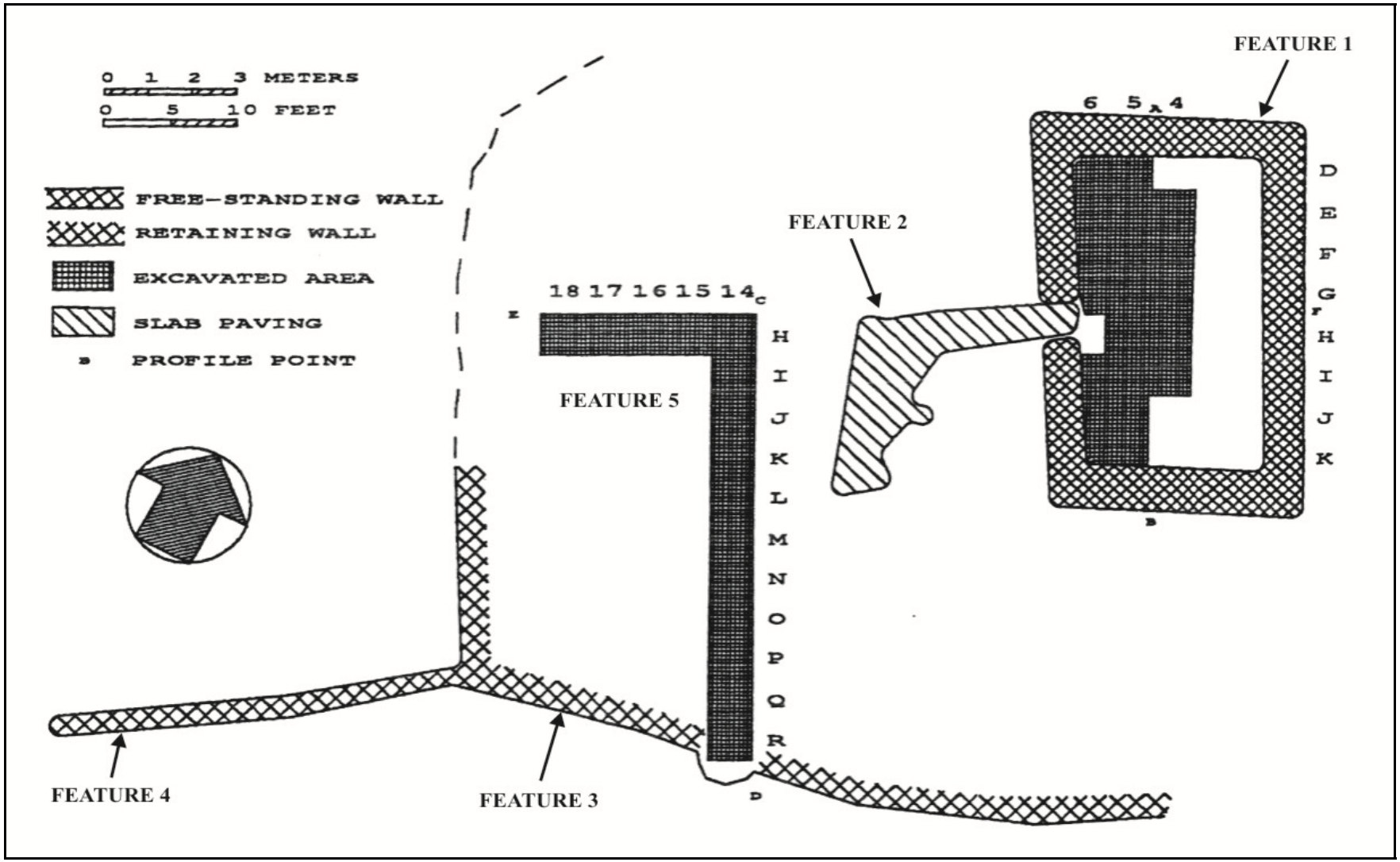

Figure 140. Plan View of Site 10737, Showing Location of Features and Excavations Units (from Barrera 1991:37).

FEATURE 4

Feature 4 is a free-standing wall measuring 8.80 m in length by 0.75 m in width, with a maximum height of 0.75 m above the ground surface. This wall links up with the retaining wall designated Feature 3.

FEATURE 5

Feature 5 is the terraced area in front of the opening of the enclosure (to its west-southwest). This terraced area was built up from the thin soil overlying the *pāhoehoe* bedrock and/or from the bedrock, itself (in some areas), with basalt pebbles and cobbles (see Figure 140).Three stratigraphic layers, designated Layers I through III, were identified in excavation (Figure 141). The uppermost, Layer I, was only present in the interior of the enclosure, and therefore represents an anthropogenic (*i.e.,* human-introduced) deposit. It consisted of 20–25 cm of loose, angular basalt pebbles. Layer II, located directly beneath the pebble layer designated Layer I, was located both within the enclosure and in the terraced area to the west-southwest. It consisted of 20 to 40 cm of angular basalt pebbles and cobbles.

This is also an anthropogenic layer, as excavation revealed the entire site area has been built up by the addition of Layer II. The base of the walls of the enclosure was built on this prepared surface. Finally, Layer III, immediately beneath Layer II, was located only in the terraced area. It was the same as the overlying layer, with the addition of a soil-sedimentary matrix. Layer III, which is probably the natural soil, rested directly on the *pāhoehoe* bedrock.

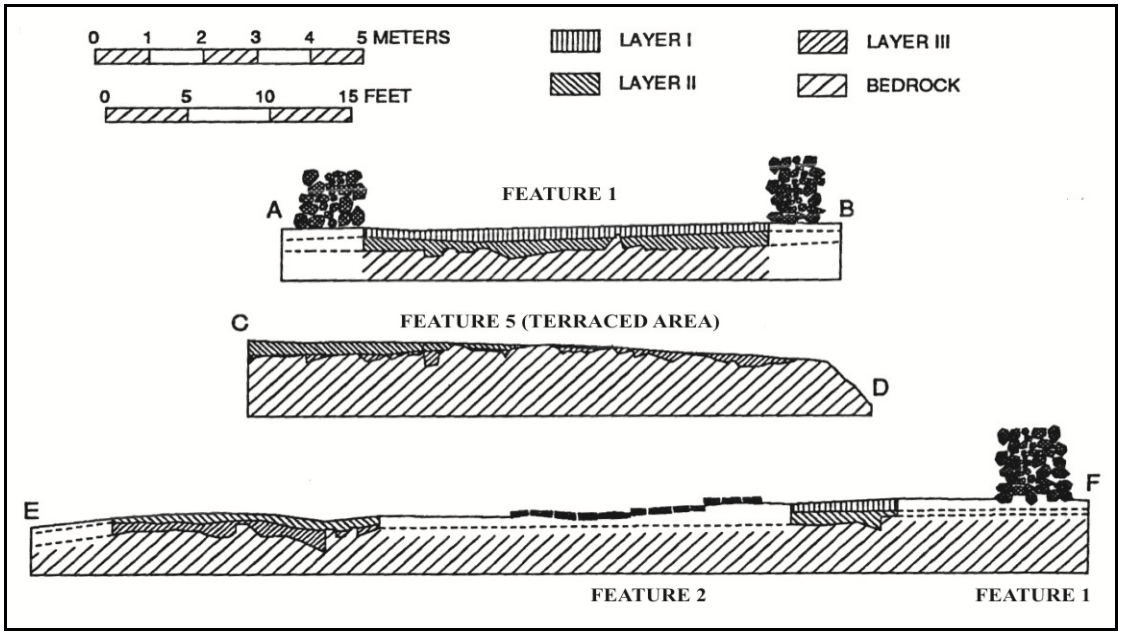

Figure 141. Section Views of Site 10737 (from Barrera 1991:38).

A total of 33 historic artifacts were recovered in excavation (Table 47). No traditional artifacts were recovered. The majority (22 of 33, or 67%) of the finds were recovered within the interior of the enclosure (*i.e.,* Feature 1).

Invertebrate remains consisted of 106.2 g of marine shell, including a single cowrie (weighing 50.6 g), representing at least four distinct taxa. No vertebrate remains were recovered in excavation. Floral remains consisted of charcoal (63.4 g) and *kukui* (*Aleurites moluccana*) (1,119.7 g). The relatively large amount of *kukui* was interpreted by Barrera (1988, 1991) as a natural occurrence, rather than a cultural introduction (*i.e.,* as "midden") due to the large number of extant *kukui* trees and the fact that these finds predominantly derived from the upper 5 cm of the excavations.

Table 47. Site 10737 Historic Artifacts.

Feature #	Excavation Unit #	Layer	Description
1	D-5	I	1 Glass button
1	E-4	I	1 Metal button
1	E-4	I	1 Glass ornament
1	E-5	II (0-10 cmbs)	2 Metal fragments; 2 nails
1	E-6	I	2 Metal fastener
1	F-5	I	1 Glass button
1	F-5	II (0-10 cmbs)	1 Metal button
1	F-6	I	1 Glass button, 1 metal button, 2 glass ornaments
1	G-5	I	1 Metal button
1	G-6	I	1 Glass button, 1 screw, 1 finger ring, 1 bottle glass sherd
1	H-4	II (0-10 cmbs)	1 Ceramic button
1	H-5	I	1 Glass button
5	H-14	II (30-Bedrock)	1 Metal fragment
5	L-14	II (30-Bedrock)	1 Metal button
5	Q-14	I	1 Metal fragment
5	General terrace area	Surface	3 Bottle sherds, 5 ceramic sherds

cmbs = cm below the ground surface

SITE 10738

This site was recorded and excavated by Barrera (1988, 1991). The information from his work is summaried here.

Site 10738 consists of three features located approximately 50 m northwest (and downslope) of the habitation site complex designated Site 50-10-27-10734 (see Figure 42, Site 10693).

Feature 1 is a platform measuring 3.0 by 4.0 m, with a maximum height of 90 cm above the ground surface. Feature 2, located 4.0 m west-northwest of Feature 1, is a mound measuring 2.2 by 3.0 m, with a maximum height of 50 cm above the ground surface. Feature 3, located 5.0 m east of Feature 1, is a mound measuring 1.2 by 2.1 m, with a maximum height of 60 cm above the ground surface. All three features are

constructed of dry-stacked, angular, basalt cobbles and small boulders resting directly on the *pāhoehoe* bedrock.

Three trenches were excavated at Site 10738 (Figure 142). Each of the three features was bisected with a trench, exposing the rock architecture of each feature (but no soil horizons, since the features rest directly on bedrock).

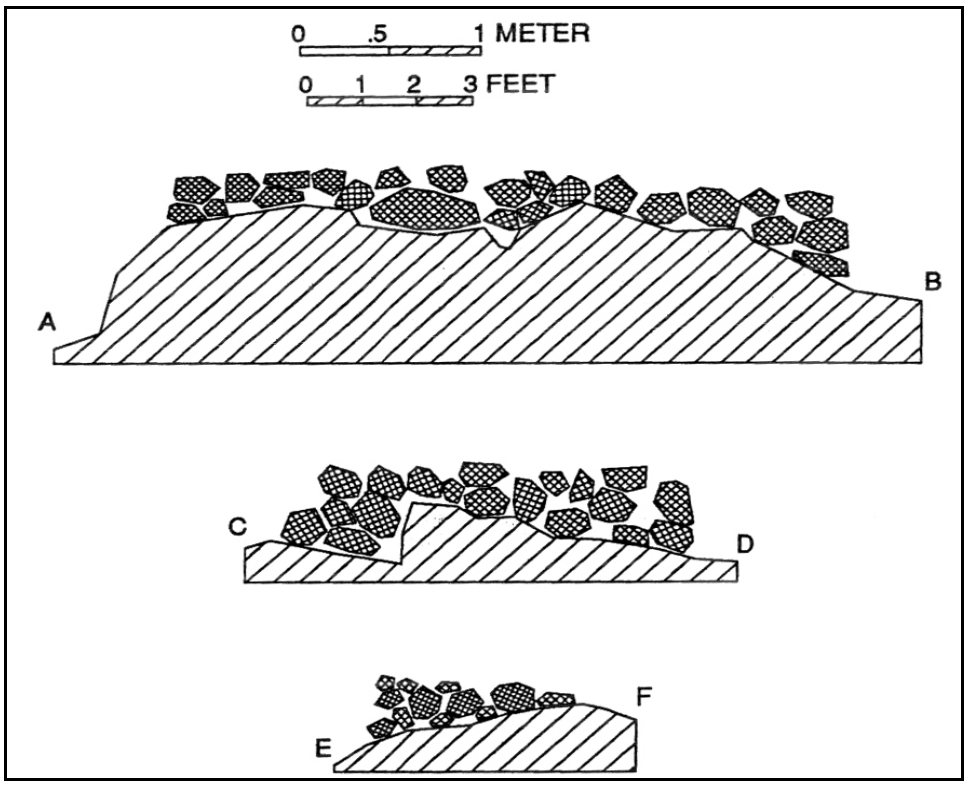

Figure 142. Section Views (Trench Excavations) of Site 10738 (Features 1, 2, and 3) (from Barrera 1991:40).

No artifacts were recovered in the three trenches. Small amounts of charcoal (8.5 g) and *kukui* (*Aleurites moluccana*) nut shell (0.5 g) were recovered from the mound designated Feature 2.

No hydration rind dates were obtained for Site 10738. This site is interpreted as a pre-Contact agricultural site.

A *konane* board on a portable rock is imbedded in the wall to the north of the Site 10738 features (Figure 142a) at UTM 186862N, 2181382E (see Figure 3). This *papamū* is a rock that is 69 by 55 centimeters and 16 centimeters thick. It had been situated within the wall construction stones, but has tumbled out partially obscuring the *konane* portion. It appears that the *konane* grid is 10 by 10.

Figure 142a. Papamū.

SITE 10740

This site was recorded and excavated by Barrera (1991). The information from this work is summarized here. Site 10740 is a small cave in Kohanaiki Ahupua‘a at 1040 ft. elevation. There are two entrances to the cave (Figure 143). The western edge of the western entrance has been built up with a wall that partially hides the entrance. The eastern entrance is smaller. The floor is covered with soil, and non-human bone was recovered from the soil surface during previous investigations (Barrera 1991:40).

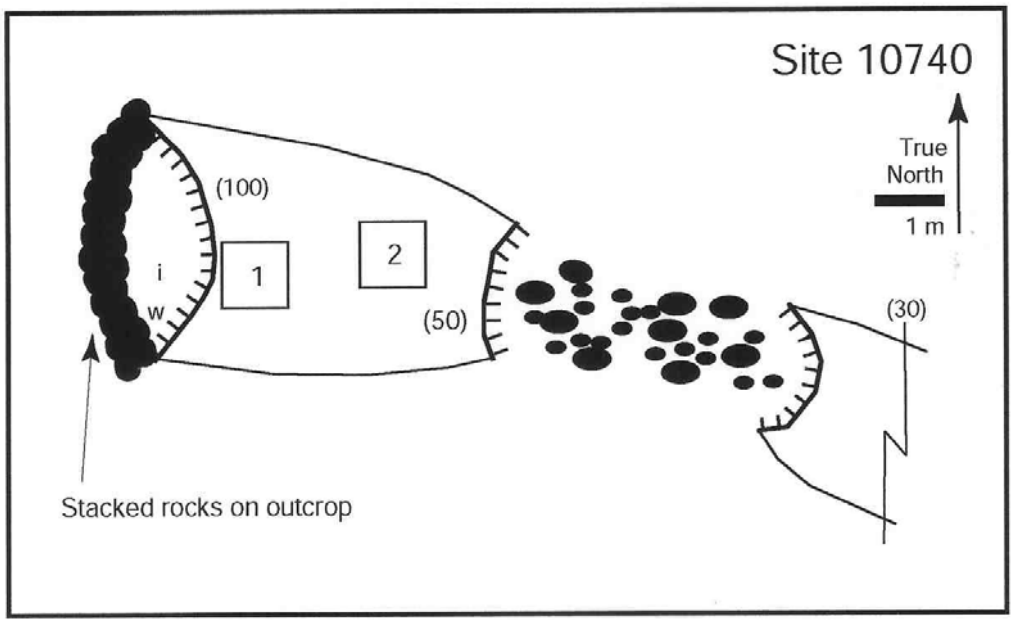

Figure143. Site 10740, plan view.

Two 1.0 by 1.0 m test units were previously excavated in the cave (Barrera 1991:40). A variety of historic and potentially traditional items were recovered (Table 48). Three hydration rind dates were generated from materials collected from Unit 1 (all A.D. dates): 1696 to 1722; 1698 to 1720, and; 1728 to 1742.

Table 48. Site 10740 Material (from Barrera 1991).

Material	N	W (g)
Basaltic glass	40	
Basalt adze piece	1	
Basalt flake	1	
Basalt manuports	2	
Marine shell**		
Shell midden		123.6
Theodozus vespertinus		6.2
Unworked coral		11.4
Other		
Charcoal		195.4
Charred *Aleurites moluccana*		17.3
Historic		
Bottle glass sherds	13	
Ceramic sherds	2	
Chert core	1	
Non-human bone		
Galliform	1	
Medium bird	1	
Sus scrofa	51	
Medium artiodactyls	2	
Large mammal	2	
Medium vertebrate	28	
Felis catus	10	
Human *iwi*		
Human *iwi*	11	
Possible human *iwi*	7	

* Material remains were reported for both units combined.

The significance of these material remains is unclear due to their uncertain context. The bones are listed in the report (Barrera 1991:40) from identifications provided by faunal osteologist Dr. Alan Ziegler, but it is difficult to understand the provenience of the material remains. Barrera writes, "Exceptionally large quantities of bone were found, most of it from the surface" (1991:40), but does not further analyze.

Based on the types of bone found, it is reasonable to suggest that the bird, cat, and pig bones were recovered from the surface, and may not be reflective of prehistoric activity in the cave. The human *iwi* are: 5 teeth, 5 digits, 1 talus. Eight of these were from the top 10 cm, and 3 were from 10 to 20 cmbs. There was only one layer in the 30 cm deep sediment.

Based on the single shallow soil layer, presence of cat, bird, and pig bone, and the kinds of human *iwi* present (small), it is entirely possible that this set of data represents a

place where a cat or some cats lived. The other bones in the deposit would then represent the remains scrounged from elsewhere. This proposition is bolstered by considering the small size yet easy access to this cave. It would be very rare to find a burial placed in a cave that is so exposed. The basalt material itself was worked in the early 1700s, but it is unclear whether that material was deposited at that time in this place. It is, however, more likely that tool manufacture took place in this small exposed cave, especially because there is a notable quantity of basalt in the assemblage, and that the non-human bone and human *iwi* were brought into the cave by non-human agents several centuries after that. The presence of historic items confuses the interpretation somewhat, but it is likely that the historic items represent their discard area, and not their primary use area.

A more fitting explanation for this collection of cultural material within this particular cave involves multiple activities over several centuries. The cave was used during prehistory with activities that employed basalt tools and burning (perhaps food processing and cooking). The cave may have been used during prehistory for body de-fleshing to ready the deceased for burial elsewhere. The few small bones found in the units might represent *iwi* that was not collected when the body was removed. After European contact imported materials such as glass and ceramics were used in the nearby homesteads, and cats were brought to the area. Debris may have been tossed into the cave during historic times.

SITE 10741

The portion of the Kaholi Homestead that is in the project area represents the *makai* half of that homestead (Figure 144 Kohanaiki Homestead Features). There are two homestead boundary wall features and four mound features in the Kaholi Homestead (Table 49). The Kaholi house was situated in the *mauka* half of the homestead and the current landowner mentioned that he remembers a cistern in that lot. The four mound features in the *makai* half of the Kaholi Homestead probably represent the remains of a garden area for that homestead. None of the features in this homestead were test excavated, nor was any datable material collected.

Table 49. Site 10741, Inventory of features in Kaholi Homestead.

Feature	Type	Size (in meters)	Previous #
1	Agricultural mound	3.0 diam. x 0.6 high	10741
2	Agricultural mound	3.0 diam. x 0.5 high	10742
3	Agricultural mound	3.0 diam. x 0.4 high	10743
4	Agricultural mound	1.5 diam. x 0.4 high	10744
5	Homestead boundary wall	1.0 wide x 0.4 high	15540 F.AF
6	Homestead boundary wall	1.0 wide x 0.5 high	No #

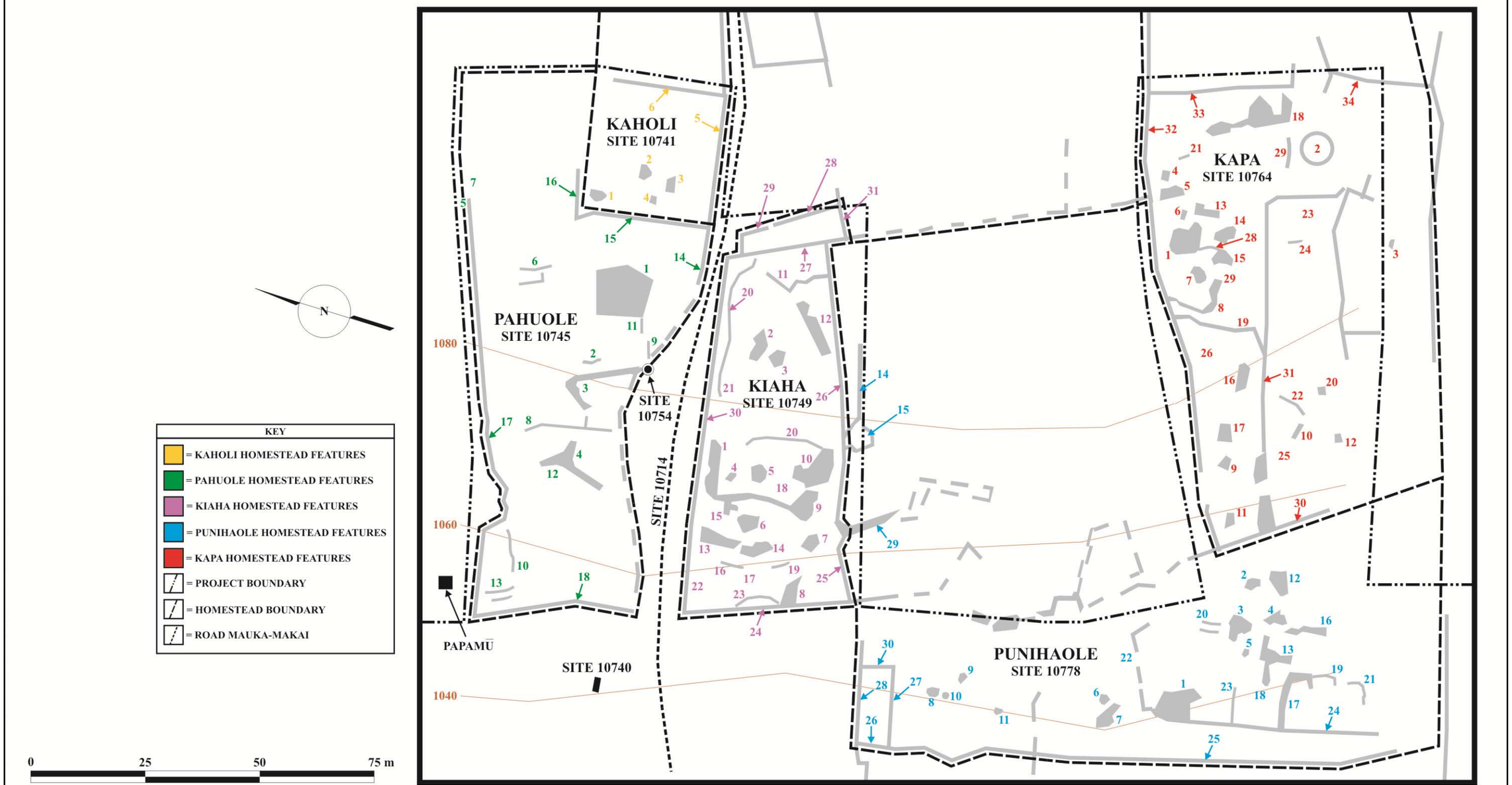

Figure 144. Plan view map of project area historic homesteads (adapted from Barrera 1991:6).

SITE 10742

Site 10742 is in Kohanaiki Ahupua‘a at 800 ft. elevation. There are three sinks (one with a natural arch over it) that link together (Figure 145). The principal activity area where cultural material and modification is most noticeable—is along the westernmost opening. A coral abrader, charred material, *opihi*, and Echinoidea (urchin species) are present among the modified roof fall. An ashy look to the soil may represent a burned area.

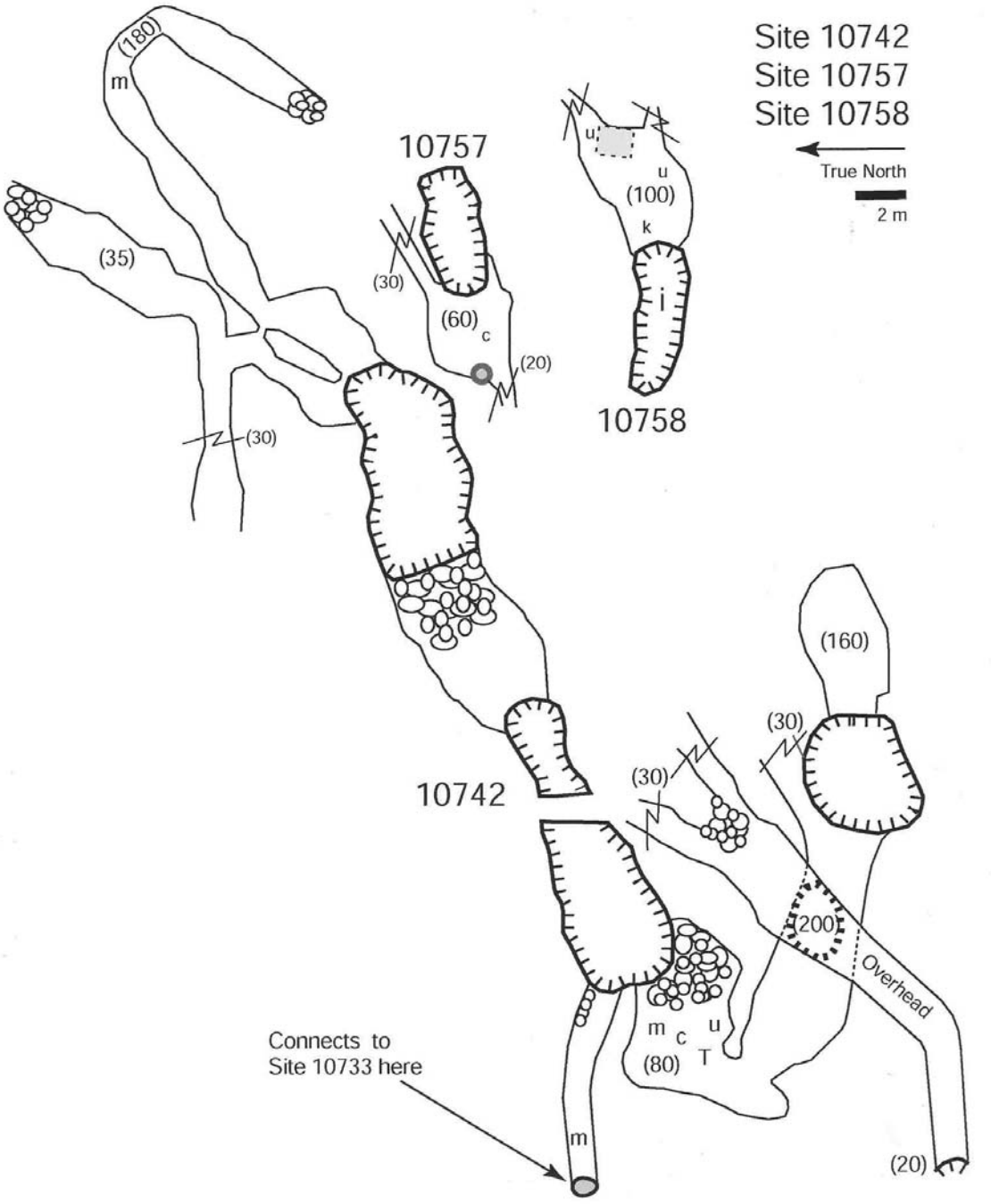

Figure 145. Site 10742 plan view.

The remainder of the cave has little indication of use. A small chamber connects Site 10742 to cave Site 10733, but this chamber is too small for human passage.

The material remains and configuration of the cave (lacking constricted entrance, and rock stacking) suggests that the western portion of Site 10742 was probably used for habitation, or was a preferred working area. This site is interpreted as a permanent habitation and functionally associated with Sites 10757 and 10758.

No excavation was conducted at this site, nor was any material removed for dating analysis.

SITE 10743

Site 10743 is a temporary habitation cave in Kohanaiki Ahupua‘a. Both ends of the sink are modified; an entrance to another cave is on the west side of the sink (Figure 146). This constricted entrance connects to a passageway where rocks have been moved to the sides of the cave chamber. There is a skylight near the distal end of the cave where two passages are blocked by roof fall. An additional cultural indicator, other than the modification, is *kukui* found on the cave floor. These are probable cultural remnants, as no sign of present or former *kukui* trees are nearby on the surface.

This small cave has a constricted entrance. The most compelling item associated with this cave is a set of petroglyphs along the northern edge of the sink. The precise outlines of the petroglyphs are not clear, but at least one of the images is an anthropomorph (Figure 147).

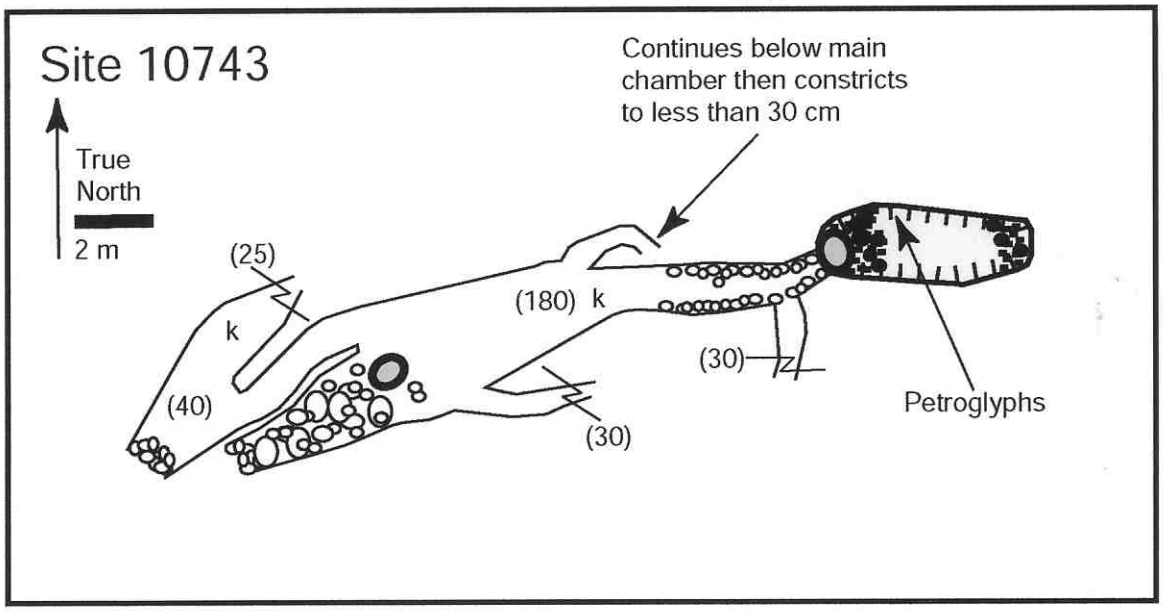

Figure 146. Site 10743 plan view.

Figure 147. Site 10743 petroglyph.

SITE 10744

Site 10744 is a temporary habitation cave in Kohanaiki Ahupua‘a (Figure 147a). A paving of cobbles (2.2 by 1.8 m) is situated near the double opening. Charred material, *kukui*, and marine shell are present in low densities throughout the cave. The paved area near the opening, and the otherwise sparse cultural material suggest that this cave was used for shelter, probably repeatedly, but not permanently.

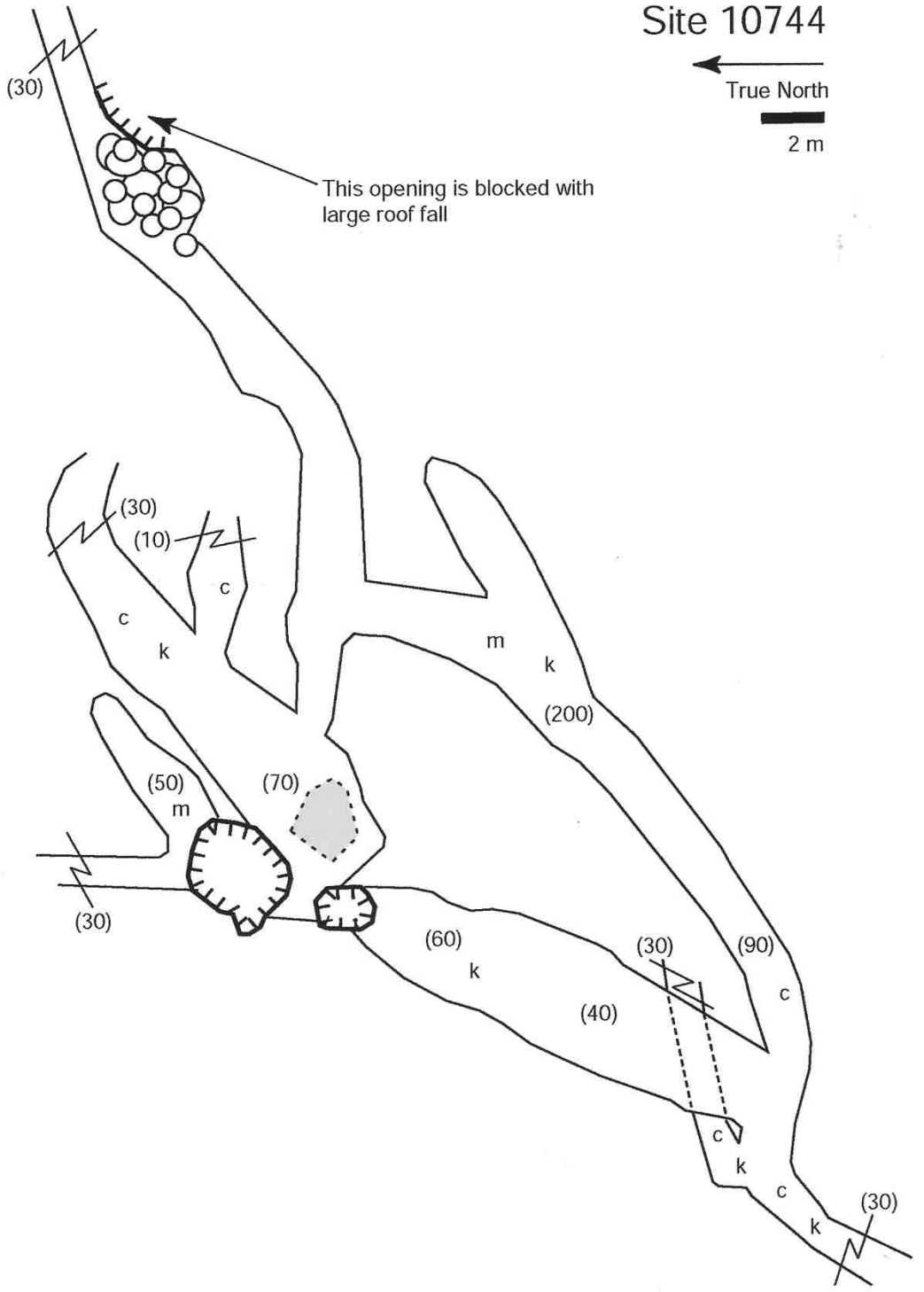

Figure 147a. Site 10744 plan view.

SITE 10745

There are 18 features within the historic Pahuole Homestead (Table 50). The main feature is a large platform in the central part of the homestead, that corresponds to the house on the early map (see Figure 144). Items observed on the ground, but not collected include a ceramic bowl and marine shell.

Table 50. Site 10745 Inventory of features in the Pahuole Homestead.

Feature	Type	Size	Previous #
1	Habitation platform	11.1 x 11.8	10745
2	Internal division wall	0.5 wide x 0.5 high	10746
3	Internal division wall	1.9 wide x 0.6 high	10747
4	Internal division wall	2.2 wide x 1.0 high	10748
5	Wooden outhouse	Tumbled, wood	SCS 1
6	Agricultural terrace	1.2 wide x 10.0 long	SCS 2
7	Agricultural terrace	2.0 wide x 8.0 long	SCS 3
8	Internal division wall	1.0 wide x 0.3 high	SCS 4
9	Agricultural terrace	0.5 wide x 0.3 high	SCS 5
10	*Kuaiwi*	1.9 wide x 0.3 high	SCS 7
11	Agricultural mound	2.0 diam x 0.4 high	SCS 8
12	Drilled post hole	0.3 diam x 0.3 deep	SCS 9
13	Agricultural terrace	1.5 wide x 0.5 high	SCS 10
14	Homestead boundary wall	1.0 wide x 1.0 high	15540 F. AB
15	Homestead boundary wall	1.0 wide x 1.2 high	15540 F. AE
16	Homestead boundary wall	1.0 wide x 1.2 high	15540 F. AG
17	Homestead boundary wall	0.8 wide x 1.0 high	15540 F. AH
18	Homestead boundary wall	0.8 wide x 1.0 high	15540 F. AI

FEATURE 1

Test excavations were conducted at this feature. It is a roughly square platform, lying on a nearly level area. It is about 11.0 by 11.0 m and is faced with boulders on its north, west, and the undisturbed portion of its east sides. Facing ranges from 41 to 84 cm high. The majority of the feature's surface appears to have a pebble pavement, but it is so covered with duff, the extent is difficult to determine. The eastern third of the surface may have more cobbles and boulders than the rest of the pavement, and a stepped entryway may occur on the center of its west side. This possible entryway is quite tumbled, however (Figure 148). Two 1.0 by 1.0 m TUs were placed in this feature. TU-1 was placed in the northeast portion of the platform, just inside the boulder facing of the north wall. The unit revealed two layers, divided primarily by architecture. Layer I was a black (10YR 2/1), pebble pavement including silt, about 20 cm thick. Layer II consisted of a fill comprised of boulders with some cobbles and pebbles, extending another 40 cm to bedrock. Layer II included black (10YR 2/1) silt mixed with the architecture. The soils of these two layers were similar, although the soil of Layer II mainly occurred at its top and bottom, with its mid portion primarily having air pockets between boulders (Figure 149). Artifact density was high for both layers, containing historic material in addition to traditional midden (Table 51).

