

# Haun & Associates

Archaeological, Cultural, and Historical Resource Management Services  
73-1168 Kahuna A'o Road, Kailua-Kona, Hawai'i 96740 Phone: 982-7755 Fax: 325-1520

June 11, 2010

Project 734

Ms. Nancy McMahon  
Archaeology and Historic Preservation Manager  
State Historic Preservation Division  
Department of Land and Natural Resources  
601 Kamokila Boulevard, Suite 555  
Kapolei, Hawaii 96707

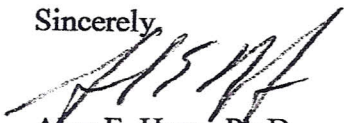
Subject: Draft Addendum Archaeological Inventory Survey  
Kamakana Villages at Keahuolu Project  
Land of Keahuolu, North Kona District  
Island of Hawaii (TMK: [3] 7-4-21:020, 024, 025, 026, 027)

Dear Ms. McMahon:

As requested in your May 4, 2010 Memorandum, the subject draft report was submitted Hawaii Island SHPD office along with a copy of this letter and the attached submittal sheet. The subject addendum report was prepared in response to your letter dated February 11, 2010 (LOG N:2009.4069; DOC NO: 1002TD07).

If you have any questions, or require additional information, please contact me at (808) 982-7755.

Sincerely,



Alan E. Haun, Ph.D.  
Principal Investigator

Encl. Report, Submittal Sheet

cc: Theresa Donham, SHPD Hawai'i Island Lead Archaeologist  
Mr. Thomas H. Yamamoto, Forest City Hawai'i Kona LLC  
Mr. Race Randle, Forest City Hawai'i Kona LLC

## Submittal Sheet for Historic Preservation Review Filing Fees

State Historic Preservation Division  
Department Land and Natural Resources

Agency/Firm (Requesting Review): Haun & Associates

Contact: Alan Haun Date 6/11/10

Phone: (808) 982-7755 Fax: (808) 325-1520 E-Mail: ahaun@haunandassociates.com

Address: 73-1168 Kahuna A'o Rd, Kailua-Kona, HI 96740

Title of Report/Plan: Addendum Archaeological Inventory Survey,  
Kamakana Villages at Keahuolu Project  
TMK: [3] 7-4-21:020, 024, 025, 026, 027  
Land of Keahuolu, North Kona District, Island of Hawaii

Island:	Hawaii	District:	N. Kona	Ahupua'a:	Keahuolu
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TMK [(1) 1-1-001:001]: \_\_\_\_\_ TMK: (3) 7-4-21:020, 024, 025, 026, 027

Acreage inventoried (hectares):	100	Number of new sites inventoried:	136
Please characterize survey level: Reconnaissance or Intensive	Intensive		

**Submitted Plan/Report Fee & Type:** (All reports or plans submitted to the SHPD for review shall be accompanied by the appropriate fee in accordance with HAR §13-275-4 and §284-4).

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- \_\_\_\_\_ \$150 Archaeological Inventory Survey Plan
- \_\_\_\_\_ \$450 Archaeological, Architectural or Ethnographic Survey Report
- \_\_\_\_\_ \$150 Preservation Plan
- \_\_\_\_\_ \$25 Monitoring Plan
- \_\_\_\_\_ \$150 Archaeological Data Recovery Plan
- \_\_\_\_\_ \$250 Burial Treatment Plan
- \_\_\_\_\_ \$100 Archaeological Monitoring Report, if resources reported
- \_\_\_\_\_ \$450 Archaeological Data Recovery Report
- \_\_\_\_\_ \$450 Ethnographic Documentation Report
- \_\_\_\_\_ \$25 Burial Disinterment Report
- \_\_\_\_\_ \$50 Osteological Analysis Report

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**ADDENDUM**

**ARCHAEOLOGICAL INVENTORY SURVEY**

**TMK: (3) 7-4-21:020, 024, 024, 026 and 027**

**LAND OF KEAHUOLU**

**NORTH KONA DISTRICT**

**ISLAND OF HAWAII**

DRAFT

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**ADDENDUM**

**ARCHAEOLOGICAL INVENTORY SURVEY**

**TMK: (3) 7-4-21:020, 024, 025, 026 and 027**

**LAND OF KEAHUOLU**

**NORTH KONA DISTRICT**

**ISLAND OF HAWAII**

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**ADDENDUM**  
**ARCHAEOLOGICAL INVENTORY SURVEY**  
**TMK: (3) 7-4-21:020, 024, 025, 026 and 027**  
**LAND OF KEAHUOLU**  
**NORTH KONA DISTRICT, ISLAND OF HAWAI'I**

By:

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and

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Prepared for:  
Forest City Hawaii Kona, LLC  
5137 Nimitz Road, Bldg. 4  
Honolulu, HI 96818

June 2010  
(Revised August 2010)

**Haun & Associates**

Archaeological, Cultural, and Historical Resource Management Services  
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# SUMMARY

At the request of Forest City Hawaii Kona, LLC, Haun & Associates conducted an archaeological survey of a 272.063-acre parcel located in Keahuolu, North Kona District, island of Hawaii (TMK: (3) 7-4-21:020, 024, 025, 026, 027). The work was done to update an earlier, approved archaeological inventory survey (AIS) report (Donham 1990), and to satisfy requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) transmitted in a letter dated February 11, 2010 (LOG N:2009.4069; DOC NO: 1002TD07).

A total of 149 sites with 3,326 features have been documented in the project area. The current AIS addendum project documented 136 sites with 3,252 features. In addition, 13 sites with 74 features that are situated along the seaward edge of the property were documented during two recent archaeological surveys conducted in conjunction with the Ane Keohokalole Highway project. The latter surveys were conducted by Cultural Surveys Hawaii, Inc. (Tulchin and Hammatt 2009) and Pacific Legacy, Inc (Reeves et al. 2009).

The 3,326 features consist of 2,655 modified outcrops, 196 pahoehoe excavations, 116 mounds, 86 terraces, 58 lava tubes, 54 enclosures, 30 platforms, 25 walls, 21 cairns, 20 petroglyphs, 16 filled cracks, 15 trails, 9 lava blisters, 8 pavements, 4 C-shapes, 4 L-shapes, 2 cart paths, 2 walled terraces and one each of the following: cupboard, road, upright, U-shape and walled platform.

Feature function includes agriculture (n=2,793), resource procurement (196), permanent habitation (160), permanent habitation/burial or possible burial (17), temporary habitation (70), temporary habitation/burial (3), burial (4), possible burial (5), marker (23), transportation (18), rock art (20), ceremonial or possible ceremonial (11), habitation of undetermined duration (3), livestock control (2) and historic habitation (1).

The 136 sites documented by the AIS addendum project are all assessed as significant for research potential. The sites have yielded, or retain the potential to yield, information important for understanding prehistoric and historic land use in project area. Eighteen sites are additionally assessed as significant for cultural value to the Hawaiian people based on the presence of burials or ritual architecture. Two sites are assessed as significant because the sites are good site type examples.

The mapping, written descriptions and photography at 22 sites adequately documents them and no further work or preservation is recommended. All, or portions of 24 sites are recommended for preservation. Four additional sites (or portions of them) are also potentially recommended for preservation based on review comments from DLNR-SHPD. Additional testing of these four sites is required to determine if preservation is required. The portions of three sites and the 86 remaining sites retain the potential to yield information important for understanding prehistoric and early historic land use. These sites are recommended for data recovery, which would entail excavation and surface collection to obtain a larger sample of portable remains and dating samples. The plans for data recovery would be detailed in a Data Recovery Plan prepared for DLNR-SHPD review and approval. The specific plans for preservation and maintenance of the burial features would be detailed in a Burial Treatment Plan prepared for DLNR-SHPD and the Hawaii Island Burial Council (HIBC) review and approval. Measures to protect other non-burial sites recommended for preservation would be described in a Site Preservation Plan prepared for DLNR-SHPD review and approval.

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# INTRODUCTION

This report presents the results of an archaeological survey of a 272.063-acre parcel located in Keahuolu, North Kona District, Island of Hawaii (TMK: (3) 7-4-21:20 - *Figure 1*). The work was done to update an earlier, approved archaeological inventory survey (AIS) report (Donham 1990), and to satisfy requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) transmitted in a letter dated February 11, 2010 (LOG N:2009.4069; DOC NO: 1002TD07).

The AIS addendum fieldwork was conducted between April 1, 2010 and May 13, 2010 under the direction of Dr. Alan Haun. Approximately 393 field days of labor were required to complete the fieldwork portion of the project. This report includes the project scope of work, project area description, field methods, background information relevant to the project area, survey findings and recommended site significance assessments and treatments.

## Scope of Work

The survey was conducted in conformance with historic preservation inventory requirements of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD), as contained within Hawaii Administrative Rules, Title 13, DLNR, Subtitle 6, State Historic Preservation Rules (DLNR 2003).

The following specific tasks were determined to constitute an appropriate scope of work for the project:

1. Conduct a high intensity, 100% pedestrian survey coverage of the project area;
2. Conduct detailed recording of all potentially significant sites including scale plan drawings, written descriptions, and photographs, as appropriate;
3. Conduct limited subsurface testing (manual excavation) at selected sites to determine feature function;
4. Analyze background research and field data; and
5. Prepare and submit Final Report.

## Project Area Description

The project area is comprised of an irregularly-shaped 272.063-acre parcel located in the Land of Keahuolu on the leeward slopes of Hualalai volcano. The parcel is bordered by Palani Road and a water tank site to the southeast and by undeveloped land along the remaining sides. The planned Ane Keohokalole Highway corridor borders the parcel along the seaward side. Keanalehu Drive terminates at the northern corner of the parcel. The terrain within the area slopes slightly to moderately the southwest. The rainfall in the vicinity of the project area ranges from 10 to 20 inches per year (Juvik and Juvik 1998:66). The project area ranges in elevation from c. 280 to 565 ft.

There are four soil types present within the project area (*Figure 2*). These consist of pahoehoe lava, a'a lava, Kaimu extremely stony peat and Punaluu extremely rocky peat. The soil throughout the majority of the parcel is pahoehoe lava, occupying 156.9-acres or 57.68% of the total area. According to Sato et al. the pahoehoe lava is dominated by a smooth surface with scattered hummocks and pressure domes (1973:34).



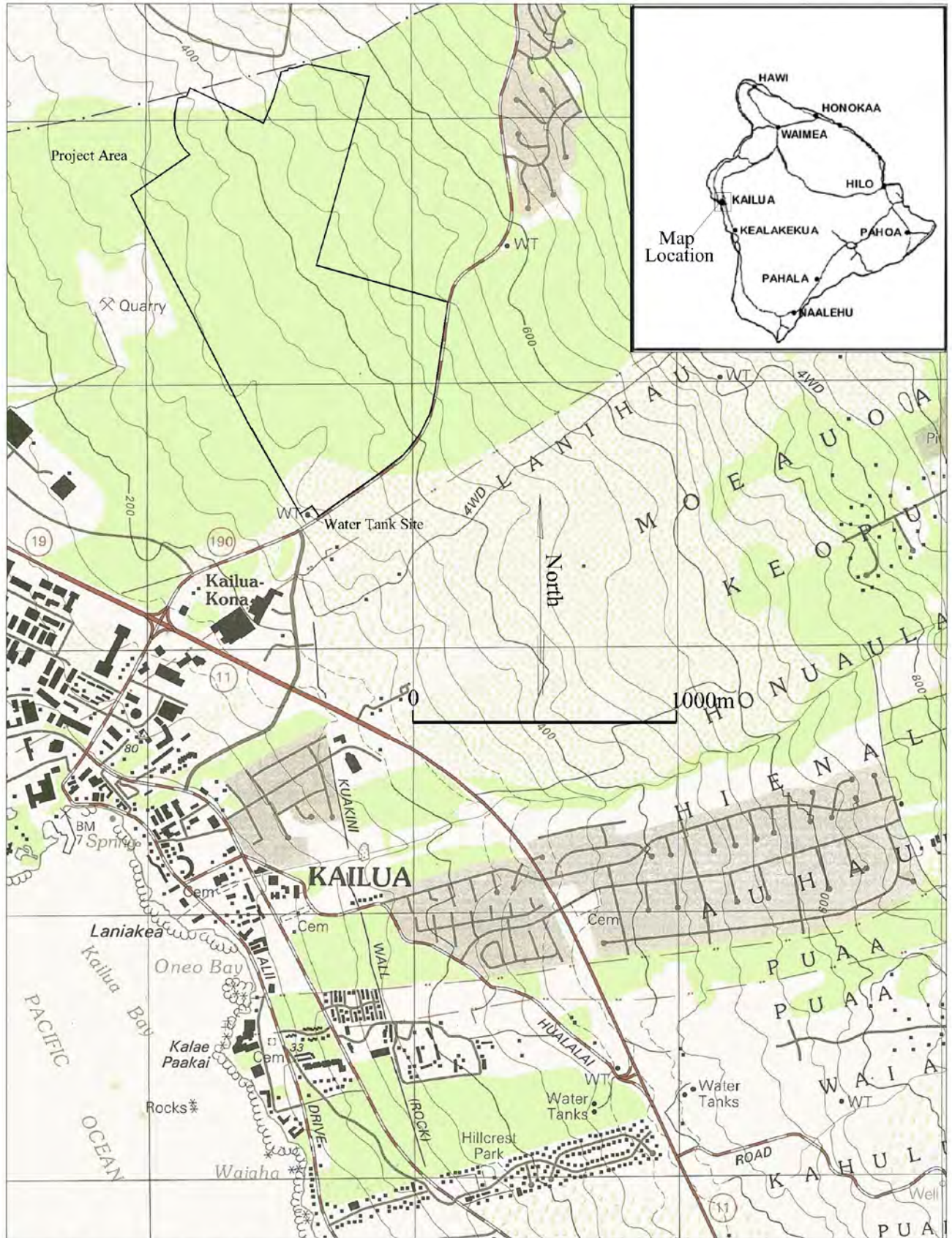


Figure 1. Portion of USGS Kailua Quadrangle showing Project Area

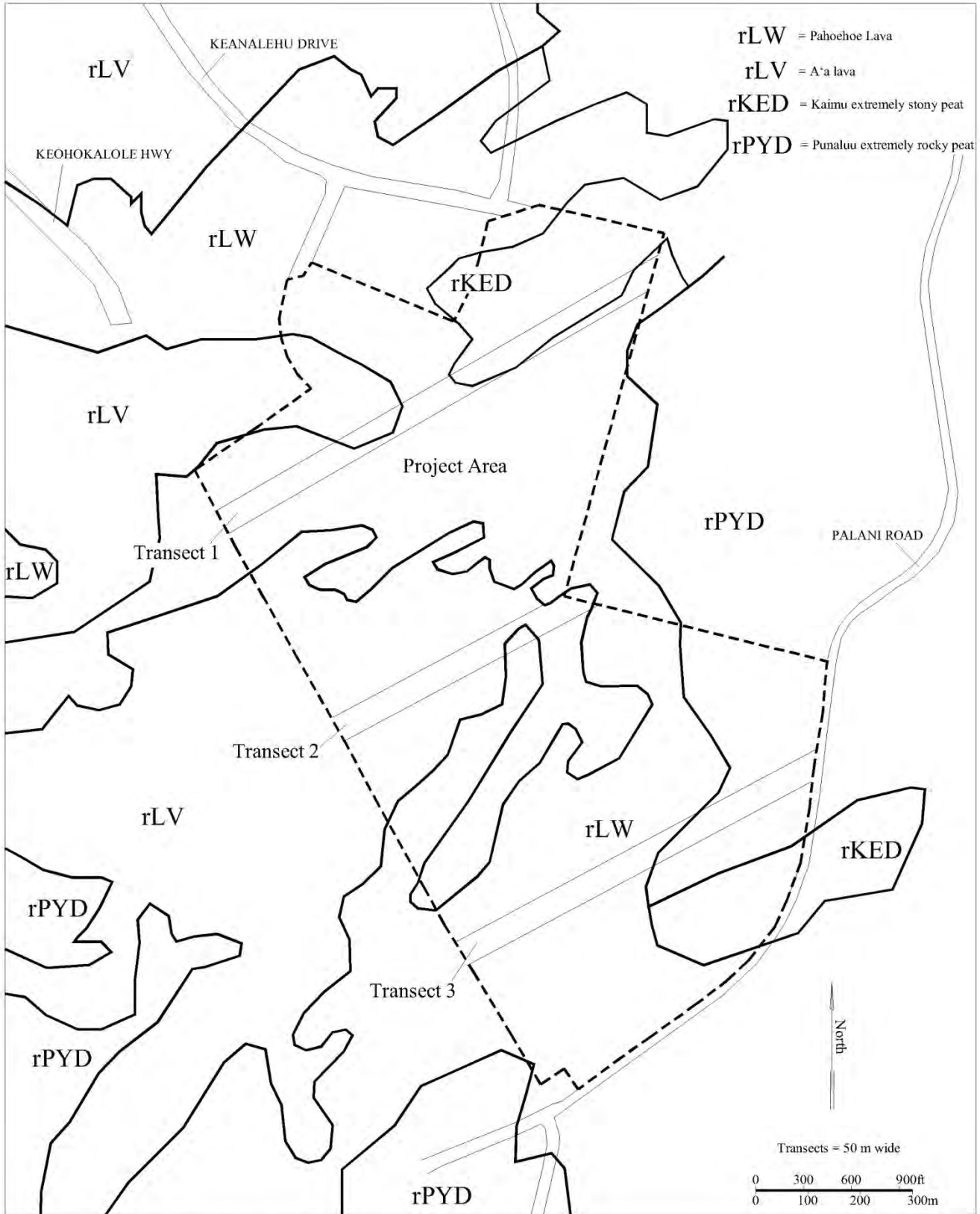


Figure 2. Location of Transects and Soils within Project Area

A'a lava comprises 62.9-acres or 23.13% of the total project area. The a'a lava is characterized as rough land comprised of "a mass of clinkery, hard, glassy, sharp pieces piled in tumbled heaps" (1973:34). The Kaimu extremely stony peat occupies 26.9-acres or 9.89% of the total area. This soil is characterized as a thin, well-drained organic soil over a'a lava (1973:22). This soil has a rapid permeability, a slow runoff and a slight erosion hazard. The majority of this soil is not suitable for cultivation and is in native woodlands, although small areas are utilized for pasture and nut and fruit trees.

Punaluu extremely rock peat on 6-20% slopes (Sato et al. 1973:48) occupies 25.3-acres or 9.30% of the project area. It is characterized by a thin (4") black peat underlain by pahoehoe bedrock, with rock outcrops occupying 40-50% of the surface. This soil evidences a rapid permeability, a slow runoff and a slight erosion hazard, and is classified as suitable for pasturelands.

Wolfe and Morris (2001) indicate that the lava flows within the project area originated from Hualalai Volcano deposited from 1,500 to 3,000 years ago. As discussed above, the Kaimu soil developed over a'a lava, while the Punaluu soil developed over pahoehoe. The development of these soil types indicates that the parent lava flows are geologically older than the bare pahoehoe and a'a lava areas within the project area.

The project area vegetation is dominated by *haole koa* (*Leucaena glauca*), Christmas berry (*Schinus terebinthifolius*) and low grasses and vines. Other common plant taxa include *alahe'e* (*Psydrax odorata*), lantana (*Lantana camara*), airplant (*Bryophyllum pinnatum* [Lam.] Kurz.), autograph tree (*Closia rosea*), *opiuma* (*Pithecellobium dulce* Roxb.) Benth), *ilima* (*Sida fallax* Walp.), monkeypod (*Samanea saman* [Jacq.] Merr.), *kiawe* (*Prosopis pallida*), and *noni* (*Morinda citrifolia*). There are thickets of bougainvillea (*Boerhavia spectabilis* Willd.) growing along Palani Road. Overviews of the project area illustrated in *Figures 3 and 4*.

## Methods

The field methods employed during the recent fieldwork were two-fold. The first phase of the project was conducted in July and September 2009. This fieldwork included archaeological survey of three transects and relocation of sites previously identified within the project area by PHRI (Donham 1990). The three 50.0 m wide transects were situated to produce a representative sample of the project area's soil types and elevation (see *Figure 2*). After an analysis of the first phase data, it was determined by SHPD that a re-survey of the remainder of the project area was required (see Background section). The second phase of the project consisted of 100% surface survey of the remaining portions of the project area.

The survey work, including the transect survey phase, consisted of 100% surface examination with surveyors spaced at a maximum of 10.0 meter intervals. Ground surface visibility during the initial surveying of the transects was fair due to relatively dense vegetation conditions at the time; however, site visibility was optimal during the second survey phase owing to a protracted period of drought in the Kona area. The identified sites/features were flagged with pink and blue flagging tape and their locations plotted on a scaled project area map with the aid of hand-held Garmin Global Positioning System (GPS) Model 60 devices using the World Geodetic Survey (WGS) 1984 datum (Zone 5). The accuracy of these GPS devices for a single point is +/- 3-5 m. This accuracy is increased to less than c. 2-3 meters by taking multiple points including property corners and overlying the plotted points on a scaled map using AutoCAD software.

Numerous agricultural and resource procurement features were identified during the project. These features consisted of clearing piles (mounds and modified outcrops), walls, and pahoehoe excavations. These features were subjected to limited recording that consisted of documenting feature location, dimensions and shape. Photographs were taken of representative feature types.

The non-agricultural/resource procurement sites were subjected to detailed recording including preparing scaled plan maps, completing standardized site/feature forms, and photographic documentation. A metal site tag was placed at each site and the tag's location was plotted on the site plan map. Many of the surface site plan maps were prepared by establishing a base line through the center of the sites with a 30 m measuring tape and obtaining perpendicular measurements with hand tapes. The subsurface sites (lava tubes and blisters) and most of the larger, more complex surface sites were mapped with laser distance measuring devices.



Figure 3. Project Area Overview, view to south-southeast



Figure 4. Project Area Overview, view to north

Subsurface testing consisted of 72 test units, including three units excavated during the initial transect survey phase and 69 units excavated during the second fieldwork phase. A total of 69.65 sq m of excavation were completed (see *Table 5* in Findings section). The tested features consist of 31 permanent habitation features, 29 agricultural features, ten temporary habitation features, a section of a transportation feature and an historic habitation feature.

The units were excavated in arbitrary levels within stratigraphic layers and were terminated on bedrock. Standardized excavation records were prepared after the completion of each stratigraphic layer. The soil removed during excavation was screened through ¼ “mesh. Portable remains collected were placed in paper bags labeled with the appropriate provenience information. Recovered charcoal samples were carefully removed from either *in situ* locations or collected during the screening process. These samples were deposited in aluminum foil pouches and placed in properly labeled paper bags. Following the excavation, a section drawing depicting the stratigraphy was prepared and post-excavation photographs were taken. Recovered cultural remains were transported to Haun & Associates’ offices for analysis.

No human remains were identified in the test excavations. The skeletal remains of 21 individuals were however identified in seven lava tube sites. These remains were briefly described and their locations plotted on plan maps, but the remains were not disturbed or photographed.

## BACKGROUND

The project area is a c. 272-acre portion of a larger c. 1,100-acre parcel surveyed by PHRI twenty years ago (Donham 1990). A total of 239 sites were documented within the overall survey area. The report was accepted by the State Historic Preservation Division (SHPD) in 1993. SHPD’s approval letter was provided in Appendix A to Exhibit D of the Final Environmental Impact Statement for the Keahuolu Affordable Housing Project, accepted by the Office of the Governor in 2008, notice of which was published in the October 8, 2008 edition of The Environmental Notice.

The current c. 272-acre project area contains 56 of the original 239 sites documented by PHRI (Donham 1990). The location of these sites is depicted in *Figure 5* and they are listed in *Tables 1* and *2*. The 56 sites are composed of 477 features (see *Table 2*). Twenty-six sites that exclusively consist of agricultural features were recommended for further data collection (data recovery; “1990 Treatment” column in *Table 1*). Of the thirty remaining sites, fourteen sites, most of which included habitation features, also were recommended for data recovery. Nine sites were recommended for further data collection followed by preservation with interpretive development. One site was recommended for further data collection followed by preservation as is (Site 13463). One site (13394) was recommended for no further study and preservation with interpretive development. Five sites were recommended for no further work or preservation.

PHRI subsequently prepared a mitigation plan for the overall 1,100-acre project area (Jensen et al. 1992) that subsequently was amended by PHRI Letter Report 1152-110593 (Walker 1993). The latter document presented a sampling strategy for data recovery that employed a series of 400 ft square sample blocks within which all archaeological features were to be documented in detail. While the sampling strategy was focused on study of the numerous, mostly undocumented agricultural features, it had implications for earlier recommended treatments of other non-agricultural sites. The planned sampling strategy would mitigate the twenty-six sites that exclusively consist of agricultural features. The sampling strategy was used to justify a change in treatment from further data collection to no further work or preservation for nine sites (13402, 13403, 13404, 13449, 13451, 13459, 13462, 13465, and 13477; “1992 Treatment” column in *Table 1*). Two other sites were removed from the further data collection category, but retained recommendations for preservation: one with interpretive development (13413) and the other “as is” (13463). *Table 2* lists twenty-five PHRI sites with non-agricultural features and their recommended treatments. The sampling strategy reduced the population of sites requiring further work to from twenty-five to sixteen sites.

A subsequent study by PHRI (Corbin and Wong-Smith 2007) included an effort to relocate sites within the current 272-acre project area. Although not explicitly stated, the relocation effort apparently was limited to the remaining sites requiring further data collection and/or preservation. PHRI relocated twelve sites. Site 13396 could not be relocated and was assumed to be destroyed. It is unclear from the Corbin and Wong-Smith (2007) report, why four sites (13390, 13413, 13463, 13477) were not included in the relocation effort.

In 2009, SHPD maintained that the previously approved amended mitigation plan for the original 1,100-acre project was no longer valid. This was because the proposed block sampling strategy could not be implemented on a piecemeal basis and because the schedule for the planned mitigation work was not adhered to. The proposed transect

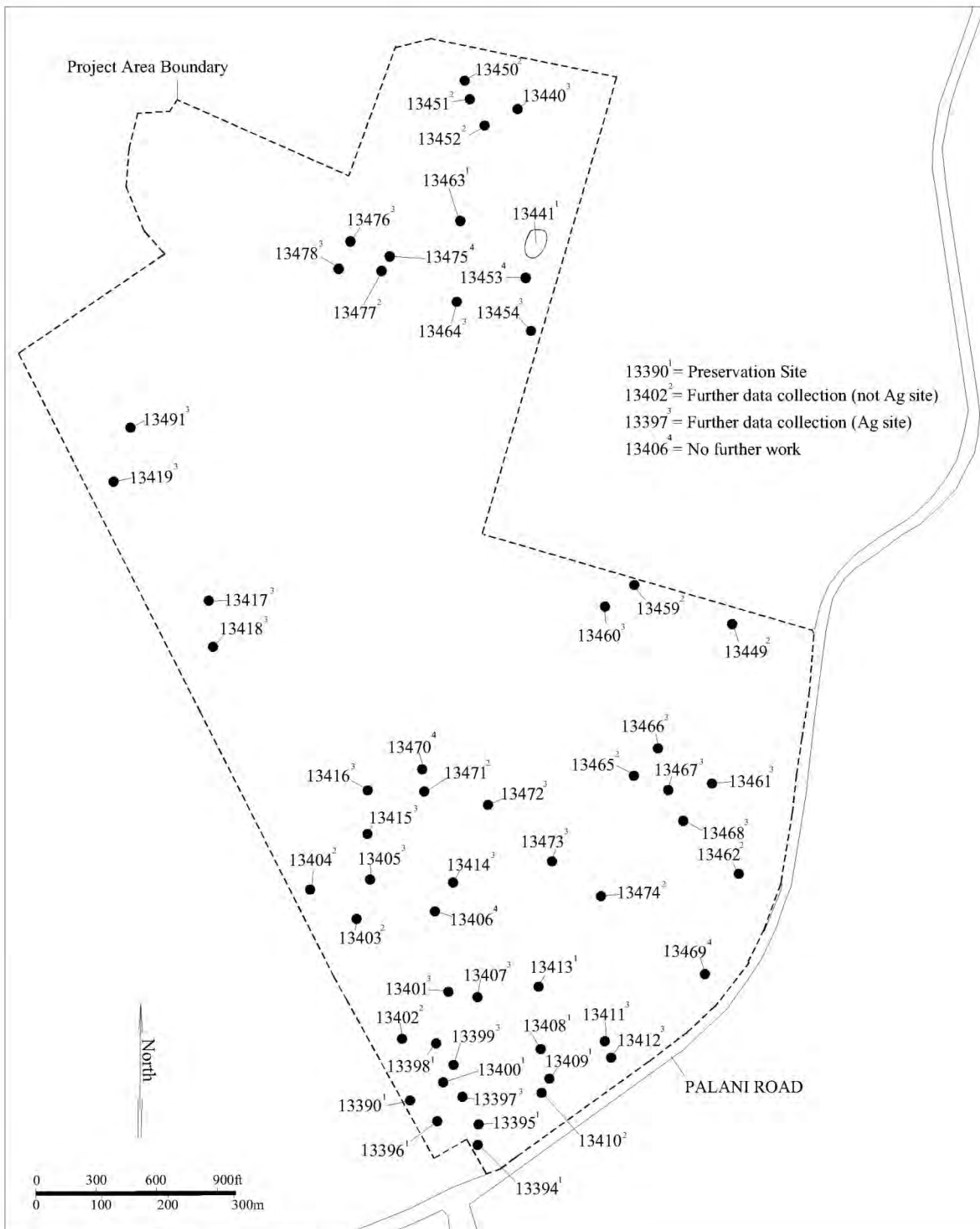


Figure 5. Reported Location of Donham (1990) Sites

**Table 1. PHRI Sites in Project Area**

<b>SIHP Site</b>	<b>Type</b>	<b>1990 Treatment*</b>	<b>1992 Treatment</b>
13390	Habitation/Agriculture Complex	FDC, PID	FDC, PID
13394	Indeterminate Alignment	PID	PID
13395	Possible Burial	FDC, PID	FDC, PID
13396	Habitation Platform	FDC, PID	NFW
13397	Agriculture Complex	FDC	FDC
13398	Habitation/Agriculture/Poss. Burial Complex	FDC, PID	FDC, PID
13399	Agriculture Terrace	FDC	FDC
13400	Agriculture/Boundary Complex	FDC, PID	FDC, PID
13401	Agriculture/Boundary Complex	FDC	FDC
13402	Boundary Complex	FDC	NFW
13403	Habitation Cave	FDC	NFW
13404	Encl (Agriculture/Habitation?)	FDC	NFW
13405	Agriculture (Pahoehoe Excavations) Complex	FDC	FDC
13406	Agriculture Pahoehoe Excavation	NFW	NFW
13407	Agriculture Complex	FDC	FDC
13408	Agriculture/Habitation/Poss. Ceremonial Complex	FDC, PID	FDC, PID
13409	Habitation/Agriculture/Poss. Burial complex	FDC, PID	FDC, PID
13410	Habitation Platform	FDC	FDC
13411	Agriculture/Boundary Complex	FDC	FDC
13412	Agriculture Complex	FDC	FDC
13413	Habitation Platform	FDC, PID	PID
13414	Agriculture Complex	FDC	FDC
13415	Agriculture Terrace	FDC	FDC
13416	Agriculture Complex	FDC	FDC
13417	Pahoehoe Excavation	FDC	FDC
13418	Pahoehoe Excavation	FDC	FDC
13419	Pahoehoe Excavation	FDC	FDC
13440	Agriculture Complex	FDC	FDC
13441	Habitation/Agriculture Complex	FDC, PID	FDC, PID
13449	Habitation/Trans/P Ceremonial Complex	FDC	NFW
13450	Stepping Stone Trail	FDC	FDC
13451	Habitation Cave	FDC	NFW
13452	Paved Trail	FDC	FDC
13453	Agriculture pavement	NFW	NFW
13454	Agriculture Complex	FDC	FDC
13459	Habitation/Poss. Burial Complex	FDC	NFW
13460	Agriculture Faced Mound	FDC	FDC
13461	Agriculture Terrace	FDC	FDC
13462	Agriculture/Habitation Complex	FDC	NFW
13463	Ceremonial/Burial /Habitation Complex	FDC, PAI	PAI
13464	Agriculture Complex	FDC	FDC
13465	Habitation/Agriculture/Ceremonial Complex	FDC	NFW
13466	Agriculture Complex	FDC	FDC
13467	Agriculture Complex	FDC	FDC
13468	Agriculture Enclosure	FDC	FDC
13469	Caim Complex	NFW	NFW

**Table 1. PHRI Sites in Project Area (cont.)**

SIHP Site	Type	1990 Treatment	1992 Treatment
13470	Petroglyph	NFW	NFW
13471	Agriculture/Habitation Complex	FDC	FDC
13472	Agriculture Complex	FDC	FDC
13473	Agriculture Complex	FDC	FDC
13474	Habitation Cave	FDC	FDC
13475	Agriculture Blister	NFW	NFW
13476	Agriculture Complex	FDC	FDC
13477	Agriculture/Habitation Complex	FDC	NFW
13478	Agriculture Complex	FDC	FDC
13491	Agriculture Complex	FDC	FDC

\*Treatments: NFW=No Further Work, FDC=Further Data Collection, PID=Preservation with Interpretative Development, PAI=Preserve As Is

**Table 2. PHRI Sites and Features in Project Area**

SIHP Site/Feature	Type	No Features	Function*
<b>13390</b>	<b>Habitation/Agriculture complex</b>	<b>15</b>	
A	Platform		H
B	Enclosure		A
C	Wall		A
D	Terrace		H/A
E	Terrace		A
F	Terrace		H/A
G	Mound (4)		A
H	Terrace		H/A
I	Platform		H/A
J	Linear Mound (3)		A
<b>13394</b>	<b>Indeterminate Alignment</b>	<b>1</b>	<b>I</b>
<b>13395</b>	<b>Possible Burial Platform</b>	<b>1</b>	<b>PB</b>
<b>13396</b>	<b>Habitation Platform</b>	<b>1</b>	<b>H</b>
<b>13397</b>	<b>Agriculture Complex</b>	<b>5</b>	
A	Terrace		A
B	Terrace		A
C	Terrace		A
D	Terrace		A
E	Terrace		A
<b>13398</b>	<b>Habitation/Agriculture/Poss. Burial complex</b>	<b>4</b>	
A	Platform		H/A/PB
B	Wall		
C	Cairn		I
D	Cairn		
<b>13399</b>	<b>Agriculture Terrace</b>	<b>1</b>	<b>A</b>
<b>13400</b>	<b>Agriculture/Boundary Complex</b>	<b>2</b>	
A	Wall		A
B	Enclosure		A



**Table 2. PHRI Sites and Features in Project Area (cont.)**

SIHP Site	Type	No Features	Function*
<b>13401</b>	<b>Agriculture/Boundary Complex</b>	<b>2</b>	
A	Wall		A/LD
B	Terrace		A
<b>13402</b>	<b>Boundary Complex</b>	<b>1</b>	LD
<b>13403</b>	<b>Habitation Cave</b>	<b>1</b>	H
<b>13404</b>	<b>Agriculture/Possible Habitation Enclosure</b>	<b>1</b>	H/PH
<b>13405</b>	<b>Agriculture (Pahoehoe Excavations) Complex</b>	<b>15</b>	
	Pahoehoe Excavations (15)		A
<b>13406</b>	<b>Agriculture Pahoehoe Excavation</b>	<b>1</b>	
<b>13407</b>	<b>Agriculture Complex</b>	<b>2</b>	
A	Mound		A
B	Pahoehoe Excavation		
<b>13408</b>	<b>Agriculture/Habitation/Poss. Ceremonial Complex</b>	<b>19</b>	
A	Platform		ND
B	Terrace		ND
C	Wall		ND
D	Wall		ND
E	Wall		ND
F	Enclosure		ND
G	Enclosure		ND
H	Wall		ND
I	Wall		ND
J	Pahoehoe Excavation (10+)		ND
<b>13409</b>	<b>Habitation/Agriculture/Poss. Burial Complex</b>	<b>9</b>	
A	Platform		A/H
B	Wall		ND
C	Enclosure		ND
D	Terrace		ND
E	Terrace		ND
F	Terrace		ND
G	Platform		A/PB
H	Platform		A/PB
I	Wall		ND
<b>13410</b>	<b>Habitation Platform</b>	<b>1</b>	H
<b>13411</b>	<b>Agriculture/Boundary Complex</b>	<b>4</b>	
A	Wall		ND
B	Wall		ND
C	Mound		ND
D	Wall		ND
<b>13412</b>	<b>Agriculture Complex</b>	<b>2</b>	
A	Enclosure		A
B	Terrace		A
<b>13413</b>	<b>Habitation Platform</b>	<b>1</b>	H
<b>13414</b>	<b>Agriculture Complex</b>	<b>20</b>	
	Pahoehoe Excavations (20+)		

**Table 2. PHRI Sites and Features in Project Area (cont.)**

SIHP Site	Type	No Features	Function*
13415	<b>Agriculture Terrace</b>	<b>1</b>	<b>A</b>
13416	<b>Agriculture Complex</b>	<b>2</b>	
	Rubble wall with terrace		A
	Wall		A
13417	<b>Pahoehoe Excavation</b>	<b>1</b>	<b>A</b>
13418	<b>Pahoehoe Excavation</b>	<b>1</b>	<b>A</b>
13419	<b>Pahoehoe Excavation</b>	<b>1</b>	<b>A</b>
13440	<b>Agriculture Complex</b>	<b>3</b>	
A	Terrace		A
B	Filled Crevice		A
C	Pahoehoe Excavation		A
13441	<b>Habitation/Agriculture complex</b>	<b>21</b>	
A	Platform		H/A
B	Terrace		A
C	Platform		A
D	Platform		H
E	Terraces (4) and pavement		
	Pavement		A
	1st terrace		A
	2nd Terrace		A
	3rd terrace		A
	4th Terrace		A
F	Terrace		A
G	Terrace		A
H	Terrace		A
I	Wall Remnant		I
J	Platform		H/A
K	Platform		H/A
L	Wall		I
M	Mound		A
N	Platform		H/A
O	Platform		A
P	Cave		H/A
Q	Enclosure		H/A
13449	<b>Habitation/Trans/Poss. Ceremonial Complex</b>	<b>3</b>	
A	Cave		H
B	Cairn		PA
C	Stepping Stone Trail		T
13450	<b>Stepping Stone Trail</b>	<b>1</b>	<b>T</b>
13451	<b>Habitation Cave</b>	<b>1</b>	<b>H</b>
13452	<b>Paved Trail</b>	<b>1</b>	<b>H</b>
13453	<b>Agriculture pavement</b>	<b>1</b>	<b>A</b>
13454	<b>Agriculture Complex</b>	<b>14</b>	
	Pahoehoe Excavations (11)		A
	Mound		A

**Table 2. PHRI Sites and Features in Project Area (cont.)**

SIHP Site	Type	No Features	Function*
<b>13459</b>	<b>Habitation/Poss. Burial Complex</b>	<b>2</b>	
A	Cave		H
B	Modified Outcrop		H
<b>13460</b>	<b>Agriculture Faced Mound</b>	<b>1</b>	<b>A</b>
<b>13461</b>	<b>Agriculture Terrace</b>	<b>1</b>	<b>A</b>
<b>13462</b>	<b>Agriculture/Habitation Complex</b>	<b>4</b>	
A	Modified Outcrop		A
B	Alignment		A
C	C-Shape		A
D	Enclosure		A
<b>13463</b>	<b>Ceremonial/Burial/Habitation Complex</b>	<b>5</b>	
A	Enclosed Platform		H/PC
B	Cave		H
C	Cave		B
D	Trail		T
E	Pavement		I
<b>13464</b>	<b>Agriculture Complex</b>	<b>8</b>	
A	Alignment/wall		A
B	Enclosure (2)		A
C	Cairn		I
D	Pahoehoe Excavations (3)		A
E	Mound		A
<b>13465</b>	<b>Habitation/Agriculture/Ceremonial Complex</b>	<b>8</b>	
A	Platform		A/PH
B	Terrace with upright		H/C
C	Wall remnant		H/A
D	Wall remnant		H/A
E	Pavement with Upright		H/C
F	Pahoehoe Excavation w/ lava tube		H/A
G	Pavement		I
<b>13466</b>	<b>Agricultural Terrace</b>	<b>1</b>	<b>A</b>
<b>13467</b>	<b>Agriculture Complex</b>	<b>9</b>	
A	Pahoehoe Excavations (6+)		A
B	Terrace		A
C	Terrace		A
D	Mound		A
<b>13468</b>	<b>Agriculture Enclosure</b>	<b>1</b>	<b>A</b>
<b>13469</b>	<b>Cairn Complex</b>	<b>6</b>	
A	Cairn		IM
B	Cairn		IM
C	Cairn		IM
D	Cairn		IM
E	Cairn		IM
F	Cairn		IM
<b>13470</b>	<b>Petroglyph</b>	<b>1</b>	<b>RA</b>

**Table 2. PHRI Sites and Features in Project Area (cont.)**

SIHP Site	Type	No Features	Function*
<b>13471</b>	<b>Agriculture/Habitation Complex</b>	<b>3</b>	
A	Upright		PC
B	Platform		A
C	Cave		H
<b>13472</b>	<b>Agriculture Complex</b>	<b>164</b>	
	Pahoehoe Excavations (6+)		A
	Modified Blister (16)		A
	Mound (3)		A
	Alignment		A
<b>13473</b>	<b>Agriculture Complex</b>	<b>73</b>	
	Pahoehoe Excavations (68)		
	Linear Mounds (2)		A
	Terrace		A
	Filled Blister		A
	Upright		A
<b>13474</b>	<b>Habitation Cave</b>	<b>1</b>	<b>H</b>
<b>13475</b>	<b>Agriculture Blister</b>	<b>1</b>	<b>A</b>
<b>13476</b>	<b>Agriculture Complex</b>	<b>10</b>	
	Pahoehoe Excavations (10)		A
<b>13477</b>	<b>Agriculture/Habitation Complex</b>	<b>4</b>	A
A	Enclosure (2)		A/H
B	C-Shape		I
C	Mound		I
<b>13478</b>	<b>Agriculture Complex</b>	<b>6</b>	
A	Platform		A
B	Terrace		A
C	Enclosure w/ mound		A
D	Filled Pahoehoe Excavation		A
E	Wall		B
<b>13491</b>	<b>Agriculture Complex</b>	<b>8</b>	
	Pahoehoe Excavations (8)		
<b>56 Sites</b>	<b>Total</b>	<b>477</b>	<b>Features</b>

\* Feature Function: A=Agriculture, H=Habitation, PB=Possible Burial, I=Indeterminate, M=Marker, RA=Rock Art, B=Boundary, LD=Land Division, I=Indeterminate, C=Ceremonial, ND=No Data

survey design for the current project had a two-fold objective that was agreed to by SHPD staff. The primary objective was to provide data to evaluate the original survey results. The other objective was to systematically document a representative sample of agricultural features for potential data recovery mitigation. It also was agreed that the update scope include relocation of all sites that were recommended for further data collection and/or preservation, excluding those sites exclusively composed on agricultural features. Thus, the relocation effort focused on all of the sites listed in *Table 3*.