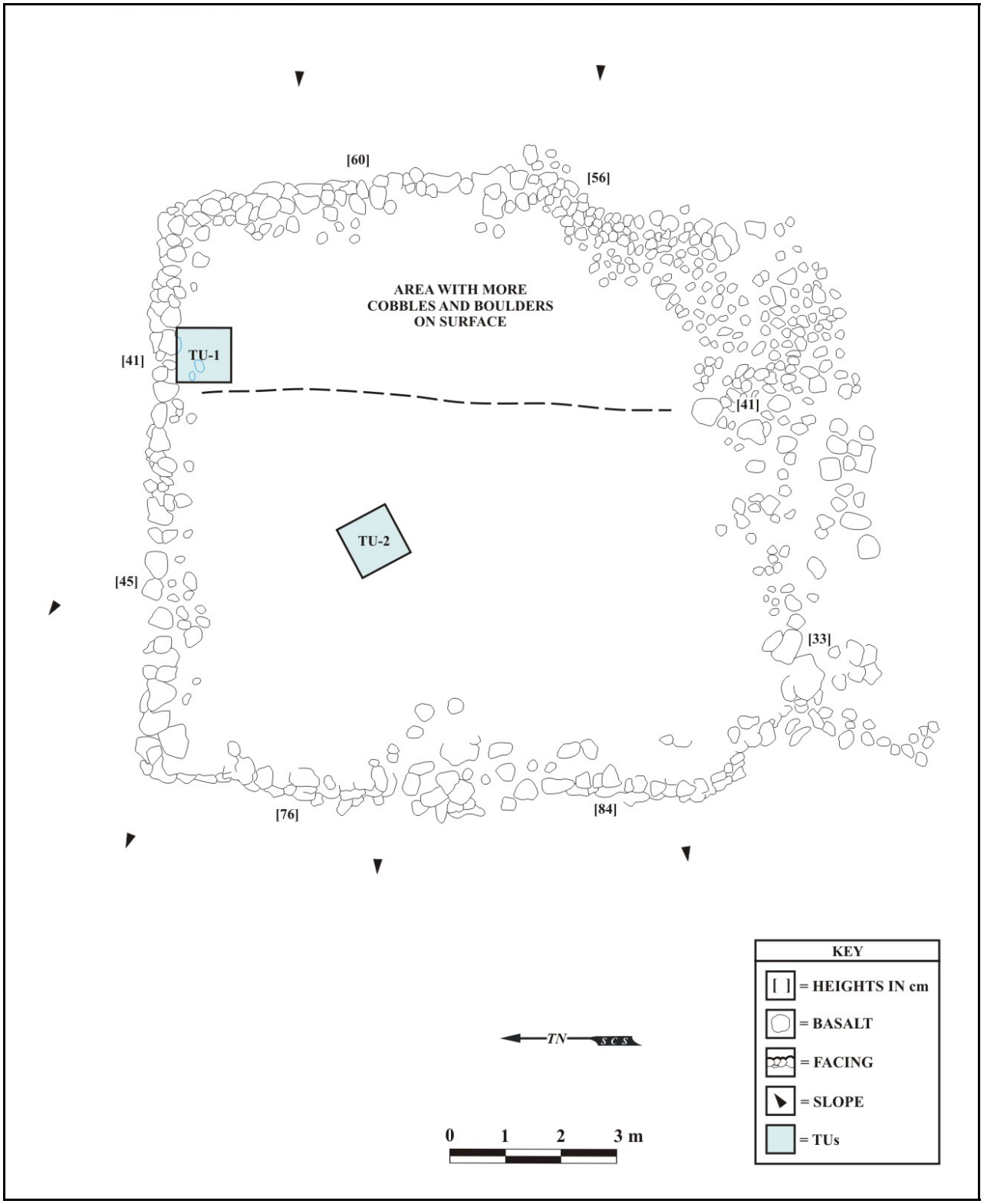

Figure 148. Site 10745, Feature 1, Plan View.

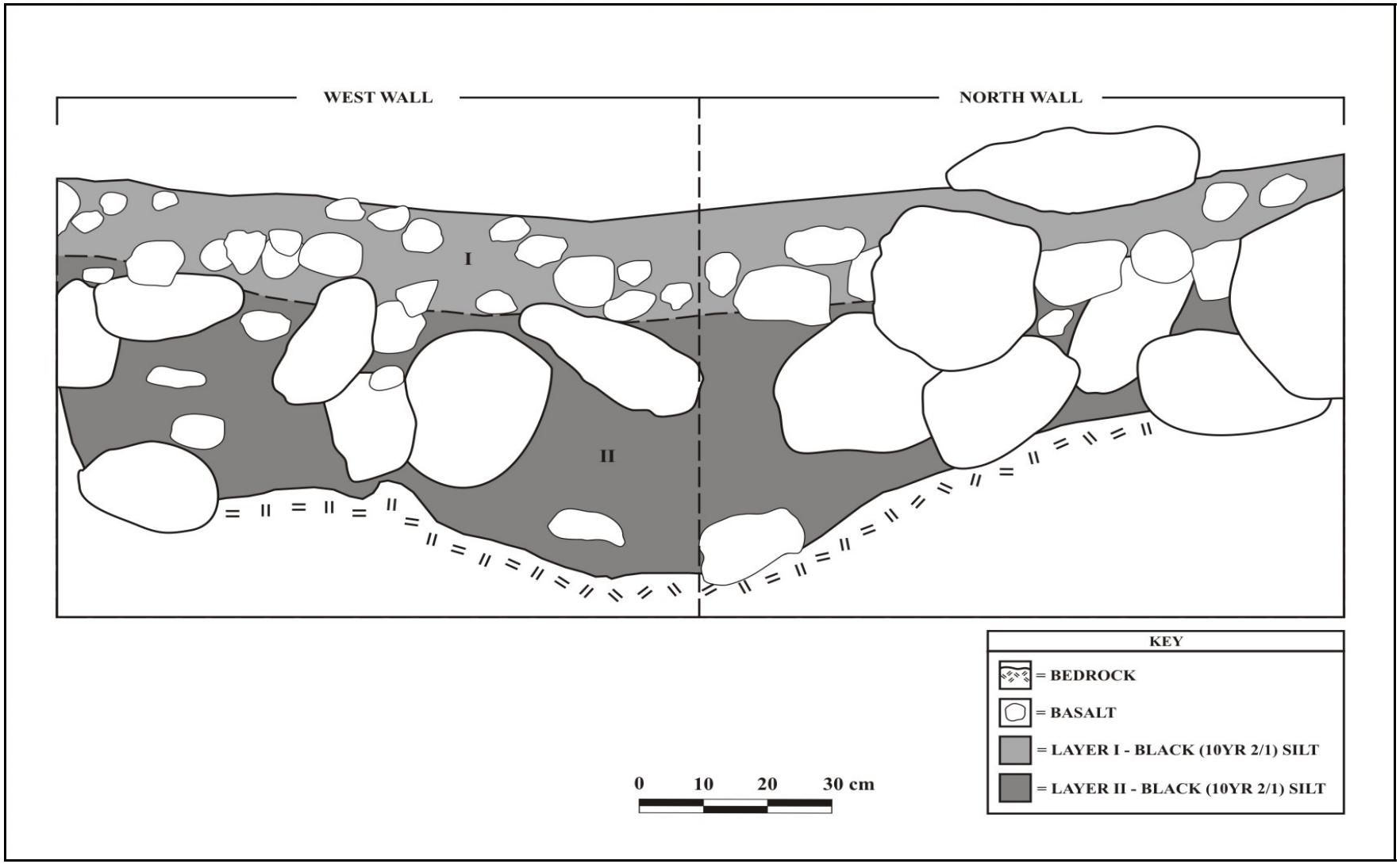

Figure 149. Site 10745, Feature 1, TU-1, Profile: West and North Walls.

Table 51. Site 10745, Feature 1, TU-1, Midden and Historic Artifacts.

Layer	Material	Weight (g)	N	Remarks
I	Invertebrates	12.7	-	Taxa: *Cellana* sp., *Nerita* sp.
	Vertebrates	30.2	-	*Sus scrofa*
	Charcoal	43.8	-	-
	Bottle Body Glass	-	1	Clear glass sherd from apothecary/medicine bottle
	Milk Glass Button	-	1	4-hole sew through, concave center surrounding holes on obverse side. Diam: 1.1cm
	Non-diagnostic Iron	-	5	Fragments
II	Invertebrates	35.6	-	Taxa: *Cellana* sp., *Conus* sp., *Tellina palatam*, non-diagnostic marine shell
	Vertebrates	63.5	-	Taxa: Fish, *Sus scrofa*, *Equus caballus*, small-to-medium mammal
	Charcoal	77.8	-	-
	Kukui	2.0	-	-
	Chert	2.0	1	-
	Bottle Body Glass	-	5	A,B,C - Clear glass sherds D - Olive green glass sherd E - Lt. green glass sherd
	Whiteware Body Sherd	-	3	Hand-painted sherds, two with blue design on white background, one with blue/pink/green design on white background.
	Iron Square Nail	-	3	One -complete nail, corroded length: 3.2cm Two - nail fragments
	Non-diagnostic Iron	-	8	Fragments

TU-2 was located in the center of the feature. This excavation produced a considerable amount of valuable data and posed at least one new question. TU-2 demonstrated a homogenous matrix of black (10YR 2/1) soil intermixed with a homogenous cobble and boulder fill that extended to a depth of 65 cm. There was no pebble pavement as that observed in TU-1, with cultural material occurring throughout the excavation and being similar in content to TU-1. Because of its uniform size, it is thought that this material probably filtered down through the architecture, rather than being deposited *in situ* (Table 52). The most notable aspect of this unit, however, was a large upright slab first encountered directly below the feature's surface and extending to the bottom of the excavation. It measured about 10 cm thick and 70 cm wide, extended out from the south wall, but did not appear to differentiate matrices on either side of it (Figure 150; Table 53).

OTHER FEATURES

A series of walls within the homestead (Features 2, 3, 4, and 8) appears to divide up the land below the habitation into several, probably, garden areas. Features 9 and 10 in the far northwest corner (a *kuaiwi* and terraces) of the homestead are probably features that were created during the prehistoric era that were not modified during the homestead occupation. This is reinforced with the presence of a *papamū* that is situated just outside the homestead and project area across from this corner.

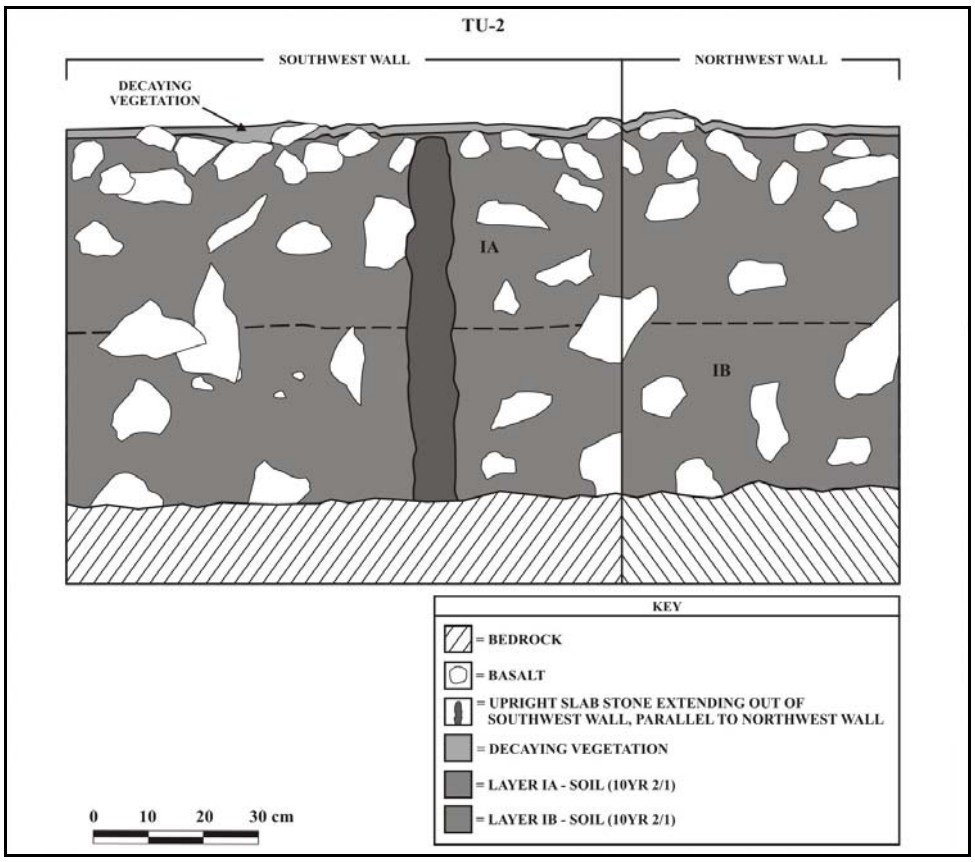

Figure 150. Site 10745, Feature 1, TU-2, Profile: Southwest and Northwest Walls

Table 52. Site 10745, Feature 1, TU-2, Midden and Historic Artifacts.

Layer	Material	Weight (g)	N	Remarks
I/1	Invertebrates	42.2	-	Taxa: *Cellana* sp., *Nerita picea, Theodoxus cariosus, Cypraea* sp., *Drupa* sp., *Tellina palatam,* Echinoidea
	Vertebrates	32.2	-	Taxa: Shark, Fish, Bird, *Rattus/Mus* sp., *Sus scrofa*
	Charcoal	40.3	-	-
	Coral	15.8	5	Non-Branch
	Bottle Glass Body Sherds	-	2	Clear
	Porcelain Ceramic Sherds	-	9	With blue hand-painted design, Six body sherds (five matching) and three rim sherds.
	Iron Square Nails	-	2	Machine headed fragments
	Non-diagnostic Iron	-	6	Fragments
	Metal Button	-	2	A - round 4 hole sew-through, slightly concave in center surrounding 4 holes, rounded edge Diam: 1.7cm B - round, 4 hole sew-through, concave in center surrounding 4 holes, flat edge Diam: 1.3cm

Table 52. Continued.

Layer	Material	Weight (g)	N	Remarks
I/2	Invertebrates	90.2	-	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus cariosus, Cypraea* sp., *Charonia tritonis, Cymatium* sp., *Drupa* sp., *Conus* sp., *Brachidontes* sp., *Isognomon* sp., *Tellina palatam,* Echinoidea, Decopoda
	Vertebrates	53.9	-	Taxa: Fish, *Rattus/Mus* sp., *Sus scrofa*
	Charcoal	66.3	-	-
	Coral	0.3	1	*Non-Branch*
	Glass Bottle Body Sherds	-	5	Clear sherds from flat faced, small bottle
	Porcelain Ceramic Sherds	-	1	Blue hand-painted body sherd
	Non-diagnostic Metal	-	3	Fragments

Table 53. Site 10745, Feature 1, Traditional Artifacts.

Feature	Unit	Layer	Artifact Type	L (cm)	W (cm)	T (cm)	N	Remarks
10745	TU-2	I/1	Volcanic Glass Debitage	-	-	-	1	One IF
		I/2	Volcanic Glass Debitage	-	-	-	2	One IF; 1 NDF
			Basalt Debitage	-	-	-	1	One IF
			Basalt Flake with Polish	1.88	2.20	0.24	1	One polished facet

IF = Interior Flake; SF = Secondary Flake; NDF = Non-Diagnostic Flake

An opening to a cave with a burial is situated within a break in the wall that defines the southern boundary of the homestead (Feature 14). The ambiguous association of this feature to the homesteads prompted the assignment of a separate feature number for this cave (Site 10754). Details on that site are reported elsewhere in this report.

SITE 10746

Site 10746 is a cave in Kohanaiki Ahupua‘a . The difficult to define sink is modified with a constricted entrance at the west end. The opening to the chamber is small (less than 50 cm diameter), and connects to a narrow, built passageway inside the cave (Figure 151). *Kukui* and charred material are prevalent in the cave, and there are six rock circles and one marine shell.

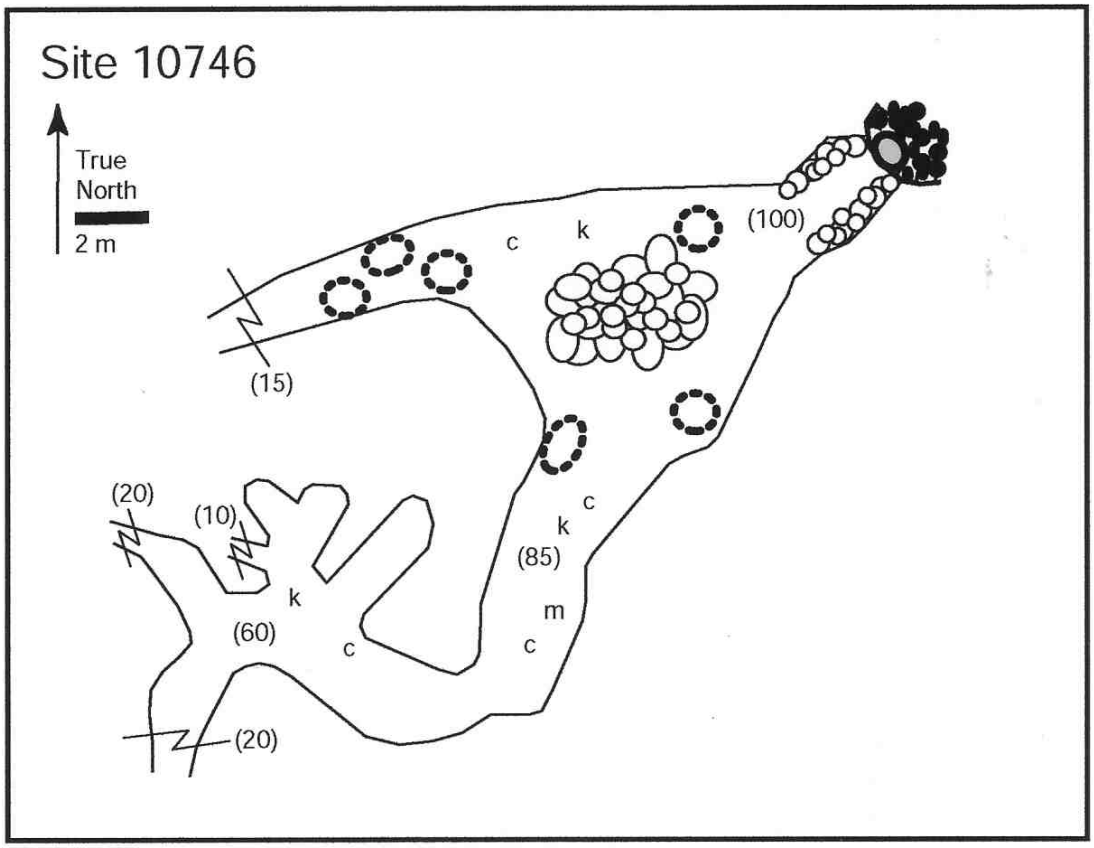

Figure 151. Site 10746 plan view.

This medium sized cave was used solely for water collection. There is only one item, the marine shell, that does not fit the pattern of elements associated with water collection in the project area: the constricted entrance, rock circles, and evidence of fire for light (*kukui* and charred material). There is no other data that suggests that the cave was used for activities other than water collection.

SITE 10747

Site 10747 is a cave in Kohanaiki Ahupua‘a at the 770 ft. elevation. The east and west portions of the sink have been modified to create a constricted entrance to the cave at the north edge of the sink (Figure 152). *Kukui* nuts are the only potentially cultural item within the cave. A larger, unexplored chamber can be viewed through the piled up rock that blocks the eastern portion of the sink. The lack of materials in the cave suggests light use, but the built environment at the cave opening suggests some level of investment. The site is interpreted as a pre-Contact temporary habitation.

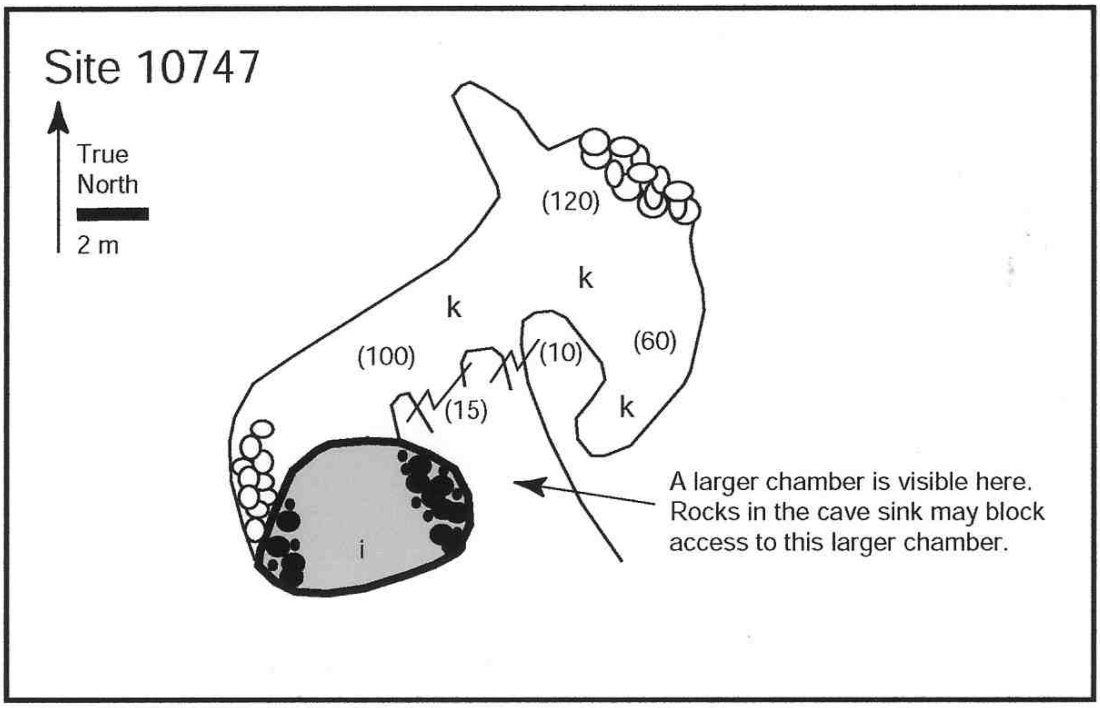

Figure 152. Site 10747 plan view.

SITE 10748

Site 10748 is a cave in Kohanaiki Ahupua‘a at the 780 ft. elevation. There are upper and lower chambers that intersect at the vertical cave opening (Figure 153). The room at the distal south end of the upper chamber (Chamber 1) has paving, an alignment, *kukui*, and a skylight. The paving represents a substantial amount of material brought into the site. A sample of a large piece of burnt wood was collected from this room, but was not submitted for analysis. An interrupted wall spans the chamber separating the room with features and material from the cave opening.

The lower cave can be divided into two chambers. Chamber 2 is east of the opening. The few remains in this chamber are *kukui* nut, and bones from an ungulate that was unfortunate enough to drop into this cave. There is an opening to a lower chamber in the center of Chamber 2, but this opening is mostly full of loose rocks precluding safe passage and exploration.

Chamber 3 is the longest chamber in the cave. *Kukui* and charred material are scattered throughout. One sample of charred material was collected, but was not analyzed. An opening in the floor near the distal end of the cave connects to a relatively short and empty chamber below.

This large cave was fully explored but not heavily used. Use was focused on the upper chamber in a walled off room with paving and a filled area. This area could have been used for temporary habitation.

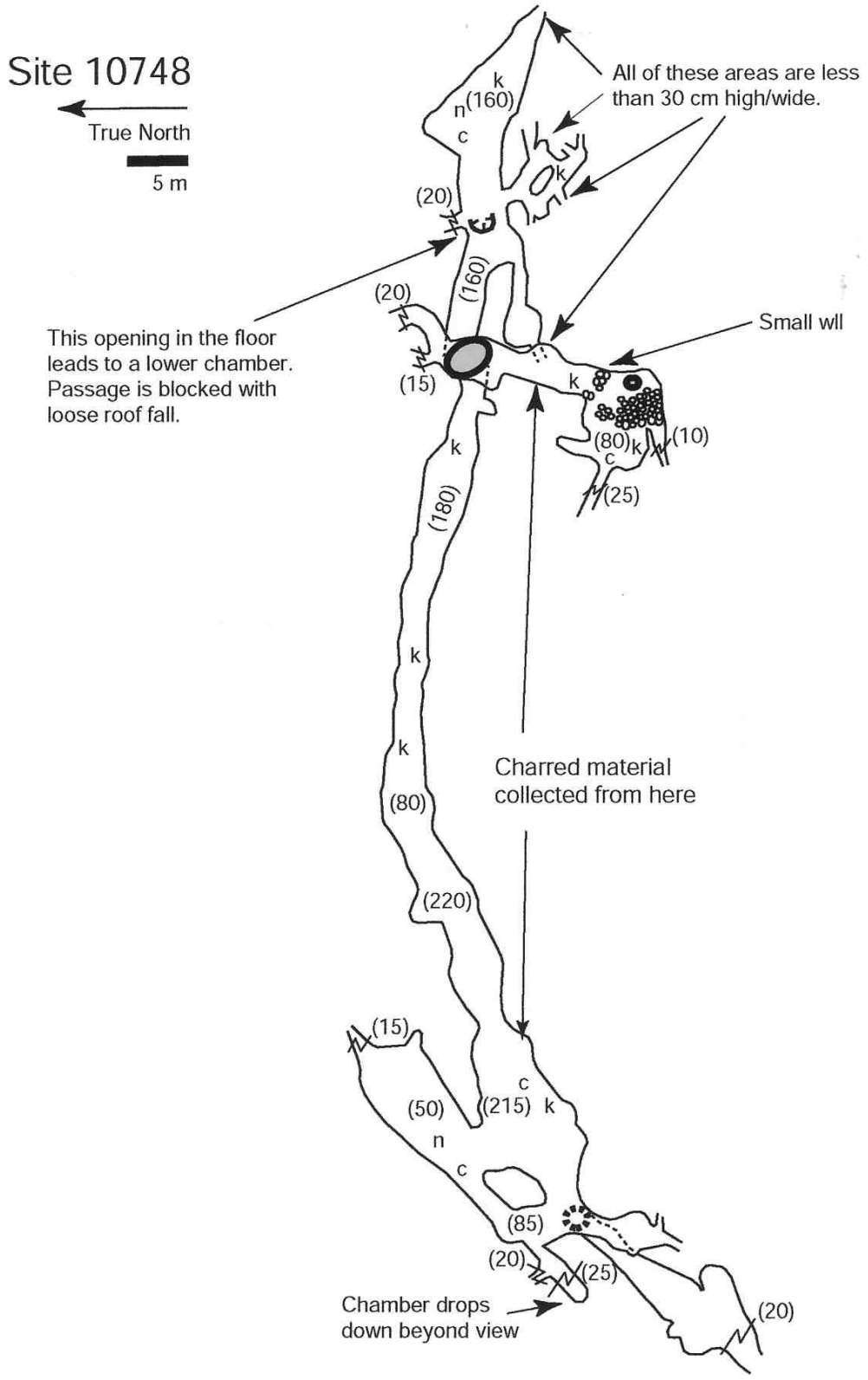

Figure 153. Site 10748 pan view.

SITE 10749

There are 31 features in the historic Kiaha Homestead (see Figure 144). None of these appear to be habitation features (Table 54). Several features were tested in an attempt to identify the habitation area, and none suggest with confidence that a habitation exists in this homestead.

Table 54. Site 10749 Inventory of features in the Kiaha Homestead.

Feature	Type	Size	Previous #
1	Agricultural terrace	1.0 wide x 17 long	10753
2	Agricultural mound	7.0 long x 0.4 high	10750
3	Agricultural mound	3 diam x 0.6 high	10752
4	Agricultural mound	2 diam x 0.4 high	10754
5	Agricultural mound	4 diam x 1.2 high	10755
6	Agricultural mound	3 diam x 0.9 high	10757
7	Agricultural mound	3 diam x 0.7 high	10760
8	Agricultural mound	4 diam x 0.4 high	10761
9	Agricultural mound	7 long x 1.0 high	10781
10	Agricultural terrace	9.1 wide x 7.8 long	10756
11	Internal division wall	1.8 wide x 0.8 high	10749
12	Internal division wall	0.4 high	10751
13	Terrace	2.8 wide x 0.9 high	10758
14	Terrace	2.4 wide x 0.9 high	10759
15	Storage hole	0.3 square	SCS 1
16	Agricultural terrace	1.5 wide x 0.5 high	SCS 2
17	Agricultural mound	2 diam x 0.4 high	SCS 3
18	Planting area	4.0 wide x 4.0 long	SCS 4
19	Agricultural terrace	0.3 wide x 3.0 long	SCS 5
20	Internal division wall	2.0 wide x 10.0 long	SCS 6
21	*Kuaiwi*	2.0 wide x 0.5 high	SCS 7
22	Stone steps	1.5 wide x 0.5 high	SCS 8
23	Agricultural terrace	1.0 wide x 10.0 long	SCS 9
24	Homestead boundary wall	1.0 wide x 1.2 high	15540 F. U
25	Homestead boundary wall	1.3 wide x 0.9 high	15540 F. V
26	Homestead boundary wall	1.0 wide x 0.5 high	15540 F. X
27	Homestead boundary wall	1.0 wide x 0.5 high	15540 F. Y
28	Homestead boundary wall	1.5 wide x 0.5 high	15540 F. Z
29	Homestead boundary wall	1.1 wide x 0.6 high	15540 F. AA
30	Homestead boundary wall	1.0 wide x 1.0 high	15540 F. AC
31	Homestead boundary wall	1.2 wide x 0.5 high	15540 F. AD

Excavation was conducted in Features 6, 7, and 13, three separate features that are in such close proximity that they are discussed as a single entity (see Figure 144, Kohanaiki Homestead Features). These features are on a moderately steep west facing slope with extensive *pāhoehoe* outcrops, and cover an area 28.0 m north-south by 12.0 m

east-west (Figure 154). Two features are terraces, and two features are mounds (Table 55).

Table 55. Sites 10749, Features 6, 7, 13, 14.

Feature	Type	L (m)	W (m)	H (m)	Units
6	Mound	4.50	4.00	0.72	One 1.0 x 3.0 ST, ST-1
7	Mound	4.00	2.50	0.50	One 1.0 x 3.0 ST, ST-2
13	Terrace	9.00	5.00	1.05	One 1.0 x 3.0 TU, TU-1
14	Terrace	3.50	1.50	0.75	

FEATURE 6

Feature 6 is a low, irregular shaped mound which incorporates a linear northwest-southeast outcrop that extends beyond the feature to the southeast. It is faced with medium to small boulders on its northwest and southwest sides, and has an interior surface mainly of pebbles, but utilizes large cobbles and small boulders on its northeast where it extends onto the outcrop. ST-1 measured 1.0 by 3.0 m and excavated in this feature primarily to test for human remains and was placed on a northeast-southwest axis through the center of the construction, crossing its southwest facing. The excavation revealed an 80 cm thick layer of architecture, unusual in its use of small to medium sized boulders, in no apparent pattern, in a matrix of pebbles and small cobbles. This architecture overlay bedrock in the southwestern portion of the trench, and two layers of soil in the remainder of the trench. Layer I rested on bedrock in the middle area of the unit and incorporated architecture in a dark brown (10YR 2/2), loose, organic silt, most likely filtered down through the architecture. The thickness of this layer was variable and ranged from 10 to 50 cm thick. Layer II was a black (10YR 2/1), fine silt, containing little architecture and ranging in thickness from 8 to 30 cm. It was located in the northeastern third of the trench (Figure 155). Coral, marine shell, bone, and a possible shell bead were recovered from this unit (Tables 56 and 57).

Table 56. Site 10749, Feature 6, ST-1, Midden.

Feature	Unit	Layer	Collected Material	Weight (grams)	Count	Remarks
6	ST-1	-	Invertebrates	88.4	-	Taxa: *Cellana* sp., *Nerita polita*, *Cypraea* sp., *Drupa* sp., *Conus* sp., *Tellina palatam*
			Vertebrates	1.7	-	Taxa: Bird, *Rattus/Mus* sp., Medium mammal
			Coral	146.9	8	Non-Branch

Table 57. Site 10749, Traditional Artifacts.

Fea	Unit	Layer	Artifact Type	L (cm)	W (cm)	T (cm)	N	Remarks
6	ST-1	-	Perforated Marine Shell	1.65	1.60	0.66	1	Bead made from top of *Conus* sp. shell
7	ST-2	Arch L II Soil L I	Marine Shell Octopus Lure	8.38	5.56	4.55	1	*Cypraea mauritiana* with 2 perforations
7	ST-2	Arch L II Soil L I	Volcanic Glass Debitage	-	-	-	1	One NDF

IF = Interior Flake; SF = Secondary Flake; NDF = Non-Diagnostic Flake

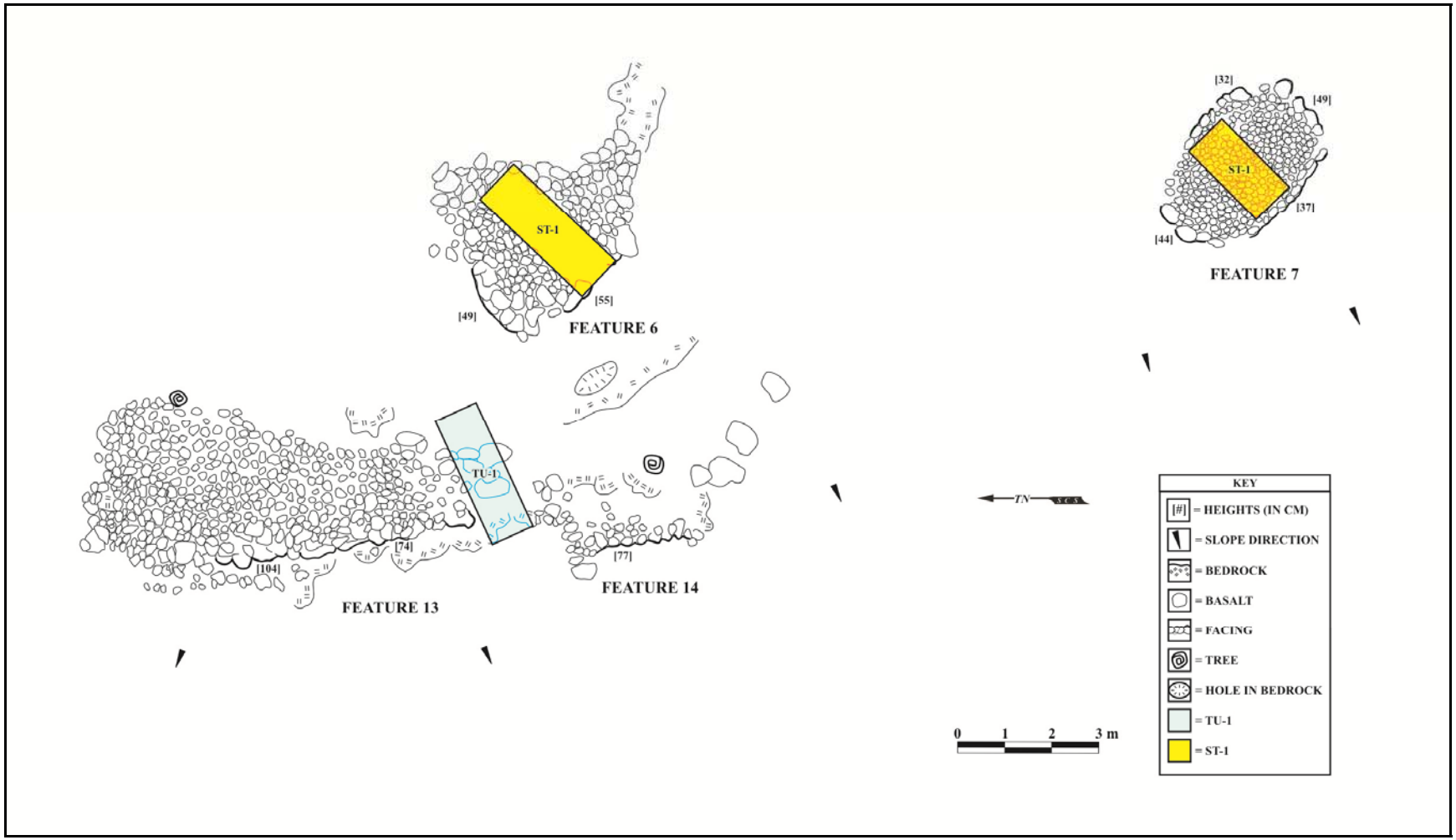

Figure 154. Site 10749, Features 6, 7, 13, and 14 Plan View.

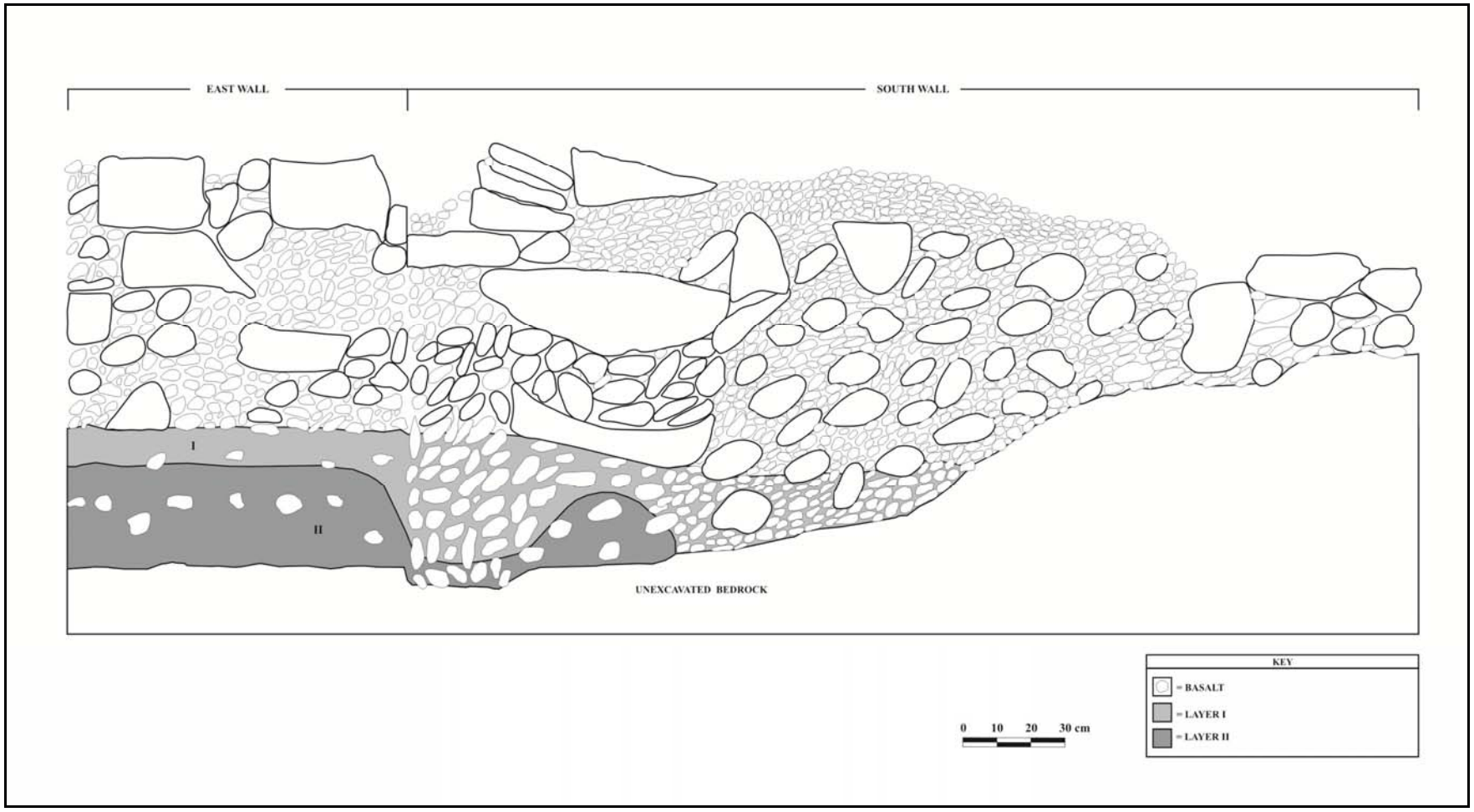

Figure 155. Site 10749: Feature 6, ST-1: Profile: East and South Walls.

FEATURE 7

Feature 7 is a roughly rectangular shaped low mound. It is faced on portions of all four sides, with facing mostly a single coarse of small boulders. Its interior surface is a paving of well sorted pebbles.

ST-2 was placed on a northeast-southwest axis through its center, but contained within the feature's facing on both sides. It was primarily conducted to establish the presence or absence of human remains. This excavation demonstrated two layers of architecture, with a single soil layer occurring in the lower portion of the second layer. The first layer of architecture was a pebble pavement, which average around 10 cm in thickness, and also include an occasional cobble. The second layer of architecture was composed of small to medium cobbles, with a few pebbles, and extended at its greatest depth to 70 cmbs where it contacted bedrock. The soil occurring within this architecture was a black (10YR 2/1), loose silt and was encountered about 25 cm below the feature's surface (Figure 156).