In July and September of 2009, Haun & Associates undertook the initial phase of the present project. After the majority of the fieldwork was completed, Haun & Associates staff gained access to the original PHRI field records for the project. The records include the original hand-written site forms for 30 of the 56 sites in the current project area. Plan maps for two sites (13463 and 13474) in addition to the maps for four sites presented in the report (13441, 13462, 13465, and 13471), were included in the records. The original aerial photograph and a topographic map used by PHRI staff to plot the locations of sites were also obtained. Dates on the forms and maps indicate that

**Table 3. PHRI Sites with Non-Agricultural Features in Project Area**

SIHP Site	Type	1990 Treatment*	1992 Treatment
13390	Habitation/Agriculture Complex	FDC, PID	FDC, PID
13394	Indeterminate Alignment	PID	PID
13395	Possible Burial	FDC, PID	FDC, PID
13396	Habitation Platform	FDC, PID	NFW
13398	Habitation/Agriculture/Poss. Burial Complex	FDC, PID	FDC, PID
13400	Agriculture/Boundary Complex	FDC, PID	FDC, PID
13402	Boundary Complex	FDC	NFW
13403	Habitation Cave	FDC	NFW
13404	Agriculture/Poss. Habitation Enclosure	FDC	NFW
13408	Agriculture/Habitation/Poss. Ceremonial Complex	FDC, PID	FDC, PID
13409	Habitation/Agriculture/Poss. Burial complex	FDC, PID	FDC, PID
13410	Habitation Platform	FDC	FDC
13413	Habitation Platform	FDC, PID	PID
13441	Habitation/Agriculture Complex	FDC, PID	FDC, PID
13449	Habitation/Trans/P Ceremonial Complex	FDC	NFW
13450	Stepping Stone Trail	FDC	FDC
13451	Habitation Cave	FDC	NFW
13452	Paved Trail	FDC	FDC
13459	Habitation/Poss. Burial Complex	FDC	NFW
13462	Agriculture/Habitation Complex	FDC	NFW
13463	Ceremonial/Burial/Habitation Complex	FDC, PAI	PAI
13465	Habitation/Agriculture/Ceremonial Complex	FDC	NFW
13471	Agriculture/Habitation Complex	FDC	FDC
13474	Habitation Cave	FDC	FDC
13477	Agriculture/Habitation Complex	FDC	FDC

Shaded entries are sites relocated by Corbin and Wong-Smith (2007)

\*Treatments: NFW=No Further Work, FDC=Further Data Collection, PID=Preservation with Interpretative Development, PAI=Preserve As Is

the PHRI fieldwork spanned the month of September, 1989. Several subsequent attempts were made to relocate sites using data from the original records with limited success.

In September 2009, Haun & Associates conducted a field inspection of a 1.0-acre proposed well site in the northeastern portion of the project area. The inspection identified a single mound (T-433) that was reported to SHPD (Haun 2009a). This letter report was accepted by DLNR with the recommendation that the mound be documented in a subsequent survey report (LOG NO: 2009.3352; DOC NO: 0909TD12). In October 2009, a lava tube was identified during grubbing of the well site. The site was recorded and reported to SHPD in a letter (Haun 2009b). Both sites are documented in this AIS addendum. The lava tube is designated Site 28470 and the T-433 mound is documented as Feature 433 of the Site 26909 agricultural complex.

Two archaeological inventory surveys were conducted along the western boundary of the project area in conjunction with the proposed Ane Keohokalole Highway. These consist of surveys by Cultural Surveys Hawaii, Inc. (Tulchin and Hammatt 2009) and Pacific Legacy, Inc (Reeves et al. 2009). Portions of both of these projects extended into the present project area. Tulchin and Hammatt (2009) undertook an inventory survey of a c. 2.3 km long portion of the proposed highway. This project area originated in central Kealakehe and extended to the south-southeast where it terminated c. 300 m north of Palani Road. This project documented 12 sites with 17 features (Figure 6). Of these 12 sites, three are located along the seaward boundary of the present project area (see Figures 8a and 8b in Findings section).

Pacific Legacy, Inc. conducted an inventory survey of a c. 300 m long by 100 m wide portion of the proposed Ane Keohokalole Highway, adjacent to the Cultural Survey Hawaii's project area to the south (Reeves et al. 2009). This survey identified 23 sites with 159 features, of which ten sites are located within or partially within the boundaries of the present project area (Figure 7).

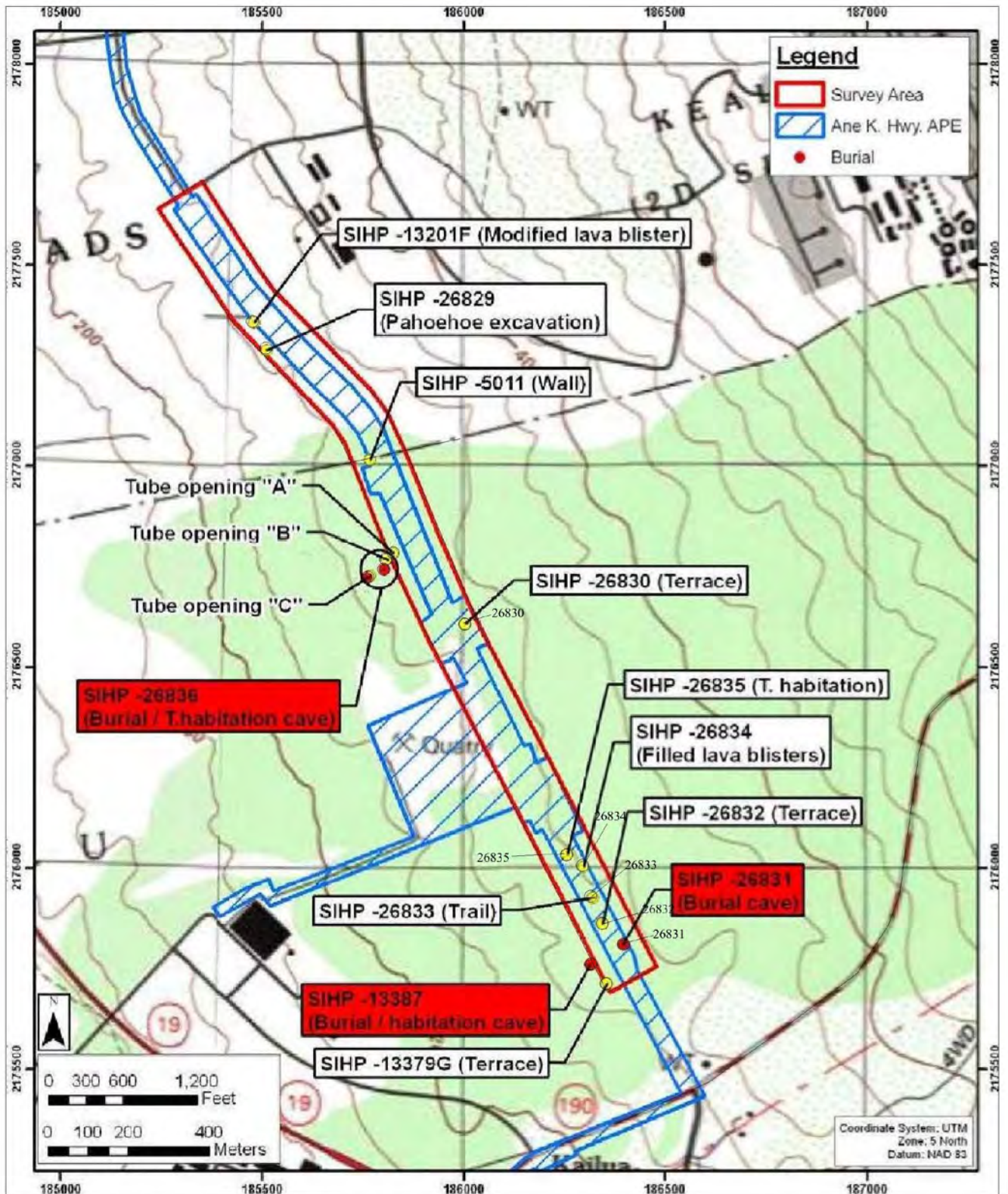


Figure 6. Cultural Surveys Hawaii Site Location Map from Tulchin and Hammatt (2009:34)

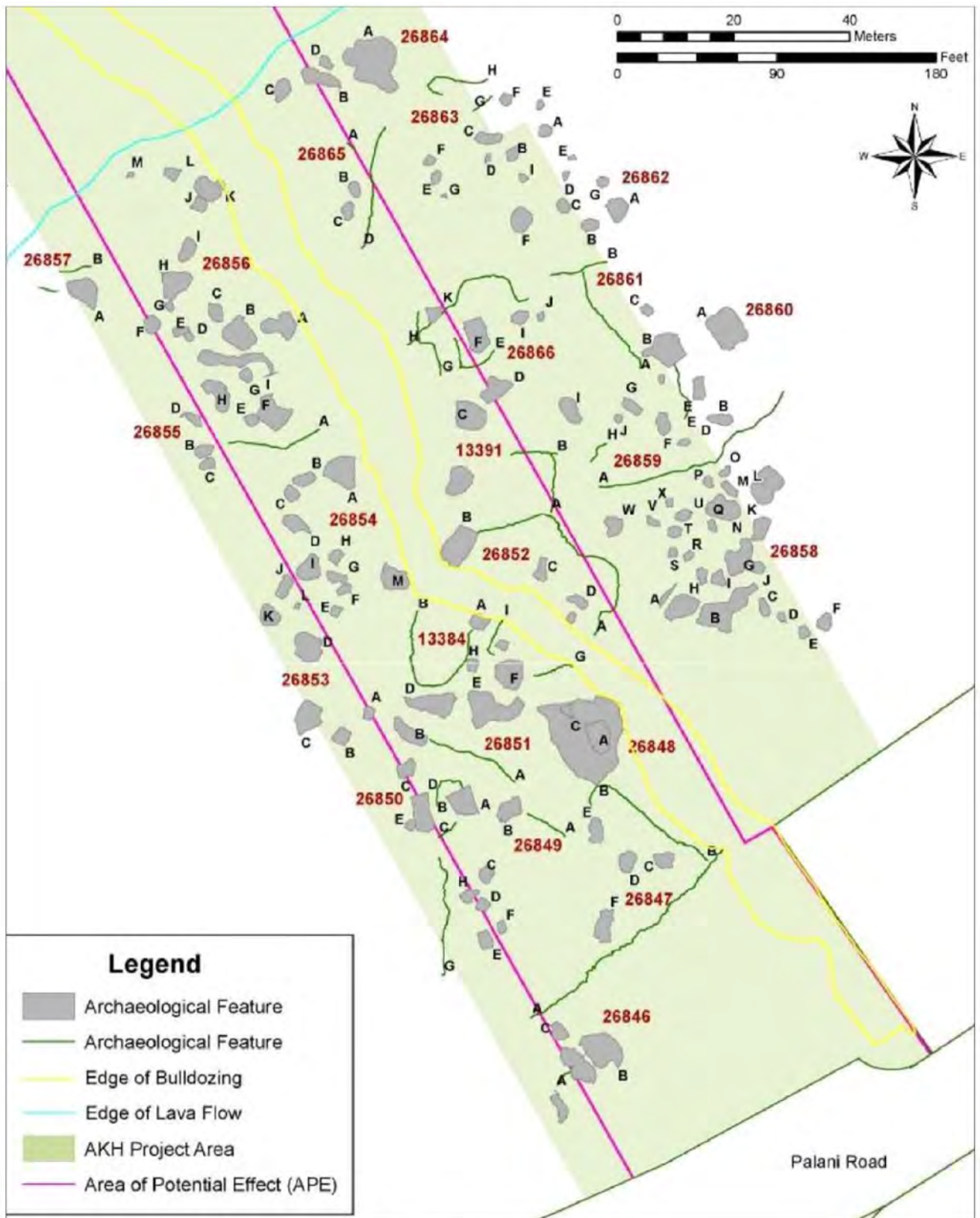


Figure 7. Pacific Legacy Site Location Map from Reeves et al. (2009:24)

# FINDINGS

Recent archaeological studies within the project area have documented 149 sites with 3,326 features (*Table 4*). These sites consist of 136 sites with 3,252 features recorded during the present AIS addendum project, and 13 sites with 74 features documented during two archaeological surveys that extended into the seaward edge of the project area. These surveys were conducted by Cultural Surveys Hawaii, Inc. (Tulchin and Hammatt 2009) and Pacific Legacy, Inc. (Reeves et al. 2009). The 136 sites recorded during the present project consist of 15 sites previously identified by Donham (1990), one site previously documented by Burgett and Rosendahl (1992) and 120 sites newly identified during the present project.

Tulchin and Hammatt (2009) identified 12 sites with 17 features, of which three are located along the seaward boundary of the present project area (*Figures 8a* and *8b*). These consist of a burial cave (Site 26831), two filled blisters interpreted as markers (Site 26834) and a temporary habitation terrace (Site 26830). These sites are included in *Table 4* and are described in Tulchin and Hammatt (2009).

Pacific Legacy, Inc. identified 23 sites with 159 features, of which ten are located within or partially within the boundaries of the present project area (Sites 26852, 26858 through 26866 - see *Figure 8b*). These sites (or portions of them) contain 70 features consisting of 27 modified outcrops, 23 mounds, 14 walls, four platforms, one terrace and one enclosure. The majority of the features are agricultural in function. The three remaining features were assigned a habitation function. These sites are also included in *Table 4* and are described in detail in Reeves et al. (2009).

The 149 sites consist of 85 single feature sites and 64 complexes of features that contain from two to 2,725 features. The majority of the complexes contain two features (21 sites) with the remaining complexes containing three features (14), four features (8), five features (3), six features (3), seven features (3), eight features (1), nine features (1), 11 features (2), 13 features (2), 17 features (1), 19 features (1), 24 features (1), and 25 features (1). The two largest sites consist of a complex of pahoehoe excavations with 196 features (Site 26910) and an agricultural complex with 2,725 features (Site 26909). The locations of the 147 of the 149 sites are illustrated in *Figures 8a* and *8b*. The two sites not depicted consist of the two large complexes (Sites 26909 and 26910) which are depicted in *Figures 46* and *80* respectively.

The 3,326 documented features consist of 2,655 modified outcrops, 196 pahoehoe excavations, 116 mounds, 86 terraces, 58 lava tubes, 54 enclosures, 30 platforms, 25 walls, 21 cairns, 20 petroglyphs, 16 filled cracks, 15 trails, 9 lava blisters, 8 pavements, 4 C-shapes, 4 L-shapes, 2 cart paths, 2 walled terraces and one each of the following; cupboard, road, upright, U-shape and walled platform.

Functionally, the features are interpreted as agricultural (n=2,793), resource procurement (196), permanent habitation (160), permanent habitation/burial or possible burial (17), temporary habitation (70), temporary habitation/burial or possible burial (3), burial (4), possible burial (5), marker (23), transportation (18), rock art (20), ceremonial or possible ceremonial (11), habitation of undetermined duration (3), livestock control (2) and historic habitation (1).

Subsurface testing has been conducted in 79 locations within the project area. These consist of seven test units excavated by Donham (1990), three excavated during the initial phase of the present project and 69 excavated during the current phase. A total of 78.15 sq m of excavation have been conducted (*Table 5*). The tested features consist of 31 permanent habitation features, 29 agricultural features, 10 temporary habitation features, a section of a cart path and an historic habitation feature.

The 38 tested permanent habitation features are comprised of 16 terraces (Sites 48405, 28422-A, 28433-A, 28461-A, -B, -E [2 units], 28463, 28465, 28467-D, 28480-B, 28481, 28498-A, 28501-F, 1-K and 28502), nine platforms (Sites 13441-C, 13441-K, 13441-O, 13465-A, 13471-B, 28408-D, 28499-E, 28500-A and 28422-C), three mounds (Sites 28420-B, 28500-D and 28501-G), two lava tubes (Site 13441-P1 and P2), two pavements (Sites 28422-B and 28460-F), one filled crack (Site 28462-C), one lava blister (Site 13471-D), one L-shape (Site 28460-G), one modified outcrop (Site 28408-C), one wall (Site 28498-B) and one walled terrace (Site 28426).











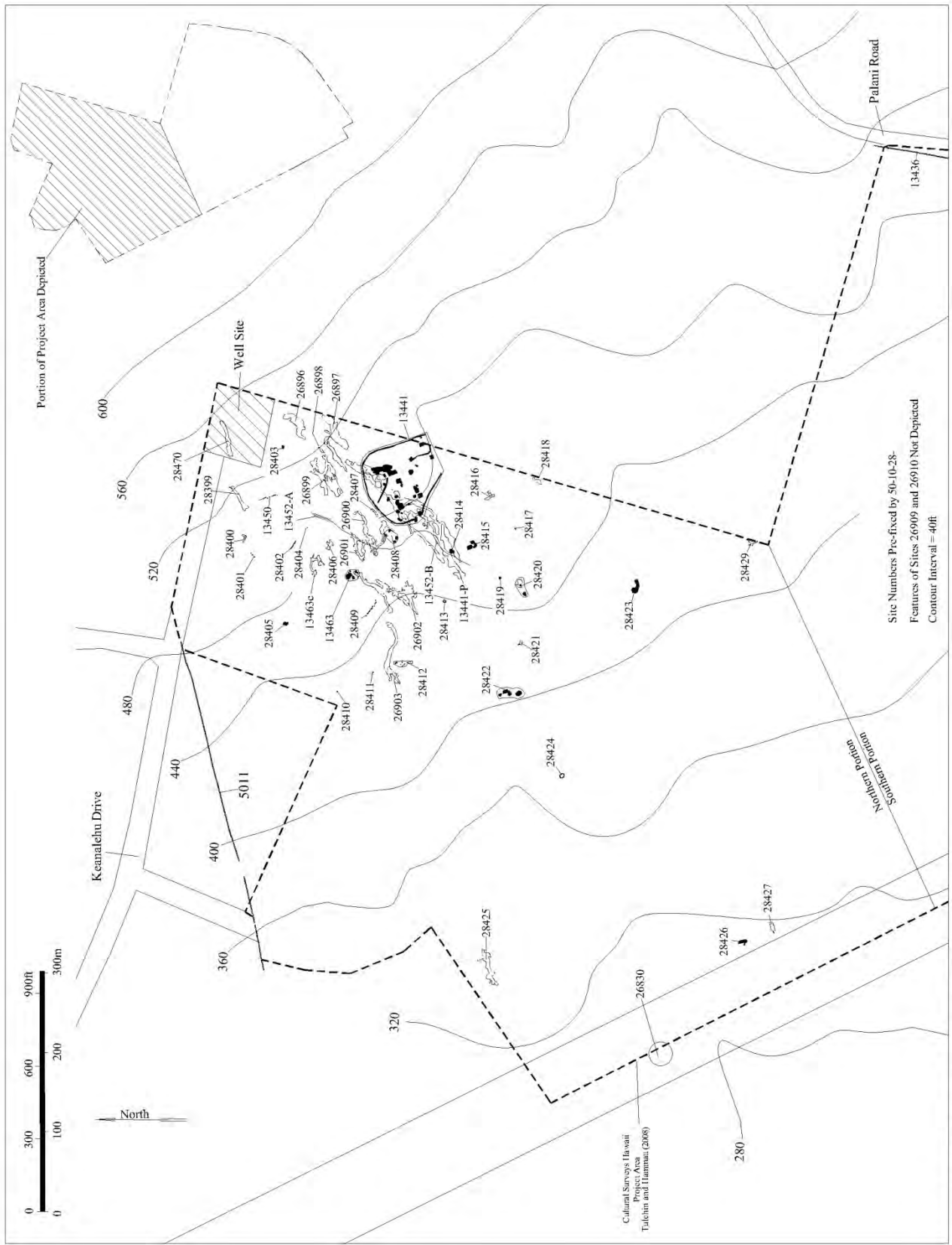


Figure 8a. Site Location Map (Northern Portion)

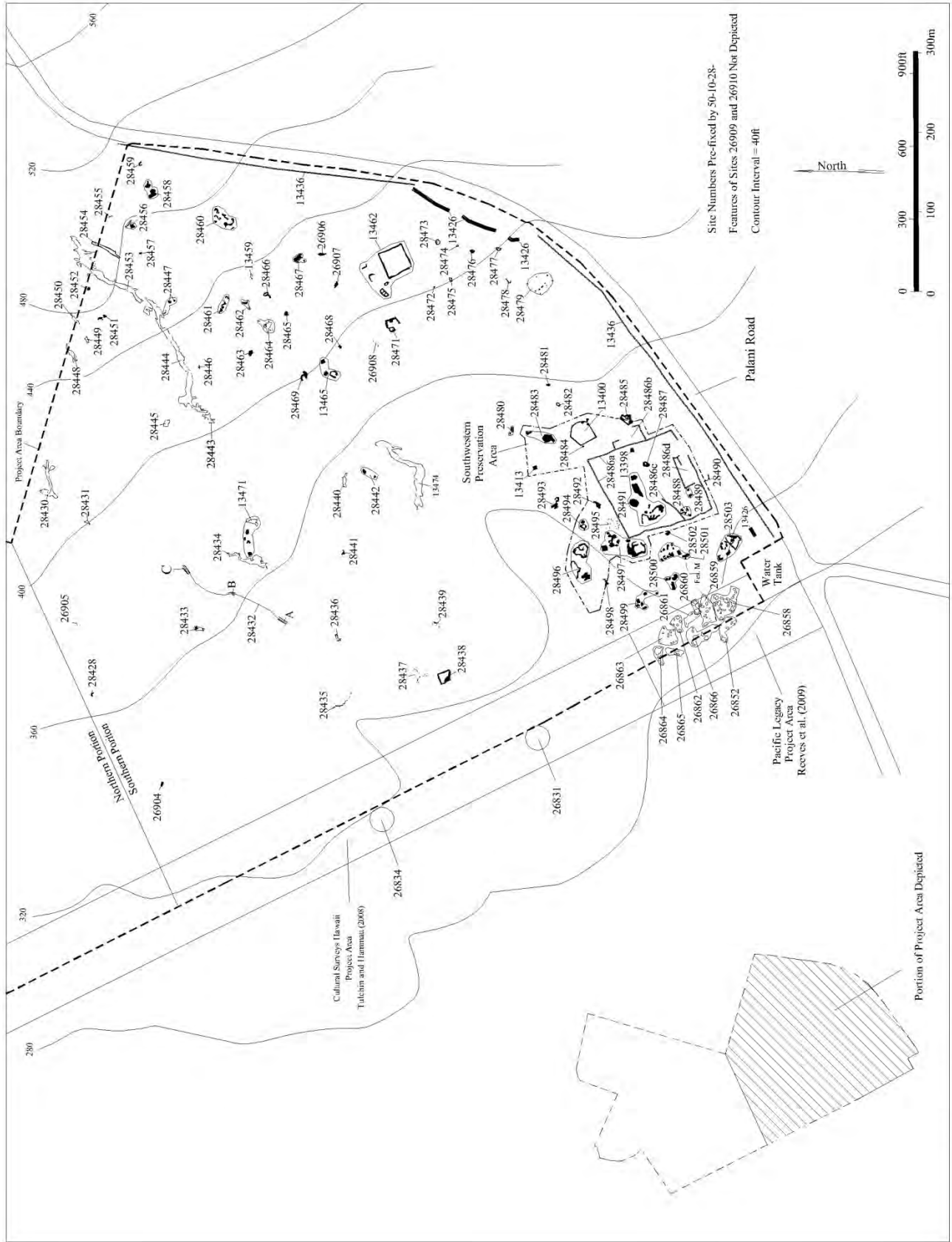


Figure 8b. Site Location Map (Southern Portion)

**Table 5. Summary of Test Units**

Test Unit No.	Site/Feature	Formal Type	Function	Unit Size (m)	Unit Area (sq m)	Cultural Remains Present
1*	13441, Feature C	Platform	Permanent Habitation	1.0 by 1.0	1.00	Yes
1*	13441, Feature K	Platform	Permanent Habitation	1.0 by 1.0	1.00	No
1*	13441, Feature O	Platform	Permanent Habitation	0.5 x 0.5	0.25	Yes
1*	13441, Feature P1	Lava Tube	Permanent Habitation	1.0 by 1.0	1.00	Yes
2*	13441, Feature P2	Lava Tube	Permanent Habitation	0.5 x 0.5	0.25	Yes
1*	13465, Feature A	Platform	Permanent Habitation	2.0 by 2.0	4.00	No
1*	13471, Feature B	Platform	Permanent Habitation	1.0 by 1.0	1.00	No
TU-1a	13395	Modified Outcrop	Agriculture	0.5 by 0.5	0.25	No
TU-2a	26904	Tenace	Temporary Habitation	1.0 by 1.0	1.00	Yes
TU-3a	26909, Feature 119	Mound	Agriculture	0.5 by 1.0	0.50	Yes
TU-1	26909, Feature 1680	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	No
TU-2	26909, Feature 1832	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-3	26909, Feature 1732	Mound	Agriculture	1.0 by 1.0	1.00	Yes
TU-4	28408, Feature C	Modified Outcrop	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-5	28408, Feature D	Platform	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-6	13452, Feature A	Cart Path	Transportation	1.0 by 1.0	1.00	No
TU-7	28403	Tenace	Temporary Habitation	1.0 by 1.0	1.00	No
TU-8	26909, Feature 1557	Mound	Agriculture	1.0 by 1.0	1.00	No
TU-9	28405	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-10	26909, Feature 1441	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-11	26909, Feature 1373	Filled crack	Agriculture	1.0 by 1.0	1.00	Yes
TU-12	28420, Feature B	Mound	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-13	28426	Walled Terrace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-14	26909, Feature 1389	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	No
TU-15	26909, Feature 1344	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-16	26909, Feature 1847	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-17	28428	Pavement	Temporary Habitation	1.0 by 1.0	1.00	Yes
TU-18	26909, Feature 1276	Filled crack	Agriculture	1.0 by 1.0	1.00	Yes
TU-19	26909, Feature 1309	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-20	26909, Feature 1204	Mound	Agriculture	1.0 by 1.0	1.00	No
TU-21	13471, Feature D	Lava Blister	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-22	28461, Feature B	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-23	26909, Feature 1169	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-24	28461, Feature A	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-25	28441	Tenace	Temporary Habitation	1.0 by 1.0	1.00	No
TU-26	28461, Feature E	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-27	26909, Feature 781	Filled crack	Agriculture	1.0 by 1.0	1.00	Yes
TU-28	28461, Feature E	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-29	28439, Feature B	Tenace	Temporary Habitation	1.0 by 1.0	1.00	No
TU-30	28462, Feature C	Filled crack	Permanent Habitation	1.0 by 1.0	1.00	No
TU-31	26909, Feature 770	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-32	28417	Tenace	Temporary Habitation	1.0 by 1.0	1.00	Yes
TU-33	28442, Feature B	Pavement	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-34	28463	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-35	26909, Feature 612	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	Yes
TU-36	26909, Feature 750	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	Yes
TU-37	28468	Tenace	Temporary Habitation	1.0 by 1.0	1.00	No
TU-38	28447, Feature A	Tenace	Temporary Habitation	1.0 by 1.0	1.00	Yes
TU-39	28476	Tenace	Historic Habitation	1.0 by 1.0	1.00	Yes
TU-40	28447, Feature B	Tenace	Temporary Habitation	1.0 by 1.0	1.00	No
TU-41	26909, Feature 505	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	No
TU-42	28465	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-43	28501, Feature G	Mound	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-44	28460, Feature G	L-shape	Permanent Habitation	0.5 by 0.5	0.25	Yes
TU-45	28501, Feature F	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-46	28460, Feature F	Pavement	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-47	28501, Feature K	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-48	28467, Feature D	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-49	28500, Feature D	Mound	Permanent Habitation	1.0 by 1.0	1.00	No
TU-50	26909, Feature 258	Mound	Agriculture	1.0 by 1.0	1.00	Yes
TU-51	26909, Feature 198	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-52	26909, Feature 198	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-53	28480, Feature B	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-54	28481	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-55	26909, Feature 871	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	No
TU-56	28500, Feature A	Platform	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-57	28502	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-58	26909, Feature 184	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-59	26909, Feature 172	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-60	28499, Feature E	Platform	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-61	28498, Feature A	Tenace	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-62	Number not used					
TU-63	26909, Feature 375	Filled crack	Agriculture	1.0 by 1.0	1.00	No
TU-64	26909, Feature 379	Filled crack	Agriculture	1.0 by 1.0	1.00	Yes
TU-65	26909, Feature 382	Modified Outcrop	Agriculture	1.0 by 1.0	1.00	No
TU-66	28498, Feature B	Wall	Permanent Habitation	1.0 by 1.0	1.00	No
TU-67	28422, Feature A	Tenace	Permanent Habitation	1.0 by 0.65	0.65	Yes
TU-68	28422, Feature C	Platform	Permanent Habitation	1.0 by 1.0	1.00	Yes
TU-69	28433, Feature A	Tenace	Permanent Habitation	1.0 by 1.0	1.00	No
TU-70	28451, Feature A	Tenace	Temporary Habitation	1.0 by 1.0	1.00	Yes
<b>Total</b>					<b>78.15</b>	

\* - Excavated by Donham (1990)

TU-1a, 2a, 3a - Excavated during preliminary phase of project

The 29 tested agricultural features consist of 15 filled cracks (Site 26909, Features 172, 184, 198 [2 units], 375, 379, 780, 781, 1169, 1276, 1309, 1344, 1373, 1441, 1832 and 1847), eight modified outcrops (Sites 13995, 26909, Features 382, 505, 612, 750, 871, 1389 and 16870) and five mounds (Site 26909, Features 119, 258, 1204, 1557 and 1732).

The ten tested temporary habitations are comprised of one pavement (Site 28428) and nine terraces (Sites 26904, 28403, 28417, 28439-B, 28441, 28447-A, -B, 28451-A and 28468). The tested historic habitation site is Site 28476. The remaining unit was excavated within the Feature A section of the Site 13452 cart path.

The project documented 67 lava tubes and blisters with evidence of traditional Hawaiian utilization. A total of 2,529 linear meters (1.57 miles) of lava tube were mapped during the study. The survey work included thorough inspection of 323 subsurface features consisting of small lava blisters (n=296), small lava tubes (22) and overhangs (5) that are interpreted as natural, non-cultural features. Each of these features was carefully examined and no cultural remains, internal modifications or other evidence of utilization was identified. These features are summarized in *Table 6* and their locations are depicted in *Figure 9*.

## Definition of Functional Site Types

As discussed above, there are nine main functional site types identified during the project. These consist of agriculture, resource procurement, permanent and temporary habitation, burial, ceremonial, transportation, marker and livestock control. These functional types are defined below.

**Agriculture** – Agricultural features identified during the project consist of modified outcrops, mounds, filled cracks, walls and an enclosure. These features are interpreted as components of the Kona Field System, a vast agricultural area that was intensively cultivated and served as the resource base for the large number of chiefs and retainers that occupied the Kailua-Keauhou coast. The field system extends north to Kau Ahupua'a, south to Honaunau, and from the coastline to the forested slopes of Hualalai. The Kona Field System has been assigned SIHP Site 6601 (Newman 1970, Kelly 1983, Schilt 1984, Cordy 1995).

**Resource Procurement** - Pahoehoe excavations have been documented throughout western Hawaii Island and have been assigned a variety of functional interpretations. These interpretations consists of agricultural features (Carter 1986, O'Hare and Goodfellow 1994, Hammatt et al. 1987, and Reinecke 1930), quarries for vesicular lava for making abraders (Donham 1987), quarries for fine-grained basalt (Haun and Henry 2004), and the result of digging to obtain juvenile dark rumped petrels from nests in crevices in the lava (Nakamura et al. 1998). Nakamura et al. (1998) hypothesize that the excavated areas artificially enhanced natural nesting areas and increased the predictability of the birds as a food resource.

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

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



Table 6. Summary of Non-Cultural Lava Blisters, Tubes and Overhangs

H & A Temp. Site No.	Type	Easting	Northing	H & A Temp. Site No.	Type	Easting	Northing	H & A Temp. Site No.	Type	Easting	Northing
10	Blister	186579	2176924	618	Blister	186834	2176007	1159	Blister	186573	2176076
32.2	Blister	186988	2176042	620	Blister	186827	2176002	1161	Blister	186590	2176087
35	Blister	186968	2176054	621	Blister	186837	2176000	1162	Blister	186580	2176097
43.3	Blister	186961	2176041	646.1	Blister	186874	2176090	1167	Blister	186657	2176123
57	Blister	186871	2175975	656	Blister	186915	2176132	1173.1	Blister	186650	2176175
69	Blister	186764	2175952	661	Blister	186985	2176123	1176	Blister	186698	2176192
71	Blister	186723	2175928	662.3	Blister	186975	2176138	1181.1	Blister	186768	2176240
83	Blister	186493	2175788	678.3	Blister	187058	2176157	1181.2	Blister	186765	2176240
86	Blister	186250	2176237	685.1	Blister	187069	2176185	1183	Blister	186759	2176244
87	Blister	186241	2176242	716.1	Blister	187005	2176204	1192	Blister	186775	2176276
91	Blister	186329	2176239	727	Blister	186945	2176193	1193	Blister	186828	2176267
93	Blister	186413	2176324	730	Blister	186942	2176192	1201	Blister	186927	2176312
100	Blister	186626	2176424	737	Blister	186910	2176186	1205	Blister	186654	2176288
105	Blister	186765	2177028	747	Blister	186847	2176110	1224	Blister	186875	2176372
107	Blister	186761	2177021	748	Blister	186826	2176144	1229	Blister	186866	2176361
110	Blister	186744	2177009	754	Blister	186786	2176078	1234	Blister	186838	2176355
110	Blister	186886	2176136	755	Blister	186788	2176075	1236	Blister	186811	2176355
111	Blister	186733	2177010	759.1	Blister	186760	2176050	1239	Lava Tube	186770	2176318
113	Blister	186658	2176993	762	Blister	186754	2176025	1240	Lava Tube	186746	2176326
114	Blister	186679	2176979	768	Blister	186702	2176022	1242.1	Blister	186718	2176249
118	Blister	186650	2176994	773.4	Blister	186717	2176038	1243	Lava Tube	186708	2176262
122	Blister	186647	2176992	776	Blister	186642	2176059	1244	Lava Tube	186701	2176268
126	Blister	186658	2176947	777	Blister	186626	2176016	1245	Lava Tube	186706	2176240
127	Blister	186648	2176947	778	Blister	186628	2176026	1246	Blister	186792	2176344
129	Blister	186629	2176941	786	Blister	186512	2175973	1247	Lava Tube	186696	2176232
130	Blister	186613	2176963	792	Blister	186468	2175917	1248	Blister	186702	2176258
133	Blister	186588	2176916	878	Blister	186682	2175610	1250	Blister	186662	2176205
135.1	Blister	186572	2176909	921	Blister	186742	2175703	1251	Blister	186684	2176219
135.2	Blister	186577	2176911	945.2	Blister	186902	2175720	1253	Blister	186640	2176187
136	Blister	186562	2176928	959	Blister	186941	2175733	1258	Blister	186472	2176159
137	Blister	186567	2176918	966.3	Blister	186960	2175766	1262	Blister	186365	2176166
138	Blister	186549	2176938	978	Blister	186807	2175650	1263	Blister	186326	2176133
150	Blister	186362	2176804	982	Blister	186763	2175627	1264	Blister	186316	2176023
151	Blister	186346	2176782	994	Blister	186686	2175566	1265	Blister	186294	2176052
153	Blister	186198	2176710	1056.1	Blister	187087	2176277	1267	Blister	186264	2176072
154	Blister	186177	2176723	1075	Blister	187021	2176286	1270.1	Blister	186774	2176378
155	Blister	186118	2176664	1109	Blister	186813	2176217	1273	Blister	186717	2176378
159	Blister	186465	2175713	1111	Blister	186796	2176136	1275	Blister	186707	2176397
225.9	Blister	186895	2175955	1112	Blister	186781	2176199	1279	Lava Tube	186690	2176397
234.1	Blister	186903	2175969	1114	Blister	186777	2176196	1280	Blister	186680	2176381
267	Blister	187064	2176024	1115	Blister	186765	2176169	1286	Blister	186648	2176301
290.1	Blister	186811	2175857	1116	Blister	186754	2176136	1288	Lava Tube	186572	2176270
293	Blister	186796	2175818	1119	Blister	186727	2176117	1289.6	Blister	186556	2176252
294	Blister	186773	2175820	1120	Blister	186712	2176162	1290	Blister	186523	2176213
298	Blister	186777	2175809	1126	Blister	186666	2176111	1291.2	Blister	186509	2176225
304.2	Blister	186763	2175802	1131	Blister	186667	2176051	1293	Blister	186608	2176778
377	Blister	186488	2175683	1137	Blister	186579	2176046	1294	Blister	186475	2176169
492	Blister	186741	2175701	1138	Blister	186569	2176058	1295	Blister	186371	2176205
498	Blister	186782	2175736	1140	Blister	186558	2176036	1298	Blister	186250	2176172
526.4	Blister	186859	2175781	1144	Blister	186541	2176007	1299	Blister	186266	2176119
527.3	Blister	186861	2175787	1150	Blister	186369	2175905	1301	Blister	186224	2176141
541	Blister	186931	2175801	1152	Lava Tube	186425	2176053	1302.1	Blister	186232	2176188
548	Blister	186942	2175800	1154	Lava Tube	186534	2176072	1306	Blister	186326	2176229
554	Blister	187022	2175852	1155	Lava Tube	186565	2176071	1308	Blister	186330	2176226
1310	Blister	186333	2176223	1416	Blister	186485	2176706	1699	Blister	186055	2176743
1311	Blister	186340	2176238	1421	Blister	186556	2176699	1700	Blister	185963	2176735
1312	Blister	186344	2176227	1427	Blister	186672	2176697	1705	Blister	186079	2176794
1313	Blister	186360	2176226	1435	Blister	186671	2176792	1707	Blister	186094	2176830

Table 6. Summary of Non-Cultural Lava Blisters, Tubes and Overhangs (cont.)

H & A Temp. Site No.	Type	Easting	Northing	H & A Temp. Site No.	Type	Easting	Northing	H & A Temp. Site No.	Type	Easting	Northing
1314	Blister	186367	2176264	1462	Blister	186462	2176773	1709	Blister	186170	2176825
1315	Blister	186433	2176295	1470	Lava Tube	186436	2176709	1710	Blister	186176	2176835
1316	Blister	186450	2176288	1491	Blister	186279	2176680	1711	Blister	186155	2176873
1317	Overhang	186481	2176274	1494	Blister	186253	2176659	1712	Blister	186162	2176880
1318	Overhang	186487	2176278	1498	Blister	186233	2176663	1714	Blister	186170	2176856
1320	Overhang	186529	2176302	1501	Blister	186191	2176625	1716	Blister	186167	2176884
1326	Blister	186579	2176371	1507	Blister	186101	2176631	1718	Blister	186185	2176889
1332	Blister	186672	2176403	1509	Blister	186157	2176661	1721	Blister	186288	2176920
1333	Blister	186673	2176415	1515	Blister	186266	2176681	1722	Blister	186390	2176960
1335	Blister	186641	2176452	1520	Blister	186310	2176736	1722	Blister	186285	2176931
1338	Blister	186609	2176435	1521	Blister	186322	2176737	1726	Blister	186360	2176958
1339	Blister	186572	2176469	1522	Lava Tube	186334	2176716	1733	Lava Tube	186468	2176978
1341.1	Blister	186491	2176389	1524	Blister	186321	2176749	1736	Blister	186507	2177059
1341.2	Blister	186489	2176386	1525	Blister	186346	2176727	1738	Blister	186576	2177031
1345.1	Blister	186357	2176369	1530	Blister	186468	2176794	1739.2	Blister	186578	2177040
1346	Blister	186336	2176304	1532	Blister	186482	2176819	1739.3	Blister	186578	2177040
1347	Blister	186316	2176328	1546.2	Blister	186576	2176845	1740	Blister	186574	2177056
1348	Blister	186260	2176343	1570	Blister	186758	2176930	1741	Lava Tube	186594	2177035
1351	Blister	186647	2176543	1574	Blister	186736	2176910	1743	Blister	186620	2177065
1354	Blister	186567	2176514	1578	Blister	186725	2176910	1749	Blister	186636	2177084
1355	Blister	186551	2176483	1586	Blister	186706	2176895	1753	Blister	186672	2177084
1357	Blister	186512	2176466	1600	Blister	186666	2176894	1754	Blister	186672	2177097
1358	Blister	186491	2176485	1601	Blister	186659	2176910	1756	Lava Tube	186696	2177123
1359	Blister	186494	2176507	1602	Blister	186656	2176913	1757	Blister	186726	2177136
1360	Blister	186488	2176494	1603	Blister	186653	2176904	1761	Blister	186624	2177180
1361	Blister	186344	2176429	1604	Blister	186646	2176913	1763	Blister	186584	2177149
1362	Blister	186273	2176390	1605	Blister	186650	2176903	1765	Blister	186563	2177148
1364	Blister	186282	2176357	1609	Blister	186644	2176903	1766	Blister	186540	2177102
1365	Blister	186243	2176362	1621.1	Blister	186590	2176877	1767	Blister	186536	2177094
1366	Blister	186203	2176319	1621.2	Blister	186590	2176877	1768	Blister	186504	2177070
1368	Lava Tube	186171	2176410	1622.1	Blister	186587	2176878	1780	Blister	186547	2177151
1369	Blister	186239	2176450	1624.1	Blister	186558	2176861	1782	Blister	186560	2177161
1370.1	Blister	186341	2176452	1633.1	Blister	186661	2176943	1784.1	Blister	186570	2177168
1371	Blister	186369	2176504	1633.2	Blister	186662	2176940	1790.1	Blister	186377	2177034
1372	Blister	186460	2176508	1637	Blister	186692	2176936	1791.1	Blister	186411	2176998
1375	Blister	186503	2176540	1639	Lava Tube	186681	2176953	1793	Blister	186371	2177000
1376	Blister	186526	2176553	1641	Blister	186708	2176951	1795	Blister	186345	2177005
1384	Blister	186638	2176685	1644	Blister	186702	2176971	1800	Blister	186338	2176983
1386	Blister	186599	2176673	1647	Blister	186779	2176975	1805	Blister	186247	2176950
1391	Blister	186557	2176653	1656.1	Blister	186625	2177008	1807	Blister	186234	2176941
1401	Blister	186324	2176550	1658	Blister	186640	2176992	1809	Blister	186115	2176948
1402	Overhang	186282	2176513	1664	Blister	186525	2176970	1810	Blister	186124	2176964
1403	Overhang	186273	2176493	1667.1	Blister	186398	2176896	1811	Blister	186145	2176960
1405	Blister	186169	2176458	1669	Lava Tube	186421	2176906	1816.1	Blister	186161	2177014
1410	Blister	186068	2176510	1670	Lava Tube	186418	2176902	1816.2	Blister	186162	2177016
1411	Blister	186120	2176528	1674	Blister	186409	2176873	1817	Blister	186182	2177021
1412	Blister	186318	2176582	1681	Blister	186360	2176881	1839	Blister	186183	2177105
1413	Lava Tube	186300	2176630	1694	Blister	186218	2176803	1841	Blister	186169	2177100
1414	Blister	186450	2176682	1695.1	Blister	186203	2176822	1848	Blister	186162	2177103
1415	Lava Tube	186462	2176653	1696	Blister	186184	2176787				