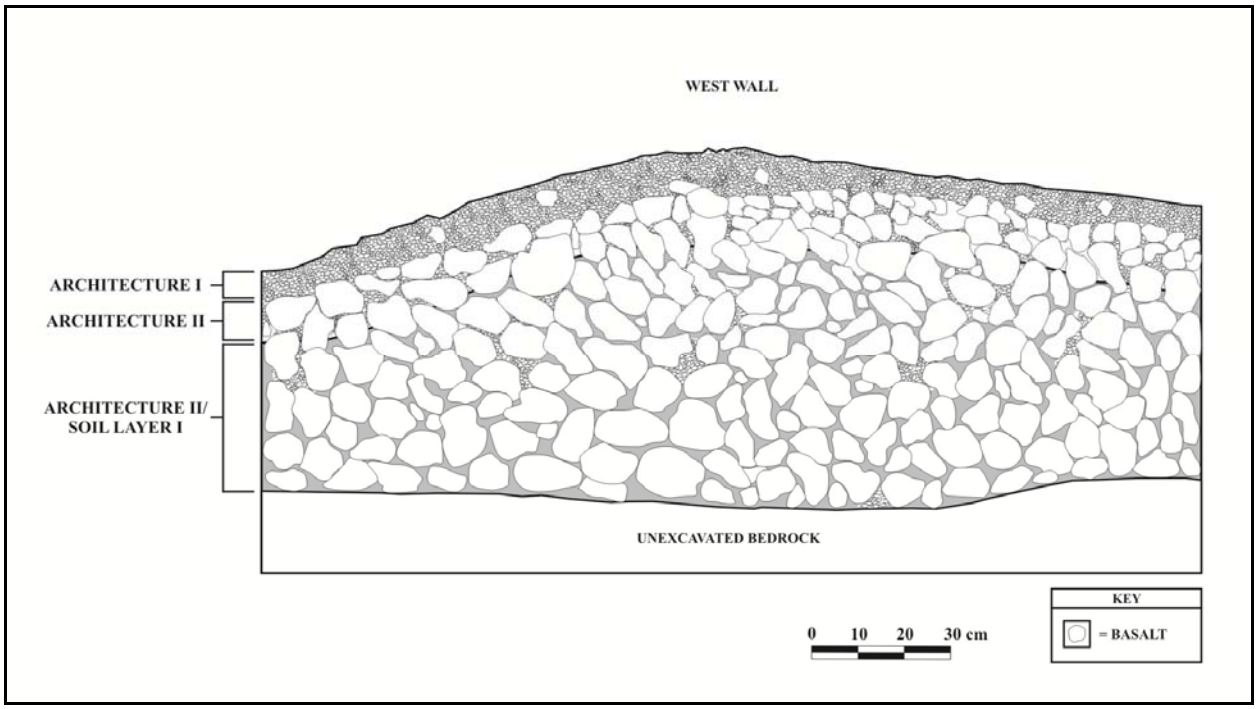

Figure 156. Site 10749, Feature 7, ST-2: Profile: West Wall

The cultural material recovered from this unit was somewhat remarkable in its variety. A green bottle base was taken from the surface of the unit, while a possibly drilled piece of coral was located in the first layer of architecture. In the second architectural layer bird bone, a pig bone, volcanic glass, a piece of ground stone, marine shell, and an octopus lure were retrieved. Only the pig bone was located above the soil of this second layer (Table 58).

Table 58. Site 10749, Feature 7, ST-2, Midden and Historic Artifacts.

Feature	Unit	Layer	Material	Weight (g)	N	Remarks
7	ST-2	Surf.	Glass Bottle Sherd	-	1	Olive green heel/base sherd with kick-up. Kick-up has a dimple depression at top of kick, on the interior of the bottle, no seams on bottle sides. Base Diam: 6.8cm
		Arch I	Coral	33.8	1	Non-Branch
		Arch II	Vertebrates	48.9	4	*Equus caballus*
		Arch II/ Soil I	Invertebrates	4.1	-	Non-diagnostic marine shell
			Vertebrates	0.2	-	Taxa: Bird, *Rattus/Mus* sp.
			Charcoal	5.8	-	-

FEATURE 13

Feature 13 is a terrace, constructed on a bedrock outcrop, which becomes a low freestanding wall at its south end. It is the northernmost of the four features, and is 3.0 m west of Feature 6. The feature is roughly faced with medium boulders, but is otherwise constructed of unsorted cobbles and pebbles piled behind the facing to form a level area north of the wall portion. Facing occurs on both sides of the wall portion of the feature, but otherwise occurs only on the feature's west face. The feature only retains a narrow band of soil at its south end, while the rest of the facing retains only rock.

TU-1 measured 1.0 by 1.0 m and was located at the terrace's south end, crossing its wall portion, and also an area of soil in front of the facing. The main motive for excavating this TU-1 was to understand feature construction. A 0.5 by 0.5 m area, in the unit's northeast corner, was screened. Excavation revealed surface architecture only in Layer I. Boulders comprised both the east facing of he wall and west facing of the entire feature, which had a cobble filled interior. The majority of this architecture rested directly on bedrock, although a thin, 5 cm layer of soil (Layer II) extended from underneath its west facing and down the slope. This thin, dark brown (10YR 3/3), silt also occurred upslope, behind the wall (Figure 157). Almost all of the cultural material retrieved from this unit was derived from the area screened. Included were pig teeth, bone, marine shell, and sparse charcoal (Table 59).

Table 59. Site 10749, Feature 13, TU-1, Midden.

Feature	Unit	Layer	Material	Weight (g)	N	Remarks
13	TU-1	II	Invertebrates	16.8	-	Taxa: *Nerita* sp., *Cypraea* sp., *Conus* sp.
			Vertebrates	5.4	-	Taxa: *Sus scrofa*, small-to-medium mammal
			Charcoal	0.3	-	-

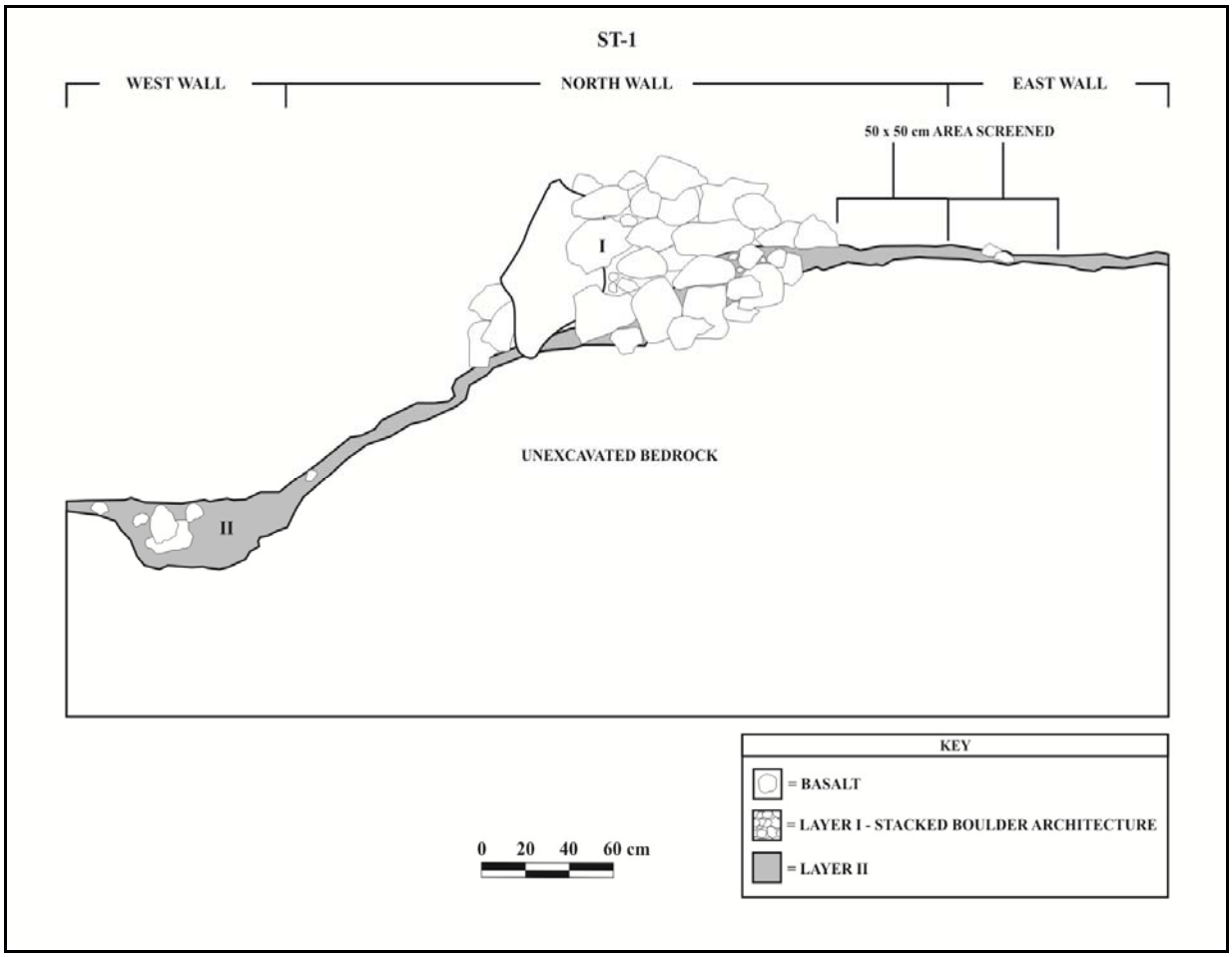

Figure 157. Site 10749, Feature 13, TU-1: Profile: North, West, and East Walls.

FEATURE 14

Feature 14 was the only feature in this group not excavated. It is a short terrace, on the same axis and located 1.0 m south of Feature 13—almost a continuation of this feature. It has a small-boulder/large-cobble facing which retains a minimal amount of soil and mostly abuts bedrock.

There is no clearly identifiable permanent habitation structure in this small homestead. Artifacts from the excavations indicate that food, including marine invertebrates, was consumed in this area and one, or more of these features may have served as a temporary habitation. There is a high density of agricultural features. The presence of *kuaiwi* reinforces the notion that this homestead unit was used for agriculture, and perhaps was not permanently inhabited. If that is the case then many of the features in the Kiaha Homestead area may be relatively unaltered by historic agents, and reflect to a large degree what the distribution of agricultural features within the Kona Field System in this particular part of the island looks like.

Historic materials are sparse in this homestead. Indeed, the highest quantity of historic material was retrieved from the unusual Feature 7. The rectangle with facing on all sides and a mounded top surface appeared to be a certain indication of a historic burial. The excavation there indicated no burial is present, but there was the glass bottle fragment on the feature, and an octopus lure piece in the feature.

SITE 10750

Site 10750 is a cave in Kohanaiki Ahupua‘a at the 910 ft. elevation. There is a vertical entrance to a small chamber with a concentration of *kukui*, charred material, and marine shell near the entrance (Figure 158). Given the marine shell and *kukui* this cave is interpreted as a temporary habitation.

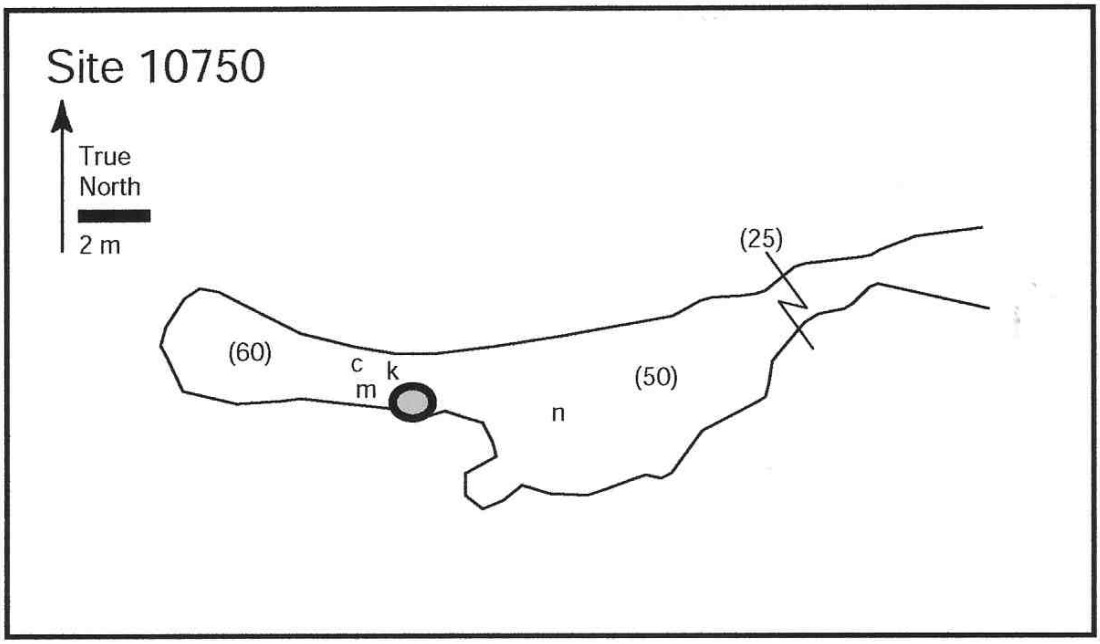

Figure 158. Site 10750 plan view.

SITE 10751

Site 10751 is a cave in Kohanaiki Ahupua‘a at the 770 ft. elevation. There is a vertical entrance into a chamber that has recent pig bone, *kukui*, some charred material, and a broken water-worn pebble to the north of the entrance (Figure 159). There is a wall on the south part of the opening that creates a smaller, constricted entrance into the chamber with three rock circles. This small cave appears to have functioned as a water collection site.

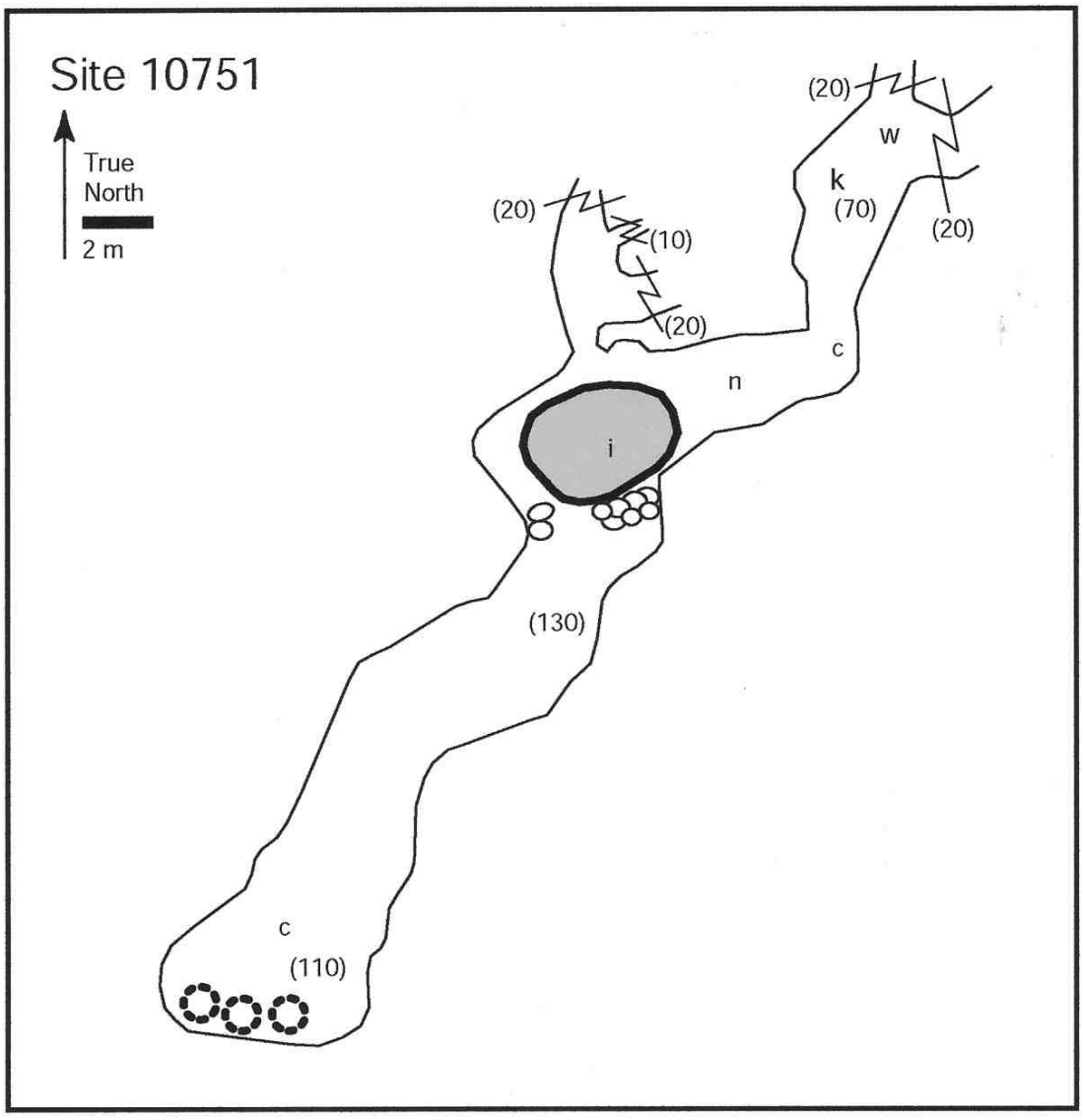

Figure 159. Site 10751. Site 10751 plan view.

SITE 10752

Site 10752 is a cave in Kohanaiki Ahupua‘a. This is a small cave at the west end of a sink (Figure 160). Rocks have been moved at the cave opening, probably as a byproduct of clearing the entranceway. Charred material is the only cultural debris, and a sample was collected but not analyzed. The exposure of this small cave to natural light suggests that the charred material reflects cooking activity. Consequently, this small cave probably served as a temporary habitation.

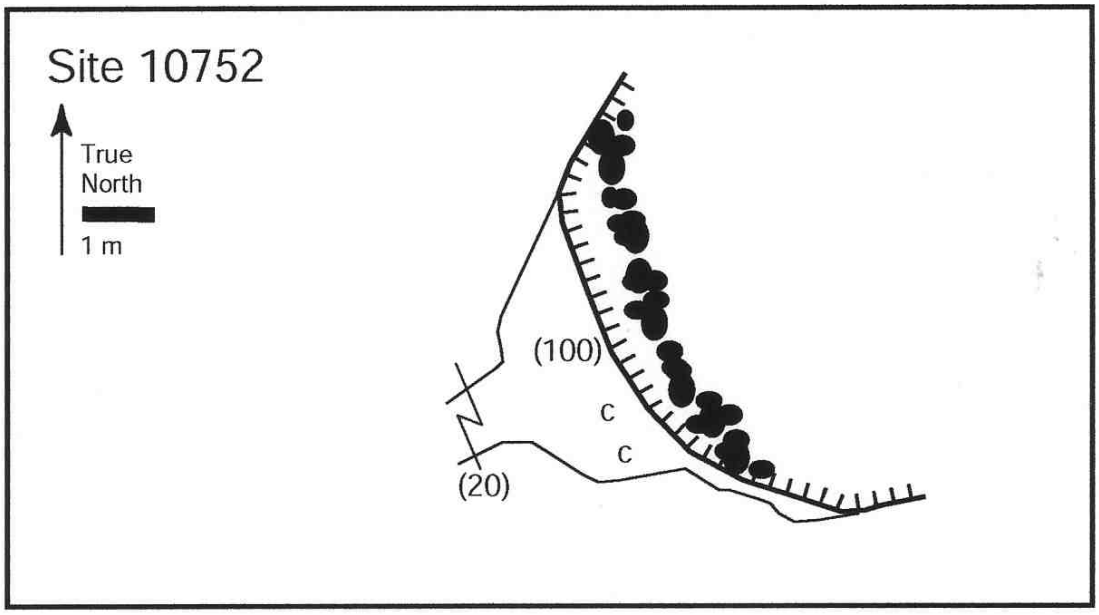

Figure 160. Site 10752 plan view.

SITE 10753

Site 10753 is a cave in Kohanaiki Ahupua‘a. The vertical opening is modified to be constricted and there are three rock circles in the small cave (Figure 161). The constricted entrance and rock circles indicate that this small cave was used for water collection.

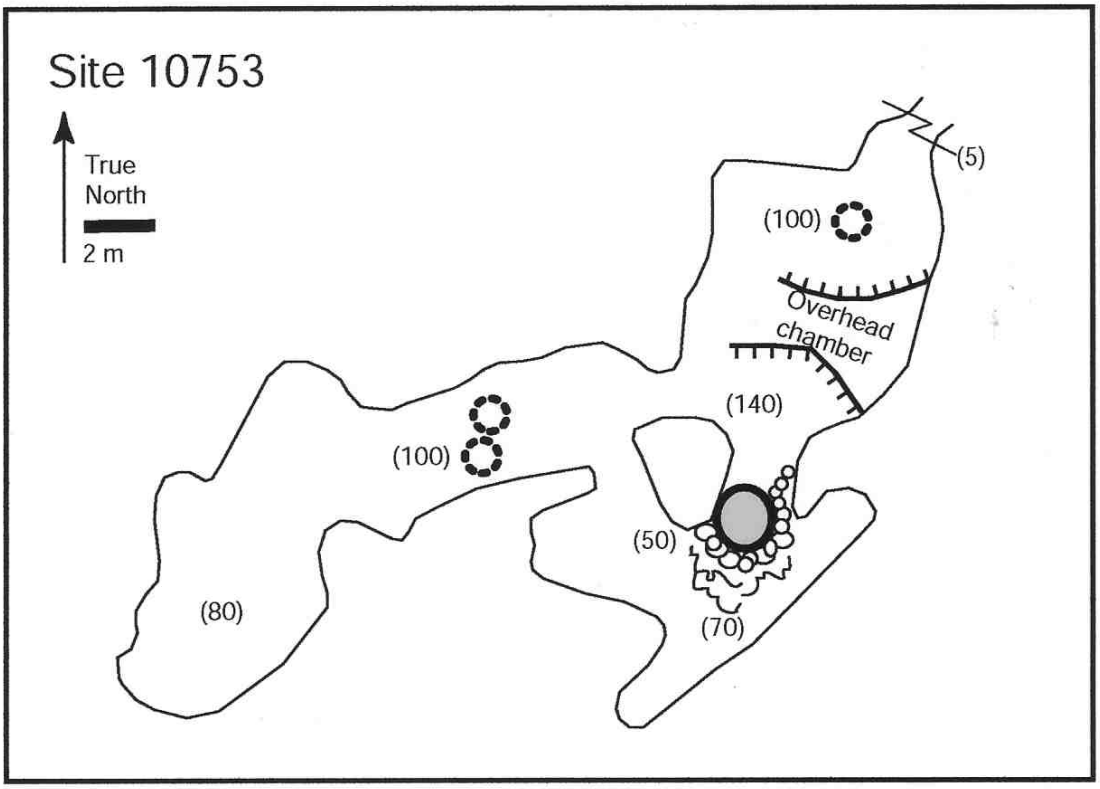

Figure 161. Site 10753 plan view.

SITE 10754

Site 10754 is a cave in Kohanaiki Ahupua‘a at the 1080 ft. elevation. The entrance to the cave is in a break in the wall that separates the Pahuole Homestead from the Mauka-Makai Road (Figure 162). The sink is filled to create a constricted opening that is also constricted inside the chamber near the opening. Sea urchin, marine shell, and *kukui* are present in the chamber.

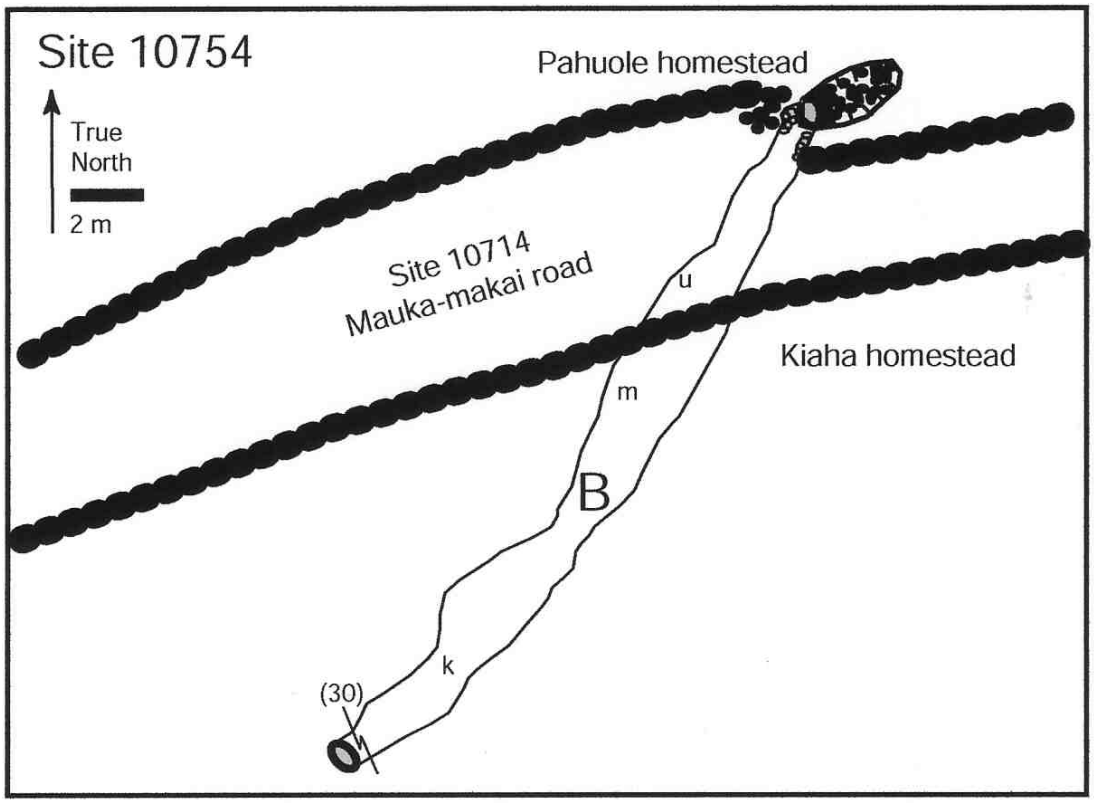

Figure 162. Site 10754 plan view.

Iwi in this small cave are resting on soil, so it is likely that there are more *iwi* below the soil that were not observed in this investigation. There is a cranium and several small *iwi*. These bones indicate that one individual was interred in this cave.

The cave chamber passes beneath the Mauka-Makai Road, and under the Kiaha homestead. The single burial is beneath the Kiaha homestead, creating an interesting situation regarding the relationship of the burial to homestead. Is the burial associated with the Pahuole Homestead, the Kiaha Homestead, or some other family that had access to this cave via the *mauka-makai* trail? The fact that the wall is discontinuous at the cave entrance suggests that the Pahuole Homestead did not have complete control over the access to the cave and burial. The *iwi* indicate that this cave was used for a burial. The urchin, marine shell, and *kukui* suggest that the cave was also used as a temporary habitation.

SITE 10755

Site 10755 is a cave in Kohanaiki Ahupua‘a at the 830 ft. elevation. The entrance is a vertical drop into the *mauka* and *makai* chambers (Figure 163). Paved platforms have been created in the roof fall surrounding the opening in both the *mauka* and *makai* perimeters. Water drips from the ceiling.

There is a stacked 0.6 m high *ahu* and a 1.2 by 1.2 m triangular stone slab set on edge east of the entrance before the *mauka* chamber splits into two chambers. The northern chamber (Chamber 1) has two rock circles with some charred material nearby. The remainder of Chamber one has few cultural items limited to charred material.

The southern *mauka* chamber (Chamber 2) also has five rock circles. Only a few pieces of charred material are in Chamber 2 beyond the rock circles.

There are eight rock circles in the *makai* chambers (Chamber 3 collectively). The large solitary "circle" is an oval with a line of rocks in the central axis dividing it into two halves. A few pieces of *kukui*, and land crab carcass are present beyond the circles. Chamber 3 connects to cave Site 10756 at a constriction that is 28 cm high. This small constriction is below the designated "cultural end" of the cave, and consequently, cave Site 10755 is considered to end there, and be separate from, Site 10756. It is possible, however, for a small person to pass through this constriction.

The presence of an *ahu* and upright next to one another deserves further attention. *Ahu* are often used as markers along pathways. This cave location does not requires anything to mark the pathway (one traveling here would simply follow the cave chamber), but it may mark something. It is stationed at a fork in the cave. The passage to the left has only two water circles, and those are near the *ahu*. The passage to the right has five rock circles. Perhaps the *ahu* directs the traveler to or away from one of the passages.

The upright may served the same function. There is no material remains near the upright, so it does not appear that a special activity took place at the upright. Another idea, one that needs additional investigations and indeed may not be confirmable, is that the upright and *ahu* serve as boundary signs within the cave. Perhaps they can be read this way: “The chamber to the right is the responsibility of the x family, and only x family members may enter. The chamber to the left is the exclusive area of the z family”.

Although this hypothesis is only just being formulated, it does have some merit. Cave Site 10718 is an excellent example of one cave that has been heavily modified to create four interior chambers, each with rock circles. That may be the extreme example of segregation of space for multiple families and their access to the precious fresh water resource underground. Subtler, or simply other styles, of doing so may be present in other caves in the area, and cave Site 10755 may represent one of these examples.

Based on 1) the lack of material remains at the upright and *ahu*, 2) their location at a fork in the cave chambers, it is suggested that these two features are directly related to the principal function of water collection with this cave. That function may be as a boundary marker separating water resource collection areas. There is no indication that ceremonial activities took place at or around the *ahu* and upright.

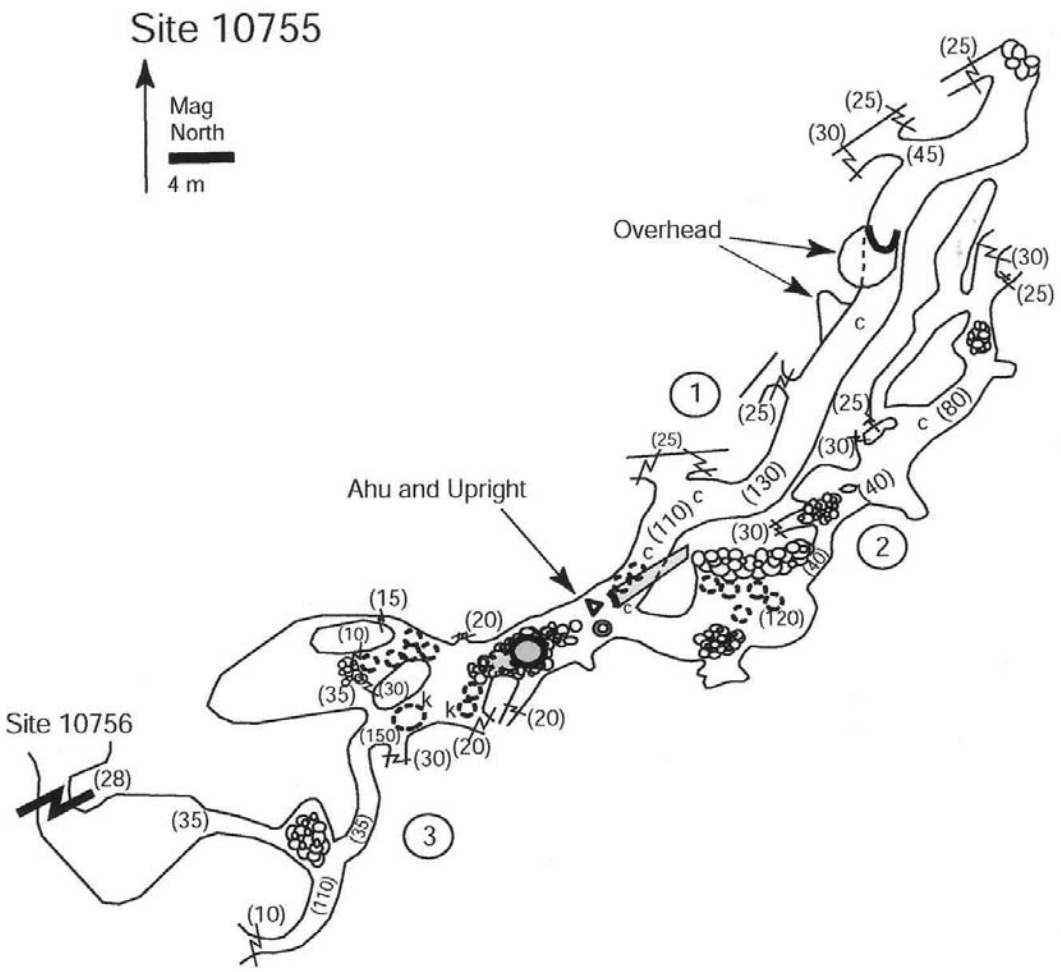

Figure 163. Site 10755 plan view.

SITE 10756

Site 10756 is a cave in Kohanaiki Ahupua‘a at the 800 ft. elevation. There are many chambers that link up to three sinks (Figure 164). A paved area has been created within the roof fall near the westernmost entrance.

There is a concentration of eight rock circles in the eastern end of the cave. Three other rock circles are scattered about the system, with one near a trail built in roof fall. Other unusual elements of this cave include pooled water near the western end, and pieces of wood in a southern chamber.

A concentration of material remains was situated within a small and low (40 cm high) chamber connecting to the southern entrance (Table 60). The material was resting on an 64 by 40 cm spread of read soil.

Table 60. Site 10756 Artifact cache.

Item	Quantity	Function
Complete and polished small adze	4	Wood working
Small adze perform	1	Tool manufacture
Small adze fragment with polish	1	Tool recycling
Opihi	3	Scraping
Leho (drilled cowrie)	1	Octopus fishing
Bird bone	13	Piercing
Pig teeth	10	Ornament
Pig tusk (drilled)	1	Ornament
Shark teeth	6	Weapon, ornament

The material represents a diverse set of tool types, reflecting a variety of activities (Figure 165). They could represent materials placed in the cave as in interment, either with a burial, in place of a burial, or as a burial in and of themselves. Alternatively, they may have been cached in this location for storage.

This latter interpretation seems most parsimonious, because the place where these were located is a difficult to reach location. Indeed, they were stored in a safe place. The presence of imported soil emphasizes the significance of the materials to their owner. These tools were perhaps used for special purposes, or the imported soil somehow enhanced the productivity of these everyday tools.

It seems unlikely that all of the material were used simultaneously. Instead, they appear to represent a diverse set of mundane (fishing, wood working) and perhaps ceremonial (ornamentation) tasks. And they represent tasks conducted on land and sea. A similar diverse set of materials was observed in a cave in Waikoloa (Wolforth *et al*. 2004), indicating that this kind of caching was probably common. The principal function for this cave was probably for water collection. The person responsible for maintaining this cave may also be responsible for the cached materials.

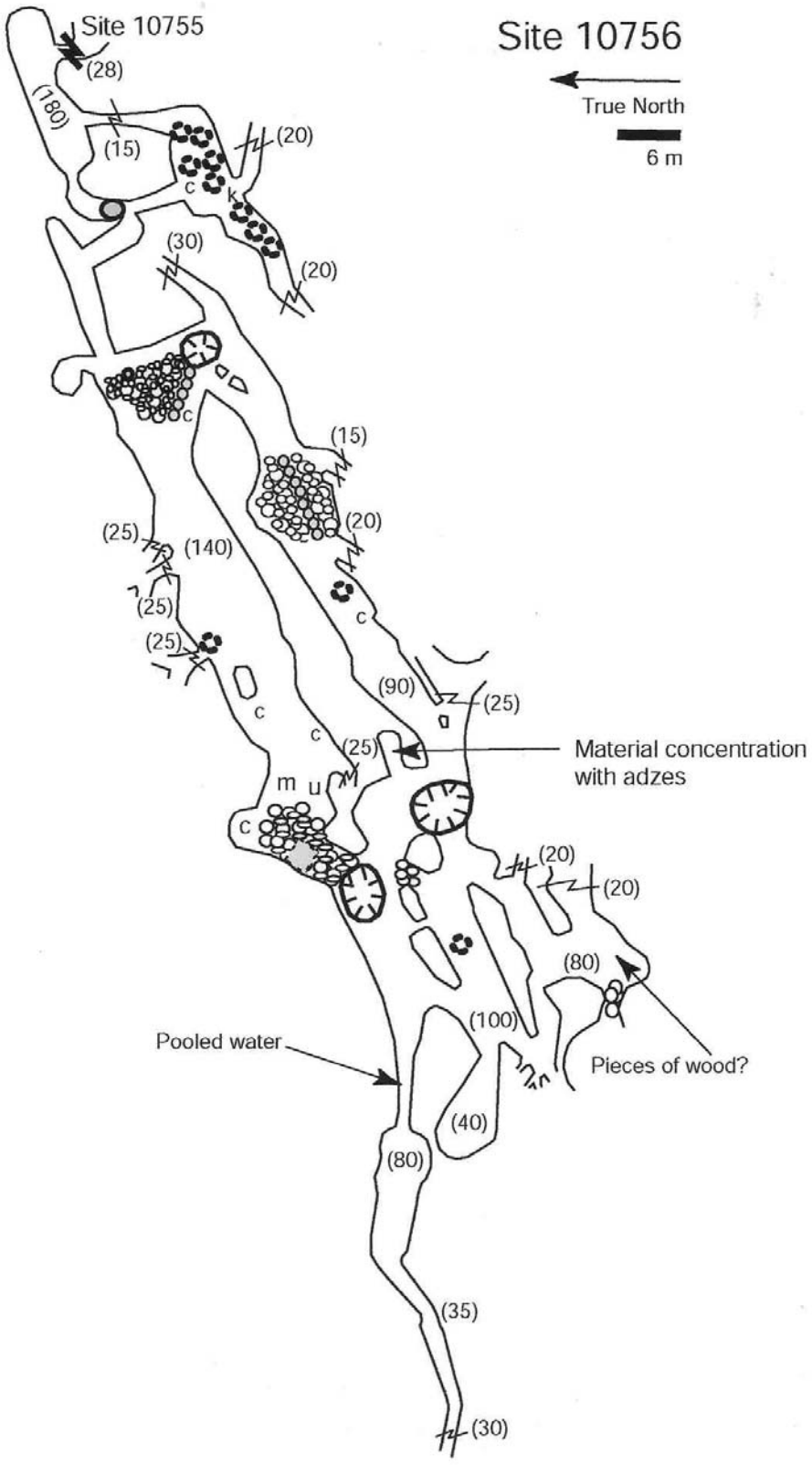

Figure 164. Site 10756 plan view.

Figure 165. Site 10756 Artifacts.

SITE 10757

Site 10757 is a cave at the 800 ft. elevation in Kohanaiki Ahupua‘a. It is a small chamber with a sink near Site 10742 (see Figure 145). The sink is approximately 4 by 2 meters, and the chamber is only about 4 meters long. The small skylight and pieces of charred material suggest that cooking may have taken place in this ventilated space. The cave may have served as one part of a *kau hale* residential unit (permanent habitation) associated with nearby cave Sites 10742 and 10758. The site is recommended for data recovery based on that hypothesis.

SITE 10758

Site 10758 is a cave at the 800 ft. elevation in Kohanaiki Ahupua‘a. It is a small chamber with a sink near Site 10742 (see Figure 145). The paving and urchin remains suggest that eating, and perhaps sleeping took place within the cave. The combination of sinks and distribution of potential activities represented by the remains and configuration of the Sites 10742, 10757, and 10758 may represent a *kau hale* situation with a subterranean twist. Site 10758 appears to provide a sleeping quarter. Site 10757 may represent a cooking area. Site 10742 could be the main work and gathering place.

SITE 10759

Site 10759 is in Kohanaiki at 840 foot elevation. Rocks have been placed around the south and west edges of the sink (Figure 166). The eastern portion of the 6.0 by 3.5 meter sink has been filled in and leveled. There are no cultural debris within the small chamber associated with the sink. The lack of material remains suggests that this cave was not used for habitation, but the stacked rock indicate that this small chamber (approximately 2 by 1.5 meters) was used for something. Perhaps it was used for storage of tools, consumables, or livestock.