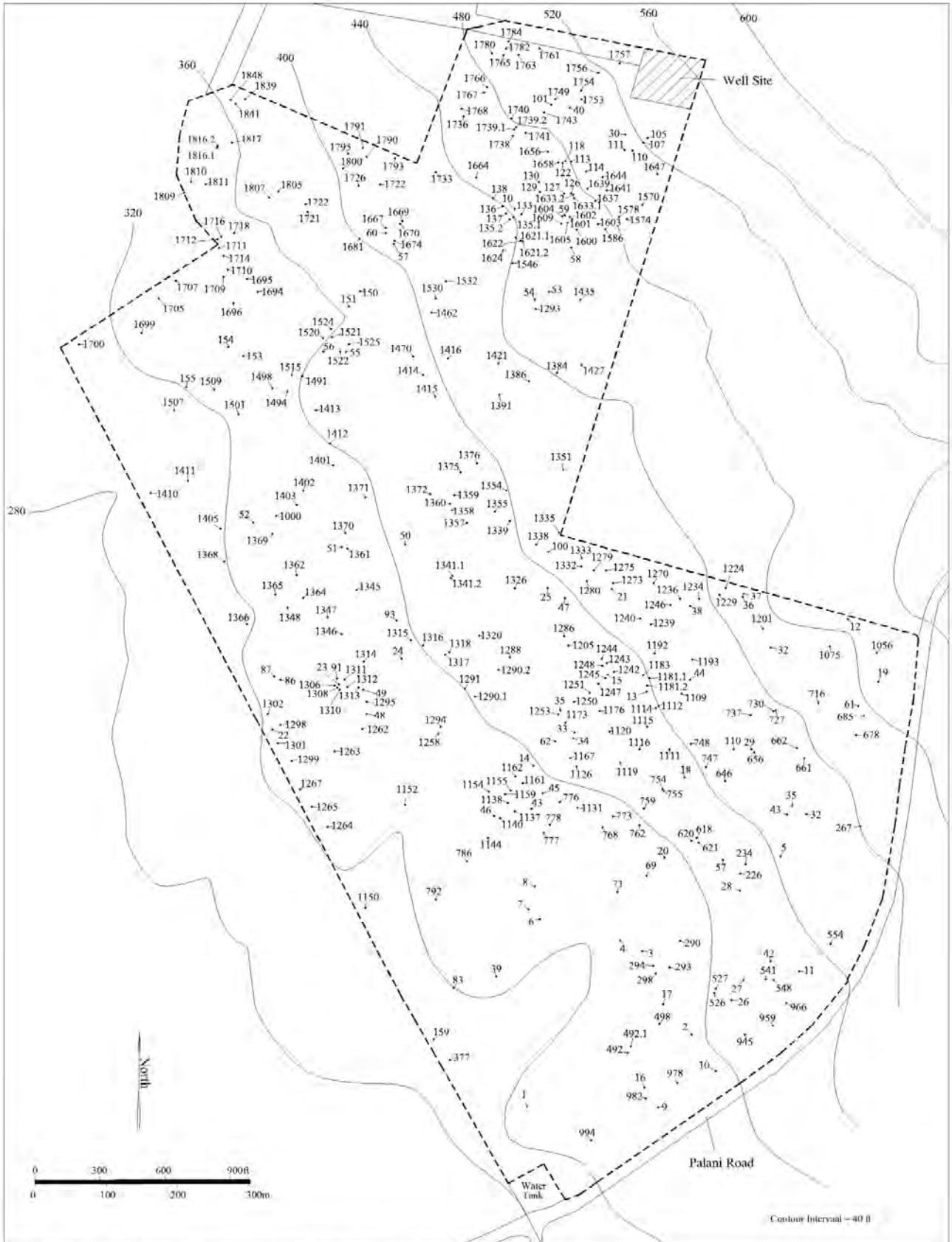


Figure 9. Distribution of Non-Cultural Blisters, Tubes and Overhangs

**Permanent Habitation** - Permanent habitation features are defined as the primary dwelling structures at a permanent habitation site. Permanent habitation features were defined during the project based on a criteria developed by Cordy for the Kona region (1981:66-82). In his model, Cordy presents the following attributes for permanent habitation sites and features: (a) external area greater than 16.0 to 19.0 sq m; (b) substantial construction (i.e. faced walls, paving); (c) presence of special purpose structures (small structures for work and storage); and (d) location (permanent housing clustered primarily along the shoreline or at the mouth of and on the sides of valleys). Other attributes used in this study as evidence of substantial construction include architectural features such as cupboards, constructed doorways and steps, and internal subdivision into rooms.

Cordy (1981) defined special purpose structures as foundations for probable roofed structures at permanent habitation sites that are less than 16-19 sq m in area. According to Cordy such structures may represent work or storage areas. For the purposes of this study other features at permanent habitation sites, which would not have supported roofed structures because the features are either too small or because they have other obvious functions (i.e., hearths and yard enclosures), are classified as permanent habitation ancillary features. These features consist of surface hearths, small platforms and terraces and pavements that probably functioned as site furniture such as tables, benches or drying racks. Large enclosures surrounding permanent habitation yards sites are also termed ancillary features, functioning to define the limits of enclosed yards.

**Temporary Habitation** - As defined by Cordy (1981), temporary habitations are (a) less than 16 sq m in external area, (b) insubstantial constructions, (c) contain numerous features of internal stratification (multiple firepits), and (d) have few or no associated structures.

**Burials** - Burial sites/features consist of a surface structure or subterranean lava tube, blister or overhang that contain evidence of human interment.

**Ceremonial** - In Hawaiian archaeology, evidence of ceremonial use includes the presence of branch coral or the presence of an upright stone that is often elongated and waterworn (Kirch 1985). Hammatt et al. (1997) compiled a list of *heiau* attributes drawn from several sources including Bennett (1930), Valeri (1985), Kirch (1985), Kolb (1991), and Stokes and Dye (1991) that was used to support their interpretations. The attributes include upright stones and coral, prominent location on bluffs and cliff tops, historic references, large area, and several architectural attributes. The architectural attributes consist of depressions (used for bone pits or to support idols), altars, paving, and multiple levels or tiers.

**Transportation** – Transportation sites are interpreted as any feature used to traverse the project area, during either prehistoric or historic times. The transportation features identified during the project consist of steppingstone trails, cart paths and a road.

**Markers** – These features are typically comprised of stone cairns typically used to delineate property boundaries or corners and are often found in association with trails.

**Livestock Control** – This functionally type typically consists of historic walls used to restrict the movement of livestock, primarily cattle.

## Site Descriptions

The following section describes the 136 sites and 3,252 features that were documented during the present study. For information on the three sites and four features documented by Cultural Surveys Hawaii and the ten sites with 70 features recorded by Pacific Legacy, Inc., see Tulchin and Hammatt (2009) and Reeves et al. (2009) respectively.

**State No.:** 50-10-28-5011 (Haun & Associates Temporary Site Number T-1770)

**Site Type:** Wall

**Functional Interpretation:** Livestock Control

**Topography:** Soil and outcrops sloping to west and southwest

**Elevation:** 350-485 ft

**Coordinates:** Inland End - E=186515, N=2177191

**Vegetation:** *Haole koa*, grasses

**Probable Age:** Historic

**Overall Dimensions within Project Area:** 86.5 m long

**Condition:** Fair

**Integrity:** Altered

**Description:** Site 5011 is a stone wall that forms a portion of the northern project area boundary (see *Figure 8a*). The wall is situated on the boundary between the Lands of Keahuolu and Kealakehe. Portions of this wall were documented by Burgett and Rosendahl (1992) and Tulchin and Hammatt (2009). There are two portions of the wall within the project area, situated on the inland and seaward sides of the V-shaped notch in the northern boundary. The first section is along the seaward side of the notch at elevations ranging from c. 350 to 370 ft. This section is 75.5 m long and extends out of the project area to the east-northeast and west-southwest. The second section is located 320 m east-northeast of the first section at the inland side of the notch. This section is 11.0 m long and extends from the corner of the notch to the east-northeast to where it is truncated by road construction. The intact portions of the wall are bi-faced with stacked cobbles and small boulders. The wall is core-filled with cobbles. The wall is 0.7 to 1.0 m wide at the base, 0.5 to 0.7 m wide at the top and from 0.7 to 1.1 m in height (*Figure 10*). No cultural remains were found in association with the wall.



**Figure 10.** Site 5011 Wall, view to south

Site 5011 is interpreted as a livestock control feature used to restrict the movement of cattle. This is based on its formal type, height and method of construction. The location of the wall on the boundary between Keahuolu and Kealakehe indicates it also served as a land division boundary. The portion of the wall within the project area is altered and in fair condition. The site is assessed as significant for its information content.

**State No.:** 13395

**Site Type:** Platform

**Functional Interpretation:** Agriculture

**Topography:** Soil and outcrops sloping to southwest, northeast and south

**Elevation:** 333 ft

**Coordinates:** E=186634, N=2175575

**Vegetation:** *Haole koa*, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 2.7 m by 1.9 m

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13395 was initially identified as a possible burial platform by Donham, located in the southwestern corner of the project area (1990: A-109). The platform dimensions were reported as 3.0 m long, 2.5 m wide and 0.95 m high. The site was relocated by Haun & Associates based on the presence of a metal site tag from the original PHRI survey. It was mapped and subjected to subsurface testing during the present project. The site is oval in shape and is 2.7 m in length (northeast by southwest) and 1.7 to 1.9 m in width, built on and adjacent to a raised bedrock outcrop (*Figure 11*). The northwest, west and southwest sides of the structure are comprised of stacked and piled cobbles and small boulder. The northeast and southeast sides have collapsed outward. The sides vary in height from 0.2 to 0.9 m and the surface is uneven cobbles and small boulders with no cultural remains present,

A 0.5 by 0.5 m test unit (TU-1a) was excavated in the center of the site during the previous phase of the current project. The excavation revealed a single layer over bedrock (see *Figure 11*). Layer I consisted of 0.13 to 0.37 m of tightly packed cobbles, pebbles and small boulders with no cultural remains present.

The examination of Site 13395 during the present project has resulted in its re-interpretation as an agricultural modified outcrop. The structure is crudely constructed of stacked and piled stones with an uneven surface and does not exhibit the characteristics of a typical platform (i.e. vertical sides, level surface). The absence of human bone, food remains or artifacts from the test unit indicate it probably was an agricultural feature. The site is unaltered, in fair condition and is assessed as significant solely for its information content.

**State No.:** 13398 (T-909)

**Site Type:** Complex (2)

**Functional Interpretation:** Permanent Habitation, Possible Burial

**Topography:** Soil and outcrops sloping to west and north

**Elevation:** 345ft

**Vegetation:** *Haole koa*, *alahe'e*, *kiawe*, airplant, autograph tree, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 9.0 by 4.5 m

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13398 is a complex of two features located in the southwestern portion of the project area within the large 28486, Feature A enclosure (discussed below). The site was previously identified by Donham (1990:A-110) and was described as a platform (Feature A) and a possible cairn (Feature B). Feature A was previously assigned a habitation/possible burial/agricultural function and Feature B was interpreted as a cairn of indeterminate function. The site is situated in an area 9.0 m long (northeast by southwest) and 4.5 m wide (*Figure 12*).

Feature A is located at the northeast end of the site, built on top of a raised bedrock outcrop. The platform is rectangular in shape and is 4.3 m long (east-west) and 3.7 m wide with sides constructed of stacked cobbles and small boulders. The sides range in height from 0.3 to 1.1 m with intact facing present along each side. Collapsed

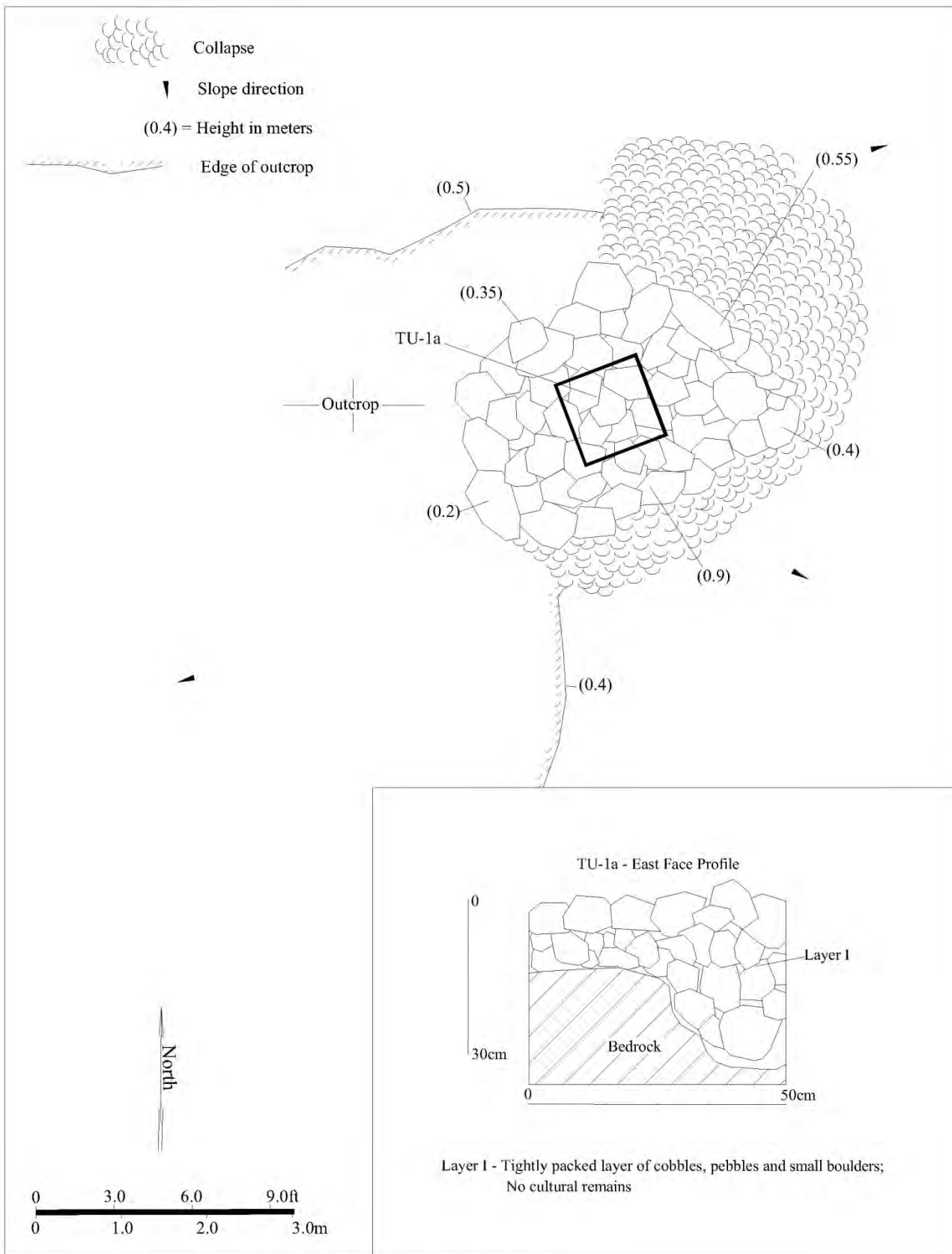


Figure 11. Site 13395 Plan Map and TU-1a East Face Profile

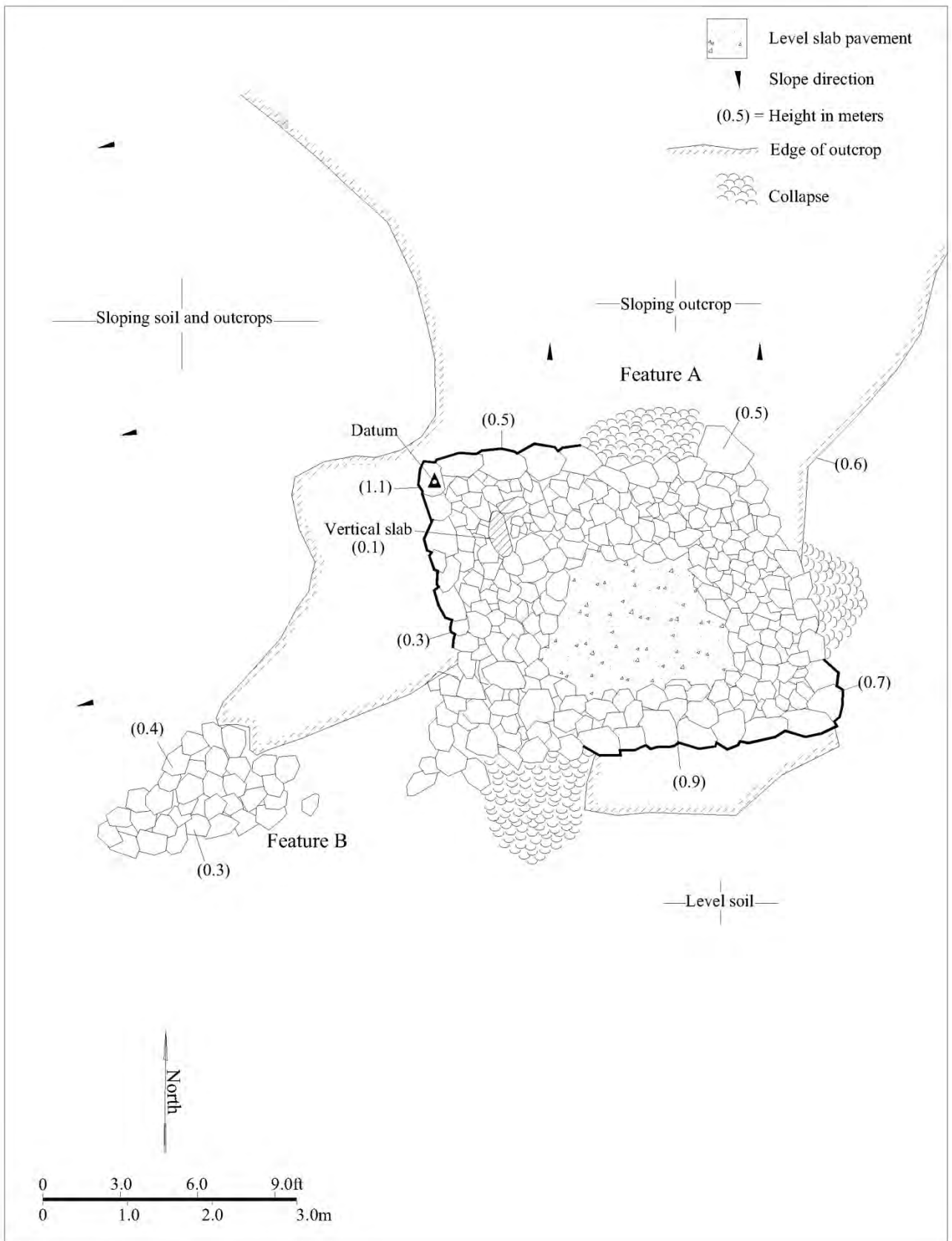


Figure 12. Site 13398 Plan Map



areas are present along the north, east and south sides. The surface is level cobbles and small boulders with an area of cobble and pebble paving in the center. There is a vertical slab set into the surface of the feature in the northwestern portion that is 0.1 m in height above the surface. No cultural remains were present on the surface.

Feature B is a pile of cobbles and small boulders located 2.7 m southwest of Feature A, built against the side of an outcrop. It is 2.5 m long (northeast by southwest, 1.45 m wide and 0.3 to 0.4 m in height. No cultural remains were present.

Site 13398 is interpreted as a permanent habitation complex. The Feature A platform is interpreted as the foundation for a roofed structure due to its formal type, substantial construction (faced sides, paved surface, vertical slab) and area (15.5 sq m). It is also possible that Feature A represents a burial feature. However, no subsurface testing was conducted due to its location with the boundaries of a preservation area. Feature B is interpreted as a modified outcrop that may have functioned as site furniture due to its proximity to Feature A. The site is assessed as significant for its information content and potentially for its cultural value due to Feature A's interpretation as a possible burial. The site is unaltered and in fair condition.

**State No.:** 13400 (495)

**Site Type:** Enclosure

**Functional Interpretation:** Permanent Habitation

**Topography:** Soil and outcrops sloping to north-northeast

**Elevation:** 345-350ft

**Coordinates:** E=186759, N=2175735

**Vegetation:** Christmas berry, *haole koa*, airplant, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 28.8 m by 28.2 m

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13400 is a large roughly rectangular-shaped enclosure situated in the southwestern portion of the project area. The site was initially identified by Donham (1990:A-110). The enclosure is 21.3 to 28.8 m in length (northeast by southwest) and 22.9 to 28.2 m wide with a 2.0 m wide entrance into the interior at the southeastern end (*Figure 13*). The walls are built of stacked and faced cobbles and small boulders and are 0.9 to 1.1 m thick and 0.6 to 1.0 m in height. Collapsed areas are present in the interior southeastern portion.

The interior of the enclosure is shallow soil over bedrock. No cultural remains were present. There is a stacked and faced wall that extends 5.0 m to the east from the north side of the entrance. This wall is 1.0 m wide and 0.7 m high and is collapsed at the eastern end.

Site 13400 is interpreted as a permanent habitation yard in which a pole and thatched roofed structure once existed. This is based on its formal type, substantial construction (faced sides) and large area (812.0 sq m). The site is located inside the Southwest Preservation Area. It is assessed as significant for its information content, is unaltered and in fair condition.

**State No.:** 13413 (T-303)

**Site Type:** Platform

**Functional Interpretation:** Permanent Habitation, Possible Burial

**Topography:** Pahoehoe lava flow sloping to west-southwest

**Elevation:** 335ft

**Vegetation:** Christmas berry, *alahe'e*, *haole koa*, airplant, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 4.95 m by 4.4 m

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13413 is a platform located in the southwestern portion of the project area in an area of sloping

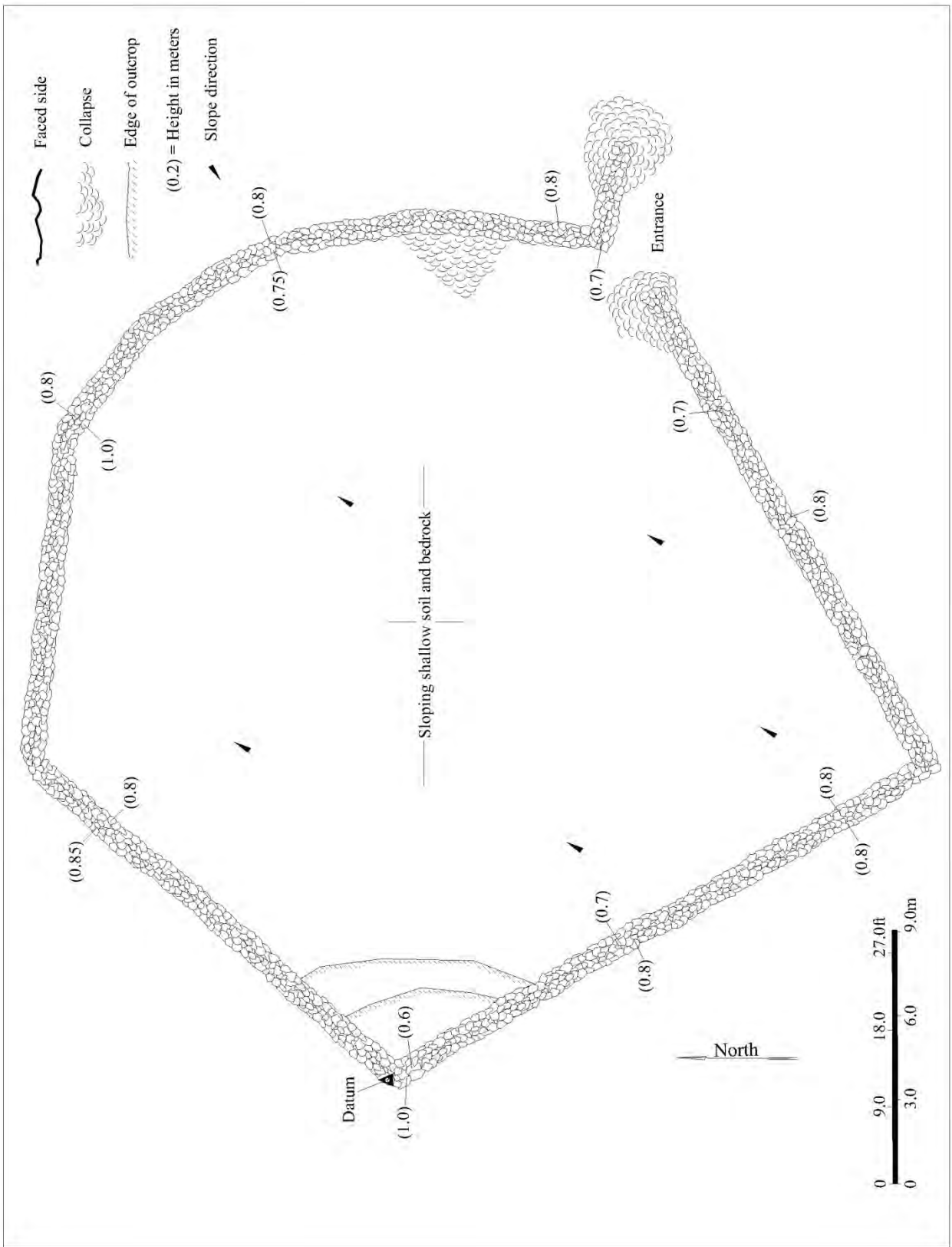


Figure 13. Site 13400 Plan Map

pahoehoe lava. The site was previously identified by Donham (1990:A-112).

The platform is square-shaped and is located at the inland end of a pahoehoe ridge (*Figure 14*). The structure is 4.95 m long (north-northwest by south-southeast) and 4.4 m wide with sides built of cobbles and small boulders. The north, east and west sides have collapsed outward and are 0.25 to 0.65 m in height. The west end of the south side is also collapsed though the east end is stacked and faced cobbles and small boulders (0.55 m high). The surface of the platform is a level cobble and pebble pavement with low outcrops in the center and at the northeast corner. Fragments of branch coral are present on the ground surface to the north and west of the platform.

Site 13413 is interpreted as a permanent habitation structure that functioned as the foundation for a roofed structure. This is based on its formal type, substantial construction (faced side, paved surface) and area (21.7 sq m). Alternatively, it is also possible that the platform may represent a burial structure based on formal type and on the presence of the branch coral on its surface. The structure was not tested because it is situated within the boundaries of a planned preservation area. The site is unaltered and in fair condition. It is assessed as significant for information content and potentially for its cultural value.

**State No.:** 13426 (T-273, 557, 560, 1045)

**Site Type:** Road

**Functional Interpretation:** Transportation

**Topography:** Soil and outcrops sloping to west and southwest

**Elevation:** 310-435 ft

**Coordinates: Northeastern end** - E=187081, N=2175947

**Vegetation:** Christmas berry, monkeypod, airplant, *haole koa*, grasses and vines

**Probable Age:** Historic

**Overall Dimensions:** 128.0 m by 3.0 m

**Condition:** Poor to fair

**Integrity:** Altered

**Description:** Site 13426 consists of an historic roadbed that roughly parallels Palani Road. The road was initially documented by Donham (1990:A-116) and was interpreted as an abandoned previous alignment of Palani Road. Four discontinuous sections of the road were documented during the present project (see *Figure 8b*). The first section is situated in the southeastern corner of the parcel and is 12.5 m long (northeast by southwest) and 30.0 m northwest of Palani Road.

The second section is situated 46.0 m to the northeast. This section is 14.5 m long (north-northeast by south-southwest) and 23.5 m northwest of Palani Road. The third section is located 18.5 m northeast of the second and is 46.5 m long (northeast by southwest). This portion of the road is 25.0 m northwest of the modern Palani Road. The fourth section is 16.5 m northeast of the third and is 54.5 m long (northeast by southwest) and 10.0 to 21.0 m northwest of Palani Road.

The road is a stacked and faced retaining wall along the northwestern side that is 0.3 to 1.5 m in height (*Figure 15*). The surface of the road is level soil and outcrops with areas of what appears to be compacted gravel.

A glass bottle was found along the road (*Figure 16*). It consists of a colorless glass bottle in the “handy flask” oval shape (Acc. 65.001, 119.7g, 118.0 x 55.3 x 29.3 mm). The machine-made bottle is embossed on the obverse with the legend “Special Battery Oil – Thomas A. Edison Corporation Primary Battery Division Bloomfield N.J. U.S.A.”. The reverse is embossed with the legend “Trade Thomas A Edison Reg. U.S. Mark Pat. Off. Made in U.S.A.” The base is embossed with the numbers “880” and “1”. The bottle was manufactured in the early 20<sup>th</sup> Century. Modern debris is also present along the road way.

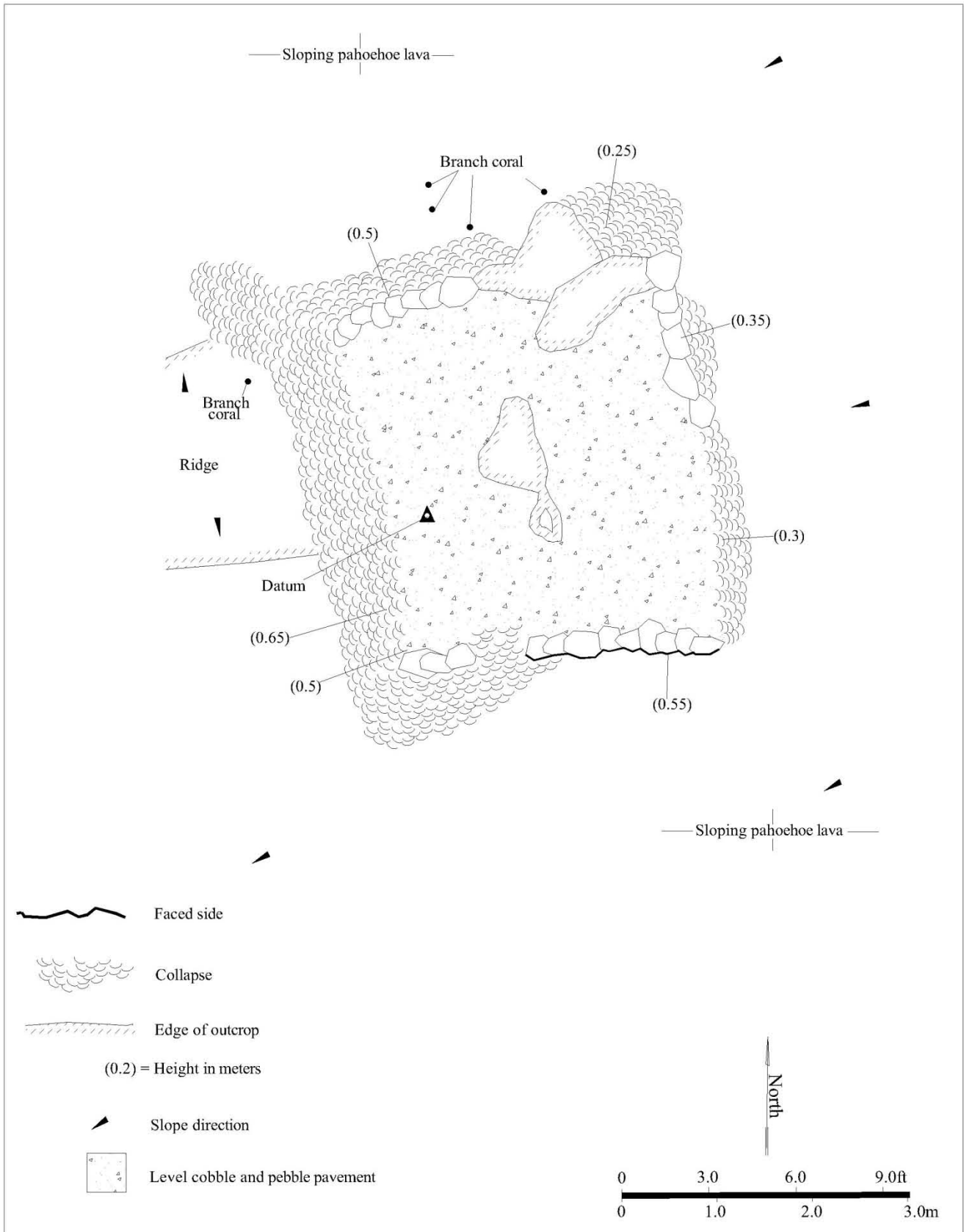


Figure 14. Site 13413 Plan Map



Figure 15. Site 13426 Retaining Wall along road, view to east



Figure 16. Site 13426, Bottle

Site 13426 is interpreted as an historic transportation route that pre-dates the current route of Palani Road. The site has been altered by modern road construction. The four sections range from poor to fair condition. The site is assessed as significant for its information content.

**State No.:** 13436 (T-1043)

**Site Type:** Wall

**Functional Interpretation:** Livestock Control

**Topography:** Soil and outcrops sloping to west and southwest

**Elevation:** 305-515ft

**Coordinates:** Northeast end - E=187136, N=2176305

**Vegetation:** Christmas berry, *haole koa*, *kiawe*, bougainvillea, grasses

**Probable Age:** Historic

**Overall Dimensions:** 843.5 m long

**Condition:** Poor to fair

**Integrity:** Altered

**Description:** Site 13436 is a discontinuous linear stone wall that parallels the northeastern side of Palani Road. The wall was previously identified by Donham (1990:A-124). The wall is two sections separated by a 168.0m wide gap (see *Figure 8b*). The wall originates in the southwestern corner of the parcel at c. 305 ft elevation and extends to the northeast for 481.5 m where it has been destroyed. The northeastern section of the Site 13426 road is present within the gap. The wall is present again on the northeastern side of the gap. It continues to the north-northeast for 362.0 m where it intersects the southeastern corner of the project area. The wall continues outside the project area an undetermined distance. Large sections of the wall are collapsed though intact stacked and faced sections are present. These intact sections are 0.8 to 1.1 m wide at the base, 0.5 to 0.8 m wide at the top and 0.7 to 1.0 m in height and have a core-filled cobble interior. An example of an intact section of the wall is presented in *Figure 17*). The collapsed sections are 1.5 to 2.0 m wide and 0.25 to 0.5 m in height. Modern debris is present along the wall.



**Figure 17.** Site 13436 Wall, view to north

Site 13436 is interpreted as a livestock control feature used to restrict the movement of cattle based on its height and method of construction. The portion of the wall within the project area is altered and in poor to fair condition. It is assessed as significant for its information content

**State No.:** 13441 (1585, 1588, 1589, 1592)

**Site Type:** Complex (25)

**Functional Interpretation:** Permanent Habitation, Burial

**Topography:** Soil and outcrops sloping to west and southwest

**Elevation:** 475-500ft

**Vegetation:** Christmas berry, *alahe'e*, klu, lantana, grasses and vines

**Probable Age:** Prehistoric

**Overall Dimensions:** 215.0 m by 114.0 m

**Condition:** Fair to Good

**Integrity:** Unaltered

**Description:** Site 13441 is a complex of 25 features located in the northeastern portion of the project area. The site was previously documented by Donham (1990:A-127-136). The site is comprised of seven terraces (Features B1, E1 through E3, F, G and H), seven platforms (Features A, C, D, J, K, N and O), two pavements (Feature B2 and E4), one wall (Feature I), a mound (Feature M) and two enclosures (Features L and Q), and a lava tube with five chambers (Features P1 through P5). The site is located in an area 215.0 m long (northeast by southwest) and 114.0 m wide (see *Figure 8a*). The surface portion of the site is depicted in *Figure 18*.

Feature A is a large rectangular shaped platform located in the western portion of the site. The site was assigned an agricultural/habitation function during the previous study. According to Donham (1990: A-127), the platform is 12.0 m long, 7.7 m wide and 0.9 m in height. The following description is from Donham:

Feature A is a platform constructed of stacked and faced basalt blocks and surfaced with pebble pavement. It is in fairly good condition and is situated immediately west of Feature B. There appears to be a single posthole in the northwest corner of the platform, formed by four basalt blocks. The possible posthole measures 0.36x0.32x0.50 m.

The platform adjoins and is roughly level with a pahoehoe outcrop. One upright basalt is located 2.0 m from the western edge of the platform, roughly in the center of the NS axis. There is a possible papamu present on the pahoehoe outcrop at the eastern edge of the platform (1990: A-127-129).

Feature B is a terrace with adjoined pavement located to the east of Feature A. It is 5.1 m long, 3.9 m wide and 0.4 m in height and was previously assigned an agricultural function. According to Donham:

The terrace is constructed with basalt blocks ranging in size from pebbles to large boulders. They are in a pile that measures 5.1 m (E-W by 3.9 m (N-S).

To the east and southeast of the pile is a pavement that measures 5.6 m (N-S) by 4.8 m (E-W). The pavement consists of generally fist sized basalt rocks with some boulders (measuring 0.3 m) and one large basalt block which is 0.76 m by 0.56 m by 0.22m. At the south edge of the pavement, extending west is an alignment (possible collapsed wall) of basalt blocks constructed with a maximum of two courses. The blocks range in length from 0.1 to 0.7 m by 0.42 by 0.19 m. The alignment measures 3.62 m (NE-SW) with a maximum height of 0.4 m (1990: A-127-129).

Feature C is a platform located to the north of Feature B. According to Donham (1990: A-129) the feature measures 10.0 m long and 6.0 m wide, although the dimensions from the map (see *Figure 18*) are 4.8 m long by 3.9 m wide (*Figure 19*). This feature was assigned an agricultural function during the previous project. According to Donham:

This low, D-shaped platform is constructed with large cobbles that are loosely stacked along the sides, and is filled with gravel and boulder size basalt ranging in size from less



Figure 18. Site 13441 Plan Map from Donham (1990A:128)



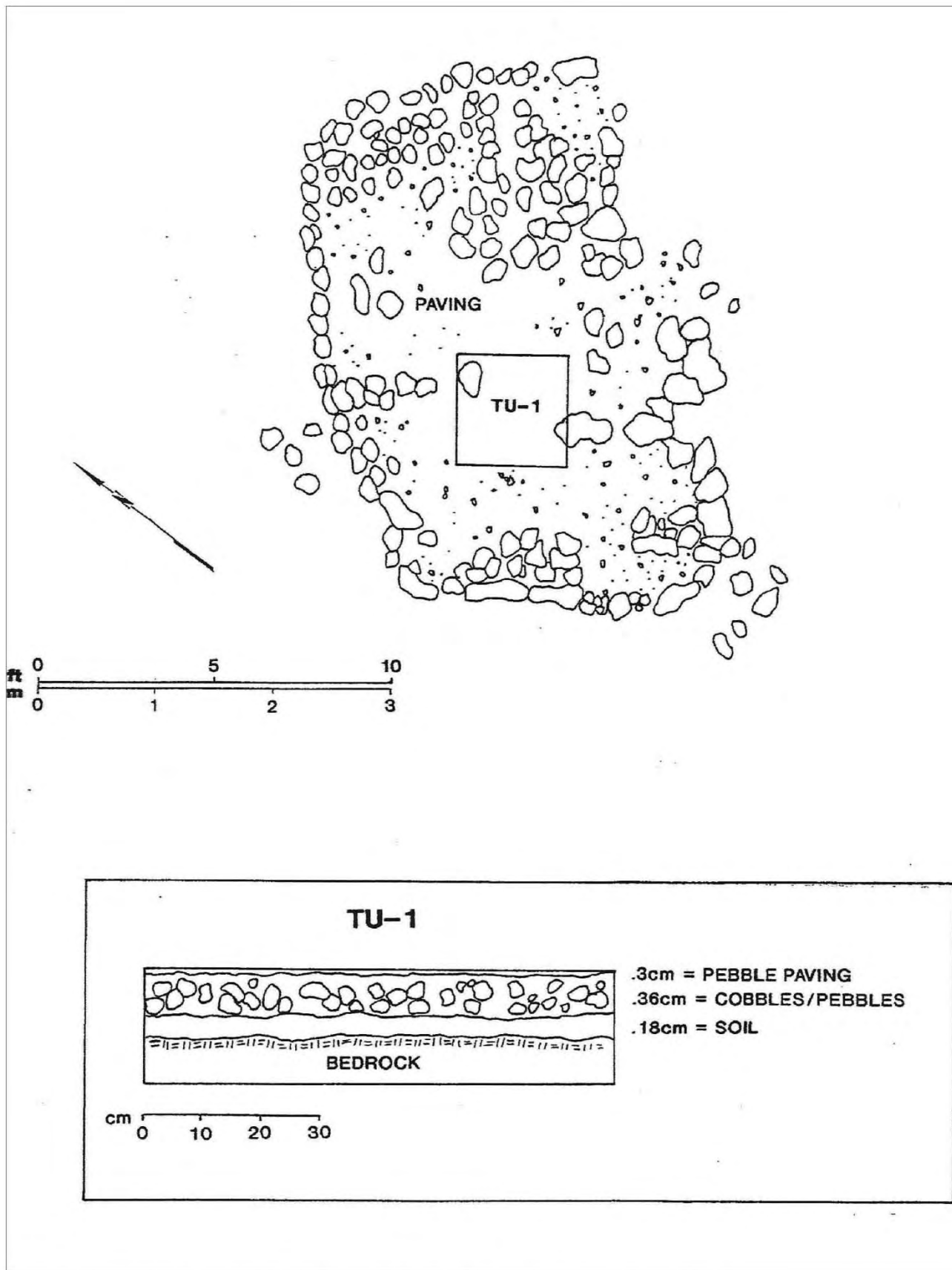


Figure 19. Site 13441, Feature C Plan Map and TU-1 Profile from Donham (1990A:130)

than 0.05 m in diameter to 0.34 by 0.3 m by 0.221 m. the surface is irregularly paved with scattered pebbles.