SITE 10760

Site 10760 is in Kohanaiki at 830 foot elevation. Rocks have been placed around the entire perimeter of the vertical 2.2 by 1.8 meter opening (Figure 166). A cowrie and urchin testa are present in this small (3.0 by 1.7 meter) cave. The small capacity of this cave seems to preclude the function of habitation. The configuration of rocks around the perimeter and food remains may reflect a storage function.

SITE 10761

Site 10761 is in Kohanaiki at 830 foot elevation. Rocks have been placed around the entire perimeter of the roughly 2.0 meter diameter vertical opening (Figure 166). Rocks inside the cave are manuports that partially block and divide the *makai* chamber. There is one marine shell, and some chicken bones (probably brought in by varmints recently). This low, small (less than 12.0 meters long) cave is probably too small to be habitation, but may have been a sleeping space, or storage area.

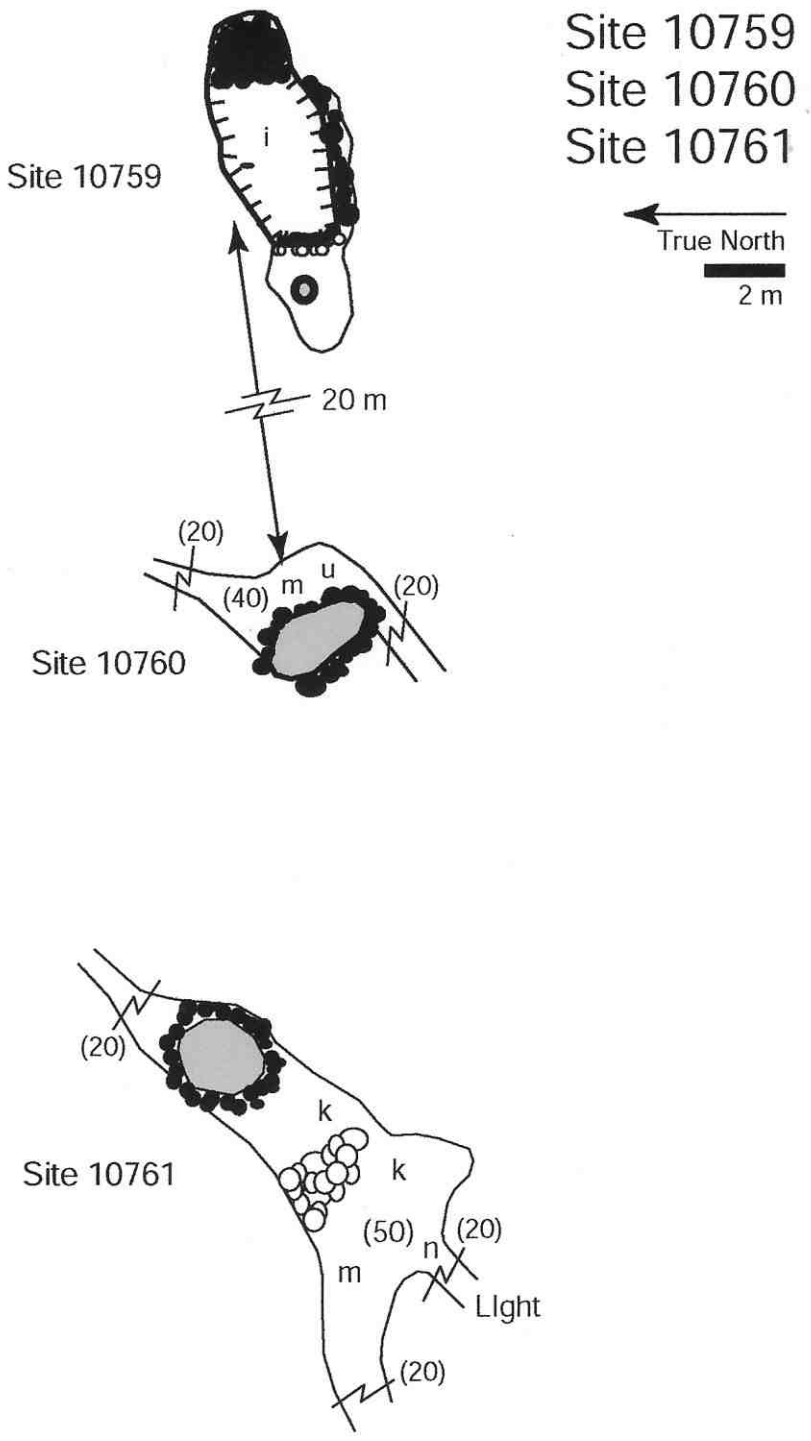

Figure 166. Sites 10759, 10760, and 10761 plan view.

SITE 10762

Site 10762 lies in the extreme northwestern corner of the project area, 20.0 m from its northern boundary. It is located in Kohanaiki Ahupua'a on the 820 ft. elevation contour, on the older of the project area's two Hualalai flows. Its sparse overstory is comprised of *haole koa* and christmasberry.

Site 10762 is a large, mound-like modified outcrop with construction on its south, east, and west sides. It measures 7.5 m north-south by 6.0 m east-west. The feature's most prominent aspect is the 6.0 m long, 1.0 m wide architecture on the outcrop's south side. This portion of the feature is completely faced with large cobbles and small boulders, and is up to 60 cm high. It has a well constructed corner at its west end, and a possible corner at its east end.

Most of the architecture on the outcrops west side is quite tumbled, but has construction similar to the feature's south side for its southernmost 3.0 m. Here, it converts to a narrow band of piled cobbles and boulders, following the edge of the outcrop, for the remaining 4.5 m. This narrow band is the area on this side that is the most tumbled, but remnant facing is visible in some areas, and there is a possibility that it has two layers of facing. Architecture on the outcrops east side only extends about 3.0 m north of the possible southeast corner. This side also has a narrow band of piled cobbles and boulders lying against the outcrop, quite tumbled, and it too may have two layers of facing (Figure 167).

A single 1.0 by 1.0 m unit was placed on the feature's southwest corner, recessed slightly in order to preserve both south and west facing. This unit had up to 80 cm of cobble and boulder architecture resting on either a thin, very black (10YR 2/1), silt layer on bedrock (Figure 168). Cultural material was retrieved from either the soil layer, or immediately above it, and consisted of marine shell, charcoal and a single piece of flagging tape. This sparse material appears to have been deposited both *in situ*, prior to construction, and to have filtered down through the architecture (Table 61).

Table 61. Site 10762, Feature 1, ST-1, Midden and Recent Material.

Layer	Material	Weight (grams)	N	Remarks
Arch/ I	Invertebrates	21.2	-	Taxa: *Cypraea* sp., *Brachidontes* sp., *Isognomon* sp.
	Flagging Tape	0.1	-	-
I	Invertebrates	42.0	-	Taxa: *Cypraea* sp., *Drupa* sp., *Tellina palatam*
	Charcoal	3.5	-	-

This feature commands an impressive view of the surrounding area due to the height of the outcrop, and appears to have been utilized as a temporary habitation and work area. The flagging tape may have been filtered down through the architecture, or have been brought into the feature by some small animal.

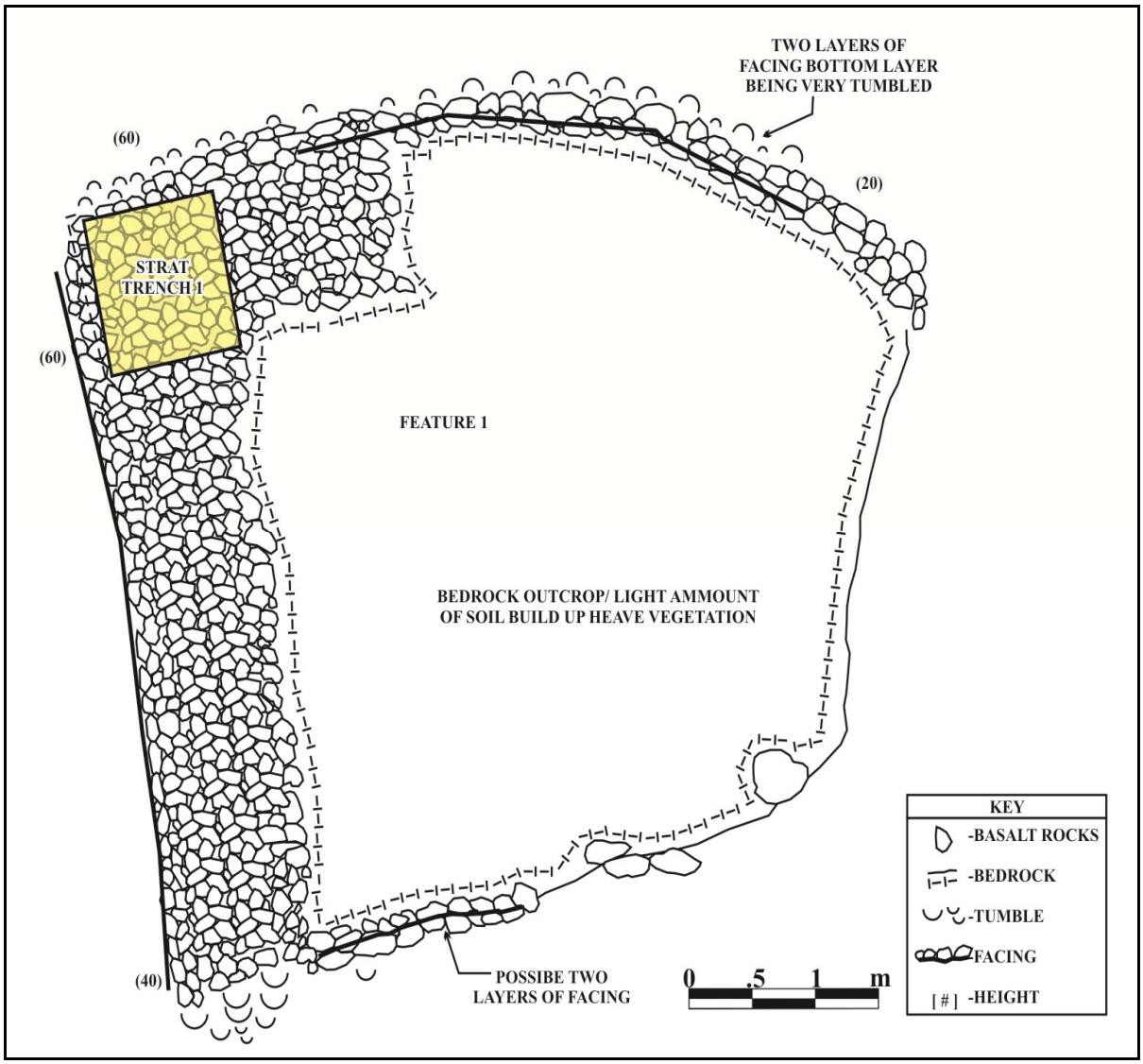

Figure 167. Site 10762, Plan View.

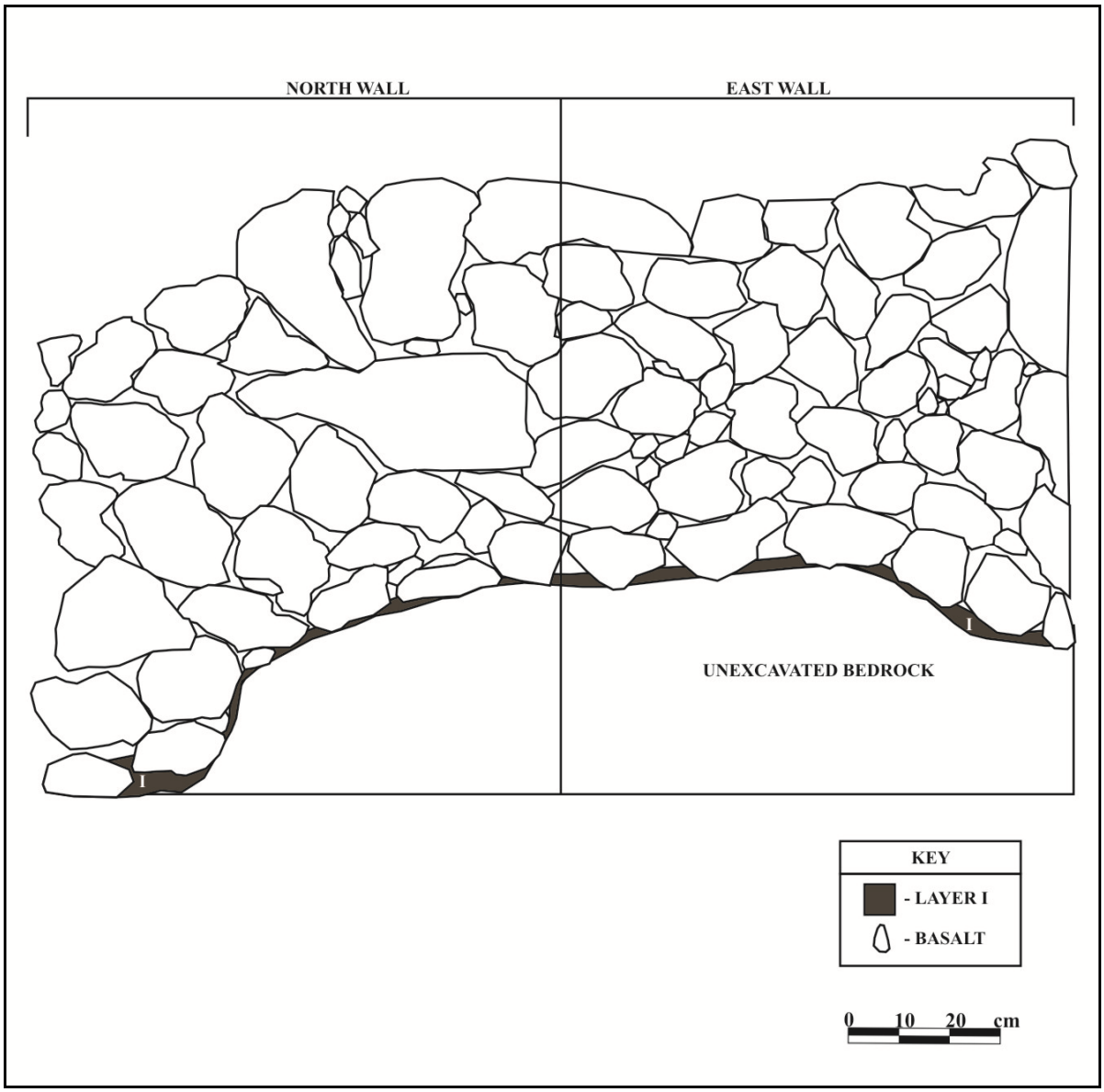

Figure 168. Site 10762, Feature 1, ST-1, Profile: North and East Walls.

SITE 10763

Site 10763 is a trail with an associated petroglyph. This trail is oriented parallel to the ocean at the 850 ft. elevation. The pathway is visible for approximately 15 meters. It is most apparent in a low lying area that was built up with cobbles (5.0 by 1.5 meters, and a maximum of 0.6 meters high). Flat slabs set in single file are on top of the built up area (Figure 169). This is very similar to Site 10767 which is also a trail with a petroglyph on a *pāhoehoe* slab. The trail is oriented to Sites 10702 and 10727. The slab with the petroglyph is 52 by 48 centimeters (Figure 169a). The head of the image is oriented to True North.

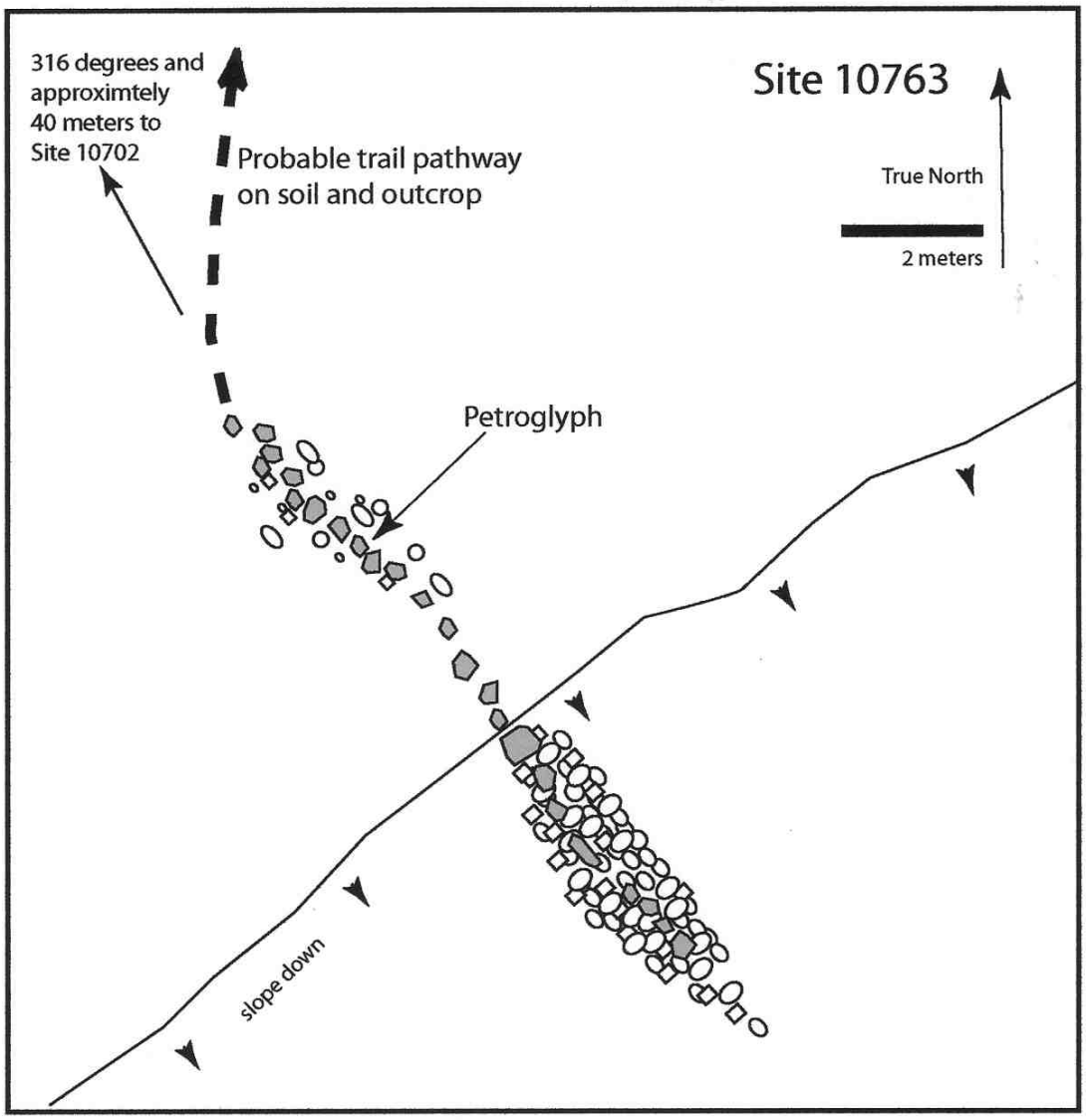

Figure 169. Site 10763. Plan View.

Figure 169a. Site 10763, Photo of Petroglyph. Veiw to West.

SITE 10764

There are 34 features in the historic Kapa Homestead (see Figure 143). The Emerson map indicates that the habitation area was beyond the Kaloko Heights project area, and previous and current investigations confirm that none of the features within the Kaloko Heights project area are permanent habitation (Table 62). A piece of branch coral is situated near Feature 28.

Feature 1 is a platform/modified outcrop, lying on a moderate southwest slope and measuring 6.3 east-west by 6.8 m north-south. Its architecture is primarily confined to the feature's eastern two thirds, and it has facing on both its east and west sides. Facing is most extensive on its south side, averaging about 70 cm high, while its north facing is only visible in an area about 1.50 m in length. Construction is of piled and stacked small to large boulders, mostly on the sides of the outcrop, but also on the east portion of its surface. Soil occurs on much of this outcrops surface also. Three small blisters are visible on the outcrop, all of which have no lateral extent beyond their surface openings. All are also less than a meter in diameter, and average around 50 cm in depth (Figure 170).

Table 62. Site 10764 Inventory of features in the Kapa Homestead.

Feature	Type	Size (in meters)	Previous #
1	Agricultural platform	6.3 wide x 6.8 long	10771
2	Cistern	7.0 diam x 1.6 deep	10765
3	Storage hole	3.3 long x 1.4 high	10780
4	Agricultural mound	2.0 diam x 0.3 high	10767
5	Agricultural mound	3.0 diam x 0.4 high	10768
6	Agricultural mound	2.0 diam x 0.7 high	10769
7	Agricultural mound	3.0 diam x 0.8 high	10774
8	Agricultural mound	8.0 long x 0.8 high	10775
9	Agricultural mound	2.0 diam x 1.0 high	10779
10	Agricultural mound	3.0 diam x 0.7 high	10784
11	Agricultural mound	3.0 diam x 0.7 high	10786
12	Agricultural mound	2.0 diam x 0.7 high	10785
13	Agricultural platform	2.4 wide x 5.3 long	10770
14	Agricultural platform	2.8 wide x 4.8 long	10772
15	Agricultural platform	3.0 wide x 4.0 high	10773
16	Agricultural platform	2.1 wide x 6.3 long	10777
17	Agricultural platform	3.3 wide x 3.9 long	10778
18	Dozed feature	6.7 wide x 13.8 long	10764
19	Agricultural terrace	4.3 wide x 11.7 long	10776
20	Agricultural terrace	1.2 wide x 1.5 long	10782
21	Internal division wall	1.0 wide x 0.4 high	10766
22	Internal division wall	0.5 wide x 1.0 high	10783
23	Agricultural mound	1.0 diam x 0.3 high	SCS 1
24	Internal division wall	0.2 wide x 0.3 high	SCS 2
25	Agricultural mound	2.0 diam x 0.4 high	SCS 3
26	Agricultural modified outcrop	1.2 wide x 0.5 high	SCS 4
27	Stone steps	1.0 wide x 0.2 high	SCS 5
28	Internal division wall	0.5 wide x 0.3 high	SCS 6
29	Internal division wall	0.5 wide x 0.3 high	SCS 7
30	Homestead boundary wall	2.0 wide x 0.6 high	15540 F. A
31	Homestead boundary wall	0.8 wide x 0.9 high	15540 F. B
32	Homestead boundary wall	1.0 wide x 0.6 high	15540 F. C
33	Homestead boundary wall	0.7 wide x 0.7 high	15540 F. D
34	Homestead boundary wall	0.8 wide x 0.9 high	15540 F. E

A single 1.0 by 3.0 m TU was placed on the feature's east half, primarily to investigate feature function. It was oriented on a rough north-west axis that not only crossed the feature's south facing, but also bisected the eastern-most blister. Excavation of this unit revealed that the facing rested directly upon bedrock and also that the fill retained by the facing included substantial slabs of up-thrust bedrock. The loose rock of this fill didn't exceed 50 cm in depth and overlay a single soil layer about 30 cm thick. Soil was a very dark brown (10YR 2/2), organic silt, and had the previously described rock fill in it only in limited areas. Soil, both at the bottom of the blister and in the area in front of the facing was thin and did not exceed 10 cm in depth before bedrock was encountered (Figure 171). While only a 0.5 by 0.5 m area located in the unit's northeast corner was screened, no midden or artifacts were recovered from the unit as a whole.

The lack of cultural material would appear to give this feature an agricultural function. There are several other outcrops modified into platforms in this homestead. Their small size precludes their use as a habitation foundation, especially for a historic house. The suite of features in the project area appear to be agricultural features (except for the cistern, steps and walls). There are several internal divisions in the Kapa Homestead. The significance of these is not clear, but they could represent ancient or historic divisions of the land to segregate garden areas.

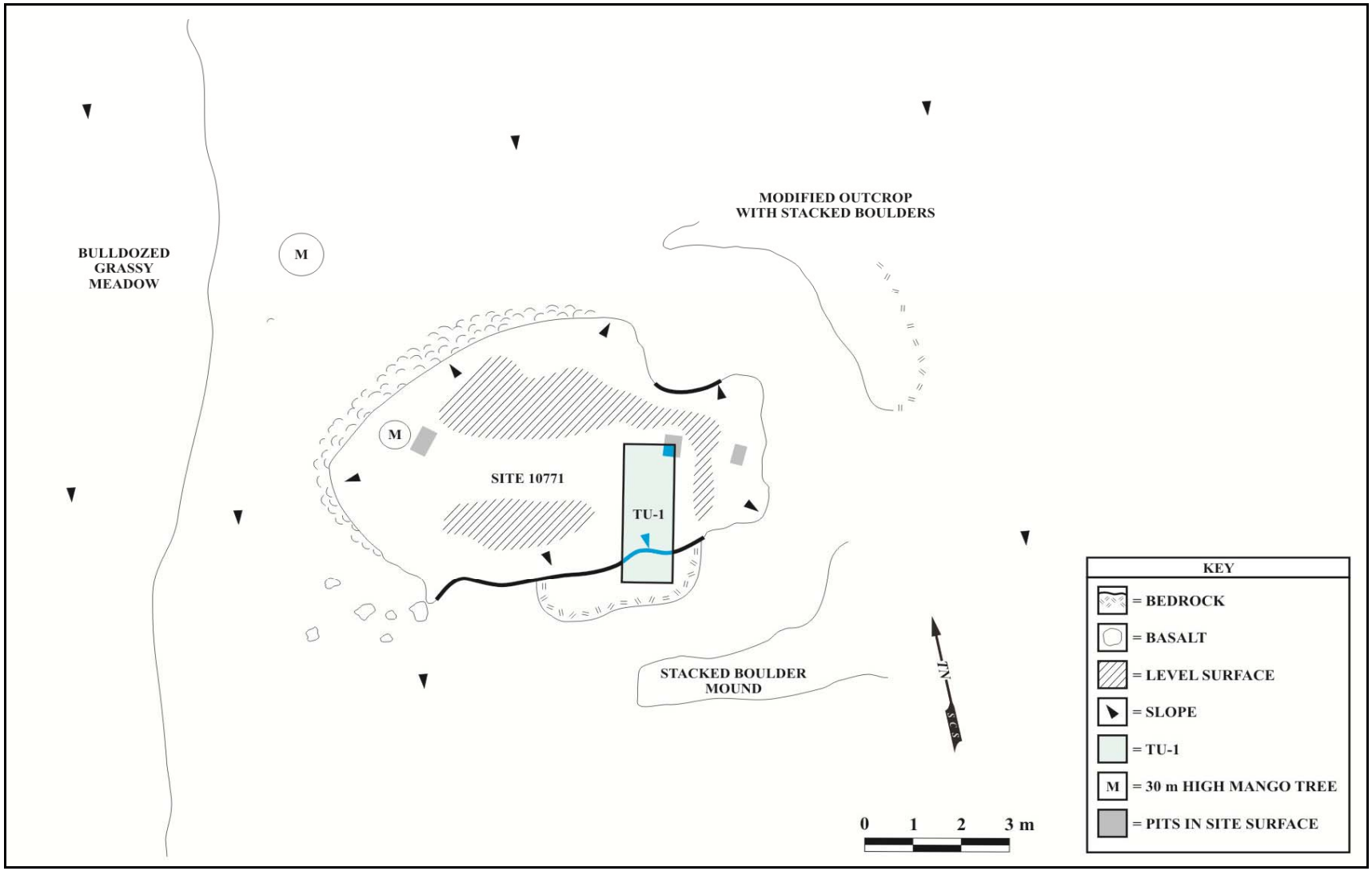

Figure 170. Site 10764, Feature 1, Plan View.

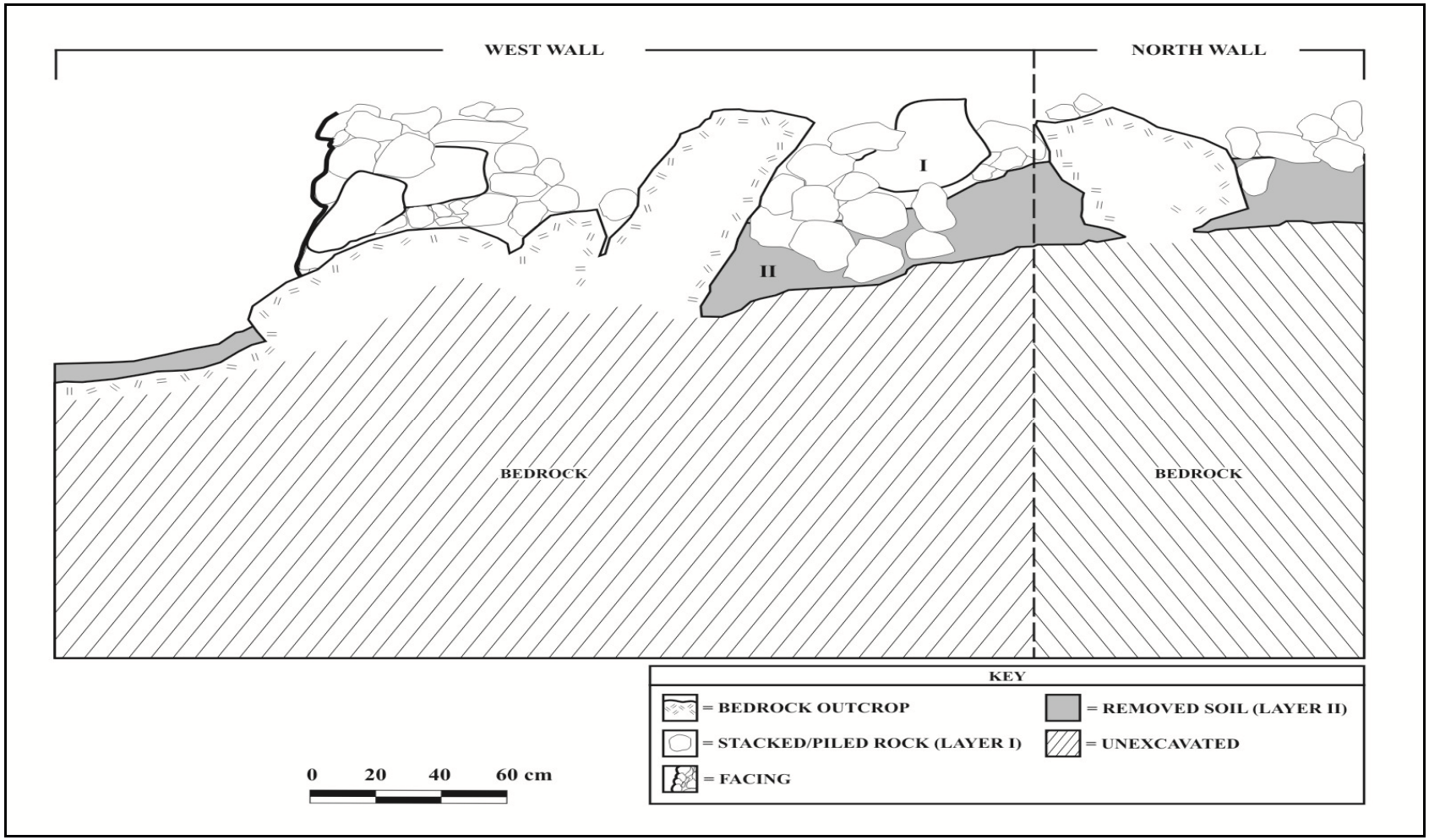

Figure 171. Site 10764, Feature 1, TU-1, Profile: West and North Walls.

SITE 10765

Site 10765 is located within Kohanaiki Ahupua‘a at the 785 ft. elevation contour. The vegetation in this area is dominated by christmasberry (*Schinus terebinthifolius*).

Site 10765 is a single feature site consisting of a terrace with a short wall extending west from the SW corner of the feature. The north, east and south edges of the terrace are slightly mounded defining a cobble-paved area within. The mounded edges are between 40 and 150 cm above the surrounding ground and 35 cm above the paved area. The west edge contains remnant facing and tumble which raises it 60 cm above the adjacent ground surface. A 45 cm tall wall extends 1.0 m towards the west from the SW corner of the feature.

Although no cultural material was observed on the surface, this site is interpreted as a temporary habitation feature. This evaluation is based on the feature's size, form and location within an *‘a’ā* flow lacking any evidence of soil. The lack of soil emphasizes the non-agricultural function. Refer to Kona Field System Lower Sample Area map for Site plan view, location and relationship to other features.

SITE 10766

Site 10766 is located within Kohanaiki Ahupua‘a at the 790 ft. elevation contour. The vegetation in this area is sparse christmasberry (*Schinus terebinthifolius*) with a few *lama* (*Diospyros sandwicensis*).

Site 10766 is a single feature site consisting of a C-shape with the opening toward the west. The feature is constructed of *‘a’ā* cobbles and boulders and also incorporates *‘a’ā* slab like boulders. There is remnant facing raising the architecture 40 to 50 cm above the surrounding ground surface. The area within the C-shape is a level, rough cobble paved area.

Although no cultural material was observed on the surface at this site, it is designated as a temporary habitation. This evaluation is based on size, form and most importantly location. This site is located within an *‘a’ā* flow with no soil present on or near the surface. The lack of soil emphasizes the non-agricultural function. Refer to Kona Field System Lower Area map for Site plan view, location and relationship to other features.

SITE 10767

Site 10767 is a trail oriented parallel to the ocean at the 810 ft. elevation. The pathway consists of *pāhoehoe* slabs serving as stepping-stones through an *‘a’ā* lava flow. There is a petroglyph on one of these *pāhoehoe* slabs (Figure 172). This is very similar to Site 10763 which is also a trail with a petroglyph on a *pāhoehoe* slab. The trail segment at Site 10767 is visible for 10.0 m. Although there is no physical evidence of the trail beyond what is reported here, it is oriented to connect to the *mauka* edge of Site

10768 and the dense collection of cave Sites 10733, 10742, 10735 and 10744. Refer to the KFS Lower Zone Map for location and relationship to other features on landscape.

Figure 172. Site 10767, Photo of Petroglyph.

SITE 10768

Site 10768 is located within the Kohanaiki Ahupua‘a between the 765 and 815 ft. elevation contours. Vegetation in this area is dominated by *alahe`e* (*Psydrax odorata*), christmasberry (*Schinus terebinthifolius*), *haole koa* (*Leucaena leucocephala*) and various grasses.

Site 10768 consists of 43 features, 35 of which are agricultural features (see Figure 177). No excavation was undertaken at this site. Based on the site’s size, number of features, feature distribution, and feature types, the site is interpreted as a pre-Contact permanent habitation and garden.

Of the 35 features interpreted as agricultural in function, 23 were mounds, 4 were *kuaiwi*, 3 were linear mounds, 3 were terraces, 1 was a large C-shape, and 1 was the modified edge of a flow. Basic information on all of the agricultural features is presented in Table 63.

FEATURE 1

Feature 1 is a platform with an attached terrace located on the northern edge of the site. The platform is 7.0 by 5.0 m with a 7.0 by 2.0 m terrace attached to the west edge. The platform is raised 20 to 40 cm above the surrounding ground surface and 35 cm above the terrace. The west edge of the terrace is raised 20 cm above the adjacent

Table 63. Site 10768 Features.

Fe.#	Type	Function	L (m)	W (m)	H (cm)
1	Platform w/ terrace	Habitation	7	7	20-40
2	Enclosure	Habitation	12	12	30-100
3	Enclosure	Animal Husbandry	15	25	70-120
4	Enclosure	Animal Husbandry	10	10	45-60
5	Enclosure	Animal Husbandry	30	47	60-70
6	Platform	Habitation	7	7	45
7	Enclosure	Habitation	5	5	110
8	Linear Mound	Agriculture	40	1-2	50-90
9	*Kuaiwi*	Agriculture	52	1-2	50-100
10	*Kuaiwi*	Agriculture	57	1-2	40-70
11	Linear Mound	Agriculture	25	1	45
12	Terrace	Agriculture	50	1-5	100-150
13	C-Shape (Large)	Agriculture	17	15	20-60
14	Mound	Agriculture	6	3	40
15	Mound	Agriculture	2	2	30
16	Mound	Agriculture	2	2	30
17	Mound	Agriculture	2	2	40
18	Mound	Agriculture	2	1	30
19	Mound	Agriculture	3	1	20
20	*Kuaiwi*	Agriculture	5	1	20
21	Mound	Agriculture	2	1	30
22	Terrace	Agriculture	8	2	35
23	Mound	Agriculture	2	1	45
24	Mound	Agriculture	3	3	60
25	Mound	Agriculture	4	2	75
26	Mound	Agriculture	2	2	30
27	Mound	Agriculture	2	2	40
28	Mound	Agriculture	4	2	40
29	Mound	Agriculture	2	2	100
30	Mound	Agriculture	5	3	110
31	Mound	Agriculture	1	2	30
32	Mound (Faced)	Agriculture	4	4	100
33	Mound	Agriculture	3	3	110
34	Terrace	Agriculture	4	3	60
35	Mound	Agriculture	4	2	40
36	Mound	Agriculture	1	1	20
37	Mound	Agriculture	2	1	20
38	Mound	Agriculture	4	2	40
39	Trail	Transportation	10	0.5	0
40	Linear Mound	Agriculture	5	1	25
41	*Kuaiwi*	Agriculture	15	3	40
42	Modified Edge of Flow	Agriculture	30	1	100
43	Mound	Agriculture	2	2	45

ground surface. The surface of the platform is a level, pebble paved, surface while the surface of the terrace is soil and bedrock. Although no cultural material was observed on

the surface, Feature 1 is interpreted to be a habitation feature. This evaluation is based on the size, form and location of this feature.

FEATURE 2

Feature 2 is an enclosure located at the far western edge of this site. The interior of the enclosure is 8.0 by 7.0 m, with a roughly level, cobble and boulder surface. The walls of the enclosure are mostly mounded with some remnant facing present on the north, west and south sides. The heights of the walls range from 30 to 100 cm while the widths of the walls range from 1.0 to 2.0 m. Although no cultural material was observed on the surface, Feature 2 is interpreted to be a habitation feature. This evaluation is based on the size, form and location of this feature.

FEATURE 3

Feature 3 is an enclosure located near the middle of the site. The interior of the enclosure is 22.0 by 12.0 m, with a roughly level soil and bedrock surface. Feature 43, a mound is also located within this enclosure. The enclosure has four walls with no evident breaks/entrances. The heights of the walls range from 70 to120 cm with remnant facing at various locations around the enclosure. All four walls of the enclosure are about 70 cm wide. Although no cultural material was observed on the surface, Feature 3 is interpreted as an animal husbandry feature. This evaluation is based on the size, form and location of this feature.

FEATURE 4

Feature 4 is an enclosure attached to the outside of the east wall of Feature 3. The interior of this enclosure is 7.0 by 7.0 m, with a roughly level soil and bedrock surface. The enclosure has four walls with a 4.0 m break (probable entrance) in the SW corner. Feature 9 extends east from the SE corner of Feature 4. The west wall of Feature 4 is the east wall of Feature 3. The widths of the walls range from 0.7 to 1.5 m, with heights ranging from 45 to 60 cm. There is no remnant facing on the north, east or south walls. Although no cultural material was observed on the surface, Feature 4 is interpreted as an animal husbandry feature. This evaluation is based on the size, form and location of this feature.

FEATURE 5

Feature 5 is an enclosure attached to the outside of the south wall of Feature 3. This enclosure measures 40.0 by 28.0 m, with a soil and bedrock surface. The enclosure has four walls with a 12.0 m break in the NW corner. The north wall of this enclosure is the south wall of Feature 3. The width of all four walls is about 0.7 m, with heights ranging from 60 to120 cm. There is remnant facing at various spots around the enclosure. Although no cultural material was observed on the surface, Feature 5 is interpreted as an animal husbandry feature. This evaluation is based on the size, form and location of this feature.

FEATURE 6

Feature 6 is a rough platform located 3.0 m west of Feature 3. The platform is 7.0 by 7.0 m, with a rough boulder paved surface. The platform has a maximum height of 45

cm. Although no cultural material was observed on the surface, Feature 6 is interpreted as a habitation feature. This evaluation is based on the size, form and location of this feature.