A 1.0 by 1.0 m square unit was excavated in the center of the feature, in order to better determine its function. The paving was found to consist of only one layer of pebbles, overlying a cobble fill that pebbles intermixed. The fill layer in the test unit was 0.56 m thick and rested on a 0.1 m thick layer of pebbles and soil intermixed. The pebble/soil layer was directly on pahoehoe bedrock. A single kukui nut in three fragments was located in the soil layer. No other portable remains or cultural deposits were observed. A sample of the soil was collected for further analysis.

Feature D is a platform located to the southeast of Feature B. The feature is rectangular in shape with a ramp along the western side. It is 6.5 m long, 5.4 m wide and 1.1 m in height and was assigned a habitation function by Donham. According to Donham:

The platform perimeters consist of large basalt blocks that are stacked and faced up to six courses high. The interior is filled with boulders and cobbles. The platform surface is level; the western portion is covered with a single layer of closely fitted pahoehoe slabs. The eastern portion is paved with pebble-size pieces of pahoehoe. There are two subsurface features resembling post holes in the platform. There are aligned along the boundary of the slab and pebble pavements. A small step-like protrusion is exterior to the south wall; it is 0.50 m high.

In addition, a low linear ramp-like platform projects westward from the southwest corner of the platform. Its dimensions are 6.2 m (E-W) by 3.4 m (N-S). It may be a partially collapsed ramp or stepped entrance path (1990: A-129).

Feature E is described by Donham as a cluster of terraces (Features E1, E2 and E3) and a pavement (Feature E4) on the side of a hill that encompasses an area 18.0 m long by 14.0 m. These features were assigned an agricultural function and are described below.

Feature E consists of four terraces on a south facing slope of a hill, just below the crown of the hill. All terraces are raised along the south side. Below the terraces to the south and west is an unbordered pavement which covers an area 10.0 m (N-S) by 14.0 m (E-W). The first terrace above the pavement measures 5.0 m (N-S) by 10.0 m (E-W); the second terrace above the pavement measures 4.0 m (N-S) by 8.0 m (E-W); the third terrace above the pavement measures 4.3 m (N-S) by 9.0 m (E-W). Large and small basalt blocks are used to construct the retaining walls. Some sections are collapsed and slope into each other.

Portions of the terraces incorporate natural pahoehoe outcrops. Other sections require the construction of up to six courses of basalt blocks to roughly level the terrace in relation to the outcrop. The lowest terrace is somewhat informal as compared to the upper levels. The west side of the lower terrace ends 2.0 m east of Feature D (1990: A-129).

Feature F is a linear terrace located to the northeast of Feature E. It measures 29.0 m long by 7.0 m wide and was interpreted as an agricultural feature. According to Donham:

The long axis of Feature F is oriented NW-SE along the northeast crown of the hill, upslope from Feature E. It is raised on the east side and slightly raised on the south side. Basalt blocks are used to construct the retaining wall, which is a maximum of six courses stacked and faced. The retaining wall edge is constructed of basalt blocks as large as 1.0x0.7x0.3 m. The interior is filled with small basalt blocks and pebbles (1990:A-129).

Feature G is a small rectangular terrace located adjacent to Feature E to the north. It is 3.3 m long, 2.9 m wide and 0.35 m in height and was previously assigned an agricultural feature function. According to Donham:

Situated on the south facing slope near the crown of the hill, it is raised on one side. The retaining wall consists of a maximum of three courses of basalt blocks, and filled with small basalt blocks and pebbles. The feature abuts a pahoehoe outcrop to the north (1990:A-131).

Feature H is a small oval-shaped terrace located to the northwest of Feature G. It is 4.0 m long, 3.5 m wide and 1.35 m in height and was previously assigned an agricultural feature function. According to Donham:

Feature H is raised on three sides and constructed of basalt blocks stacked and faced to a maximum of four courses high. It is partially collapsed in sections. Most of the basalt blocks are large with the largest measuring 0.8 c 0.5 c 0.3 m. The interior consists of large medium and small basalt blocks and slabs (1990:A-131).

Feature I is a linear wall located adjacent to Feature H to the southwest. The wall was assigned an indeterminate function by Donham (1990). It is 32.0 m long (northwest by southeast) and is described by Donham as follows:

Feature I is constructed with medium to large basalt blocks and with eight upright slabs. It is mostly collapsed except for the upright slabs and a small section near Feature H. The wall is oriented NW-SE, and the northwest end is at the complex enclosure wall (Feature Q - 1990:A-131).

Feature J is a rectangular-shaped platform assigned a habitation/agricultural function by Donham (1990) located 12.5 m southeast of Feature D. It measures 6.6 m long by 5.4 m wide. According to Donham:

Raised on four sides it appears to be level with a smaller and higher portion on the north side. It is constructed with basalt blocks and slabs. The higher portion has a small paved area measuring 2.90 m (E-W) by 1.9 m (N-S). A pahoehoe outcrop forms a part of the higher area. The structure is not presently faced (1990:A-131).

Feature K is a rectangular-shaped platform assigned a habitation/agricultural function by Donham (1990) located 9.0 m southeast of Feature J. It measures 5.25 m long by 4.7 m wide (*Figure 20*). According to Donham:

The platform is raised on four sides with portions faced on the northwest and southwest sides. The sides are generally six courses high. The interior of the structure is filled with medium to small blocks and pebbles sized basalts. There is a small shallow depression near the center of the platform that measures 1.6 m (E-W) by 1.20 m (N-S).

A 1.0 by 1.0 m sq test unit was excavated into the depression, in order to better determine feature function and to determine if subsurface features, such as human interments, were present. A concentration of 6-7 small kiawe trees were growing in the depression, at the time of excavation. The uppermost layer encountered consisted of a humus/duff soil layer intermixed with small cobbles and pebbles. This layer varied in thickness from 0.29 to 0.35 m. Beneath Layer I in the southeast quarter of the unit was a dark grayish brown silty loam which was 0.06 m thick. In the remainder of the unit, Layer I continued to the bedrock surface, encountered 0.35 m below surface. No portable remains or cultural deposits were encountered in the unit. A soil sample was collected for further analysis (1990: 131).

Feature L was described by Donham (1990:A-131) as a wall of indeterminate function, although it is more accurately described as an enclosure. It has an overall length of 26.0 m (north-south) and 13.2 m wide, open to the north. According to Donham:

The wall adjoins Feature K at its north corner and proceeds at an angle of 140 degrees Az. for 5.0 m where there is a 2.0 m break. It continues again for 12.0 m and turns to 360 degrees Az. for 5.0m and joins the southwest corner of Feature M. Basalt blocks and

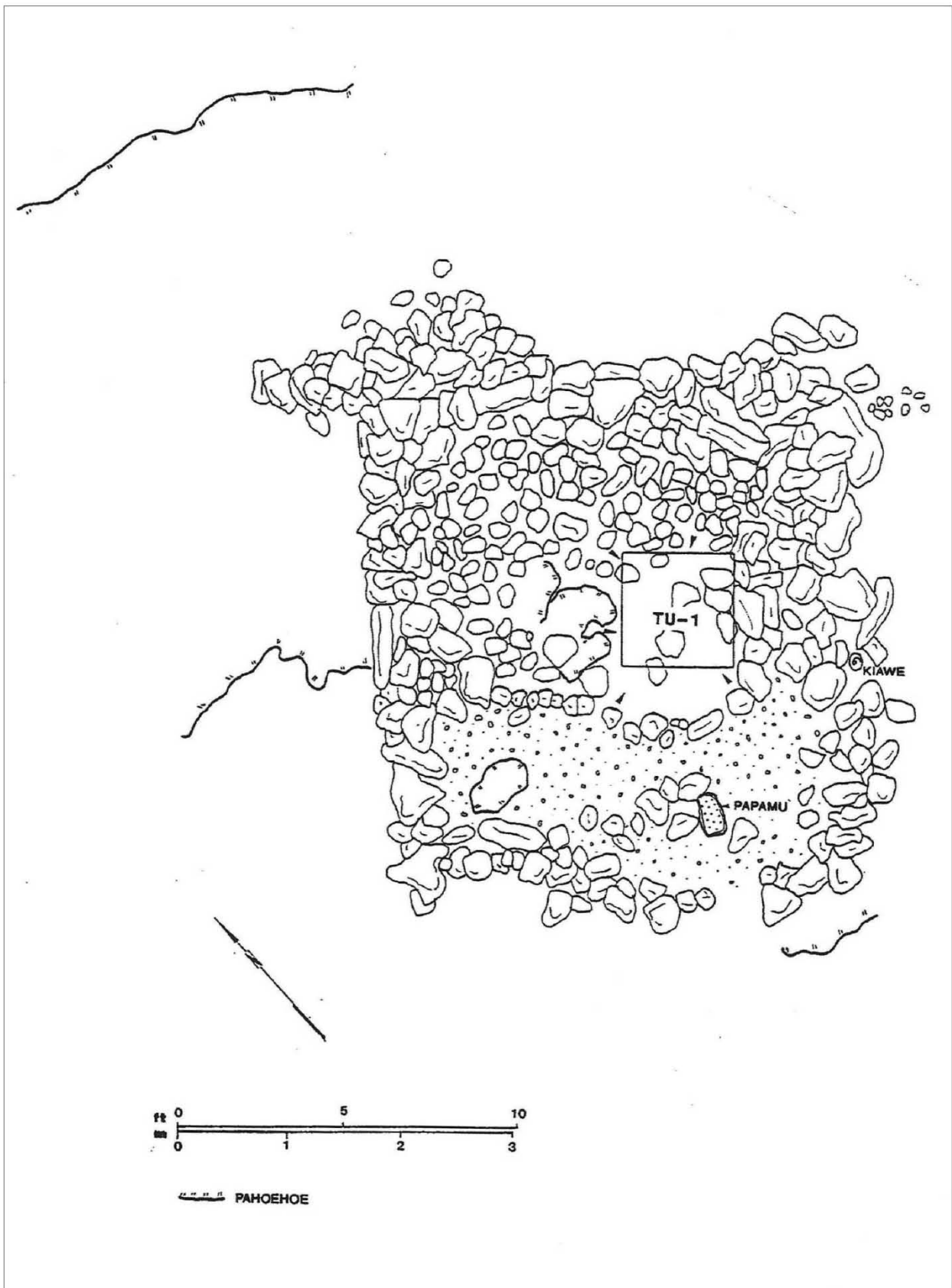


Figure 20. Site 13441, Feature K Plan Map from Donham (1990:A-132)

slabs ranging from pebble to large blocks are used in the construction of Feature L. The wall width ranges from 0.9 to 2.0 m. Some portions of the wall are collapsed and it does not appear to have been entirely faced.

Feature M is a roughly rectangular-shaped mound located at the southeast end of the Feature L enclosure. It is 5.3m long (north-south) and 3.2 m wide with a maximum height of 0.65 m. The feature was assigned an agricultural function by Donham, who describes it as follows:

Feature M is connected to Feature L near the south corner. It is an unfaced rubble mound with no distinct coursing. The mound is constructed with basalt gravel to medium size basalt blocks. The highest portion is near the north edge where several large blocks sit atop the rubble. Otherwise, the center would be the highest point with mound gradually tapering to ground level along the sides (1990:A-131).

Feature N is a rectangular-shaped platform located adjacent to the Feature L enclosure to the west. It is 7.1 m long (north-south) and 4.4 m wide with a maximum height of 0.85 m and was assigned a habitation/agricultural function. According to Donham:

Feature N is raised on four sides with stacked basalt blocks ranging in size from 0.52 x 0.5 x 0.2 m to less than 0.1 m in diameter. A portion of the southwest side is faced, the southeast side is coursed with a maximum of two courses evident and the northwest and northeast sides are collapsed. The interior is filled with pebbles to medium sized basalt blocks. A depression is present in the northeast quad of the platform surface, It is 0.3-0.4 m deep and measures 2.0 by 2.0 m (1990:A-131).

Feature O was described by Donham (1990) as a platform. It is a rectangular in shape and is located in the southwestern portion of the site. It is 5.4 m long (north-south) and 4.05 m wide (*Figure 21*) and is described by Donham as follows:

Square to rectangular shape in plan it is constructed with pahoehoe slabs and blocks, many of which appear to be quarries. The perimeter wall is double faced along the north half, where both sides are visible. Several large slabs are set on side or upright along the interior and exterior of the wall. The wall is core-filled with cobble size pieces and covered with slabs along portions. Average wall width is 0.70 m.

The interior of the perimeter wall is partially filled with slabs and cobbles to form a platform. The north portion inside of the wall is left open with the original ground surface. A slab-lined rectangular pit (1.25 by 0.45 by 0.50 m deep) is present near the south end of the platform. The pit walls are vertical and formed with single large slabs on the sides. The pit resembles an open burial crypt. Some collapse has fallen into the pit.

The platform fill at the south end is level with the top of the perimeter wall, which has collapsed onto the platform surface in places. The south surface of the platform is sloping from the top of the wall toward the tops of the slab-lined pit liners. This is partially attributable to wall collapse to the interior. The fill surface steps down 0.30 m at the 1.7 m from the north wall. The open, unfilled area at the north end steps down 0.40 m from the lower platform level. Pahoehoe with excavated face is present on the surface of the open area.

A 0.50 by 0.50 m square test unit was excavated into the center of the stone-lined pit in order to determine if it contained a human interment. The pit was filled to the top of the liners with a loosely thrown in layer of boulders and cobbles. This layer was 0.45 m thick and was set on an old duff (0 horizon) layer. None of the stones intruded into the level surface of the duff layer, which was a maximum of 0.02 m thick. A scatter of charcoal fragments was encountered on the duff layer surface. These fragments were collected for age determination analysis (Note – yielded a dated age range of AD-1640-1955).

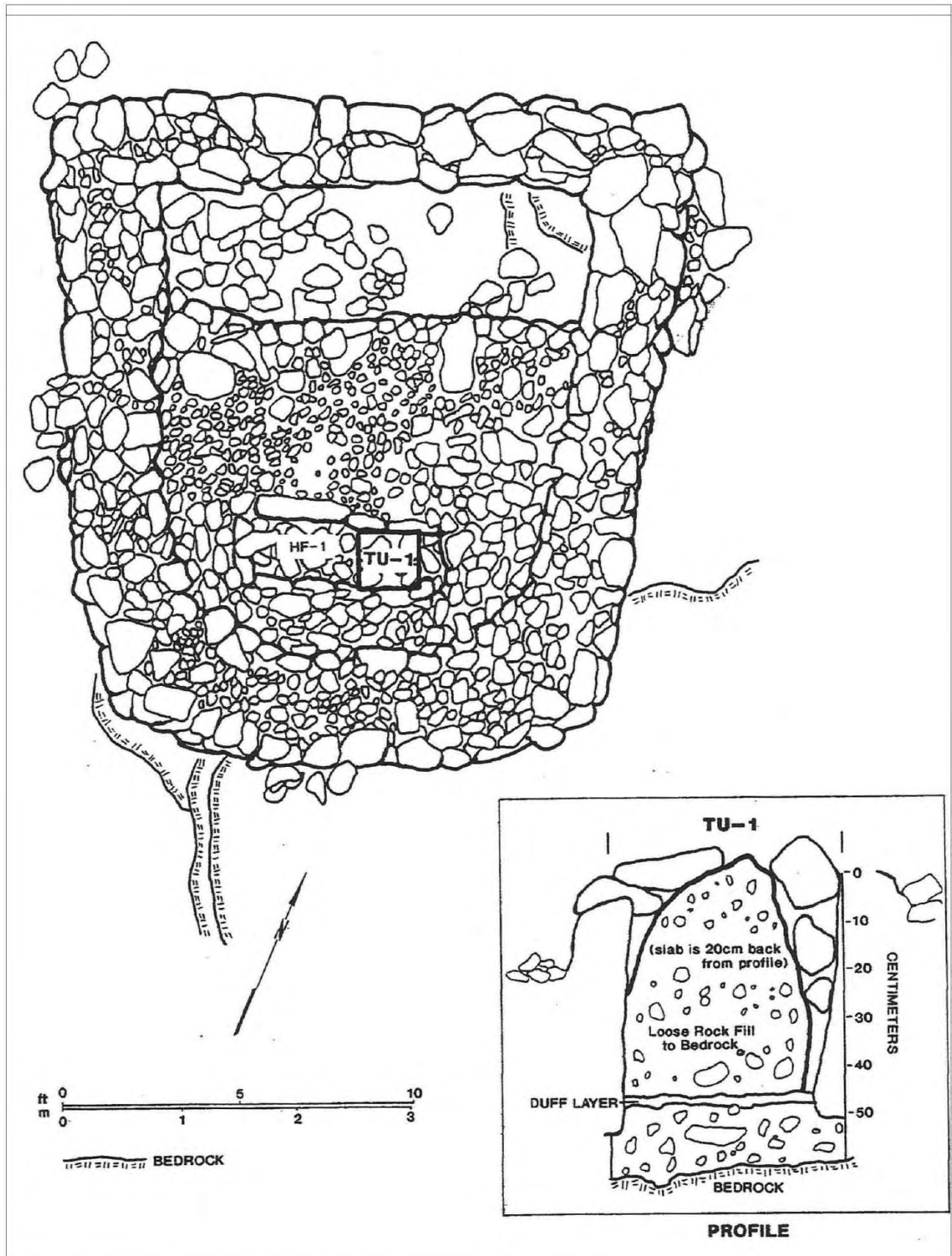


Figure 21. Site 13441, Feature O Plan Map and TU-1 Profile from Donham (1990A:103)

Beneath the duff was a deposit of loose, black loam with scattered pebbles, which directly overlaid unbroken pahoehoe bedrock surface. This deposit was 0.07 to 0.6 m thick. A single Cypraeidae shell fragment and a kukui nut shell fragment were recovered from this layer.

Feature P is a lava tube composed of multiple inter-connected passages accessible from six sinkhole entrances within the Site 13441, Feature Q enclosure that intersect the northeast and central portions of the tube complex. The lava tube extends northeast beyond the site's perimeter wall (Feature Q) and the greater portion of the southwest half is also outside the perimeter wall, covering a total distance of 451.3 m, a maximum width of 36.4 m and an overall area of 2,210.7 sq m. The lava tube is separated into five sections (Features P-1 through P-5) using sinkhole entrances to define the segments (*Figure 22*).

The northeast half of the lava tube is composed of a single main passage (Features P-1, P-2, and P-3). At the southwest end of Feature P-3, the lava tube splits into two connected lateral passages, forming a west (Feature P-4) and east branch (P-5). An upper chamber intersects the central P-4 passage, while a lower chamber intersects the juncture of the P-3/P-5 passages; both contained subsistence debris. Three upper chambers in the P-5 passage do not contain cultural material. Generally, only the Feature P-1 and P-2 portions of the lava tube contain passages of standing height; access to most other parts of the lava tube system requires crouching or crawling.

The primary habitation loci are centered on five of the six entrances and in the portions of the lava tube system that connect the entrances. Only scattered cultural material is present throughout the more distant reaches of the lava tube complex. Some modifications at the sinkhole entrances obstruct passage but only one entrance was sealed. The entry points are not fortified in the manner typical of refuge caves. Disarticulated human remains of at least two burials are present near the southwest end of the Feature P-4 passage. Two human incisors are present at the southwest end of the P-5 passage.

The light zones of P-1 and P-2 were originally documented by PHRI (Donham 1990: A-135), as were the sinkhole entrances (*ibid.*: A-128). The original documentation did not indicate the full extent of the lava tube system or identify use of the lava tube for burial.

Feature P-1 is the northeast end of the lava tube and is defined on the southwest by a sinkhole and by the end of the tube on the northeast, covering a distance of 31.8 m with an area of 204.8 sq m. Two sinkholes provide access to this portion of the tube. The northeast sinkhole is located adjacent to the southwest (interior) side of the enclosure wall (Feature Q) that marks the perimeter of the site. The northeast sinkhole provides vertical access 1.8 m above the tube floor below through an irregularly-shaped opening 4.5 m long by 1.8 m wide. Roof collapse debris litters the floor around the entrance and a concentration of goat bones is present on the roof fall just inside the dripline.

An irregularly-shaped pavement composed of a level surface of boulders, cobbles and pebbles overlies the bare lava floor northeast of the sinkhole entrance, just inside the dripline. *Canis* cranial bones are visible beneath the paving material on the southwest end of the pavement and a concentration of *Canis* bones are located at the northwest end of the pavement. A crab claw and *kukui* nutshells are exposed on the northwest and northeast edge of the pavement, respectively. The pavement is a maximum of 5.0 m long (northeast-southwest) by a maximum of 4.7 m wide and is constructed along the west wall of the chamber, in an area where the ceiling height is 2.74 m, or comfortably standing-height. The pavement is within the light zone and twilight zone of the entrance.

The floor is a broad shelf 0.6 m high northeast of the pavement and within the dark zone, where passage to the northeast end of the tube is along the northwest wall. Two floor-to-ceiling columns block the center of the passage at the rear of the tube and charcoal fragments are exposed on the bare lava floor between the two columns.

TU-2, a 0.5 by 0.5 m test unit excavated by PHRI in 1989, is located on the south side of the northeast sinkhole, just inside the dripline. The unit was excavated over a shallow soil deposit 3 cm thick and did not contain any cultural material (Donham 1990:A-134).