FEATURE 7

Feature 7 is an enclosure attached to the inside of the NW corner of Feature 5. The interior of this enclosure is 3.0 by 3.0 m, with a roughly level soil interior. The west wall of this enclosure is part of the west wall of Feature 5. The width of all four walls is about 0.7 m with interior heights of 110 cm and exterior heights ranging from 5 to120 cm. The exterior of the east wall was intentionally constructed to be 5 cm tall. There is remnant facing on all four walls of the enclosure. Although no cultural material was observed on the surface, Feature 7 is interpreted as a habitation feature. This evaluation is based on the size, form and location of this feature.

FEATURE 39

Feature 39 is a trail oriented *mauka-makai* directly northwest of Feature 7. The pathway consists of *pāhoehoe* slabs serving as stepping-stones. Feature 39 is visible for 10.0 m. Although there is no physical evidence of the trail beyond what is reported here, it is oriented to connect to Feature 7 and Feature 2.

SITE 10769

Site 10769 is located in the middle zone of the project area, 60.0 m from the northern boundary. It is located in the Kohanaiki Ahupua‘a at the 920 ft. elevation contour. The dense overstory of the surrounding vegetation is comprised primarily of *alahe`e* (*Psydrata odorata*) and christmasberry (*Schinus terebinthifolius*).

Site 10769 is a single feature site consisting of a two-sided terrace situated on the north edge of a ridge like undulation. The surface of the terrace is cobble paved with the west and north edges raised above the surrounding topography. The east and south edges of the terrace are flush with the surrounding ground surface. The terrace measures 3.0 by 3.0 m, with a height of 30 cm on both raised edges. There was no cultural material observed on the surface or in the surrounding area of this feature.

This feature is located within an area of agricultural features. Without performing any sub-surface excavations, this feature is interpreted as a temporary habitation based on the presence of the level, paved surface of the feature. Refer to Kona Field System Middle Sample Area map for Site plan view, location and relationship with other nearby features.

SITE 10770

Site 10770 is oriented *mauka-makai* at the 915 ft. elevation. The pathway consists of *pāhoehoe* slabs serving as stepping-stones through an *‘a’ā* lava flow. The trail is visible for 10.0 m. Although there is no physical evidence of the trail beyond what is reported here, it is oriented to connect to Site 10697 and Site 10725. Refer to KFS Middle Zone Map for location and relationship to other features on landscape.

SITE 10771

Site 10771 is oriented *mauka-makai* at the 920 ft. elevation. The pathway consists of a cleared corridor through alternating *pāhoehoe* and *ʻa'ā* lava. The trail is visible for 45.0 m. The trail connects to Site 10724, and although there is no physical evidence of the trail beyond what is reported here, it is oriented to connect to Site 10725. Refer to KFS Middle Zone Map for location and relationship to other features on landscape.

SITE 10772

Site 10772 is located in the Kohanaiki Ahupuaʻa at the 945 ft. elevation contour. Vegetation in this area is dominated by *alahe`e* (*Psydrax odorata*) and christmasberry (*Schinus terebinthifolius*).

Site 10772 consists of a terrace and a paved area on the south side of a level, *pāhoehoe* outcrop and soil area. These features are situated directly north of a relatively deep, modified gully with numerous Kona Field System agricultural features. Although no cultural material was observed at Site 10772, this site is interpreted as a pre-Contact temporary habitation site. This evaluation is based on feature size, form and location within the landscape and agricultural features of the Kona Field System.

Feature 1 is a three sided terrace situated against a small *pāhoehoe* outcrop step. The surface of the terrace is a nearly square 1.5 by 1.5 m cobble/small boulder paved area. The west, south and east sides are raised above the surrounding ground surface with heights ranging from 15 to 50 cm. The north edge of the terrace is built against a *pāhoehoe* outcrop which steps up 20 cm from the surface of the terrace. There is remnant facing present on the west edge of the terrace while the other edges are single course and/or two course high with some tumble.

Feature 2 is a paved area situated 1.5 m to the NE of Feature 1. The surface of Feature 2 is a nearly square 1.5 by 1.5 m pebble/cobble paved area with probable bedrock visible as part of the surface. The most distinctive part of this feature is the pavement at the edges of the feature blend into the surrounding ground surface. Directly to the south and east, the terrain slopes down into the relatively deep gully described above. The west and north edges of Feature 2 blend into the level, *pāhoehoe* outcrop and soil area directly to the north of both Feature 1 and 2.

Although the level, *pāhoehoe* outcrop and soil area is not designated as a formal feature, it is worth some description. Both Feature 1 and 2 are attached directly to the south edge of this naturally flat area. If not for the density of the current vegetation, there would be a great view of the coastline from this area. The level, *pāhoehoe* outcrop and soil area is 20 by 20 m. Other than Feature 1 and 2, there are a few modifications which slightly enhance the levelness of the area. This is visible in the plan view of Site 10772 (Figure 173).

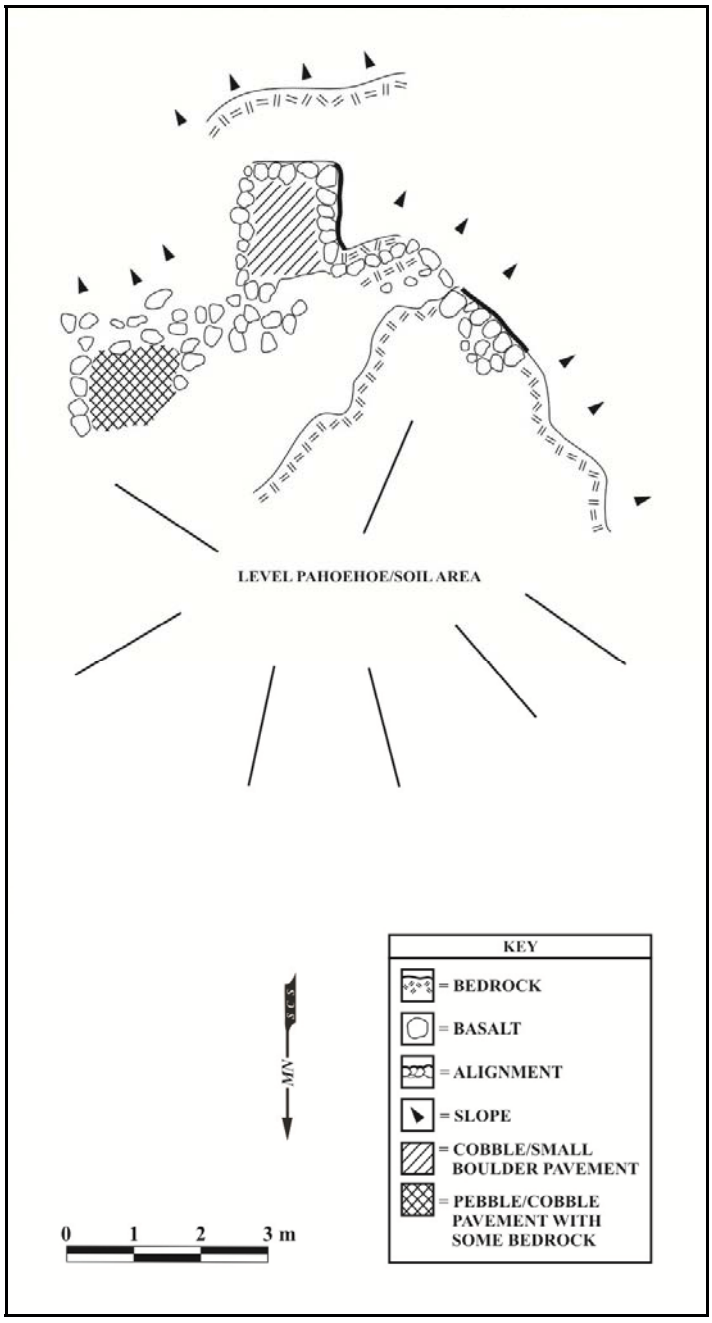

Figure 173. Site 10772, Plan View.

SITE 10773

Site 10773 is located within the Kohanaiki Ahupua‘a at the 900 ft. elevation contour. The vegetation in this area is dominated by *alahe`e* (*Psydrax odorata*) and christmasberry (*Schinus terebinthifolius*).

Site 10773 is a single feature site consisting of a two-sided terrace. The surface of this terrace is a level, soil and bedrock area. The north and west edges of the terrace are raised 70 cm above the adjacent ground surface. The east and south edges of the terrace are flush with the adjacent ground surface. The north and west edges of the terrace have remnant facing with a broken water-worn boulder incorporated in the west edge.

Although no cultural material was observed on the surface of this feature, Site 10773 is interpreted as a temporary habitation. This evaluation is based on feature size, form and location within the landscape and agricultural features of the Kona Field System. Refer to Kona Field System Middle Sample Area map for Site plan view, location and relationship with other nearby features.

SITE 10774

Site 10774 is located within the Kohanaiki Ahupua‘a at the 875 ft. elevation contour. The vegetation in this area is dominated by christmasberry (*Schinus terebinthifolius*) and *alahe`e* (*Psydrax odorata)*.

Site 10774 is a single feature site consisting of a three-sided terrace with a 45 cm deep depression in the cobble/small boulder pavement. The east, south, and west edges of the terrace are raised 20 to100 cm above the surrounding ground surface. There is no remnant facing but rather a lot of tumble on all raised sides. The north edge of the terrace is flush with the adjacent ground surface. The 80 by 80 cm depression is located in the NE center of the pavement (Figure 174).

Although no cultural material was observed on the surface, this site is interpreted as a pre-Contact temporary habitation feature. This evaluation is based on size, form and location of the feature.

SITE 10776

Site 10776 is a trail oriented *mauka-makai* at the 810 ft. elevation. The pathway consists of *pāhoehoe* slabs serving as stepping-stones through an *‘a’ā* lava flow. The trail is visible for 25.0 m. The trail connects to *pāhoehoe* outcrop directly north of Site 10742 opening and, although there is no physical evidence of the trail beyond what is reported here, it is oriented to Site10702.

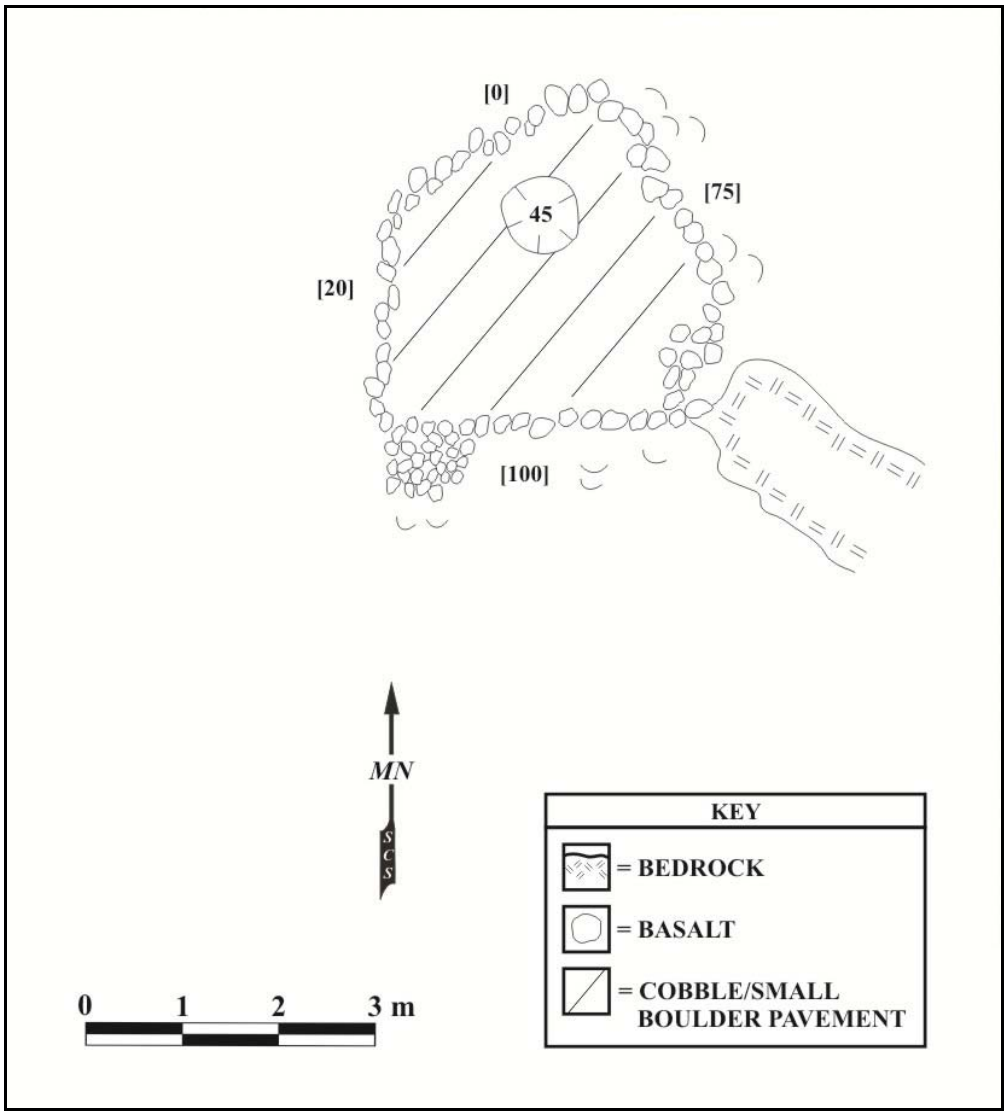

Figure 174. Site 10774 plan view.

SITE 10778

There are 30 features in the historic Punihaole Homestead (see Figure 144; Table 64). The main habitation feature associated with this homestead that is shown in the Emerson map (see Figure 8) is beyond the Kaloko Heights project area. Feature 1 may be another habitation feature in this large, possibly, multi-residential, homestead.

Table 64. Site 10778 Inventory of features in the Punihaloe Homestead.

Feature	Type	Size (in meters)	Previous #
1	Habitation platform	7.3 wide x 8.1 long	10795
2	Agricultural mound	3.0 diam x 0.5 high	10787
3	Agricultural mound	5.0 diam x 0.8 high	10789
4	Agricultural mound	4.0 diam x 0.5 high	10790
5	Agricultural mound	2.0 diam x 0.5 high	10792
6	Agricultural mound	2.0 diam x 0.9 high	10796
7	Agricultural mound	7.0 long x 0.8 high	10797
8	Agricultural mound	2.0 diam x 0.5 high	10798
9	Agricultural mound	2.0 diam x 0.5 high	10799
10	Agricultural mound	1.5 diam x 0.4 high	10800
11	Agricultural mound	1.5 diam x 0.4 high	10801
12	Agricultural terrace	4.0 wide x 6.2 long	10788
13	*Kuaiwi* and Agricultural terrace	6.9 wide x 11.6 long	10793
14	Agricultural terrace	4.9 wide x 19.5 long	10762
15	Agricultural terrace	2.4 wide x 6.6 long	10763
16	Internal division wall	1.9 wide x 0.4 high	10791
17	Internal division wall	1.5 wide x 1.0 high	10794
18	Agricultural mound	1.5 diam x 0.3 high	SCS 1
19	Agricultural terrace	0.4 wide x 4.0 long	SCS 2
20	Agricultural terrace	4.0 wide x 10.0 long	SCS 4
21	Agricultural terrace	2.0 wide x 2.0 long	SCS 5
22	Cistern	2.0 diam x 0.4 high	SCS 6
23	*Kuaiwi*	2.0 wide x 0.4 high	SCS 7
24	Internal division wall	0.7 wide x 0.8 high	15540 F. F
25	Homestead boundary wall	0.8 wide x 1.2 high	15540 F. G
26	Homestead boundary wall	0.9 wide x 1.2 high	15540 F. R
27	Internal division wall	0.9 wide x 0.9 high	15540 F. S
28	Homestead boundary wall	1.0 wide x 1.2 high	15540 F. T
29	Internal division wall	1.3 wide x 0.8 high	15540 F. W
30	Internal division wall	0.7 wide x 1.1 high	15540 F. AJ

Feature 5

A portion of Feature 5, a small, oval-shaped mound lying on a moderate southwest facing slope, and measuring 2.9 m east-west by 1.4 m north-south, was tested. The entire feature does not exceed 50 cm in height above the surrounding ground surface. It is substantially faced on both its north and south sides, this facing being composed of medium sized *pāhoehoe* slabs and medium to large cobbles. A few of the cobbles located in the lower portions of the facing, may have been dressed. Fill retained by this facing consisted of large pebbles to large cobbles (Figure 175).

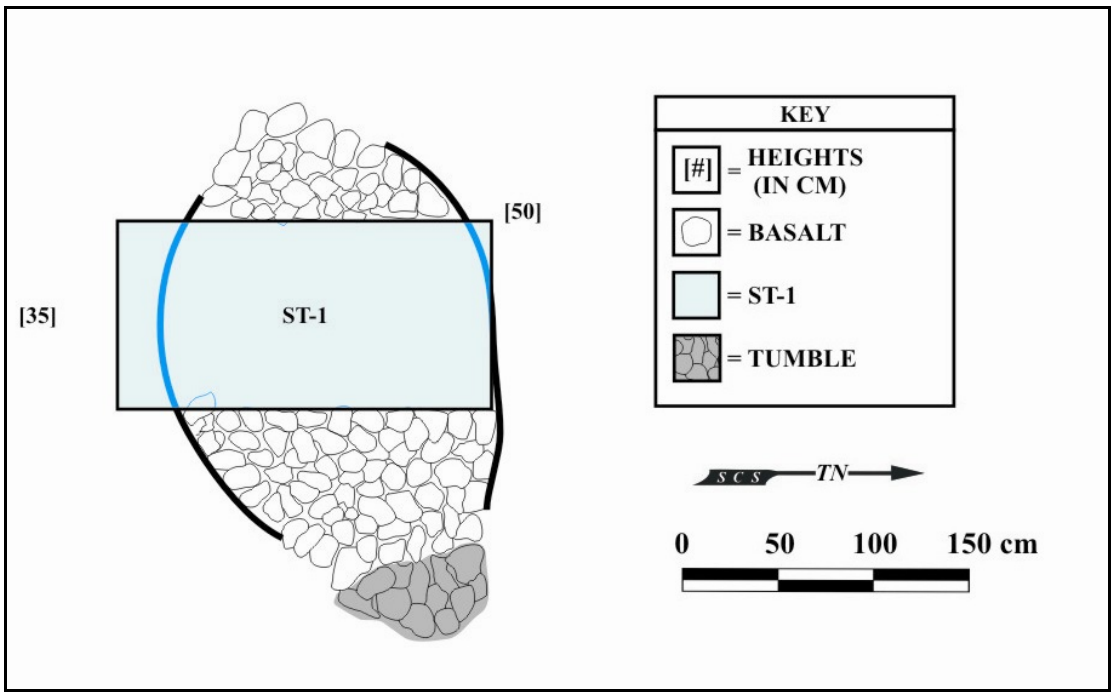

Figure 175. Site 10778, Feature 5, Plan View.

The trench placed within this feature, ST-1, measured 2.0 by 1.0 m and sought to answer the question regarding the feature's potential to conceal human remains. ST-1's orientation was north-south so that both ends of the trench crossed the facing on both sides of the feature. Excavation revealed that although the south facing where this trench was placed was minimal, the north facing was up to 40 cm thick and extended considerably below the surrounding ground surface.

Two soil layers were identified, the lowermost of these confined to a portion of the unit outside of the feature. The pebble-cobble fill penetrated the uppermost soil layer (Layer I). Layer I averaged 20 cm thick and was a very dark brown (10YR 2/2), organic silt with about 70% natural cobbles and pebbles in only the southern portion of the unit. In the northern portion, fill rested upon a large boulder that appears culturally placed due to the soil underneath it, and its elevation above the base of the facing.

Layer II, an 18 cm thick, very dark gray (10YR 3/1), inorganic silt was only visible in the extreme south portion of the unit, outside of the feature (Figure 176). Cultural material recovered from this unit was sparse, but included marine shell, small mammal bone and charcoal. The charcoal, however, was recovered from soil Layer II, outside of the feature (Table 65).

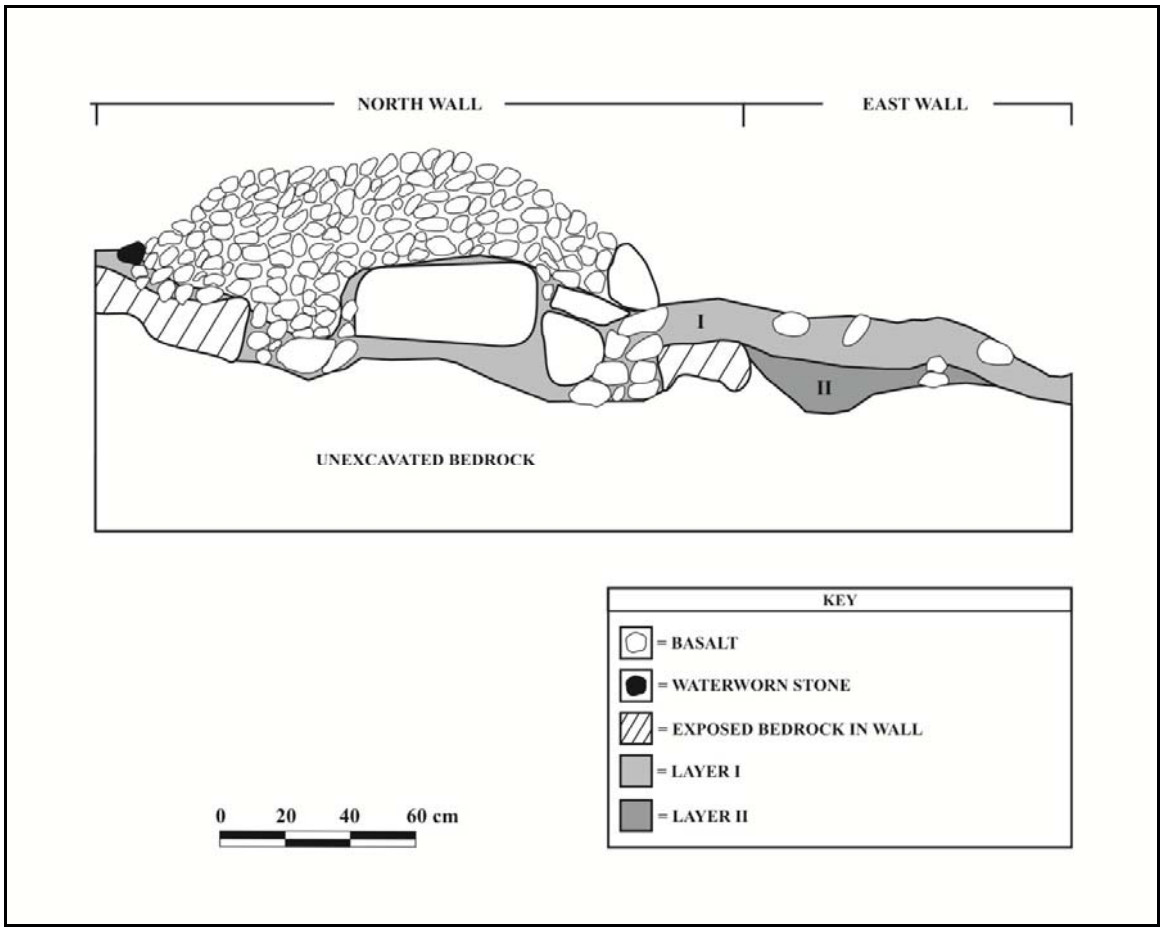

Figure 176. Site 10778, Feature 5, ST-1, Profile: North and East Walls.

Table 65. Site 10778, Feature 5, ST-1, Midden.

Feature	Unit	Layer	Material	Weight (g)	N	Remarks
5	ST-1	-	Invertebrates	30.7	-	Taxa: *Cypraea* sp., *Drupa* sp.
		-	Vertebrates	13.0	-	Small-to-medium mammal
		-	Charcoal	5.2	-	-
		-	*Kukui*	0.7	-	-

Feature 5 probably represents another agricultural feature in this homestead. The few marine shell pieces are probably debris from the ubiquitous presence of marine shell in an ancient and historic homestead area.

KONA FIELD SYSTEM

The Kona Field System was identified throughout much of the undisturbed portion of the project area. Based on consultation with SHPD, SCS mapped three transects of the field system within the project area, which were labeled the Lower, Middle, and Upper Sample Areas (see Figure 3).

A total of 191 features were mapped in the Lower Sample Area (Table 66; Figure 177). Of the 191 recorded features, 155 (81.15%) were mounds, 12 (6.28%) were *kuaiwi*, 5 (2.62%) were modified outcrops, 5 (2.62%) were terraces, 4 (2.09%) were C-shapes, and various other feature types (N=10; 5.24%) made up the remainder of the recorded features.

A total of 319 features were mapped in the Middle Sample Area (Table 67; Figure 178). Of the 319 recorded features, 229 (71.79%) were mounds, 30 (9.40%) were *kuaiwi*, 25 (7.84%) were modified outcrops, 21 (6.58%) were terraces, 0 (0%) were C-shapes, and various other feature types (N=14; 4.39%) made up the remainder of the recorded features.

A total of 151 features were mapped in the Upper Sample Area (Table 68; Figure 179). Of the 151 recorded features, 73 (48.34%) were mounds, 24 (15.83%) were *kuaiwi*, 14 (10.08%) were C-shapes, 10 (6.62%) were terraces, 9 (5.96%) were modified outcrops, and various other feature types (N=21; 13.92%) made up the remainder of the recorded features.

Table 66. Lower Area Features.

Fea #	Feature type	L (m)	W (m)	Long axis
1	Mound	1.5	1.0	E-W
2	Mound	1.0	1.0	
3	Mound	2.0	1.0	NW-SE
4	Mound	1.5	1.0	E-W
5	Mound	1.5	1.0	E-W
6	Mound	1.5	1.0	E-W
7	Mound	1.0	1.0	
8	Mound	1.5	1.5	
9	Mound	1.5	1.5	
10	Mound	2.0	1.5	E-W
11	Mound	1.5	1.5	
12	Mound	1.0	1.0	
13	Mound	2.0	2.0	
14	Mound	1.0	1.0	
15	Mound	2.0	2.0	
16	Mound	2.0	1.5	E-W
17	Mound	1.0	1.0	
18	Mound	1.0	1.0	
19	Mound	1.0	1.0	
20	Mound	1.0	1.0	
21	Mound	1.5	1.0	
22	Mound	1.5	1.0	E-W
23	Mound	1.0	1.0	
24	Mound	1.0	1.0	
25	Mound	1.0	1.0	
26	Mound	1.0	1.0	
27	Mound	2.0	2.0	
28	Mound	1.0	1.0	
29	Mound	1.0	1.0	
30	Mound	1.0	1.0	
31	Mound	1.5	1.5	
32	Mound	2.5	2.5	
33	Mound	1.5	1.5	
34	Mound	2.0	2.0	
35	*Kuaiwi*	24.0	1.0	NE-SW
36	*Kuaiwi*	27.5	1.0	NE-SW
37	Mound	1.5	1.0	
38	*Kuaiwi*	10.0	1.0	NE-SW
39	Mounded wall	28.0	1.0	NW-SE
40	Mound	1.5	1.0	NW-SE
41	Mound	1.0	1.0	
42	*Kuaiwi*	29.0	1.0	NE-SW
43	Mound	1.0	1.0	
44	Mound	1.5	1.0	N-S
45	Mound	1.5	1.0	NE-SW
46	*Kuaiwi*	9.0	1.0	NE-SW
47	Mound	1.5	1.0	E-W
48	Mound	1.5	1.0	E-W
49	Mound	1.0	1.0	
50	Mound	1.0	1.0	
51	Mound	1.5	1.5	
52	Mound	1.0	1.0	
53	Mound	2.0	1.5	E-W
54	Mound	2.0	1.5	E-W
55	Mound	2.5	1.5	NW-SE
56	*Kuaiwi*	7.5	1.0	NE-SW
57	Mound	1.0	1.0	
58	Mound	1.0	1.0	
59	Mound	2.5	2.0	E-W
60	Mound	2.5	2.5	
61	Mound	2.5	2.0	E-W
62	Mound	2.5	2.5	
63	Mound	2.0	1.5	NW-SE
64	Mound	2.5	2.0	NW-SE
65	Mound	2.5	2.5	
66	Mound	3.0	2.5	E-W
67	Mound	2.5	2.5	
68	Mound	2.5	2.5	
69	Mound	2.0	1.5	E-W
70	Mound	2.5	2.0	E-W
71	Mound	2.0	2.0	
72	Mound	2.0	2.0	
73	Mound	2.5	1.5	E-W
74	Mound	2.0	2.0	
75	Mound	1.0	1.0	
76	Mound	2.5	2.5	
77	*Kuaiwi*	41.0	1.0	NE-SW
78	Mound	2.5	2.0	E-W
79	Enclosure	10.0	10.0	
80	*Kuaiwi*	35.0	1.5	E-W
81	Mounded wall	25.0	1.5	N-S
82	C-shape	7.0	5.0	Open SE
83	Mound	2.0	1.5	E-W
84	Mound	2.0	1.5	N-S
85	Mound	5.0	2.5	E-W
86	Mound	5.0	3.0	NW-SE
87	Mound	4.0	2.5	E-W
88	Mound	4.0	3.0	NE-SW
89	Modified edge of flow	20.0	1.0	E-W
90	Mound	3.0	2.0	NE-SW

Table 66. Continued.

Fea #	Feature type	L (m)	W (m)	Long axis
91	Terrace	19.0	10.0	N-S
92	Mound	3.5	1.5	NW-SE
93	Terrace	20.0	7.5	NW-SE
94	Mound	2.0	1.5	E-W
95	Mound	4.0	3.5	E-W
96	Modified O/C	4.0	2.5	E-W
97	Mound	5.0	4.0	E-W
98	Mound	3.0	2.5	N-S
99	Mound	3.0	2.0	N-S
100	Mound	3.0	1.0	NW-SE
101	Void			
102	*Kuaiwi*	6.5	1.5	E-W
103	Modified O/C	4.5	2.5	N-S
104	Mound	1.5	1.0	E-W
105	Mound	7.5	4.5	N-S
106	Modified edge of flow	16.0	1	N-S
107	Mound	3.0	2.5	E-W
108	C-shape	7.5	3.5	Opens W
109	Mound	4.5	2.5	E-W
110	*Kuaiwi*	22.0	1.5	E-W
111	Mound	3.0	2.0	E-W
112	*Kuaiwi*	6.0	1.5	E-W
113	C-shape	11.5	5.0	Opens NW
114	Mound	2.5	2.0	N-S
115	Mound	6.0	1.5	E-W
116	Mound	6.0	1.5	NE-SW
117	Modified O/C	3.5	1.0	N-S
118	Modified O/C	4.0	1.0	N-S
119	Modified O/C	6.0	4.0	N-S
120	Mound	2.5	1.5	N-S
121	Mound	1.5	1.0	N-S
122	Mound	3.0	2.5	N-S
123	Mound	2.5	2.5	
124	Mound	4.5	1.5	NW-SE
125	Mound	3.0	3.0	
126	Mound	2.0	2.0	
127	Mound	3.5	2.0	NW-SE
128	Mound	2.5	1.5	NE-SW
129	Mound	3.0	1.5	NW-SE
130	Mound	3.5	2.5	N-S
131	Mound	3.5	1.5	NW-SE
132	Mound	2.0	1.5	NW-SE
133	Mound	4.0	1.5	NE-SW
134	Mound	2.5	1	NW-SE
135	Mound	3.0	2.5	E-W
136	Mound	3.0	1.5	E-W
137	Mound	2.0	1.0	E-W
138	Mound	3.5	2.5	N-S
139	Mound	2.5	2.5	
140	Mound	2.5	2.0	NW-SE
141	Modified edge of flow	6.0	1.0	N-S
142	Mound	2.0	1.5	E-W
143	Mound	2.0	1.5	E-W
144	Mound	1.5	1.5	
145	Mound	3.0	3.0	
146	Mound	2.0	2.0	
147	Mound	2.5	1.5	N-S
148	Mound	4.0	2.0	NW-SE
149	Mound	3.0	1.5	E-W
150	Mound	2.5	2.0	NW-SE
151	Mound	4.5	2.0	E-W
152	Mound	4.0	1.5	N-S
153	Mound	2.5	1.0	E-W
154	Mound	2.0	2.0	
155	Mound	2.0	1.0	N-S
156	Mound	2.5	1.0	N-S
157	C-shape	4.0	3.5	Opens W
158	Mound	2.5	1.5	N-S
159	Mound	3.5	2.5	NE-SW
160	Mound	1.0	1.0	
161	Mound	2.0	2.0	
162	Mound	4.5	3.0	NE-SW
163	Terrace	5.0	5.0	
164	Terrace	7.5	3.0	N-S
165	Modified sink	10.0	6.0	NE-SW
166	*Kuaiwi*	10.0	1.0	NE-SW
167	Mounded wall	15.0	1.5	N-S
168	Mound	5.0	5.0	
169	Terrace	4.5	3.5	N-S
170	Modified sink	8.5	5.0	E-W
171	Modified edge of flow	5.0	1.0	E-W

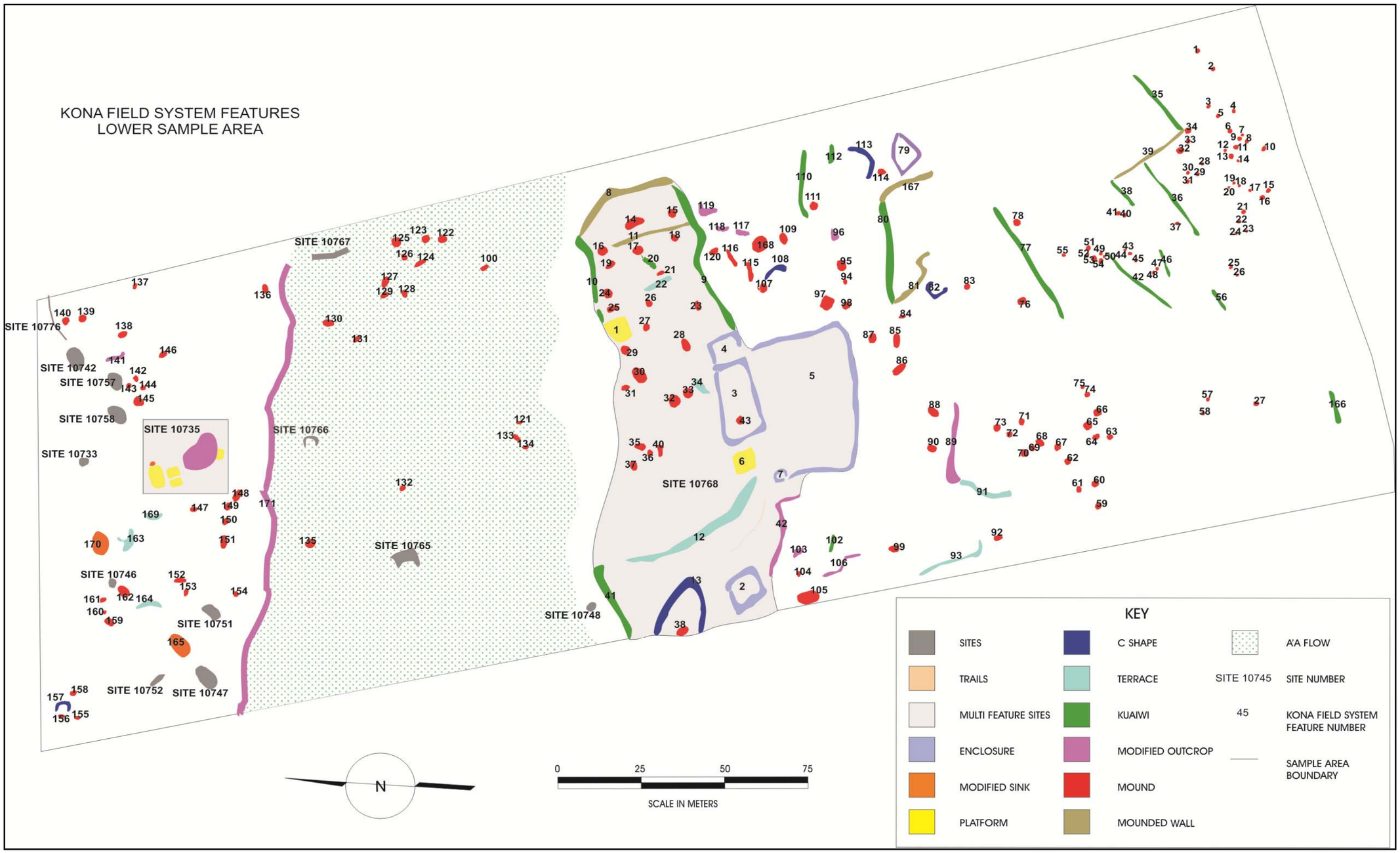

Figure 177. Map of Lower Sample Area in the KFS.

Table 67. Middle Area Features.

Fea #	Feature Type	L (m)	W (m)	Long axis
1	*Kuaiwi*	11.0	1.0	E-W
2	Terrace	12.0	1.0	NW-SE
3	Mound	4.0	4.0	
4	Mound	1.5	1.5	
5	Mound	2.0	2.0	
6	Mound	2.0	2.0	
7	Mound	1.5	1.5	
8	Mound	2.0	2.0	
9	Mound	2.0	2.0	
10	Mound	2.5	2.0	N-S
11	Mound	2.0	1.5	E-W
12	*Kuaiwi*	16.0	1.5	E-W
13	Terrace	7.5	1.5	NW-SE
14	Mounded Wall	8.0	1.5	NW-SE
15	Pavement	6.0	3.0	E-W
16	Modified O/C	10.0	8.0	E-W
17	Terrace	15.0	7.5	N-S
18	*Kuaiwi*	35.0	1.0	E-W
19	Terrace	6.0	1.0	NW-SE
20	Mound	3.5	2.0	E-W
21	Mound	2.5	2.0	N-S
22	Mound	1.5	1.5	
23	Mound	2.0	1.5	N-S
24	Mound	2.5	1.5	E-W
25	*Kuaiwi*	7.0	1.0	E-W
26	Mound	3.0	1.0	N-S
27	Mound	2.0	1.5	E-W
28	Mound	2.0	2.0	
29	Mound	4.5	2.5	E-W
30	Mound	2.5	2.0	N-S
31	Mound	5.0	3.5	E-W
32	Mound	2.5	1.0	E-W
33	Mound	2.5	2.5	
34	*Kuaiwi*	7.0	1.0	E-W
35	Modified O/C	10	1.0	E-W
36	Mound	5.0	1.5	NE-SW
37	Mound	2.0	1.5	N-S
38	Mound	4.0	1.5	E-W
39	Mound	5.0	2.0	E-W
40	Mound	4.0	3.0	N-S
41	Mound	1.0	1.0	
42	Mound	2.0	1.0	E-W
43	Mound	3.0	1.0	E-W
44	Modified O/C	9.5	1.5	E-W
45	Terrace	4.0	2.0	N-S
46	Mound	2.0	1.0	E-W
47	Mound	4.0	2.5	E-W
48	Mound	7.0	2.0	E-W
49	Mound	2.5	2.0	N-S
50	Mound	6.0	2.0	E-W
51	Mound	3.5	2.0	NW-SE
52	Mound	6.0	1.0	NE-SW
53	Mound	2.5	1.0	E-W
54	Mound	5.0	3.0	NE-SW
55	Mound	4.0	3.0	NW-SE
56	Mound	1.5	1.5	
57	Terrace	6.5	2.0	N-S
58	Mound	1.5	1.5	
59	Terrace	5.0	1.0	NW-SE
60	Terrace	7.0	1.5	NW-SE
61	Mound	3.5	3.5	
62	Modified O/C	5.5	6.0	E-W
63	Wall	6.5	1.5	NE-SW
64	Mound	2.5	2.0	E-W
65	Modified O/C	3.5	3.5	
66	Mound	2.0	2.0	
67	Mound	1.5	1.5	
68	Mound	2.5	1.5	E-W
69	Mound	2.0	1.5	N-S
70	Mound	2.0	1.5	N-S
71	Mound	2.0	2.0	
72	Mound	2.0	2.0	
73	Mound	3.0	1.5	N-S
74	Mound	2.0	2.0	
75	Mound	2.0	1.5	N-S
76	Mound	1.5	1.5	
77	Modified O/C	4.0	1.0	E-W
78	Modified O/C	4.0	1.5	E-W
79	Mound	2.5	2.5	
80	Modified O/C	7.0	1.5	E-W
81	Mound	4.5	3.0	NE-SW
82	Mound	2.0	1.5	NW-SE
83	Mound	3.5	2.5	N-S
84	*Kuaiwi*	85	1.5	NE-SW
85	Terrace	5.0	2.5	NW-SE
86	*Kuaiwi*	10.5	1.5	NE-SW
87	Mound	3.5	3.0	N-S
88	Mound	5.5	3.0	NE-SW
89	Mound	3.0	2.5	N-S
90	Terrace	11.0	5.0	NW-SE
91	Depression	2.5	1.5	N-S
92	Mound	3.0	1.5	NE-SW
93	Mound	3.0	1.5	NE-SW

Table 67. Continued.

Fea #	Feature Type	L (m)	W (m)	Long axis
94	Mound	2.5	1.0	NE-SW
95	Mound	2.0	2.0	
96	Mound	3.0	1.5	NE-SW
97	Mound	3.0	2.0	NE-SW
98	Modified O/C	3.0	2.0	NE-SW
99	Mound	3.5	3.0	NE-SW
100	Mound	6.0	6.0	
101	Modified O/C	2.5	1.0	E-W
102	Mound	4.0	2.5	NE-SW
103	Mound	4.0	2.0	E-W
104	Mound	3.5	3.0	E-W
105	Mound	3.0	2.5	N-S
106	Mound	4.0	2.5	NE-SW
107	Mound	3.0	1.0	NE-SW
108	Terrace	15.0	2.0	NW-SE
109	Terrace	5.5	2.0	N-S
110	Mound	2.5	2.5	
111	Mound	2.5	2.5	
112	Mound	2.0	2.0	
113	Mound	2.0	1.0	NE-SW
114	Mound	2.0	2.0	
115	Mound	2.0	1.5	N-S
116	Mound	3.0	2.0	NE-SW
117	Mound	2.5	1.5	NW-SE
118	Mound	1.5	1.5	
119	Mound	3.0	2.5	E-W
120	*Kuaiwi*	16	1.0	NE-SW
121	Terrace	3.0	2.0	NW-SE
122	Mound	2.5	2.5	
123	Mound	2.5	2.5	
124	Mound	2.5	1.5	E-W
125	*Kuaiwi*	7.5	1.0	E-W
126	*Kuaiwi*	75	1.0	E-W
127	Mound	2.0	1.5	E-W
128	*Kuaiwi*	8.5	1.0	NE-SW
129	*Kuaiwi*	22.0	1.0	NE-SW
130	Mound	4.0	2.5	E-W
131	Depression	1.5	1.0	NW-SE
132	Depression	1.0	1.0	
133	Mound	2.5	2.0	E-W
134	Mound	1.5	1.0	NW-SE
135	Mound	1.5	1.5	
136	*Kuaiwi*	55	2.0	E-W
137	Mound	2.0	1.5	NW-SE
138	Mound	2.0	1.0	NW-SE
139	Mound	1.0	1.0	
140	Mound	3.5	2.5	E-W
141	Mound	3.5	2.5	E-W
142	Mound	2.5	1.0	E-W
143	Mound	2.5	1.5	E-W
144	Terrace	2.5	2.5	
145	Mound	1.5	1.0	NE-SW
146	Mound	1.5	1.0	E-W
147	Mound	1.5	1.0	N-S
148	Mound	2.0	2.0	
149	Mound	2.5	1.0	N-S
150	Mound	2.5	2.0	E-W
151	Terrace	5.0	4.0	E-W
152	Mound	1.0	1.0	
153	Depression	1.0	1.0	
154	Mound	1.5	1.5	
155	Mound	2.0	1.5	N-S
156	*Kuaiwi*	30.0	1.0	NE-SW
157	Mound	3.0	1.5	NW-SE
158	Mound	3.0	1.5	E-W
159	*Kuaiwi*	8.0	1.0	E-W
160	Mound	4.0	1.5	N-S
161	*Kuaiwi*	15.0	1	E-W
162	Mound	1.0	1.0	
163	Mound	1.0	1.0	
164	Ahu	1.0	1.0	
165	*Kuaiwi*	45.0	1.0	E-W
166	Mound	2.0	1.5	N-S
167	Mound	1.5	1.0	N-S
168	Mound	2.5	1.5	NE-SW
169	Mound	1.5	1.5	
170	Mound	1.5	1.0	N-S
171	Mound	2.5	1.0	E-W
172	Mound	3.0	1.5	E-W
173	Mound	3.0	1.5	E-W
174	*Kuaiwi*	9.5	1.0	E-W
175	*Kuaiwi*	4.0	1.0	E-W
176	Mound	4.0	1.0	NW-SE
177	*Kuaiwi*	8.0	1.5	E-W
178	Mound	3.0	2.0	E-W
179	Mound	3.0	2.0	NE-SW
180	Enclosure	5.0	5.0	
181	Mound	2.5	1.0	E-W
182	Mound	2.5	2.0	E-W
183	Mound	2.5	2.5	
184	Mound	1.5	1.5	
185	Mound	1.5	1.5	
186	*Kuaiwi*	15.0	1.5	NE-SW

Table 67. Continued.

Fea #	Feature Type	L (m)	W (m)	Long axis
187	Mound	2.0	2.0	
188	Mound	3.0	1.5	E-W
189	Mound	3.5	1.5	NE-SW
190	Terrace	4.0	3.0	NW-SE
191	Mound	2.5	1.5	NW-SE
192	*Kuaiwi*	25.0	1.0	NE-SW
193	Terrace	22.0	2.0	NW-SE
194	Mound	2.5	2.0	NW-SE
195	*Kuaiwi*	5.0	1.0	NE-SW
196	Mound	3.5	1.5	NE-SW
197	Mound	2.0	1.0	E-W
198	Mound	1.5	1.5	
199	Mound	3.0	2.0	N-S
200	Mound	2.5	1.5	E-W
201	Mound	1.5	1.5	
202	Mound	3.5	2.0	N-S
203	Mound	2.5	2.0	N-S
204	Mound	2.0	1.5	N-S
205	Mound	3.5	2.5	NW-SE
206	Mound	2.0	1.0	N-S
207	Mound	3.5	1.5	E-W
208	Mound	2.5	1.5	E-W
209	Mound	2.5	2.5	
210	Mound	3.0	2.0	E-W
211	Mound	1.5	1.5	
212	Mound	3.0	2.0	NE-SW
213	Mound	2.5	2.0	NE-SW
214	*Kuaiwi*	12	1.5	NE-SW
215	Mound	2.5	2.0	NW-SE
216	Mound	2.0	2.0	
217	Mound	2.0	1.0	N-S
218	Mound	2.5	2.0	E-W
219	Mound	5.0	2.0	E-W
220	Mound	3.0	2.0	NE-SW
221	Mound	3.0	1.0	NE-SW
222	Mound	2.5	1.5	N-S
223	Mound	2.5	2.5	
224	Mound	3.0	1.5	NW-SE
225	Modified O/C	5.0	2.5	N-S
226	Mound	2.5	1.5	NE-SW
227	Mound	2.5	2.0	N-S
228	Mound	2.5	1.5	N-S
229	Mound	4.5	2.0	E-W
230	Mound	3.0	1.0	E-W
231	Mound	3.0	2.0	NE-SW
232	Mound	3.0	2.0	E-W
233	Mound	3.0	2.0	N-S
234	Alignment	6.5	0.3	E-W
235	Mound	2.5	2.5	
236	Terrace	14.0	7.5	E-W
237	Mound	3.0	2.5	E-W
238	Mound	2.5	2.5	
239	Mound	3.0	2.0	N-S
240	Mound	3.0	2.5	N-S
241	Mound	2.5	2.5	
242	Mound	2.0	1.5	N-S
243	Mound	1.5	1.5	
244	Mound	1.0	1.0	
245	Mound	1.5	1.5	
246	*Kuaiwi*	7.0	1.5	E-W
247	Mound	1.5	1.5	
248	Modified O/C	4.0	1.0	E-W
249	Mound	3.0	1.5	E-W
250	Mound	2.5	1.5	N-S
251	Mound	2.5	2.0	N-S
252	Mound	3.0	2.5	E-W
253	Mound	2.5	1.5	E-W
254	Mound	2.5	2.0	N-S
255	Mound	2.5	2.0	E-W
256	Mound	3.0	2.5	N-S
257	Mound	3.0	1.5	E-W
258	Mound	5.0	2.5	N-S
259	Mound	3.5	2.5	E-W
260	Depression	1.0	1.0	
261	Modified O/C	2.5	2.0	NW-SE
262	Mound	4.5	2.5	N-S
263	Terrace	18.0	1.5	N-S
264	Wall	4.0	1.5	N-S
265	Mound	2.0	2.0	
266	Mound	3.5	2.0	NW-SE
267	Mound	2.5	2.0	N-S
268	Mound	5.0	4.5	N-S
269	*Kuaiwi*	11.0	1.5	E-W
270	Mound	3.0	1.5	N-S
271	Mound	4.0	3.5	N-S
272	Mound	2.5	1.0	NW-SE
273	Mound	2.0	1.0	E-W
274	Mound	2.5	1.5	N-S
275	Mound	1.5	1.5	
276	Mound	3.0	1.5	N-S
277	*Kuaiwi*	18.0	1.5	E-W
278	Mound	2.0	1.5	E-W
279	Mound	3.5	1.5	NE-SW

Table 67. Continued.

Fea #	Feature Type	L (m)	W (m)	Long axis
280	Mound	1.5	1.0	NW-SE
281	Mound	3.0	1.5	NW-SE
282	Mound	2.5	1.0	NE-SW
283	Mound	3.0	2.0	NE-SW
284	Mound	4.0	2.5	NE-SW
285	*Kuaiwi*	8.5	1.0	NE-SW
286	Mound	2.0	1.5	E-W
287	*Kuaiwi*	5.0	1.0	NE-SW
288	Mound	1.5	1.5	
289	Mound	2.5	1.0	E-W
290	Modified O/C	10.0	1.0	E-W
291	Modified O/C	10.0	1.0	E-W
292	Mound	2.0	2.0	
293	Modified O/C	3.5	2.0	NW-SE
294	Modified O/C	2.0	1.0	NW-SE
295	Mound	1.5	1.5	
296	Modified O/C	4.0	4.0	
297	Mound	4.0	2.0	
298	Modified O/C	3.0	2.0	N-S
299	Modified O/C	3.0	2.5	E-W
300	Modified O/C	8.0	4.0	NE-SW
301	Modified O/C	5.0	3.0	E-W
302	*Kuaiwi*	19.0	1.0	NE-SW
303	Modified O/C	4.0	1.0	E-W
304	Modified O/C	6.0	1.0	E-W
305	Modified Gully	60	10.0	E-W
306	Depressions (4)	1.0	1.0	
307	Mound	2.5	1.0	E-W
308	Terrace	4.0	1.5	NE-SW
309	Mound	3.5	2.5	E-W
310	Terrace	5.0	4.0	NW-SE
311	*Kuaiwi*	7.5	1.0	E-W
312	Mound	6.0	4.0	NW-SE
313	Mound	2.0	1.5	NW-SE
314	Mound	1.5	1.5	
315	Mound	2.0	1.0	NW-SE
316	Mound	2.0	1.0	N-S
317	Mound	2.0	1.5	NW-SE
318	Modified O/C	1.5	1.5	
319	Mound	3.0	2.0	NE-SW
320	Mound	3.5	3.0	E-W

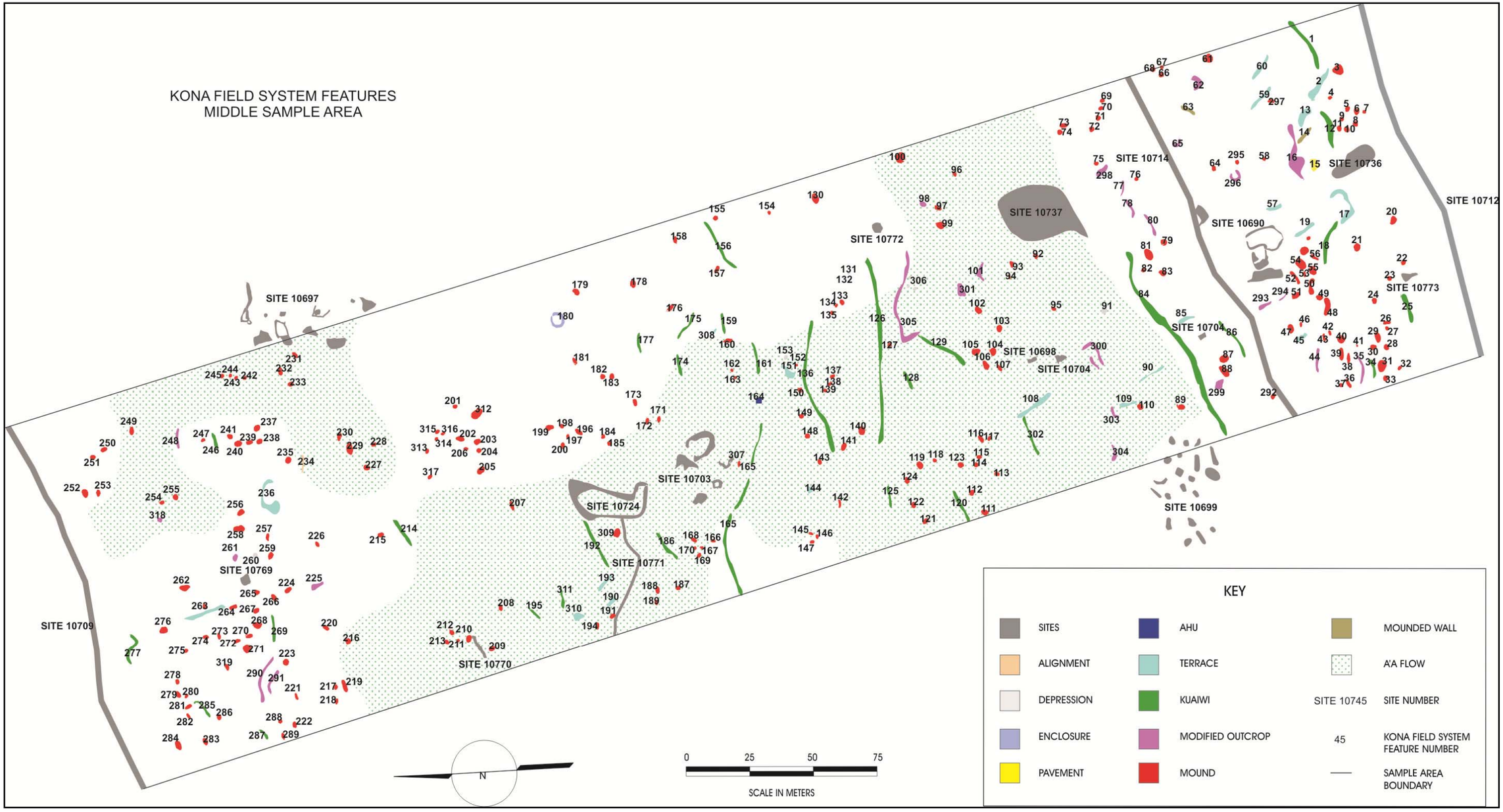

Figure 178. Map of Middle Sample Area in the KFS.

Table 68. Upper Area Features.

Fea #	Feature Type	L (m)	W (m)	Long Axis
1	Pavement	4.0	3.0	E - W
2	Pavement	6.0	2.0	E - W
3	Mound	2.0	2.0	
4	Filled Crack	7.0	2.0	E - W
5	Mound	2.0	2.0	
6	In Homestead			
7	Site 49 - In Hs.			
8	In Homestead			
9	*Kuaiwi*	12.0	3.0	SE-NW
10	Mound	4.0	4.0	
11	C Shape	8.0	8.0	E-W
12	*Kuaiwi*	10.0	2.0	NE-SW
13	Mod. Outcrop	20.0	12.0	SE-NW
14	Mod. Outcrop	12.0	5.0	NE-SW
15	Mound	3.0	3.0	
16	Mod. Outcrop	15.0	8.0	NE-SW
17	3 Tier Terrace	12.0	6.0	SE-NW
18	tMound	2.0	2.0	
19	Void			
20	Void			
21	*Kuaiwi*	15.0	2.5	NE-SW
22	Mound	2.0	2.0	
23	Mod. Outcrop			
24	Platform	7.0	7.0	SE-NW
25	Mound	5.0	1.5	NE-SW
26	Mound	1.5	1.5	
27	Void			
28	Mound	3.0	2.0	N – S
29	Mound	8.0	6.0	NE-SW
30	Mound	3.0	3.0	
31	Mound	10.0	10.0	
32	*Kuaiwi*	25.0	2.0	E – W
33	Mound	4.0	4.0	
34	Void			
35	C Shape	7.0	7.0	N – S
36	Mound	2.0	2.0	
37	Mound	2.5	2.5	
38	Mound	4.0	4.0	
39	Mound	8.0	2.0	NE-SW
40	Terrace	4.0	2.0	SE-NW
41	Void			
42	Terrace	8.0	3.0	N – S
43	Mound	6.0	4.0	NE-SW
44	Terrace	10.0	8.0	SE-NW
45	Mound	5.0	2.5	SE-NW
46	Void			
47	*Kuaiwi*	30.0	5.0	E – W
48	Void			
49	Bubble/Cave			
50	Mound	15.0	4.0	NE-SW
51	Mound	4.0	4.0	
52	Terrace	8.0	8.0	SE-NW
53	Void			
54	Puka/Cave			
55	Terrace	7.0	7.0	SE-NW
56	Mod. Outcrop	3.0	3.0.	
57	Platform	10.0	8.0	E - W
58	Mound	2.0	2.0	
59	Mound	1.5	1.5	
60	Mound	7.0	7.0	
61	Mound	2.0	2.0	
62	Mound	3.0	3.0	
63	*Kuaiwi*	25.0	3.0	NE-SW
64	Mound	3.0	3.0	
65	Mound	4.0	3.0	SE-NW
66	Void			
67	Mound	3.0	3.0	
68	Terrace	10.0	4.0	SE-NW
69	Terrace	10.0	2.0	N – S
70	C Shape	12.0	6.0	
71	Mound	5.0	3.0	NE-SW
72	*Kuaiwi*	45.0	2.0	E – W
73	Poss. Road			SE-NW
74	Mound	4.0	3.0	
75	*Kuaiwi*	35.0	2.5	NE-SW
76	Aligned Mounds	15.0	3.0	N – S
77	Mound	4.0	4.0	
78	Mound	6.0	6.0	
79	C Shape	10.0	5.0	N – S
80	C Shape	4.0	2.0	SE-NW
81	C Shape	12.0	8.0	N – S
82	Mound	2.0	2.0	
83	C Shape	5.0	3.0	E – W
84	*Kuaiwi*	40.0	2.0	NE-SW
85	*Kuaiwi*	35.0	3.0	NE-SW
86	C Shape	8.0	8.0	E - W
87	Mound	4.0	4.0	
88	Mound	8.0	3.0	SE-NW
89	Mod. Outcrop	17.0	10.0	SE-NW
90	Mound	5.0	3.0	SE-NW
91	Mound	6.0	3.0	

Table 68. Continued.

Fea #	Feature Type	L (m)	W (m)	Long Axis
92	Platform	4.0	4.0	E – W
93	Mod Outcrop	15.0	10.0	N – S
94	Void			
95	Mound	4.0	3.0	SE-NW
96	Mound	4.0	4.0	
97	Mound	3.0	3.0	
98	Void			
99	Mound	3.0	3.0	
100	*Kuaiwi*	15.0	2.0	NE-SW
101	Cave			
102	Mound	3.0	1.5	E - W
103	C Shape	8.0	4.0	SE-NW
104	*Kuaiwi*	16.0	4.0	NE-SW
105	C Shape	3.0	2.0	NE-SW
106	Mound	3.0	3.0	
107	Mound	2.0	2.0	
108	C Shape	8.0	3.0	SE-NW
109	C Shape	8.0	8.0	NE-SW
110	Mound	2.0	2.0	
111	Mound	4.0	4.0	
112	*Kuaiwi*	20.0	2.0	E – W
113	Mod Outcrop	15.0	4.0	NE-SW
114	*Kuaiwi*	?	3.0	NE-SW
115	Platform	3.0	2.0	N – S
116	Platform	4.5	3.0	E – W
117	*Kuaiwi*	20.0	2.5	NE-SW
118	Mound	4.0	4.0	
119	Mound	4.0	4.0	
120	*Kuaiwi*	30.0	3.0	N – S
121	Void			
122	*Kuaiwi*	30.0	2.0	NE-SW
123	Void			
124	Terrace	5.0	3.0	N – S
125	Terrace	4.0	2.0	N – S
126	Puka	2.5	2.5	
127	*Kuaiwi*	20.0	2.0	NE-SW
128	Mound	2.0	2.0	
129	L Shape	15.0	5.0	NE-SW
130	*Kuaiwi*	15.0	2.0	NE-SW
131	Terrace	8.0	8.0	N – S
132	*Kuaiwi*	30.0	3.0	E - W
133	Mound	2.0	2.0	
134	Mod Outcrop	5.0	2.0	NE-SW
135	Puka	.75	.75	
136	*Kuaiwi*	28.0	3.0	E – W
137	Mound	4.0	4.0	
138	*Kuaiwi*/Mod Sink	20.0	6.0	NE-SW
139	*Kuaiwi*	40.0	3.0	E – W
140	Mod Sink/Cave	4.0	4.0	
144	Mound	6.0	4.0	SE-NW
145	2 Tier Terrace	11.0	8.0	SE-NW
146	Mound	2.0	2.0	
147	Mound	2.0	2.0	
148	C Shape	6.0	4.0	E - W

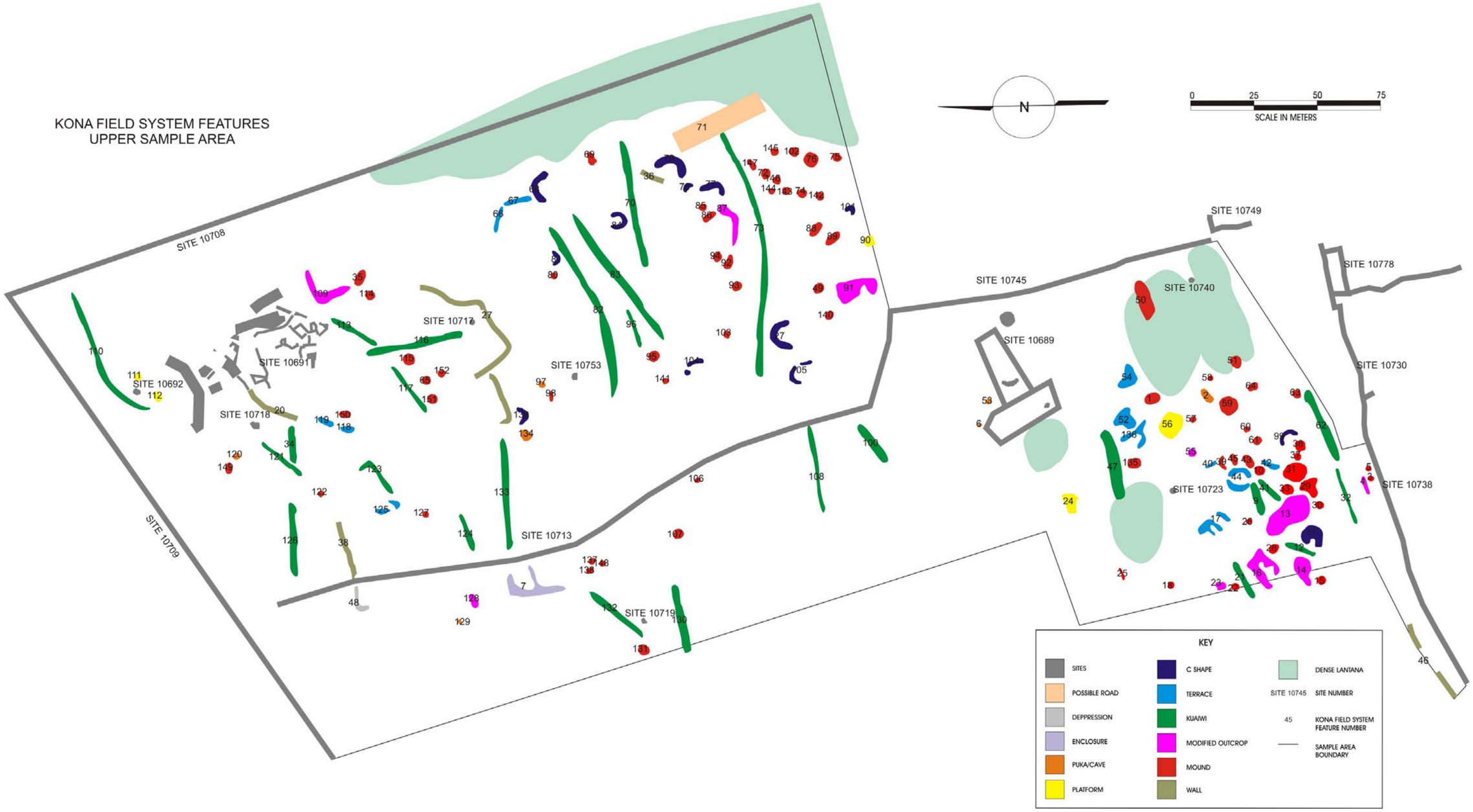

Figure 179. Map of Upper Sample Area in the KFS.

DISCUSSION AND CONCLUSION

A total of 89 sites were identified during this project. These 89 sites were classified into 14 different site types including Caves (N=37), Complexes (N=15), Walled Fields (N=6), Walls (N=6), Homesteads (N=5), Trails (N=5), Terraces (N=5), Mounds (N=2), Enclosures (N=2), Platforms (N=2), Historic Road (N=1), Paved Area (N=1), Modified Outcrop (N=1), and C-Shape (N=1). Functionally, these sites types were assessed as burials, permanent habitations, temporary habitations (shelters), religious/ceremonial, roads or pathways, boundaries, agricultural sites, or some combination of these functions.

CHRONOLOGY

Based on the radiocarbon dates generated in this study, and the hydration rind dates generated in a previous study (Barrera 1991), the earliest use of the project area was probably in the first half of the 15th century (Figure 180). That date, from Site 10699, could be as early as the early A.D. 1300s.

The radiocarbon results from Sites 10681 and 10694 suggest that by the 1500s agricultural fields (Site 10681) and residential sites (10694) were commonplace in the uplands of Kohanaiki and Kaloko. Twelve of the hydration rind dates, discussed earlier, suggest that the walled fields area *makai* of the Kohanaiki Homesteads was consistently being used beginning in the latter half of the 1400s through the first half of the 1700s.

Eight of the radiocarbon dates are too widespread to provide precision regarding the chronology at the project area. Those radiocarbon dates are, however, associated with prehistoric excavated contexts. That means that the dated materials most likely were deposited during the prehistoric portion of those radiocarbon dates, that being between the mid-1600s and the time when European and Asian items were introduced into the islands around 1800.

The quantity of dates relative to their calendar age provides a rough indication of the intensity of occupation and use during those times (Dye and Komori 1992). The distribution of radiocarbon dates indicates that this upland area was lightly occupied during the entry into the area in the early 1400s, and perhaps as early as the early 1300s. Occupation and exploitation increased during the late 1400s through the middle 1600s. The area was intensively used in the middle 1600s and 1700s.

The hydration rind dates indicate an intensive occupation and use from the middle 1400s through the early 1700s. Most of these dates pertain to the Walled Fields area, suggesting that the Kona Field System style of agricultural landscape and habitation was well established by the late 1400s.

CAVES

Caves were the most numerous site type identified in the project area and receive special attention here. Thirty-seven of the caves have their own site number, and two caves are part of other sites (Sites 10689 and 10735).

Of the 37 caves with their own site number, there are four main identified functions: water collection, burial, habitation, and ceremonial (Table 69).

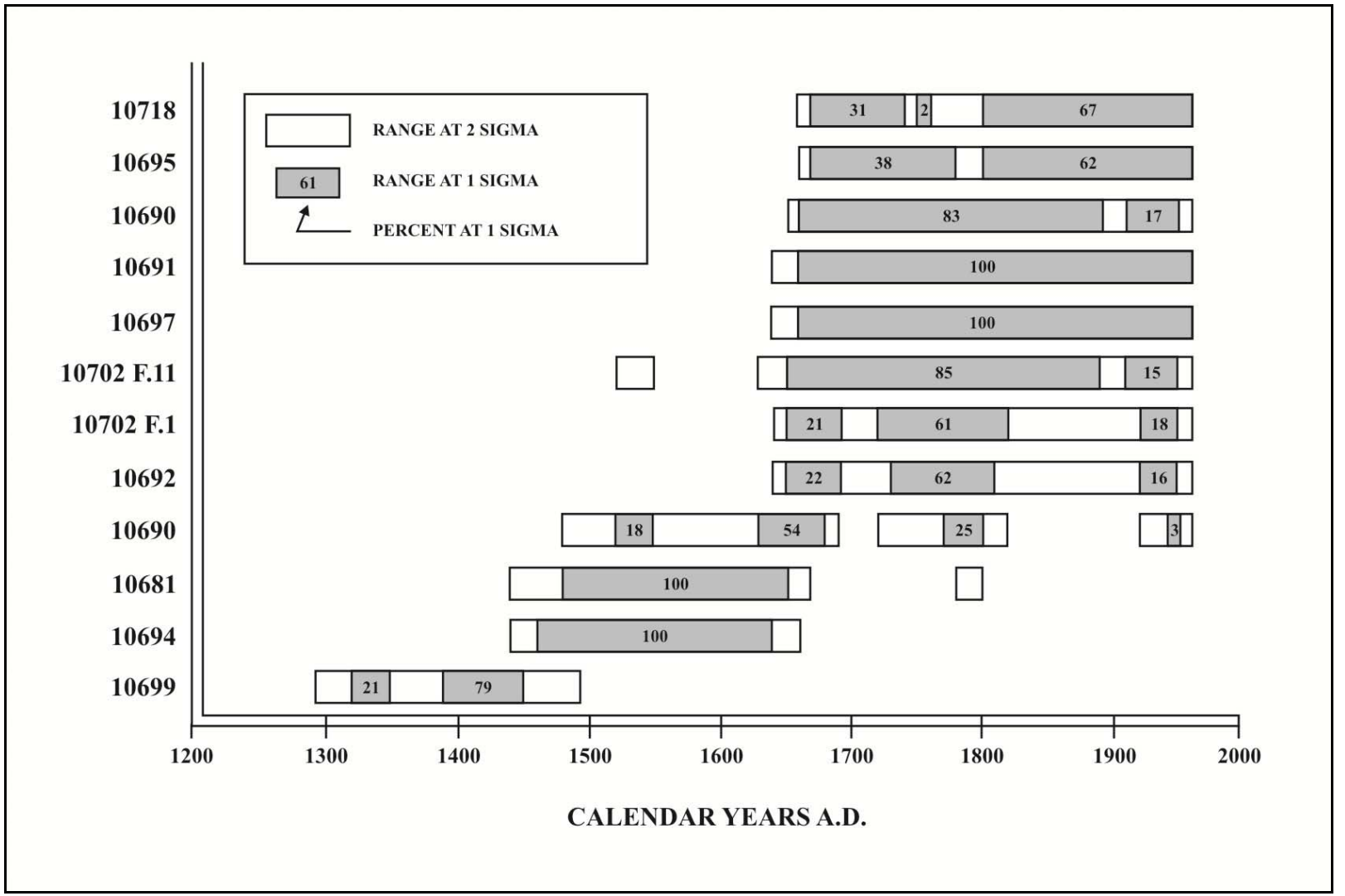

Figure 180. Distribution of calendar radiocarbon dates.

Table 69. Cave Data.

SIHP	Function	Total L (m)	Size	Max H (m)	Ave H (m)	Opening style	Opening mod	Paving	Platform	Ahu	Internal wall	Blockage	Rock circle	External Encl	Trail	WW	Burial
10692	WS/Hab	52	Medium	3.5	3.0	Horizontal	Minor	Yes	Yes	No	Yes	No	6	No	Yes	No	No
10715	TH	8	Small	0.7	0.6	Vertical	None	No	No	No	No	Yes	No	No	No	Yes	No
10717	Burial/Hab	13	Small	0.6	0.5	Vertical	Minor	Yes	No	No	Yes	No	No	No	No	Yes	1
10718	WS	65	Medium	1.5	1.0	Vertical	Major	No	No	No	Yes	No	12	No	Yes	Yes	No
10719	TH	4	Small	0.4	0.4	Horizontal	None	No	No	No	No	No	No	Yes	No	No	No
10720	TH	25	Small	0.7	0.5	Vertical	None	No	No	No	Yes	No	No	No	No	Yes	No
10721	WS	11	Small	1.3	0.8	Vertical	Major	Yes	No	No	No	No	1	Near	Yes	No	No
10722	Burial/Hab	56	Medium	0.8	0.5	Vertical	Minor	No	No	Yes	Yes	Yes	No	No	No	No	2 or 3
10723	TH	12	Small	0.6	0.5	Vertical	None	No	No	No	Yes	No	No	No	No	No	No
10724	TH	12	Small	1.5	1.0	Horizontal	None	No	No	No	No	Yes	No	Yes	No		No
10725	WS	165	Large	1.5	0.8	Horizontal	Minor	No	No	No	No	Yes	7	No	Yes	No	No
10726	TH	20	Small	0.7	0.5	Horizontal	None	No	No	No	No	No	No	No	No	No	No
10727	TH	40	Medium	1.5	0.8	Horizontal	None	No	No	No	No	No	No	No	No	No	No
10728	WS/Burial/ Habitation	220	Large	2.1	1.6	Horizontal	None	Yes	Yes	No	No	No	3	No	No	No	8 or 9
10729	WS/Hab/ Ceremonial	300	X L	2.5	1.6	H and V	Major	Yes	Yes	Yes	No	Yes	11	No	No	No	No
10731	TH	10	Small	0.6	0.5	Vertical	Major	Yes	Yes	No	No	Yes	No	No	No	Yes	No
10732	TH	7	Small	0.6	0.5	Horizontal	Minor	No	No	No	Yes	Yes	No	No	No	No	No
10733	TH	54	Medium	2.0	1.5	Horizontal	None	Yes	No	No	No	No	No	No	No	No	No
10740	Burial/Hab	4	Small	1.0	0.7	Horizontal	Minor	No	No	No	No	No	No	Yes	No	Yes	1
10742	PH	110	Large	2.0	0.8	Horizontal	Minor	Yes	No	No	No	Yes	No	No	No	No	No

Table 69. Continued.

SIHP	Function	Total L (m)	Size	Max H (m)	Ave H (m)	Opening style	Opening mod	Paving	Platform	Ahu	Internal wall	Blockage	Rock circle	External Encl	Trail	WW	Burial
10743	TH	26	Small	1.8	0.7	Vertical	Minor	No	No	No	No	Yes	No	No	No	No	No
10744	TH	110	Large	2.0	0.7	Vertical	Minor	Yes	No	No	No	Yes	No	No	No	No	No
10746	WS	60	Medium	1.0	0.8	Horizontal	Major	No	No	No	No	No	6	No	No	No	No
10747	TH	16	Small	1.2	1.0	Horizontal	Minor	No	No	No	No	Yes	No	No	No	No	No
10748	TH	205	Large	2.2	1.6	Vertical	None	Yes	No	No	Yes	Yes	No	No	No	No	No
10750	TH	20	Small	0.6	0.5	Vertical	None	No	No	No	No	No	No	No	No	No	No
10751	WS	42	Medium	1.3	1.0	Vertical	Minor	No	No	No	Yes	No	3	No	No	Yes	No
10752	TH	3	Small	1.0	0.8	Horizontal	None	No	No	No	No	No	No	No	No	No	No
10753	WS	42	Medium	1.0	0.8	Vertical	Minor	No	No	No	No	No	3	No	No	No	No
10754	Burial/Hab	25	Small	0.5	0.5	Vertical	Minor	No	No	No	No	No	No	No	No	No	1
10755	WS/ Ceremonial	130	Large	1.5	0.8	Vertical	Minor	Yes	Yes	Yes	No	Yes	15	No	No	No	No
10756	WS/storage	380	X L	1.8	1.0	Horizontal	Minor	Yes	No	No	No	Yes	11	No	Yes	No	No
10757	PH	9	Small	0.6	0.6	Horizontal	None	No	No	No	No	No	No	No	No	No	No
10758	PH	8	Small	1.0	1.0	Horizontal	None	Yes	No	No	No	No	No	No	No	No	No
10759	TH	3	Small	0.6	0.6	Horizontal	Minor	No	No	No	No	No	No	No	No	No	No
10760	TH	6	Small	0.4	0.4	Vertical	None	No	No	No	No	No	No	No	No	No	No
10761	TH	12	Small	0.5	0.5	Vertical	None	No	No	No	Yes	No	No	No	No	No	No

WS=Water Source
Hab=Habitation
TH=Temporary Habitation
PH=Permanent Habitation

The principal indicator of water collection in the Kaloko Heights caves is the correlation of circles of rock in caves where water is dripping from the ceiling. The correlation is enhanced with the combination of water dripping directly into the circle of rocks in many instances. In addition, there is a greasy, black substance in some rock circles that may represent the remains of gourds that decomposed at their place of abandonment. Small non-decomposed gourd fragments were observed in Site 10692.

Examination of the configuration of the caves that contain rock circles suggests that there is a particular style of cave and cave modifications associated with water collection. This leads to the proposition that water was collected in a particular, socially proscribed way.

There are 78 rock circles in 11 caves. All of the water collection caves are in Kohanaiki Ahupua‘a. There are from 1 to 15 rock circles in any given cave. They usually occur in clusters, but there is one cave (10721) with a solitary circle. Compared to the other caves in the project area, there is no exclusive correlation with most kinds of cultural modifications. In other words, water-worn stones occur in water collection caves and in other caves—along with pavings, internal walls, and blocked passages. But there are a couple of things that do appear to correlate with the water caves: trails, and *ahu*.

All five of the caves with interior trails (or clearly created pathways) are water collection caves. Two of the three *ahu* are in water collection caves. Notably, external enclosures have a negative correlation with water collection. That is, of the seven caves associated with enclosures on the ground surface, only one has rock circles, and that one, Site 10721, only has one rock circle. This suggests that surface enclosures are not part of the water collection cave suite of features. Six water collection caves have pavings near their entrances, and four of the six platforms in the project area caves are in water collection caves. Only one of the 11 water collection caves did not have a modified entrance that constricts the natural opening. These correlations are probably meaningful and not coincidental.

Rock circles occur within the larger caves. Both of the extra large caves have rock circles, and they each have 11, close to the greatest quantity in any water collection cave. The only small cave with rock circles has only one rock circle. Five of the six largest caves have rock circles. Based on the distribution, there is a general positive correlation between the size of the cave and the quantity of rock circles.

Burials do not occur within water collection caves, with one exception: Site 10728. This correlation may be a function of different uses during different times, however. The burials in Site 10728 are the only clearly historic burials observed in the project area (with coffins and historic artifacts). The water collection function may have been abandoned before the burials were placed in the cave. That is, those people placing the burials in the cave may not have known about the rock circles, and may not have collected water from that cave. Alternatively, the water collection function may have been overtly terminated at the time that the burials were placed in the cave. Until further investigations show otherwise, it is assumed that during prehistory, burials were not placed within caves that were used to collect fresh water.

The importance of fresh water in traditional society is well documented (cf. Beckwith 1940, 1951; Earle 1978). That is underscored in the dry project area with the oral history references to social intrigues associated with fresh water. The importance of water, and the mechanics of obtaining such were on the mind of one of the missionaries in the early 1800s:

> The inhabitants generally use brackish water which they find near the shore; or the water that is caught in the rocks; but the chiefs send back several miles for the water which they drink, which is found fresh and cool in caves and natural reservoirs (Thurston 1821:21).

Whether this correlation between cave fresh water and *ali'i* was in force during prehistory is not known, but very likely. There are some indications, based on the inventory survey work, that the water collection was more than a mundane task.

Many of the caves with rock circles also have constricted entrances. In some cases, this constriction is elaborate. For instance, in Site 10718, a massive amount of stone was brought in and moved around inside the cave to create three separate chambers connected by a crossroads of pathways.

The constricted openings, in and of themselves, cannot prevent anyone from entering the cave. Yet, some element of control of the cave interior is implied by the constricted openings. Other "habitation" caves in this project area (10742, 10757, and 10758) lack the constricted entrance. The pavings near the entrances to many of the water collection caves may be significant in this regard. If that correlation is more than a coincidence, then it might suggest that people were living in the water collection caves. The distribution of subsistence remains and artifacts from the excavation unit conducted within a paving in the water collection cave Site 10692, does reflect a wide range of activities typical of habitation. Perhaps, then, one family or group lived at the entrances to this type of cave, and either had sole access to the fresh water within, or controlled access to the fresh water within. The occurrence of pig bone in the excavated Site 10692 assemblage suggests that those people associated with the water collection control may have had some degree of status.

The trails within the caves may also be associated with the presence of individuals with status, or an extra level of recognition of the special function of collecting water. The trail would not only facilitate the physical experience of movement to and from the water collection areas, it might symbolize the higher degree of care and concern expressed in preparing the ground of these particular places. The only two *ahu* that are triangular slabs set on end are also in water collection caves, and these special features may also mark certain locations, activities, or attitudes within these caves.

Based on the limited inventory survey investigations, several propositions concerning fresh water collection in caves can be advanced:

- Fresh water was collected in gourds or other containers that rested within rock circles.
- Fresh water may be considered an exotic resource, one that was controlled by the local, and even extra-local *ali'i*.
- Access to the interiors of water collection caves was regulated within the prevailing *kapu* system.

- Regulation may have been achieved by family guardians, or "professional" guards.
- Collected water may have been transported to royal centers.
- Water collection caves had to be large enough to sustain a minimum level of productivity.
- Pathways, stacked stone, and erect slabs may reflect ceremonial attention to the water collection process.

The group of caves represented by Sites 10742, 10757, and 10758 may represent a permanent habitation with a subterranean twist, the three sites may have functioned as one unit. Site 10758 appears to provide a sleeping quarter. Site 10757 may represent a cooking area. Site 10742 could be the main work and gathering place.

Nineteen of the caves were interpreted as temporary habitations based on the, usually, limited amount of alteration, and scant cultural deposits. These sites could have served a range of functions, from very briefly used shelters to sites used for more extended periods of time.

Most of the burials identified during inventory survey occur within caves. The methods for mapping caves (explained in detail in the Methods section) do not provide the kind of precision necessary for Burial Treatment Plans or development plans.

Burials in cave Site 10717 and Site 10722 are similar in that, in addition to the burials, they have a variety of artifacts such as basalt flakes, volcanic glass, branch coral, and marine shell. The artifacts may indicate that distinctly different functions were conducted in the cave (burial and tool making and/or food processing). Alternatively, the fact that few other caves have this diversity of artifacts suggests that their presence in caves with burials may be a meaningful correlation.

The distribution of the caves with, presumably, prehistoric *iwi* can be characterized as being at the higher elevations, which is closer to the Kohanaiki Homesteads. Interestingly, the one clearly historic burial cave (Site 10728) is relatively far from the historic habitation area, the Kohanaiki Homesteads.

SITE 10714, THE MAUKA-MAKAI ROAD

None of the previously interviewed informants explicitly described the characteristic of the Kohanaiki Road. One can infer certain aspects of the trail, based on a reference to "*ala hele wāwae*", however. Based on these oral histories, it seems fairly certain that all of the people that used that route, either walked it, or used donkeys and/or horses when traveling.

The current interviews provide some details about the landscape and the pathway, and the changes to both over time. Based on the current and previous interviews, historical documents, and the field work conducted for this project, a chronology of use can be generated.

Site 10714 is also referred to as the Kohanaiki Road, the Kohanaiki-Kaloko trail, and the Church of God Road. Prior to WWII, that pathway was manifest on the ground surface as a slightly worn path on the bare lava. Vegetation at that time was sparse. The trail was marked at unspecified intervals with stone *ahu* to help the traveler stay on the path. Travelers either walked, or rode donkeys and horses, along the route.

The 1888 Emerson map shows the route as having *ahu* along it. He even gives names for three *ahu*. Emerson talks about the Road to the Sea, but at no time does he ever mention "paving" or "kerbing". The kind of pathway implied by the Emerson data is typical of *mauka-makai* routes in historical Kona. They seldom are paved with cobbles, rarely have kerbing, and are generally narrow pathways that are sometimes distinguished with worn lava surfaces[7]. Stone *ahu* emphasize where the otherwise unidentifiable path is.

Site 10714 as described during Emerson's time, and elaborated upon by Ms. Ako was used in the first half of the 20th century for a variety of reasons: to get to school from the ocean; to get to the ocean from habitation in the uplands to work the pond; to get to the ocean from the uplands for extended recreational stays. That changed with WWII.

U.S. soldiers were stationed at the church area of the Kohanahiki Homesteads sometime during American involvement in WWII (between 1941 and 1945). Defensive gun installments were in place at the shoreline below. Soldiers traveling to and from the ocean apparently decided to modify the pathway to facilitate vehicular traffic. Modifications were initiated at the soldiers' encampment, continued *makai*, but were abandoned at some undisclosed location. An old automobile tire alongside Site 10714 within the Kaloko Heights project demonstrates that rubber-tired vehicles once traversed this route.

The portion of the pathway that is within the Kaloko Heights project is that portion of the Kohanaiki Road that has been modified by soldiers. The *makai* end of soldier construction can be inferred from the 1959 USGS topographic map for Keahole and Kailua quadrangles. There is a line from the homesteads *makai* for about 1 mile identified on the USGS map as a "fence line". That line is coterminous with previous locations of the pathway, but this fence line terminates in the uplands without connecting to the shoreline. It is likely that the fence line marks the full extent of the soldier road. That location is west beyond the Kaloko Heights project.

The morphology (physical characteristics) of Site 10714 as it is visible today within the Kaloko Heights project is in accord with soldier modification. The pathway is unusually wide and erratically so. It ranges from 1.5 to 3.2 meters wide. In contrast, Hawaiian historical trails are notably regular in width, and are usually 1 to less than 2 meters wide. Site 10714 is rather amorphous. Contrary to the usual Hawaiian historical trails, Site 10714 does not have any vertically-sided edges. Instead, all edges are rounded, or mounded, in cross-section. Also, the Site 10714 kerbing is erratic in size of stones used, and placement. This contrasts with the typical regularly constructed kerbing in Hawaiian historical trails. Whoever built Site 10714 did not follow the template for roads that is manifest with the paved historical trails that can be seen today within Kaloko-Honokohau National Historical site (the Mamalahoa Trail), or at Mauna Lani and ʻAnaehoʻomalu (the King's Trail). The soldiers employed some other criteria for construction.

Even though Site 10714 as we see it today within the project area was created by soldiers (perhaps most of whom were born and lived most of their lives away from Hawaiʻi) during

[7] There is some uncertainty as to whether the worn pathways on bare lava were created by people walking, or by hoofed animals. See Apple (1965:33) for some discussion of that.

WWII, the pathway along that route is at least as old as 1888, and probably older. It shows up on the 1888 map. Although Site 10714 itself cannot be absolutely dated, the context of the pathway indicates that the *ahu*-marked, non-paved path was probably being used for centuries prior to contact. This is based on:

- Radiocarbon and hydration rind dates (and other archaeological studies nearby) indicating that the uplands and lowlands were occupied as early as 1300 AD: it is logical that a pathway would have connected those habitations to the ocean.
- There is a *papamū* alongside the pathway, and *papamū* are commonly situated along old trails.

Based on all lines of evidence, one can generate a description of the Road to the Sea and its changes over time.

- During occupation of the *ahupua'a* from AD 1300 to 1800, the Road to the Sea was on bare lava with sparse vegetation in the vicinity. Stone *ahu* were situated at strategic places along the route to mark the pathway. People used the trail to move up and down to different resource zones, and places of habitation, recreation, ceremony, and agriculture.
- From 1800 to 1940 the path was still used and marked by *ahu*. Although fewer people regularly used the route, it was still used for a full range of activities. The biggest change to the Road to the Sea at this time was the decline in foot travel, and the introduction and increasing use of pack animals. Hoofed animals that were introduced after European contact may be responsible for creating the worn groove in places in the bare lava along the pathway.
- Soldiers stationed in the homesteads during WWII (1941 to 1945) decided to alter the Road to the Sea to facilitate vehicular traffic to and from placements of deployment at the ocean. They added cobbles to pave the route at variable widths, and filled in some low spots with cobbles.
- The *papamū* is a pre-contact artifact and was originally located nearby, but it was moved to its current resting place on top of stones placed there during WWII.
- After 1945, vegetation expanded in the area. Trees grew up in and around the Road to the Sea pathway. Although people remember using the Road to the Sea prior to WWII, pedestrian usage was scanty after that. That is probably because other jeep roads were being created nearby, and those would have facilitated *mauka-makai* travel. The time after 1945 represents abandonment and alteration by natural forces.

Regarding the condition of Site 10714, it is entirely destroyed by paving, bulldozing, and modern usage at the intersection just east beyond the project area (Segment 1). Vegetation, pigs, and marijuana growers have disturbed it to the extent that it is not readily identifiable within the Kohanaiki Homesteads (Segment 2). Pieces of the road are observable and intact alongside the walled Kona Field System (Segment 3), but trees have impacted notable portions of the curbing and paving of the path. The road is more easily identifiable, and more intact the further it is away from the Kohanaiki Homesteads. The pathway is in good to better than good condition within the lower two thirds of the Kaloko Heights project area (Segment 4).

HABITATION SITES

Habitation sites were identified within the project area. Permanent habitations took the form of historic Kohanaiki Homesteads, Complexes, Walled Fields, a set of three caves (noted above), and a large enclosure. Temporary habitations were identified with caves (noted above), single terraces, and a C-shape.

Field investigations did not focus on the homesteads. Much of the data concerning them are contained within written, and probably oral, media: time of origin, abandonment, and ownership. The field investigations did provide indications that the homesteads were situated on lands occupied and used during prehistory. Remnants of field systems are present, and the burial at Site 10754 probably is a prehistoric interment. Indeed, the reason that the homesteads were "created" in this particular location is probably because the area was well known as a place that could sustain habitation with a developed agricultural field system. The data from this investigation clearly demonstrates that the landform in Kohanaiki, and probably in Kaloko prior to dozing, was a highly modified agricultural landscape similar to other *ahupua'a* to the south that are dominated by the Kona Field System.

Contrary to intuitive expectation, one of the homesteads does not seem to have a permanent habitation feature (Kiaha). In other words, it does not have a home. Rather, this small "homestead" has a high density of agricultural features. This configuration indicates that homesteads could be used in ways other than as a permanent residential complex.

Besides the historic homesteads, permanent habitations principally were found to be complexes (sites with three, or more, features) or situated within, and forming part of, walled field sites. Temporary habitation was overwhelmingly identified with caves (see above). The remaining temporary habitations, in the form of terraces and a C-shape, most likely served as living and work areas related to the Kona Field System.

KONA FIELD SYSTEM

Elements of the Kona Field System are present throughout much of the undisturbed portions of the project area. Three large sections of the system were mapped during this Inventory Survey. These maps provide extensive detail into the types, distribution, and relationship of the features to each other and to the landscape. Most noticeably, the frequency of mounds in relation to other agricultural features drops dramatically in the Upper Sample Area (*e.g.*, Lower Area 81.15%; Middle Area 71.79%; Upper Area 48.34%). In addition, there is a wider variety of identified agricultural features in the Upper Sample Area, even though they occur at low frequencies.

EVALUATING AND MODIFYING THE EXPECTED MODEL

The model set forth prior to conducting this inventory survey portrayed the coastal area as the foci of habitation, with agricultural fields in the uplands that were visited by these inhabitants. The data examined in this inventory survey indicates that the uplands were not merely a series of agricultural fields. Quite the contrary, the uplands were probably inhabited by as many, if not more, citizens of their respective *ahupua'a* than were living along the shoreline.

Habitation complexes are situated in two basic manners in the project uplands: scattered about the agricultural fields, and clustered in the eastern edge of Kohanaiki *ahupua'a*. Sites 10693, 10700, 10730, 10734, and 10738 represent five "households" (to use the term proposed in the model at the beginning of this report) that are just *makai* of the Kohanaiki Homesteads in the Walled Fields area. Those were being used from the 1400s through the 1700s. The households that were almost certainly contemporaneous with those five sites and that were subsequently transformed into the Kohanaiki Homesteads include Sites 10741, 10745, 10749, 10764, and 10778. That represents 10 households in close proximity to one another. And those ten represent only those households that were in the Kaloko Heights project area. Perhaps a dozen more contemporaneous households existed adjacent *mauka.*

This kind of "community" is different from that on the coast where the 19 households are clustered into 4 "local residence groups". In contrast, the upland households are side by side in one large community that is integrated into the Kona Field System landscape.

Other elements of the dynamic upland community include *heiau* and burials, representing the diversity of activities associated with permanent residence. Remnants of trails provide glimpses into corridors of concentrated habitation and activity.

The uplands certainly were a good natural environment for habitation. Rainfall was abundant enough to sustain agriculture, but this tenuous and fluctuating rainfall would require more than the widespread landscape modification of the Kona Field System. The cultigens would require constant attention and tending. Permanent habitation would facilitate that level of attention in these fields.

A significant resource was mined in the uplands: fresh water. The cave water was a dependable source of water for crops and people. It was also a resource much desired by the *ali'i*. The water belonged to the *ali'i*.

Certain quantities of water were probably expected and demanded by the rulers of the land. To ensure that the expected quota was reached, it is likely that significant energy was expended in guarding this resource to maintain its physical and *kapu* cleanliness. Once that level of water for the *ali'i* was achieved, the surplus was probably dispersed in a variety of ways. Those that had access to it used it for their personal needs and for their gardens in times of drought or semi-drought. They probably shared it with their *ahupua'a* kin with reciprocal goods moving upland from the shoreline.

Some insight into how fresh water caves were thought of in the Hawaiian fashion is provided with the story of the cave of Makalei, referred to earlier in this report. That story emphasizes the *kapu* nature of the fresh water caves, but also shows that common folk were clever in manipulating information about that resource. This kind of resource production, storage, distribution to the chiefly elite, and tactics for keeping it from the chiefly elite is part and parcel of the modes of production in complex chiefdoms (cf. Pauketat 1994). This is more pronounced in Hawai'i where unfamiliar non-local *ali'i* may be assigned charge of any given *ahupua'a* when *moi* change in peaceful or non-peaceful transitions (cf. Earle 1978).

SITE SIGNIFICANCE EVALUATION

Sites identified during this project were assessed for their significance as outlined in Hawai‘i Administrative Rules §13-275-6. To be assessed as significant a site must be characterized by one or more of the following five criteria:

(A) It must be associated with events that have made a significant contribution to the broad patterns of our history, or be considered a traditional cultural property.
(B) It must be associated with the lives of persons significant in the past.
(C) It must embody distinctive characteristics of a type, period, or method of construction, or represent a significant and distinguishable entity whose components may lack individual distinction.
(D) It must have yielded or may be likely to yield, information important in prehistory or history.
(E) Have important value to native Hawaiian people or other ethnicities in the state, due to associations with cultural practices and traditional beliefs that were, or still are, carried out.

All 89 of the identified sites were considered significant under Criterion D (Table 70). In addition, seven sites (10691, 10692, 10695, 10709, 10718, 10725, 10746) are recommended for Criterion C, and 14 sites (10701, 10702, 10714, 10717, 10722, 10728, 10736, 10740, 10741, 10745, 10749, 10754, 10764 and 10778) were considered significant under Criterion E.

Table 70. Site Significance and Recommendations.

Site #	Site Type	Function	Significance Criterion	Recommended Treatment
10681	Complex	Agricultural	D	NFW
10687	Complex	Agricultural	D	NFW
10689	Complex	Permanent habitation	D	NFW
10690	Complex	Permanent habitation	D	DR
10691	Complex	Permanent habitation	C, D	P
10692	Cave	Water source/habit.	C, D	P
10693	Walled fields	Habitation and garden	D	DR
10694	Complex	Permanent habitation	D	DR
10695	Complex	Permanent habitation	C, D	P
10696	Mound	Agricultural	D	NFW
10697	Complex	Permanent habitation	D	NFW
10698	Mounds	Agricultural	D	NFW
10699	Complex	Agricultural	D	NFW
10700	Walled fields	Habitation and garden	D	DR
10701	Platform	Burial	D, E	BTP
10702	Complex	*Heiau*	D, E	P
10703	Complex	Habitation/ceremonial	D	NFW
10704	Platform	Agricultural	D	NFW
10705	Complex	Permanent habitation	D	DR
10706	Enclosure	Permanent habitation/ ceremonial	D	DR
10707	Paved area	Agricultural	D	NFW

Table 70. Continued.

Site #	Site Type	Function	Significance Criterion	Recommended Treatment
10708	Wall	Boundary	D	NFW
10709	Wall	Boundary	C, D	P
10710	Wall	Boundary	D	NFW
10711	Wall	Boundary	D	NFW
10712	Wall	*Ahupua'a* boundary	D	NFW
10713	Wall	Boundary	D	NFW
10714	Historic road	Pathway	D, E	NFW
10715	Cave	Temporary habitation	D	NFW
10716	Walled fields	Agricultural	D	NFW
10717	Cave	Burial/habitation	D, E	BTP
10718	Cave	Water source	C, D	P
10719	Cave	Temporary habitation	D	NFW
10720	Cave	Temporary habitation	D	NFW
10721	Cave	Water source	D	DR
10722	Cave	Burial/habitation	D, E	BTP
10723	Cave	Temporary habitation	D	NFW
10724	Cave	Temporary habitation	D	NFW
10725	Cave	Water source	C, D	P
10726	Cave	Temporary habitation	D	NFW
10727	Cave	Temporary habitation	D	NFW
10728	Cave	Burial/water source/ habitation	D, E	BTP
10729	Cave	Water source/ ceremonial/habitation	D	DR
10730	Walled fields	Habitation and garden	D	DR
10731	Cave in terrace	Temporary habitation	D	NFW
10732	Cave	Temporary habitation	D	DR
10733	Cave	Temporary habitation	D	NFW
10734	Walled fields	Habitation and garden	D	DR
10735	Complex	Permanent habitation	D	DR
10736	Enclosure	Burial and *heiau*	D, E	P, BTP
10737	Complex	Permanent habitation	D	DR
10738	Complex	Agricultural	D	NFW
10740	Cave	Burial/habitation	D, E	BTP
10741	Homestead, Kaholi	Historic homestead	D, E	P
10742	Cave	Permanent habitation	D	DR
10743	Cave and petroglyphs	Temporary habitation	D	DR
10744	Cave	Temporary habitation	D	NFW
10745	Homestead, Pahuole	Historic homestead	D, E	P
10746	Cave	Water source	C, D	P
10747	Cave	Temporary habitation	D	NFW
10748	Cave	Temporary habitation	D	NFW
10749	Homestead, Kiaha	Historic homestead	D, E	P
10750	Cave	Temporary habitation	D	NFW
10751	Cave	Water source	D	DR
10752	Cave	Temporary habitation	D	NFW

Table 70. Continued.

Site #	Site Type	Function	Significance Criterion	Recommended Treatment
10753	Cave	Water source	D	DR
10754	Cave	Burial/habitation	D, E	BTP
10755	Cave	Water source/ ceremonial	D	DR
10756	Cave	Water source/storage	D	DR
10757	Cave	Permanent habitation	D	DR
10758	Cave	Permanent habitation	D	DR
10759	Cave	Temporary habitation	D	NFW
10760	Cave	Temporary habitation	D	NFW
10761	Cave	Temporary habitation	D	NFW
10762	Modified outcrop	Temporary habitation	D	NFW
10763	Trail with petroglyph	Pathway	D	DR
10764	Homestead, Kapa	Historic homestead	D, E	DR
10765	Terrace	Temporary habitation	D	NFW
10766	C-shape	Temporary habitation	D	NFW
10767	Trail with petroglyph	Pathway	D	DR
10768	Walled field	Habitation and garden	D	DR
10769	Terrace	Temporary habitation	D	NFW
10770	Trail	Pathway	D	NFW
10771	Trail	Pathway	D	NFW
10772	Terrace w/ paved area	Temporary habitation	D	NFW
10773	Terrace	Temporary habitation	D	NFW
10774	Terrace	Temporary habitation	D	NFW
10776	Trail	Pathway	D	NFW
10778	Homestead, Punihaole	Historic homestead	D, E	DR

RECOMMENDATIONS

Of the 89 sites recorded during this project 45 are considered to require no further work (Table 70). The quantity or kind of criteria used to evaluate a site is not an exclusive indication of what site needs to be preserved. For instance, a site that is significant for D only, may be designated a preservation site, and one that is significant for A and C, may not. Criteria are used to evaluate a site. A different set of information is used to decide whether a site should be preserved. There are no guidelines for how to decide which site should be preserved in the Hawai‘i cultural resource management laws and regulations, except when those sites contain burials. Lacking that, it is suggested that one element for determination of preservation sites is made in consultation with the contracting archaeologist, SHPD, the developing agency, and consulting parties. A good candidate for preservation must be made in consultation with all parties involved, and not to the exclusion of any.

For the sites discussed below, comments regarding preservation have been provided by SHPD (comment letter dated July 13, 2005), informants, Stanford Carr, and SCS. The results presented below represent modification to earlier recommendations to include more preservation

sites. Those sites were carefully considered within the context of the SHPD comments, informant discussion, archaeological concerns, and project design constraints and opportunities.

PRESERVATION

Preservation is recommended for 11 non-burial sites, seven burial sites, and one *heiau* with a burial site (10736). The non-burial preservation sites are: three of the Kohanaiki Homesteads (10741, 10745, and 10749), four water source caves (10692, 10718, 10725, and 10746), two permanent habitation sites (10691, and 10695), an *ahupua'a* boundary wall (10709), and one *heiau* (10702 [plus the one *heiau* with a burial 10736]).

Kohanaiki Homesteads

Much of the Kohanaiki Homestead area has been destroyed by previous development *mauka* of fhe project area. Portions of five of the total of 18 homesteads lots are within the Kaloko Heights project area. For each of the three homesteads that are partially within the project area, Kapa, Punihaole and Kaholi, the portion that contained the house is outside of the project area, and consequently, has been destroyed by previous developments. The two homesteads that are completely within the project area are Kiaha and Pahuole.

Presevation is recommended for the two homesteads that are completely within the project area: Sites 10745 and 10749. The rationale for preserving these two is that they exhibit the full compliment of what is manifest with a late 1800s homestead. The other three partial homesteads in the project area are lacking essential parts of the homestead, and consequently, do not provide an understanding of how homesteads are arranged.

All informants expressed a desire to see the Homesteads preserved. The idea of preserving just the two intact homesteads was presented to Mr. Punihaole, Mr. Kahananui, Ms. Coelho, and Ms. Punihaole, and they agree with the rationale for preserving just the comlete one, even though that means that the Punihaole homestead will not be preserved.

Site 10714

Informants have expressed a desire to have this pathway preserved. Principal among the reasons expressed was that the pathway represents the way people once moved between the ocean and the mountain, and this is a direct expression of the holistic *ahupua'a* system of resource management and human interaction. Informants also expressed a nostalgia for the pathway. Previously interviewed people expressed their sentiments, too.

> When asked about the proposed development Kohanaiki and in other locations of Kekaha, all of the interviewees spoke with hesitancy. It is difficult for them to see the landscape in which they have known all their lives change. All interviewees believe that *ilina* (burial sites) should be preserved in place; likewise should any *heiau*, or other important site be located, they should be protected. It is also believed that the *Alanui Aupuni* and *mauka-makai* trails should be preserved [Maly and Maly 2003:iii].

The physical pathway as it is observable on the ground today is not the pathway that was used by the people that have shared their memories of it. The pathway today through the project

area was created during WWII by soldiers to drive motor vehicles on. Consequently, pursuant to standard cultural resource management practices, the pathway does not retain the integrity of the ancient, or even early 20th century, expression. Based on that, it is recommended that Site 10714 is not a preservation site.

DATA RECOVERY

Data Recovery is recommended for 26 sites. Two primary research topics are proposed that can be addressed by the site population identified within the project area. The first of these topics concerns the water source caves identified in the project area. These caves are a significant archaeological find and little recognized in the archaeological literature. Data Recovery should focus on the detailed mapping and recording of a selected sample of these caves. Botanical analysis of selected materials recovered from the caves should be undertaken.

The second research topic recommended concerns the variety of permanent habitations identified in this project area. Data Recovery should be conducted in the Punihaole and Kapa Homesteads and in sample of the 15 other households *makai* of the Punihaole Homestead. The research design for this Data Recovery should focus on determining how the configuration of the prehistoric household areas varied, and how it was modified during the historic era.

CONDITION S

Condition S of the 1983 County of Hawai‘i Zoning Ordinance 83-63 situpulates that for the YO (the old name) project

> "Intensive archaeological investigations shall be conducted for the two identified sites, i.e. the lava tube and agricultural walled complex, as recommended by the ARCH report, meeting with the approval of the Planning Director and the Historic Sites section of the Department of Land and Natural Resources, prior to grading, grubbing, or construction."

This condition is based entirely upon reconnaissance work conducted in 1980 by ARCH prior to the Barrera work. The archaeological firm ARCH did a reconnaissance of approximately 400 acres that included the approximately 200 acres of the project now known as Kaloko Heights, and approximately 200 acres across Hina Lani Street and south of Kaloko Heights. The results of that work are described in a letter dated 1980 from Hammatt to Lum (Hammatt 1980). That letter was not found during recent research. There is one map created by Belt Collins that shows where the “lava tube” (no site number) is. That Belt Collins map shows the “lava tube” on the south side of Hina Lani beyond the Kaloko Heights project.

That same map does not show any “agricultural walled complex”, but does show a “1980 survey area” and “cave complex” near, but south and not in, the Kohanaiki Homesteads. This 1980 survey area is situated withing Kaloko *ahupua‘a* where bulldozing has taken place are removed most surface features. Based on the survey conducted by SCS for Kaloko Heights there is clearly no agricultural walled fields there. It is likely that the 1980 crew saw the Kohanaiki Homesteads and the walled field that are directly *makai* in Kohanaiki *ahupua‘a*, but mislocated them on their map in Kaloko *ahupua‘a*.

The significance of the 1980 work and Condition S vis-à-vis the Kaloko Heights report is this:

- The "lava tube" is not in Kaloko Heights.
- The "agricultural walled fields" are almost certainly the Kohanaiki Homesteads and the walled area just *makai* of the homesteads.

Consequently, the inventory survey conducted by SCS, and the proposed data recovery research satisfies Condiction S.

ACKNOWLEDGEMENTS

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And finally, we appreciate the hard work and dedication of the SHPD Kona staff, Keola Linsdsay and Mary Anne Maigret, whom we have the pleasure of working and struggling with on this and many projects on this island.

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APPENDIX A: RADIOCARBON DATA

Radiocarbon Dates for the Project Area.

Site #	Feature	Test Unit	Layer	Conventional Radiocarbon Age	Calibration (Oxcal v. 3.5)
10681	2	TU-1	II	320 +/- 60 BP (Beta 197067)	(1 sigma) A.D. 1480–1650 and (2 sigma) A.D. 1440-1670
10690	2	TU-2	II	150 +/- 50 BP (Beta 197058)	(1 sigma) A.D. 1660–1890 and (2 sigma) A.D. 1650-1960
10690	6	ST-1	I/II	250 +/- 60 BP (Beta 197057)	(1 sigma) A.D. 1630–1680 and (2 sigma) A.D. 1480-1690
10691	3	ST-1	II	150 +/- 50 BP (Beta 197059)	(1 sigma) A.D. 1660–1960 and (2 sigma) A.D. 1640-1960
10692	1	TU-1	I	190 +/- 50 BP (Beta 197060)	(1 sigma) A.D. 1730–1810 and (2 sigma) A.D. 1640-1960
10694	1	TU-1	II	350 +/- 50 BP (Beta 197061	(1 sigma) A.D. 1460–1640 and (2 sigma) A.D. 1440-1660
10695	1	ST-2	II	120 +/- 50 BP (Beta 197062)	(1 sigma) A.D. 1800–1960 and (2 sigma) A.D. 1660–1960
10697	5	TU-2	I	150 +/- 70 BP (Beta 197063)	(1 sigma) A.D. 1660–1960 and (2 sigma) A.D. 1640–1960
10699	3	ST-3	I	520 +/- 70 BP (Beta 197064)	(1 sigma) A.D. 1390–1450 and (2 sigma) A.D. 1290–1490
10702	1	TU-3	III	180 +/- 50 BP (Beta 197065)	(1 sigma) A.D. 1720–1820 and (2 sigma) A.D. 1640–1960
10702	11	TU-1	II	170 +/- 70 BP (Beta 197066)	(1 sigma) A.D. 1650–1890 and (2 sigma) A.D. 1630–1960
10718	Stone Circle	NA	Surface	120 +/- 40 BP (Beta 197056)	(1 sigma) A.D. 1800–1960 and (2 sigma) A.D. 1660–1960

Dr. Robert L. Spear

Report Date: 11/18/2004

Scientific Consultant Services, Inc.

Material Received: 10/25/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 197056	60 +/- 40 BP	-21.6 o/oo	120 +/- 40 BP
SAMPLE : SCSRC386			
ANALYSIS : AMS-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1670 to 1950 (Cal BP 280 to 0)			
Beta - 197057	260 +/- 60 BP	-25.6 o/oo	250 +/- 60 BP
SAMPLE : SCSRC387			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1490 to 1690 (Cal BP 460 to 260) AND Cal AD 1730 to 1810 (Cal BP 220 to 140) Cal AD 1920 to 1950 (Cal BP 30 to 0)			
Beta - 197058	170 +/- 50 BP	-26.4 o/oo	150 +/- 50 BP
SAMPLE : SCSRC388			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1650 to 1950 (Cal BP 300 to 0)			
Beta - 197059	190 +/- 60 BP	-27.0 o/oo	150 +/- 60 BP
SAMPLE : SCSRC389			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1650 to 1950 (Cal BP 300 to 0)			
Beta - 197060	200 +/- 50 BP	-25.5 o/oo	190 +/- 50 BP
SAMPLE : SCSRC390			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1640 to 1890 (Cal BP 310 to 60) AND Cal AD 1910 to 1950 (Cal BP 40 to 0)			

Dr. Robert L. Spear

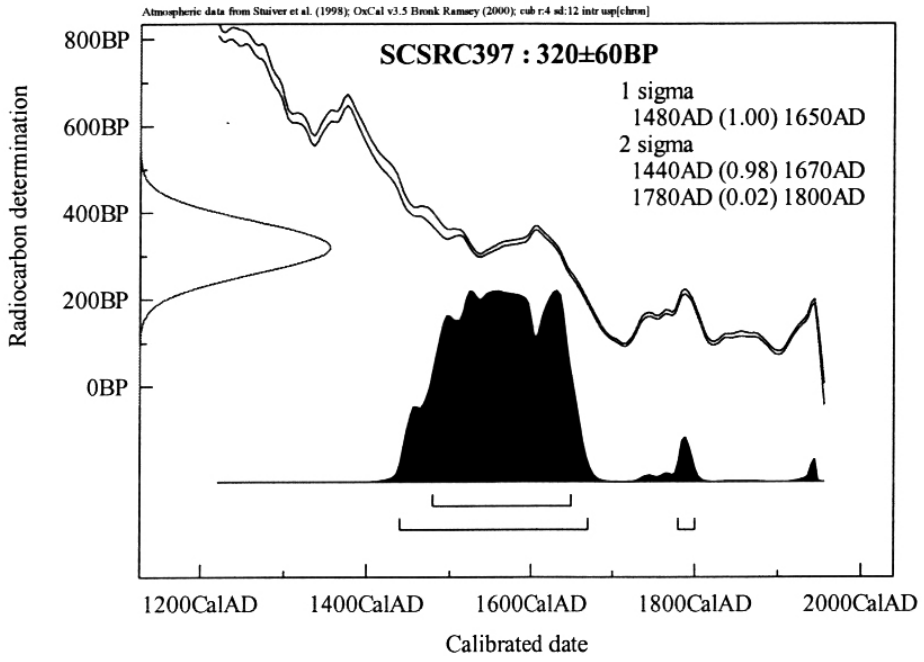
Report Date: 11/18/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 197061 SAMPLE : SCSRC391 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1440 to 1650 (Cal BP 510 to 300)	340 +/- 50 BP	-24.3 o/oo	350 +/- 50 BP
Beta - 197062 SAMPLE : SCSRC392 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1660 to 1950 (Cal BP 290 to 0)	110 +/- 50 BP	-24.4 o/oo	120 +/- 50 BP
Beta - 197063 SAMPLE : SCSRC393 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1640 to 1960 (Cal BP 310 to 0)	160 +/- 70 BP	-25.4 o/oo	150 +/- 70 BP
Beta - 197064 SAMPLE : SCSRC394 ANALYSIS : Radiometric-Standard delivery (with extended counting) MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1300 to 1480 (Cal BP 650 to 470)	510 +/- 70 BP	-24.6 o/oo	520 +/- 70 BP
Beta - 197065 SAMPLE : SCSRC395 ANALYSIS : Radiometric-Standard delivery MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid 2 SIGMA CALIBRATION : Cal AD 1640 to 1950 (Cal BP 310 to 0)	160 +/- 50 BP	-23.7 o/oo	180 +/- 50 BP

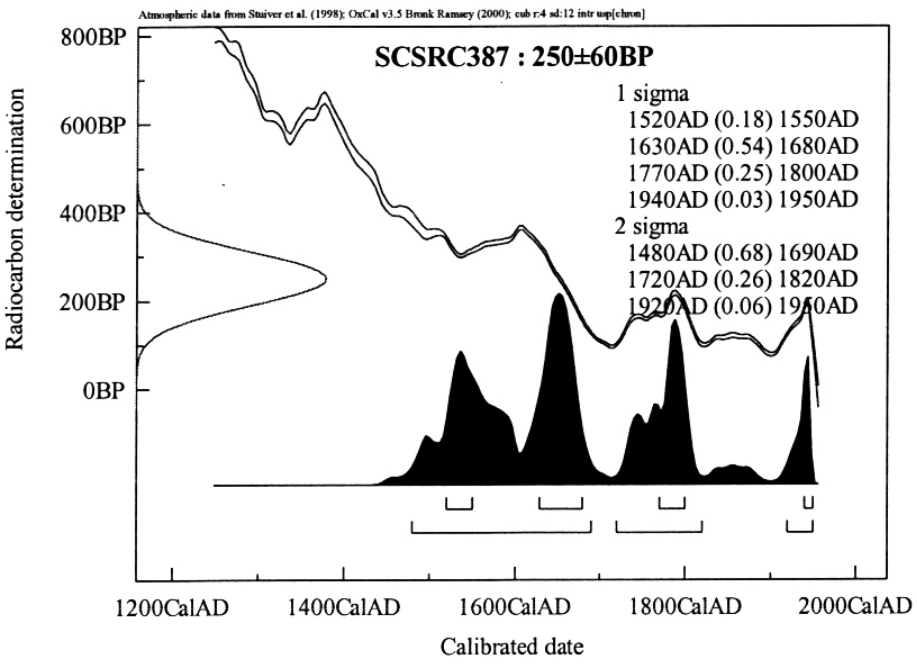
Dr. Robert L. Spear

Report Date: 11/18/2004

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 197066	190 +/- 70 BP	-25.9 o/oo	170 +/- 70 BP
SAMPLE : SCSRC396			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1530 to 1550 (Cal BP 420 to 400) AND Cal AD 1630 to 1950 (Cal BP 320 to 0)			
Beta - 197067	300 +/- 60 BP	-24.0 o/oo	320 +/- 60 BP
SAMPLE : SCSRC397			
ANALYSIS : Radiometric-Standard delivery			
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid			
2 SIGMA CALIBRATION : Cal AD 1440 to 1670 (Cal BP 510 to 280)			



Site 10681



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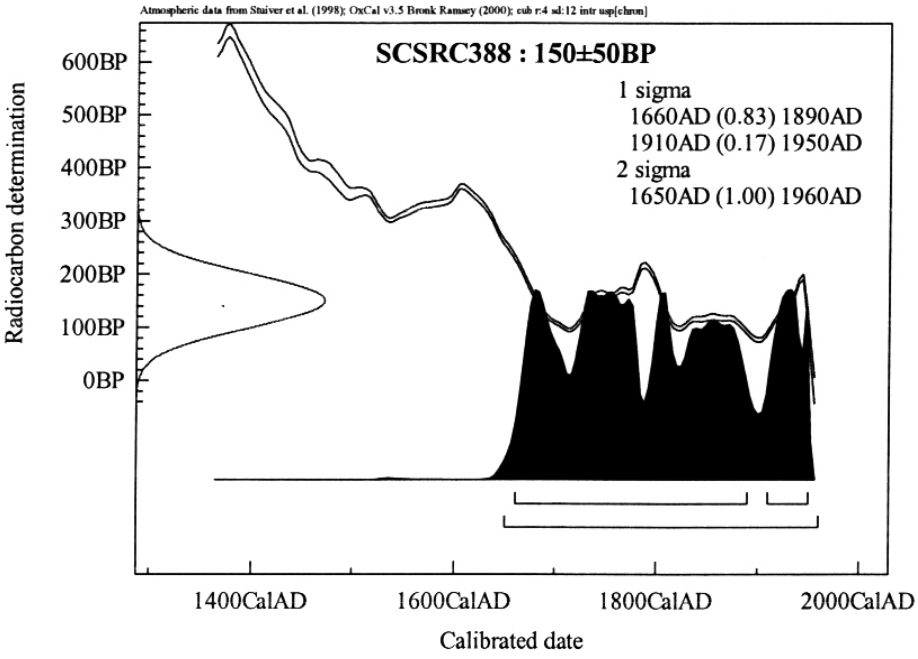

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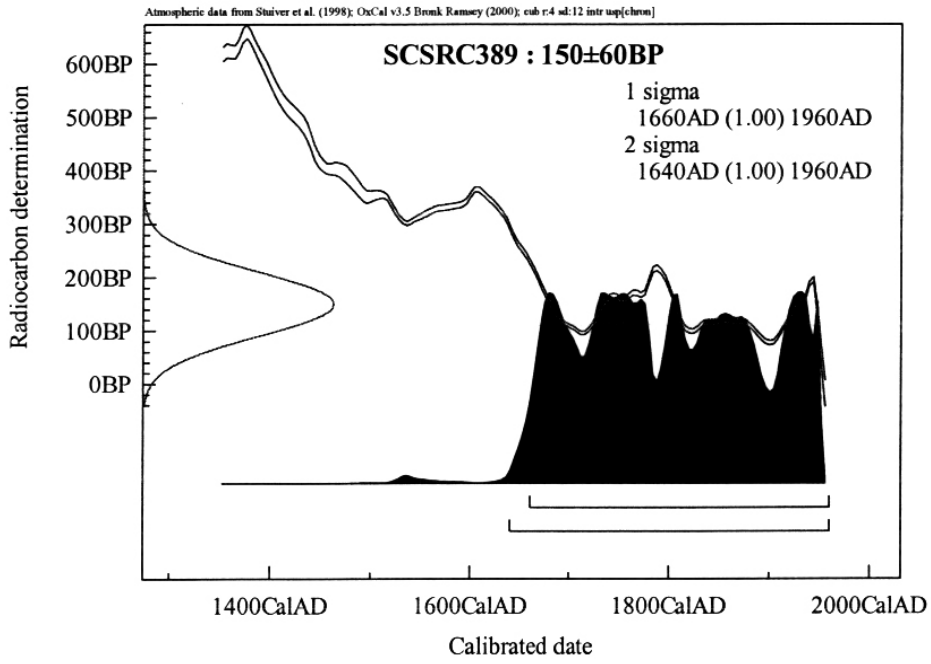

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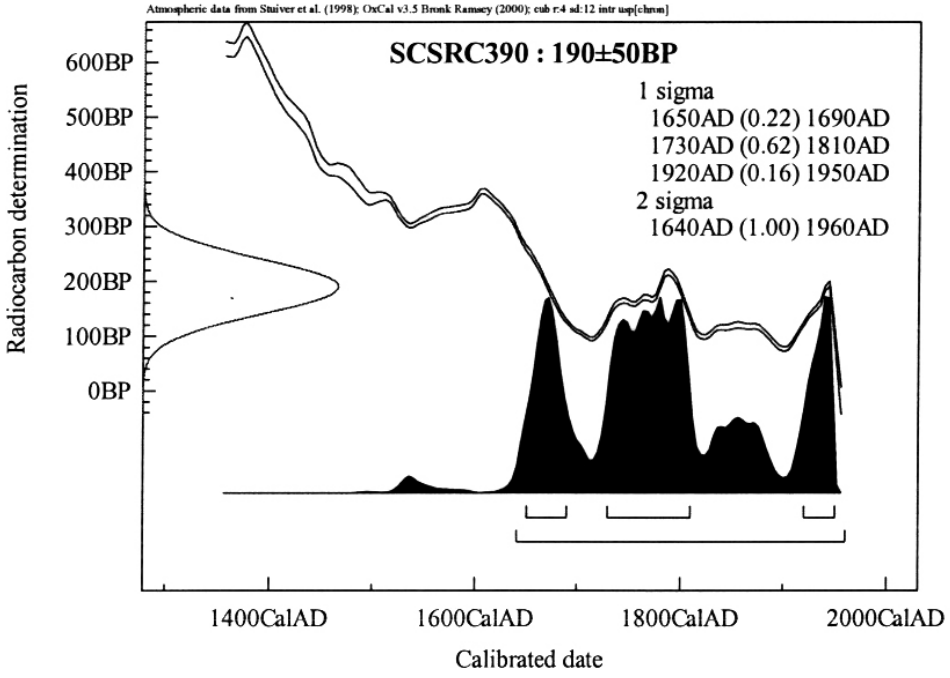

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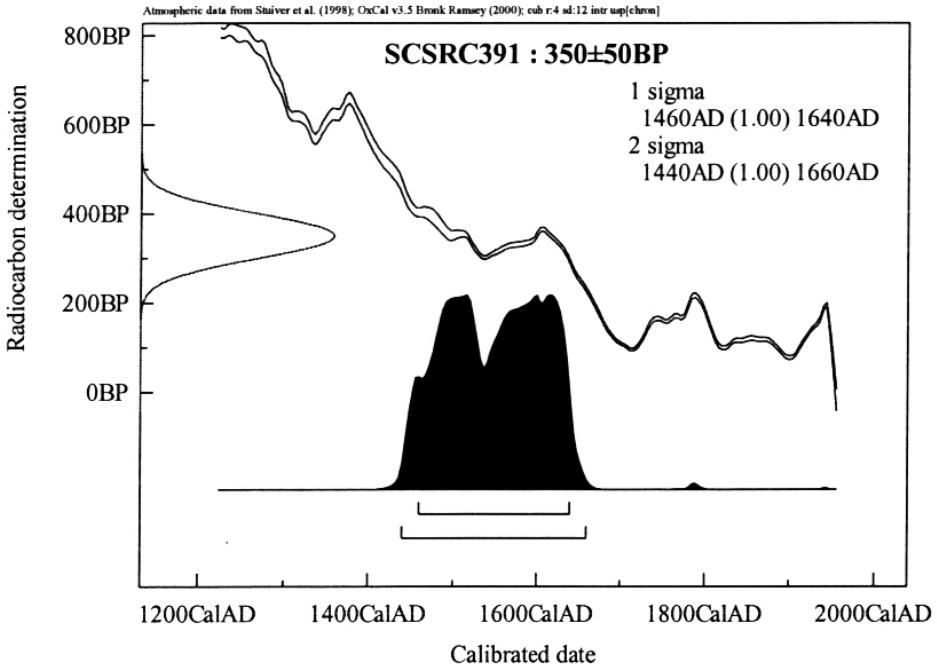

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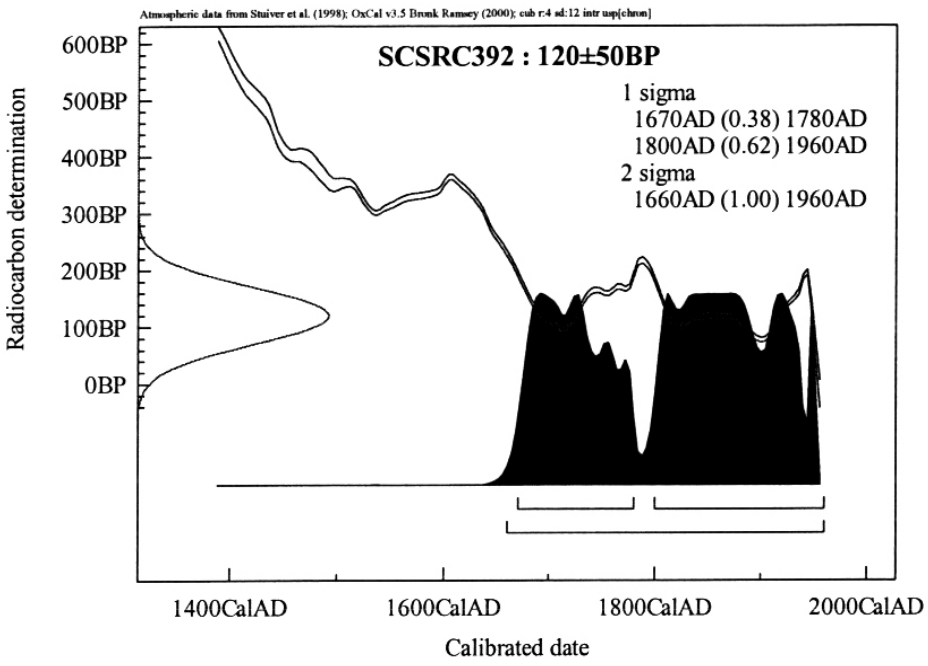

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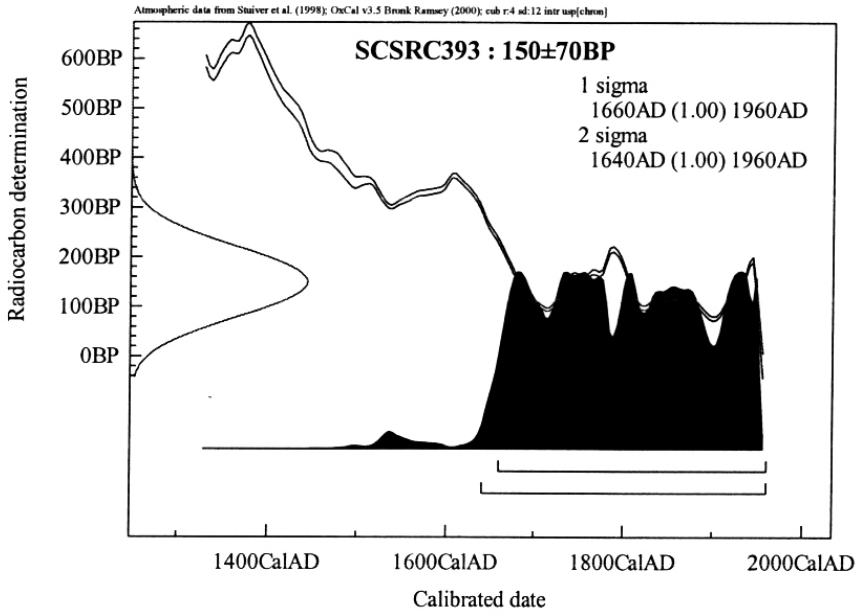

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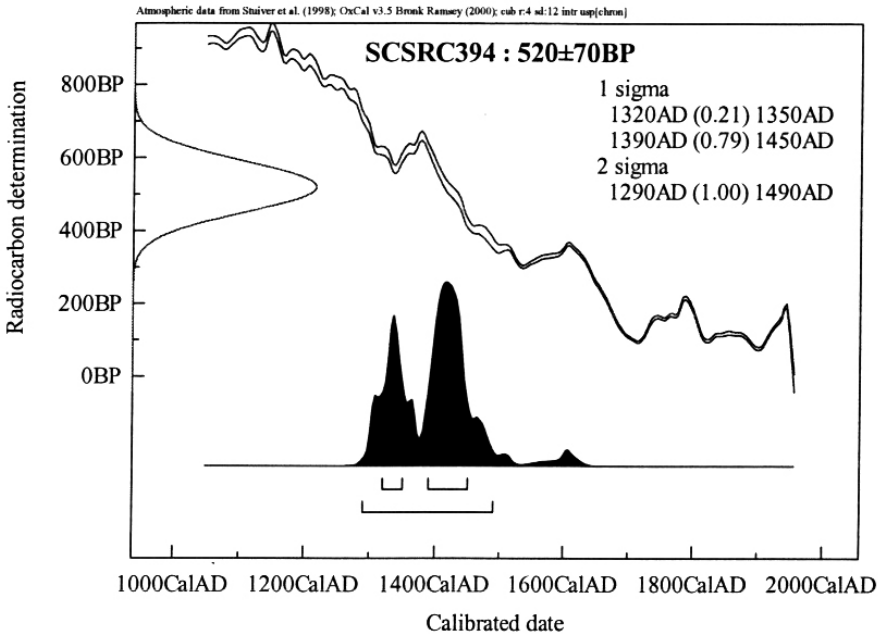

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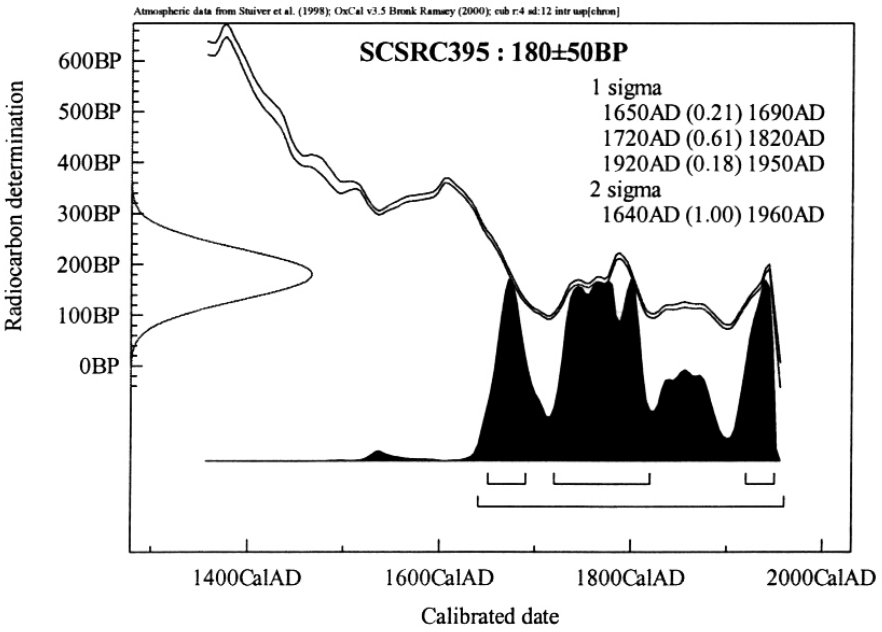
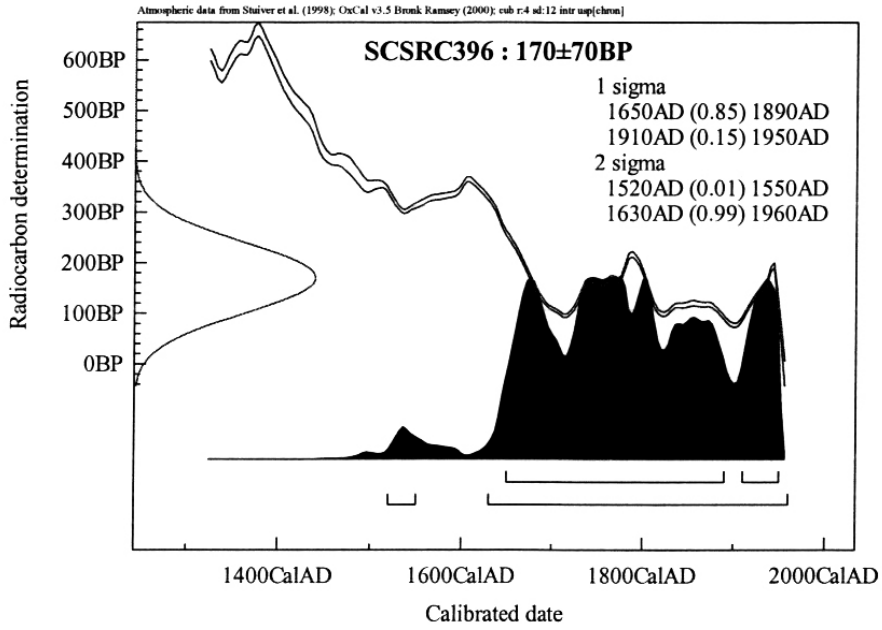


Site 10702



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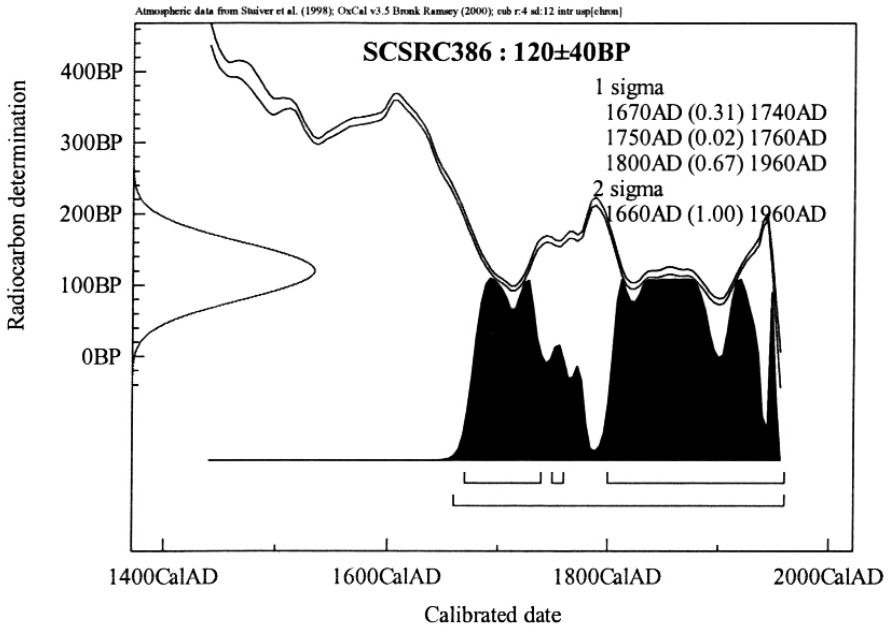
Atmospheric data from Stuiver et al. (1998); OxCal v3.5 Bronk Ramsey (2000); cub r:4 sd:12 intr usp[chron]
SCSRC386 : 120±40BP
1 sigma
1670AD (0.31) 1740AD
1750AD (0.02) 1760AD
1800AD (0.67) 1960AD
2 sigma
1660AD (1.00) 1960AD
Radiocarbon determination
400BP
300BP
200BP
100BP
0BP
1400CalAD
1600CalAD
1800CalAD
2000CalAD
Calibrated date

Site 10718

APPENDIX B: CORAL MATERIAL

Site	Feature	Unit	Layer	Depth (cmbs)	Weight (g)	N	Remarks
10690	6	ST-1	Arch	W1/4	54.1	3	Two pieces possible branch coral - 49.1 g
10690	6	ST-1	I & II	E 1/2	12.1	25	18 pieces possible branch coral - 6.8 g
10690	6	ST-1	II	W 1/2	39.2	1	No branch coral
10690	2/ SSF 2.21	TU-2	II	15-33	0.9	2	No branch coral
10691	3	ST-1	I	42-65	3.4	1	No branch coral
10691	2	TU-3	I	0-10	3.9	2	No branch coral
10694	1	TU-1	I	18-65	0.4	1	No branch coral
10694	1	TU-1	II	59-95	0.2	2	No branch coral
10694	17	-	-	Surface	10.9	1	No branch coral
10695	1	TU-2	I	30-86	2.0	4	Two pieces possible branch coral-1.3 g
10696	1	ST-1	Arch 2	-	>20	1	One side is smooth. No branch coral.
10702	1	TU-3	-	5	14.5	1	50cm W/ 20cm N. No branch coral.
10702	1	TU-3	Arch	35	17.8	4	250cm W/ 30 cm N. All branch coral.
10702	1	TU-3	Arch	15	56.8	7	3m W/ 50cm N. All branch coral.
10702	1	TU-3	Arch	45	21.5	1	230cm W/ 60cm N. 1is branch coral.
10702	1	TU-3	III	-	134.1	16	All branch coral
10702	1	TU-3	III	-	2.2	5	No branch coral
10702	1	TU-3	III	-	180.3	15	14 pieces branch coral - 179.0 g
10702	1	TU-3	III	-	1247.3	90	89 pieces branch coral - 1245.4 g
10702	1	ST-2	Arch	34	6.1	8	290cm W/ 35cm N. All pieces possible branch coral.
10704	1	ST-1	Arch	-	6.4	2	South middle depression. No branch coral.
10706	1	TU-1	2	20-23	12.3	1	Possible branch coral
10745	-	TU-2	I/1	0-35	15.8	5	No branch coral
10745	-	TU-2	I/2	36-66	0.3	1	No branch coral
10757	1	ST-1	-	-	146.9	8	No branch coral
10760	-	ST-1	Arch I	-	33.8	1	No branch coral

APPENDIX C: BOTANICAL MATERIAL

Site	Feature	Unit	Layer	Depth (cmbs)	Material	Weight (g)	Remarks
10687	1	TU-3	II	83	*Kukui*	0.3	
10718	-	-	-	Surface	Charcoal	26.7	
10718	-	-	-	Surface	Charcoal	4.7	
10718	-	-	-	Surface	Charcoal	1.3	
10718	-	-	-	Surface	Charcoal	26.3	
10721	-	-	-	Surface	Charcoal	6.7	
10690	6	ST-1	I & II	East 1/2	Charcoal	6.5	
10690	6	ST-1	I & II	East 1/2	*Kukui*	4.1	
10690	2	TU-2	I	0-10	Charcoal	12.7	
10690	2	TU-2	I	0-10	*Kukui*	0.3	
10690	2/SSF 2.21	TU-2	II	15-33	Charcoal	0.1	
10690	2/SSF 2.21	TU-2	II	15-33	Charcoal	44.4	
10690	2/SSF 2.21	TU-2	II	15-33	*Kukui*	1.0	
10691	3	ST-1	II	73-121	Charcoal	24.1	
10691	3	ST-1	II	73-121	*Kukui*	0.9	
10691	2	TU-3	II	10-24	*Kukui*	0.1	
10692	1	TU-1	I	-	Charcoal	43.4	
10692	1	TU-1	I	-	*Kukui*	4.4	
10694	1	TU-1	II	51-95	Charcoal	45.6	
10694	1	TU-1	II	51-95	*Kukui*	2.5	
10694	1	TU-1	II	59-95	*Kukui*	0.2	
10694	1	TU-3	II	56-3	*Kukui*	<0.1	
10694	1	ST-1	II	-	Charcoal	51.0	
10694	1	ST-1	II	-	*Kukui*	3.0	
10694	1	ST-1	II	-	*Kukui*	0.4	
10695	1/SSF-1	TU-1	I	58-100	Charcoal	1.0	
10695	1/SSF-1	TU-1	I	58-100	Soil	1757.7	100% of layer
10695	1/SSF-1	TU-1	I	58-100	Soil	3402.0	100% of layer
10695	1/SSF-1	TU-1	I	58-100	Soil	2721.6	100% of layer
10695	1	TU-2	I	30-86	Charcoal	0.3	
10695	1	TU-2	I	30-86	Charcoal	34.5	
10695	1	TU-2	I	30-86	*Kukui*	1.8	
10695	1	TU-2	I	30-86	Charcoal	40.1	
10695	1	TU-2	I	30-86	*Kukui*	0.5	
10695	1	TU-2	I	30-86	Charcoal	25.7	
10695	1	TU-2	I	30-86	*Kukui*	0.5	
10695	1	TU-2	II	61-97	Charcoal	2.7	
10695	1	ST-2	I	S half	Charcoal	1.7	
10695	1	ST-2	I	S half	*Kukui*	0.3	
10695	1	ST-2	II	S half	Charcoal	21.2	
10695	1	ST-2	II	S half	*Kukui*	4.0	
10695	1	ST-2	I	N half	Charcoal	0.2	
10695	1	ST-2	II	N half	Charcoal	3.8	
10695	1	ST-2	II	N half	*Kukui*	0.3	
10695	1	ST-2	IIA	N half	Charcoal	0.8	

Site	Feature	Unit	Layer	Depth (cmbs)	Material	Weight (g)	Remarks
10697	5	TU-2	I	14-47	Charcoal	14.3	
10697	7	TU-3	I	23-44	Charcoal	2.8	
10697	7	TU-3	II	36-71	Charcoal	7.5	
10697	7	TU-3	II	36-71	*Kukui*	0.5	
10699	3	ST-3	I	55	Charcoal	5.6	
10702	11	TU-1	II	-	Charcoal	7.5	
10702	11	TU-1	II	-	*Kukui*	1.2	
10702	1	TU-3	Arch	25	Charcoal	4.9	
10702	1	TU-3	Arch	34	Charcoal	0.6	
10702	1	TU-3	Arch	50	Charcoal	10.8	
10702	1	TU-3	Arch	55	Charcoal	2.1	
10702	1	TU-3	III	-	Charcoal	21.2	
10702	1	TU-3	III	-	*Kukui*	1.8	
10702	1	TU-3	III	-	Charcoal	246.4	
10702	1	TU-3	III	-	*Kukui*	3.8	
10704	1	ST-1	Arch/I	-	Charcoal	0.4	
10704	1	ST-1	II	-	Charcoal	0.6	
1070	1	TU-1	2	20-23	Charcoal	1.6	
10762	1	ST-1	I	-	Charcoal	3.5	
10748	-	-	-	Surface	Charcoal	3.2	
10748	-	-	-	Surface	Charcoal	7.0	
10752	-	-	-	Surface	Charcoal	1.6	
10681	2	TU-1	I	18-88 W 1/3	Charcoal	0.2	
10681	2	TU-1	I	18-88 W 1/3	Charcoal	4.8	
10681	2	TU-1	II	41-100	Charcoal	18.2	
10681	2	TU-1	I	132-177 E 1/3	Charcoal	93.9	
10745	-	TU-1	I	0-15	Charcoal	43.8	
10745	-	TU-1	II	16-64	Charcoal	77.8	
10745	-	TU-1	II	16-64	*Kukui*	2.0	
10745	-	TU-2	I/1	0-35	Charcoal	40.3	
10745	-	TU-2	I/2	36-66	Charcoal	66.3	
10758	-	ST-1	II	54-60	Charcoal	0.3	
10760	-	ST-1	Arch II/ Soil I	-	Charcoal	5.8	
10792	ST-1	-	-	-	*Kukui*	0.7	
10792	ST-1	-	-	-	Charcoal	5.2	

APPENDIX D: VERTEBRATE MATERIAL

Site	Feature	Unit	Layer	Depth (cmbs)	Weight (g)	N	Remarks
10689	1	ST-1	-		69.3	-	Medium mammal
10690	6	ST-1	I & II		0.4	-	Fish
10690	6	ST-1	II		1.2	-	Taxa: Fish, *Canis familiaris*
10691	3	ST-1	II	80	0.6	-	Taxa: small-to-medium bird, small-to-medium vertebrate
10691	3	ST-1	II	73-121	4.4	-	Fish
10691	1A- 1B	ST-3	I		5.2	-	Medium-to-large mammal
10692	1	TU-1	I		1.6	-	Taxa: Fish, *Sus scrofa*
10692	1	-	-	Surface	64.3	-	*Sus scrofa*
10694	1	TU-1	II	59-95	0.2	-	Acanthuridae
10694	1	TU-2	I	55	1.2	-	*Cypraea* sp., 60cm E/ 97cm N
10694	5	-	-	Surface	25.0	1	*Equus caballus*, Interior of Blister (North)
10695	1/SSF-1	TU-1	I	58-100	1.2	-	Taxa: small-to-medium mammal, small vertebrate
10695	1	TU-2	I	30-86	1.8	-	Taxa: Fish, Bird, *Rattus/Mus* sp., small-to-medium mammal
10695	1	ST-2	I		1.7	-	Taxa: Fish, *Sus scrofa*
10695	1	ST-2	II		16.1	-	Taxa: Fish, Bird, *Sus scrofa*
10695	1	ST-2	I		2.2	-	Taxa: Fish, medium mammal
10695	1	ST-2	II		0.3	-	Taxa: Fish, *Rattus/Mus* sp.
10695	1	ST-2	IIA		0.1	-	Taxa: Fish, *Rattus/Mus* sp.
10702	1	TU-3	-		23.3	-	*Sus scrofa*
10702	1	TU-3	III		6.3	-	Taxa: Fish, small-to-medium mammal
10702	1	TU-3	III		0.9	-	Small-to-medium mammal
10702	1	TU-3	III		88.0	-	Taxa: Fish, *Rattus/Mus* sp., *Sus scrofa*, small-to-medium mammal
10756	-	-	-		14.3	-	Bird
10756	-	-	-		24.0	-	Taxa: Shark, Fish, *Canis familiaris*, *Sus scrofa*
10745	-	TU-1	I	0-15	30.2	-	*Sus scrofa*
10745	-	TU-1	II	16-64	63.5	-	Taxa: Fish, *Sus scrofa*, *Equus caballus*, small-to-medium mammal
10745	-	TU-2	I/1	0-35	32.2	-	Taxa: Shark, Fish, Bird, *Rattus/Mus* sp., *Sus scrofa*
10745	-	TU-2	I/2	36-66	53.9	-	Taxa: Fish, *Rattus/Mus* sp., *Sus scrofa*
10757	1	ST-1	-		1.1	-	Medium mammal
10757	1	ST-1	-		0.6	-	Taxa: Bird, *Rattus/Mus* sp.
10758	-	ST-1	II	54-60	5.4	-	Taxa: *Sus scrofa*, small-to-medium mammal
10760	-	ST-1	Arch II		48.9	4	*Equus caballus*
10760	-	ST-1	Arch II/ Soil I		0.2	-	Taxa: Bird, *Rattus/Mus* sp.
10792	ST-1	-	-		13.0	-	Small-to-medium mammal

APPENDIX E: INVERTEBRATE MATERIAL

Site	F.	Unit	Layer	Depth (cmbx)	W (g)	Remarks
10690	6	ST-1	Arch		3.2	Taxa: *Nerita* sp., *Cypraea* sp.
10690	6	ST-1	II		1.2	Echinoidea
10690	6	ST-1	I & II		115.4	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus* sp., *Strombus* sp., *Cypraea* sp., *Cassis cornuta, Drupa* sp., *Purpura aperta, Conus* sp., *Brachidontes* sp., *Isognomon* sp., non-diagnostic marine shell, Echinoidea
10690	6	ST-1	II		214.6	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus* sp., *Cypraea* sp., *Drupa* sp., *Conus* sp., Zonitoidae, *Brachidontes* sp., *Isognomon* sp., *Chama* sp., *Tellina* sp., non-diagnostic marine shell, Echinoidea
10690	2	TU-2	I	0-10	13.5	Taxa: *Theodoxus* sp., *Cypraea* sp., *Conus* sp., non-diagnostic marine shell
10690	2/SSF 2.21	TU-2	II	15-33	6.9	Taxa: *Cellana* sp., *Cypraea* sp.
10691	3	ST-1	I	42-65	6.7	Taxa: *Cypraea* sp., *Drupa* sp.
10691	3	ST-1	-	80	0.3	Non-diagnostic marine shell
10691	3	ST-1	II	73-121	16.7	Taxa: *Cypraea* sp., non-diagnostic marine shell, Echinoidea
10691	2	TU-3	I	0-10	1.3	Taxa: *Cellana* sp., *Cypraea* sp., non-diagnostic marine shell
10691	2	TU-3	II	10-24	0.4	Non-diagnostic marine shell
10691	1A & 1B	ST-3	I		0.4	*Cellana* sp.
10692	1	TU-1	I		11.7	Taxa: *Cellana* sp., *Cypraea* sp., *Drupa* sp., *Conus* sp., *Periglypta reticulata*, non- diagnostic marine shell, Echinoidea
10692	1	-	-	Surface	25.6	*Cellana* sp.
10694	1	TU-1	I	18-65	5.2	*Cypraea* sp.
10694	1	TU-1	II	59-95	36.3	Taxa: *Cellana* sp., *Cypraea* sp., *Brachidontes* sp., *Isognomon* sp., Echinoidea
10694	1	TU-2	II	30-70	2.0	*Cypraea* sp.
10694	1	TU-3	II	56	1.7	*Cypraea* sp.
10694	1	ST-1	II		0.1	Echinoidea
10694	1	ST-1	II		7.5	Taxa: *Nerita picea*, *Cypraea* sp., *Isognomon* sp, non-diagnostic marine shell, Echinoidea
10695	1	TU-2	I	30-86	35.5	Taxa: *Nerita* sp., *Theodoxus* sp., *Cypraea* sp., *Brachidontes* sp., *Isognomon* sp., Echinoidea
10695	1	ST-2	Arch		5.7	*Cellana* sp.
10695	1	ST-2	Arch		32.7	Taxa: *Cellana* sp., *Cypraea* sp., *Conus* sp.
10695	1	ST-2	I		30.0	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus* sp., *Cypraea* sp., *Conus* sp., *Brachidontes* sp., Echinoidea
10695	1	ST-2	II		0.4	Echinoidea
10695	1	ST-2	II		24.5	Taxa: *Nerita* sp., *Cypraea* sp., *Drupa* sp., *Conus* sp., *Brachidontes* sp., *Isognomon* sp., Echinoidea
10695	1	ST-2	I		37.2	Taxa: *Cellana*sp., *Nerita* sp., *Cypraea* sp., *Brachidontes* sp., Echinoidea

Site	F.	Unit	Layer	Depth (cmbx)	W (g)	Remarks
10695	1	ST-2	II		0.7	Taxa: *Brachidontes* sp., Echinoidea
10695	1	ST-2	IIA		3.1	Taxa: *Cypraea* sp., *Brachidontes* sp., Echinoidea
10697	5	TU-2	I	Surface	2.0	*Conus* sp.
10697	5	TU-2	I	14-47	0.4	*Cypraea* sp.
10697	7	TU-3	I	23-44	9.4	*Cypraea* sp.
10697	7	TU-3	II	36-7	1.2	Taxa: *Cellana* sp., *Drupa* sp.
10702	11	TU-1	II		1.7	*Cypraea* sp.
10702	1	TU-3	Arch	20	1.6	*Tellina palatam*, 1m W/ 30cm N
10702	1	TU-3	Arch	50	3.0	*Tellina palatam*, 1.5m W/ 40cm N
10702	1	TU-3	III		23.1	Taxa: *Conus* sp., *Isognomon* sp., non-diagnostic marine shell, Echinoidea
10702	1	TU-3	III		122.5	Taxa: *Nerita picea*, *Cypraea* sp., *Cassis cornuta*, *Conus* sp., *Isognomon* sp., *Tellina palatam*, non-diagnostic marine shell, Echinoidea, Decopoda
10702	1	TU-3	III		1.1	*Cypraea* sp.
10704	1	ST-1	I		1.1	*Cypraea* sp., North 1m just inside feature
10704	1	ST-1	I		0.6	*Cassis cornuta*, 2m extension to south found within feature
10704	1	ST-1	II		0.1	Echinoidea, South 1m
10706	1	TU-1	2	20-23	7.3	*Cypraea* sp.
10762	1	ST-1	Arch/ I		21.2	Taxa: *Cypraea* sp., *Brachidontes* sp., *Isognomon* sp.
10762	1	ST-1	I		42.0	Taxa: *Cypraea* sp., *Drupa* sp., *Tellina palatam*
10756	-	-	-		37.6	*Cellana* sp.
10681	2	TU-1	I	18-88	2.1	*Cypraea* sp.
10745	-	TU-1	I	0-15	12.7	Taxa: *Cellana*sp., *Nerita* sp.
10745	-	TU-1	II	16-64	35.6	Taxa: *Cellana* sp., *Conus*sp., *Tellina palatam*, non-diagnostic marine shell
10745	-	TU-2	I/1	0-35	42.2	Taxa: *Cellana* sp., *Nerita picea, Theodoxus cariosus, Cypraea* sp., *Drupa* sp., *Tellina palatam,* Echinoidea
10745	-	TU-2	I/2	36-66	90.2	Taxa: *Cellana* sp., *Nerita* sp., *Theodoxus cariosus, Cypraea* sp., *Charonia tritonis, Cymatium* sp., *Drupa* sp., *Conus* sp., *Brachidontes* sp., *Isognomon* sp., *Tellina palatam,* Echinoidea, Decopoda
10757	1	ST-1	-		88.4	Taxa: *Cellana* sp., *Nerita polita*, *Cypraea* sp., *Drupa* sp., *Conus* sp., *Tellina palatam*
10758	-	ST-1	II	54-60	16.8	Taxa: *Nerita* sp., *Cypraea* sp., *Conus* sp.
10760	-	ST-1	Arch II/ Soil I		4.1	Non-diagnostic marine shell
10792	ST-1	-	-		30.7	Taxa: *Cypraea* sp., *Drupa* sp.

APPENDIX F: TRADITIONAL ARTIFACTS

Site	F.	Unit	Layer	Depth	Material	Weight (g)	N	Remarks
10690	6	ST-1	Arch	30	Volcanic Glass	6.7	1	107cm W/ 0cm N
10690	6	ST-1	I	20	Basalt Adze	8.2	1	160cm W/ 90cm N
10690	6	ST-1	I	40	Basalt Adze	25.4	1	Fragment, located south wall- west half- near center
10690	6	ST-1	II	-	Waterworn Basalt Hammerstone	45.1	1	-
10690	6	ST-1	II	85	Coral Abrader	6.2	1	160cm W/ 5cm N
10690	6	ST-1	II	-	Basalt	453.6	1	poss. worked
10690	6	ST-1	I & II		Volcanic Glass	19.6	22	-
10690	6	ST-1	II		Basalt Debitage	2.4	1	-
10690	6	ST-1	II		Volcanic Glass	26.2	14	-
10690	2/SSF 2.21	TU-2	II	15-33	Basalt Flake with Polish	15.9	1	-
10691	3	ST-1	I	42-65	Basalt	41.9	2	poss. worked
10691	3	ST-1	I	42-65	Volcanic Glass	10.7	3	-
10691	3	ST-1	II	80	Volcanic Glass	1.2	1	-
10691	3	ST-1	II	73-121	Basalt Flake with Polish	0.4	1	-
10691	3	ST-1	II	73-121	Basalt	7.9	1	poss. abrader
10691	3	ST-1	II	73-121	Volcanic Glass	3.9	4	-
10691	3	ST-1	II	73-121	Worked Marine Shell	1.3	1	Pinctada radiata
10691	2	TU-3	I	0-10	Volcanic Glass	0.2	2	-
10691	2	TU-3	I	0-10	Basalt Flake with Polish	1.8	1	-
10691	10	TU-4	I	0-20	Volcanic Glass	1.1	2	-
10692	1	TU-1	I	-	Polished Basalt	94.3	1	-
10692	1	TU-1	I	-	Marine Shell Bead	0.2	1	Conus sp.
10692	1	TU-1	I	-	Basalt Debitage	1.7	3	-
10692	1	TU-2	I	-	Volcanic Glass	1.7	2	-
10692	1	-	-	Surface	Coral Abrader	22.9	1	-
10694	1	TU-1	I	62	Volcanic Glass	1.3	1	68cm N/ 30cm E
10694	1	TU-1	I	18-65	Volcanic Glass	1.6	2	-
10694	1	TU-1	II	64	Volcanic Glass	1.1	2	10cm N/ 90cm E
10694	1	TU-1	II	59-95	Basalt Debitage	1.3	1	-
10694	1	TU-1	II	59-95	Volcanic Glass	49.5	12	-
10694	1	TU-2	II	30-70	Volcanic Glass	1.7	3	-
10694	1	TU-3	II	56	Volcanic Glass	19.2	10	-
10694	1	ST-1	II	-	Volcanic Glass	0.6	1	-
10694	30	ST-5	II	-	Basalt Abraders	35.9	3	-
10694	32	ST-2	Arch	-	Basalt Core	127.5	1	99cm N/ 125cm E
10695	1	TU-2	I	30-86	Worked Basalt	44.3	1	-
10695	1	ST-2	Surface	35	Basalt Adze	266	-	-
10695	1	ST-2	Arch		Basalt Hammerstone	680.4	1	-
10695	1	ST-2	Arch		Waterworn Basalt	460	1	poss. hammerstone

Site	F.	Unit	Layer	Depth	Material	Weight (g)	N	Remarks
10695	1	ST-2	Arch		Basalt	15.4	1	poss. worked
10695	1	ST-2	I		Scoria Basalt	114.1	7	poss. abraders
10695	1	ST-2	I		Volcanic Glass	1.2	1	-
10695	1	ST-2	I		Worked Bone	1	1	Medium-to-large mammal
10695	1	ST-2	II		Volcanic Glass	0.5	1	-
10695	1	ST-2	I		Scoria Basalt	56	4	poss. abraders
10695	1	ST-2	IIA		Volcanic Glass	0.3	1	-
10697	5	TU-2	I	14-47	Volcanic Glass	6.7	22	-
10697	7	TU-3	I	23-44	Volcanic Glass	0.5	-	-
10697	2	-	-	Surface	Basalt Core	191.2	1	-
10702	11	TU-1	II		Volcanic Glass	0.6	1	-
10702	3	ST-2	I		Basalt with Polish	38.4	1	Poss. Adze frag.
10702	1	TU-3	III	50	Bone Pick	4.9	1	Medium mammal, 280cm W/ 80cm N
10702	1	TU-3	III		Volcanic Glass	14.2	1	-
10702	1	TU-3	III		Basalt	17.8	2	poss. worked
10702	1	TU-3	III		Modified Pig Tooth	0.6	1	-
10702	1	TU-3	III		Volcanic Glass	1.2	4	-
10702	1	TU-3	III	75	Basalt Adze	11.4	1	250cm W/ 5cm N
10702	1	ST-2	Surface		Basalt	1360.7	1	poss. grinding stone
10702	1	TU-1	2	20-23	Volcanic Glass	1.7	2	-
10756	-	-	-		Ochre, worked	11	1	-
10756	-	-	-		Basalt Graver	9.5	1	-
10756	-	-	-		Drilled Pig Tooth	2.8	1	-
10756	-	-	-		Basalt Adze	55.8	1	-
10756	-	-	-		Basalt Adze	43	1	-
10756	-	-	-		Basalt Adze	46.8	1	-
10756	-	-	-		Basalt Adze	15.9	1	-
10756	-	-	-		Basalt Adze	15.7	1	-
10756	-	-	-		Ocotpus (He`e) Lure	136.7	1	-
10745	-	TU-2	I/1	0-35	Volcanic Glass	0.5	1	-
10745	-	TU-2	I/2	36-66	Basalt Debitage	6.7	2	One with polish
10745	-	TU-2	I/2	36-66	Volcanic Glass	4	2	-
10757	1	ST-1	-		Marine Shell Bead	2.3	1	Conus sp.
10760	-	ST-1	Arch II/ Soil I		Octopus (He`e) Lure	61.6	1	-
10760	-	ST-1	Arch II/ Soil I		Volcanic Glass	2.7	1	-