A distance of 6.4 m separates the northeastern-most entrance from the second sinkhole entrance and the entire portion of the lava tube between the two is within the light or twilight zone. Midway between the two sinkholes, roof fall rubble has been organized and rearranged to form an alignment that partially blocks passage through the tube from the east side. A small pavement c. 3.0 m long (W-E) by 2.0 m wide covers the lava tube floor along the

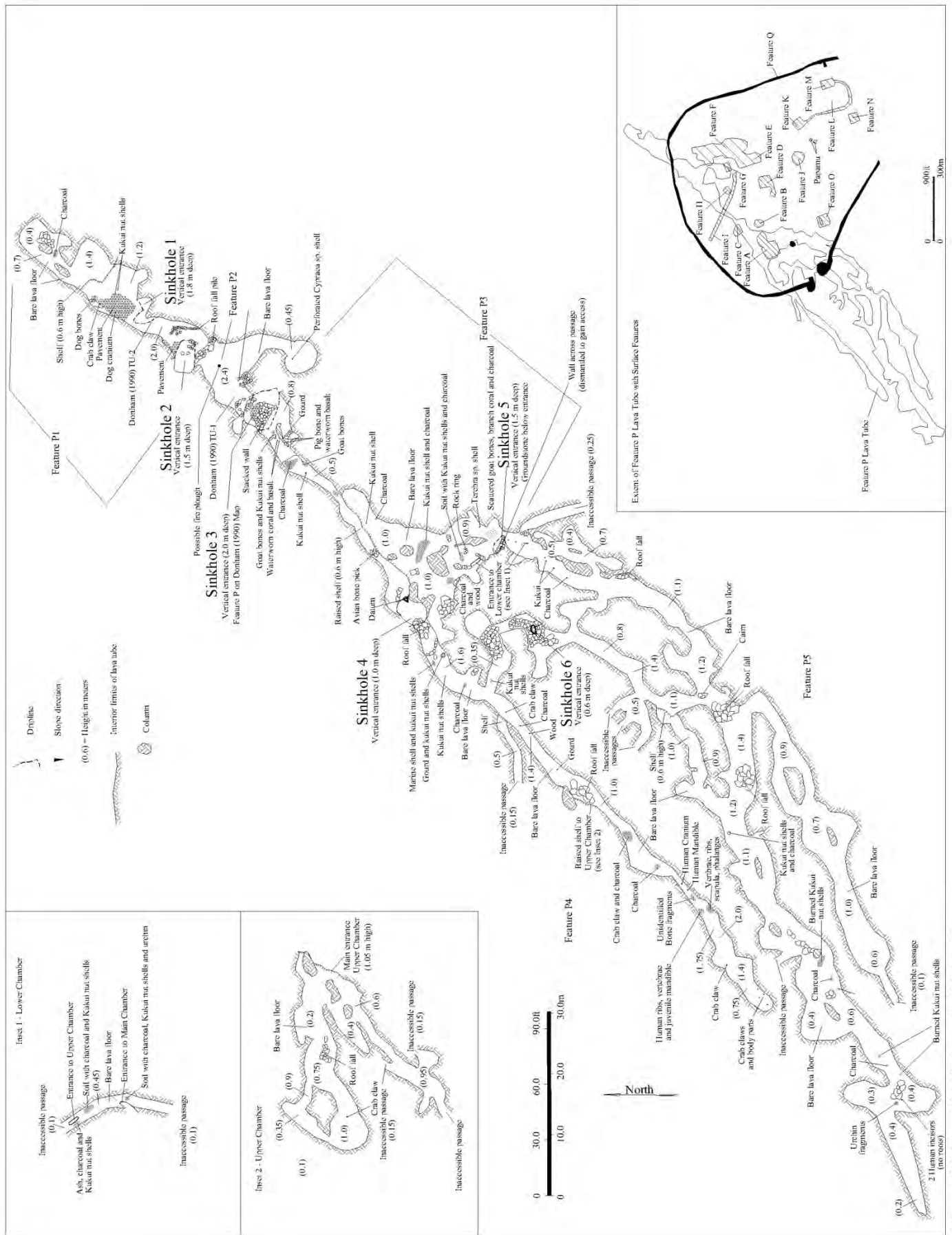


Figure 22. Site 13441, Feature P Plan Map



west wall of the tube, just inside the dripline on the northwest side of the second sinkhole opening. The second sinkhole entrance marks the southwest end of Feature P-1 and the northeast end of P-2.

Feature P-2 is the most light-filled part of the tube system, largely because the space is bordered by two large sinkholes that provide ample shaded light but also because the ceiling is high enough to permit walking and standing. The chamber is bordered on the northeast by a sinkhole that intersects the west wall of the lava tube and on the southwest by a sinkhole that breaches the entire width of the tube, covering a distance of c. 27.5 m between the southwest edges of each sinkhole with an area of 141.2 m<sup>2</sup>. The northeast sinkhole is c. 5.0 m long by 3.0 m wide and the dripline is 1.5 m above the floor. Piled cobbles and boulders obtained from the collapsed sinkhole form a crude wall across the floor of the tube to a height of 0.85 m that obstructs but does not block passage to the northeast or southwest. The floor throughout P-2 is bare lava, overlain in discrete areas by roof fall debris.

A side chamber intersects the east wall of the tube immediately south of the piled wall. The entrance to the side chamber is within the twilight zone, but the majority of the chamber is within the dark zone. A 45 cm length of soft wood, similar to *hau* or *olomea*, is exposed on the floor in the center of the side passage near its intersection with the main passage. It is potentially a fragment of a fire plough (*'aunaki*) or perhaps was intended for use as a fire plough. A waterworn basalt boulder, cobble and waterworn *Porites* cobble are clustered on and around the perimeter of a pile of roof fall debris at the point where the south wall of the side chamber intersects the east wall of the main passage. A perforated *Cypraea* shell is exposed on the bare lava floor at the end of the side chamber.

The main passage has largely been cleared of rubble between the two sinkholes that define the P-2 portion of the lava tube. The floor in the main passage of P-2 is shallowly overlain by a soil deposit containing “charcoal, fire-cracked rock, marine shell, *kukui* nut shell, and mammal bone (including feral goat)...” (*ibid.*).

TU-1, a 1.0 by 1.0 m test unit excavated by PHRI in 1989, is located in the approximate center of the floor in the main passage c. 1.5 m northwest of the south wall of the side passage. The unit sampled a portion of the shallow midden deposit that overlies bedrock to a maximum depth of c. 5 cm. “Marine shell fragments, charcoal, fish and mammal bone, and basalt gravels were recovered” (*ibid.*). No additional quantitative analysis of the remains was presented.

On the southwest side of the still-visible TU-1 excavation unit, roof fall debris is piled in linear arrangements across the passage to form or separate space within the chamber. Two parallel piles are located just inside and just outside the dripline of the third sinkhole (labeled Feature P on the PHRI map) that defines the southwest end of the P-2 chamber. This is the largest of the sinkhole openings at 9.0 m long (northwest-southeast) by 6.0 m wide. The dripline varies in height from 1.5 to 2.0 m above the chamber floor. Beneath the sinkhole opening, collapsed debris is stacked to a height of 1.0 m, or within c. 0.5 m of the surface, facilitating access and partially obscuring the passage to the southwest. A strong air current comes from the southwest passage into the P-2 chamber and the wall might have been constructed to block the flow of air at the floor level. Two to four courses of roughly stacked boulders compose the makeshift wall, which is c. 5.0 m long. The width of the wall is indistinct, since the northeast side consists of a disorganized pile of rubble. Further passage to the southwest is via a c. 2.0 m gap between the southeast end of the wall and the east wall of the lava tube. The southwest end of Feature P-2 is marked by the southwest edge of the large sinkhole.

Feature P-3 is defined by the area between the third large sinkhole (Feature P on the PHRI site map) and the fourth sinkhole located c. 43.0 m to the southwest. The fourth sinkhole marks the beginning of the west branch of the lava tube (Feature P-4). Feature P-3 also includes the connecting passage between the fourth and fifth sinkhole 15.5 m to the southeast, which provides access to the southeastern branch of the lava tube (Feature P-5). The northeast end of the P-3 section of the lava tube receives dim light around the sinkhole dripline, but much of the light is blocked by the stacked wall. The tube is 40.5 m long with an area of 330.2 sq m.

Cultural material is scattered on the floor on the southwest side of the stacked wall in the third sinkhole. A small cylindrical floor-to-ceiling column, a narrow linear floor-to-ceiling column and two roughly-stacked low walls separate the passage into north and south sections. The space provides sitting room only, since the ceiling is less than a meter high. Goat bones, a *kukui* nutshell, coral and a waterworn basalt pebble are exposed on the bare lava floor on the north side of passage. A gourd fragment, pig bone and a waterworn basalt pebble are exposed on the floor on the south side. Three courses of a stacked cobble wall constructed to a height of 0.5 m extends from the

west end of the narrow column to within 0.1 m of the tube wall, obstructing access to the main passage from the south side of the column. A second small section of wall, constructed of roughly stacked boulders, originates on the east wall of the lava tube and nearly intersects the first wall at its juncture with the column, but for a 0.4 m gap, in which the gourd fragment is exposed.

From the southwest end of the activity area, the next c. 24.0 m is strictly within the dark zone. This segment of P-3 is characterized by a bare lava floor on which scattered and clustered non-cultural goat bones are present, in addition to scattered fragments of charcoal and *kukui* nutshells. An avian bone pick is visible between the cracks of collapsed boulder roof fall debris on a low shelf on the west wall of the passage, c. 26.0 m southwest of the third sinkhole entry. The dark zone ends c. 2.5 m southwest of the location of the avian bone pick, where the passage opens broadly to the southeast, forming the widest space within the entire lava tube. Sparse cultural debris, consisting of charcoal fragments and *kukui* nutshells, is present on the tube floor between the avian bone pick and the fourth sinkhole. Roof fall debris overlies the chamber floor around the sinkhole entry.

The triangular-shaped connecting passage southeast of the fourth sinkhole is c. 0.6 m lower than the shelf present along the west wall of the tube, but the chamber ceiling only permits sitting since it is 1.0 m or less in height. The connecting passage is dominated by seven floor-to-ceiling columns that occupy most of the useable space within the chamber. Sparsely scattered *kukui* nutshells, charcoal fragments, a marine shell and a section of unmodified wood are present on the floor on the west side of the chamber. All of the cultural material on the west side of the chamber is within the dark zone. The light and twilight zone around the fourth entrance only penetrates c. 5.0 m into the chamber. Within the P-3 segment, no cultural material or modifications are located within the lit or partially lit zone of the fourth entrance. The fourth sinkhole is 5.4 m long (northeast-southwest) by 3.6 m wide and the dripline is c. 1.0 m above the floor. The southwest end of the fourth sinkhole marks the southwest end of the P-3 section of the lava tube. The remaining section of P-3 is a connecting passage between the P-3 and P-5 sections of the lava tube. The connecting passage covers the 15.5 m distance between the fourth and fifth sinkholes.

The majority of the cultural material in the connecting passage is clustered within the light and twilight zone of the fifth sinkhole. The light and twilight zones extend c. 4.0 m northwest from the dripline of the fifth sinkhole and the dark zone begins at the approximate mid-point of a long narrow floor-to-ceiling column oriented roughly N-S. A semi-circular cobble ring is present on the chamber floor on the northwest side of the narrow column, just inside the dark zone. The ring is c. 1.0 m long and is open to the north. Waterworn coral, a *kukui* nutshell and charcoal fragments are exposed on the floor on the northwest side of the rock ring. Three courses of stacked boulders form a low wall that originates on the west wall of the chamber, 1.5 m north of the north side of the fifth sinkhole entrance. The wall is preserved for a length of 2.0 m, but is collapsed or dismantled c. 0.5 m from the rock ring. The wall blocks the southeast end of a vertical crack that provides access to a lower chamber.

The lower chamber (see *Figure 22*, Inset 1) is accessible from two points in the main chamber. One is via a narrow crack near the southeast end of P-3 and the other is from an overhang entrance in the P-5 section of the tube. The entire chamber is within the dark zone and requires crawling to traverse since the ceiling height is less than 0.5 m. The entry crack in P-3 is 1.5 m long by a maximum of 0.3 m wide and the floor is 0.45 m below the upper chamber surface. The traversable portion of the lower chamber southwest of the crack entrance is 20.9 m long by 1.8 m wide. The passage north of the crack entrance is not traversable due to a ceiling height of c. 0.1 m. A deposit of ash, charcoal and *kukui* nutshells is present on the floor of the lower chamber on the west side of the crack. A shallow soil deposit containing charcoal and *kukui* nutshells is located c. 1.0 m south of the crack entrance. The overhang entrance is c. 8.0 m south of the crack entrance. A shallow soil deposit containing charcoal, *kukui* nutshells, marine shells and urchin exoskeleton fragments is present on the floor just inside the overhang entrance. The southern end of the lower chamber does not contain any cultural material and is not traversable beyond 5.4 m south of the overhang entrance.

An auger shell (*Terebra* sp.), urchin exoskeleton fragments, charcoal fragments and goat bones are exposed on the connecting passage floor of the main lava tube, within the light zone of the fifth sinkhole entrance. The fifth sinkhole is 3.3 m long (WNW-ESE) by a maximum of 1.2 m wide and the dripline is 1.5 m above the floor. The entrance is modified to prevent access to the passage south. A roughly stacked wall composed of three courses of boulders, covering a distance of 3.8 m and 1.2 m wide, was constructed to seal the passage from floor to ceiling, to block access to the P-5 section. A piece of branch coral is exposed on the tube floor on the north side of the wall in

the P-3 section. A section of the east end of the wall, 0.6 m wide, was dismantled to access and map the P-5 section of the lava tube. The sealed passage marks the southeast end of the P-3 section of the lava tube.

Feature P-4 is the west branch of the main lava tube and is defined on the northeast by the southwest end of the fourth sinkhole, on the east by the sixth sinkhole in the P-4/P-5 connecting passage, and on the southwest by the southwest end of the tube, covering a total distance of 85.0 m, a maximum width of 13.0 m and an area of 258.5 sq m. The P-4 segment of the lava tube is internally accessible via the P-3 and P-5 segments.

The light zone on the southwest side of the fourth sinkhole extends c. 6.0 m southwest into the tube and the twilight zone extends an additional 2.5 m. Collapsed roof fall debris chokes the entrance under the dripline at the southwest end of the sinkhole and covers the initial 2.5 m of the passage. On the southwest side of the rubble, a paved terrace c. 0.2 m in height, c. 3.0 m long by 2.5 m wide covers the passage floor and is framed by a low retaining wall on the southwest end. Paving consists of a level surface of cobbles and pebbles. A waterworn basalt pebble is exposed on the terrace surface. Gourd fragments, *kukui* nutshells and a *Nerita* shell are exposed within 4.0 m of the southwest end of the terrace within the twilight zone. The area around the paved terrace provides sitting-height space, since the ceiling height is only 1.4 m.

The passage connecting P-4 and P-5 intersects the east wall of the P-4 chamber c. 17.0 m southwest of the fourth sinkhole entrance and is accessible by stooped walking or crouching. A concentration of charcoal is present on the floor of the P-4 passage c. 4.0 m northeast of the intersecting passage. *Kukui* nutshells litter the floor at the P-4 entrance to the connecting passage. The sixth sinkhole entry is located c. 9.0 m east of the P-4 intersection. The floor surface around the small sinkhole is littered with collapsed rubble.

The sixth sinkhole entrance is 1.0 m long by 0.9 m wide and the dripline is 0.6 m above the floor. The sinkhole opening does not provide a significant light source for the interior chamber. The sixth sinkhole also represents the east boundary of the P-4 lava tube segment and is the final and smallest entry point to the Feature P lava tube system. No cultural material was observed in the connecting passage on the west side of the sixth sinkhole entrance.

A second passage intersects the P-4 segment on the west wall of the passage, c. 4.0 m southwest of the P-4/P-5 connecting passage. Its traversable length is c. 11.0 m before the low ceiling height prevents further access. A crab claw is present on the floor of the main P-4 passage, across from the entrance to the west wall intersecting passage. A fragment of charcoal is present on the floor of the intersecting passage, just inside the entrance. Access requires crawling and there is no additional cultural material beyond the entryway.

An upper chamber intersects the west wall of the P-4 passage c. 18.0 m southwest of the second passage. The lava tube wall forms a shelf c. 1.0 m high and c. 6.0 m wide that intersects the northeast east side of an upper bifurcated passage. In addition, a small opening c. 1.5 m long by 1.0 m wide and 1.5 m above the P-4 chamber floor provides an ancillary vertical access point to the upper chamber. The entrance is located at the northeast intersection of two upper passages and is partially blocked by three aligned floor-to-ceiling columns. The passage southwest present on the southwest side of the three aligned columns and is traversable for a distance of c. 35.5 m, from the shelf entry to the point where further access is precluded due to the low ceiling height. The floor is bare lava and no cultural material is present. The passage to the northwest is on the north side of the three aligned columns and is traversable for a distance of c. 28.0 m, from the entry shelf to the end of the chamber. A crab claw is exposed on the floor at the end of the upper northwest chamber. Collapsed roof fall debris overlies the bare lava floor in discrete areas of the northwest passage and around the aligned columns. A large floor-to-ceiling column dominates the chamber at the rear of the northwest passage.

A crab claw and charcoal fragment are exposed on the floor of the main P-4 passage c. 6.0 m from the upper chamber entry and scattered charcoal fragments are present on the floor 16.5 m from the upper chamber entry. At 21.0 m southwest of the upper chamber entry, disarticulated human skeletal element fragments are scattered on the passage floor over a distance of 6.5 m.

The human remains consist of an adult cranial and mandible fragment clustered at the northeast end of the scatter, along the east wall of the chamber; a sparse scatter of unidentifiable elements in the center of the passage floor; and the ilium and sacrum of an adult pelvis together with vertebrae, ribs, scapula, clavicle and phalanges clustered at the southwest end of the scatter along the east wall of the chamber. A separate cluster of bones is present along the west

wall, adjacent to the post-cranial cluster of bones at the southwest end of the overall scatter. The second cluster consists of a concentration of rib fragments, vertebrae and a juvenile mandible. A 29 cm length of wood with bark and cut ends, and charcoal fragments are present on the northeast side of the juvenile mandible. A minimum of one adult and one child were buried in this portion of P-4, based on the number of mandibles present, but additional burials are not precluded.

Southwest of the burials, the P-4 chamber continues for an additional 20.0 m. Two upper chambers intersect the west wall at the point where the ceiling is 2.0 m high and one intersects the east wall immediately southwest of the human remains, but none are traversable. Crab claws, legs and bodies are scattered on the floor along the final 9.0 m of the P-4 passage. One crab body at the rear of the chamber is smashed.

Feature P-5 is the southeast passage of the main lava tube and is defined on the east by the fifth sinkhole, on the west by the sixth sinkhole in the P-4/P-5 connecting passage, and on the southwest by the end of the lava tube system. The P-5 segment covers a total distance of c. 266.8 m, with a maximum width of 28.0 m and an area of 1,276.0 sq m. The passage is internally accessible via Feature P-3 at the fifth sinkhole entrance, or via the P-4/P-5 connecting passage on the northeast side of the sixth sinkhole entrance. Two large floor-to-ceiling columns create east and west sides of the P-5 passage.

The northeast end of the P-5 segment originates on the south side of the sealed entrance, described with the fifth sinkhole entrance at the southeast end of the P-3 segment. *Kukui* nutshell fragments are present on the bare lava floor on the south side of the wall that seals the entrance to the passage. The overhang entrance to the lower chamber, which is also accessible from the narrow floor crack in P-3, is located in the center of the passage floor c. 3.0 m south of the sealed entrance. Access through the overhang entry to the lower chamber required moving a boulder that sealed the entrance. A short passage intersects the east wall of the chamber 2.0 m east of the overhang entrance to the lower chamber. Approximately 9.0 m of the intersecting passage is traversable, at which point a low ceiling precludes further access. There is no cultural material in the intersecting passage.

The P-4/P-5 connecting passage is located c. 16.0 m southwest of the overhang entrance to the lower chamber and intersects the west wall of the P-5 chamber. A charcoal fragment and *kukui* nutshells are present on the bare lava floor along the west side of a large floor-to-ceiling column, between the connecting passage and the lower chamber overhang entry. The P-4/P-5 connecting passage is c. 17.0 m long. A *kukui* nutshell is present on the floor of the connecting passage at the north end of a large floor-to-ceiling column that dominates the middle of the P-5 passage, but no other cultural material was observed in the connecting passage around the sixth sinkhole entry. The large floor-to-ceiling column on the south side of the connecting passage is c. 22.0 m long by a maximum of 9.7 m wide. A cairn formed by two leaning adjacent small boulders topped by a cobble to a maximum height of 0.4 m is located in the gap between the southwest end of the large floor-to-ceiling column and the northeast end of a smaller floor-to-ceiling column. Segments of three short non-traversable passages intersect the west wall of the P-5 passage, c. 10.0 m north of the cairn.

The second large floor-to-ceiling column is c. 16.5 m long and a maximum of 5.0 m wide. A long side passage intersects the east wall of the P-5 chamber c. 8.0 m SSE of the cairn between the columns, south of the roof fall rubble at the northeast end of the second large floor-to-ceiling column. The traversable portion of the intersecting passage is c. 59.0 m long, the floor is bare lava and no cultural material was observed in it.

*Kukui* nutshells and charcoal fragments are exposed on the floor of the main P-5 passage c. 6.0 m southwest of the west end of the smaller of the two large columns. At c. 50 m southwest of the column another cluster of charcoal fragment and burned *kukui* nutshells is present on the passage floor and 9.0 m further southwest a concentration of roof fall rubble contains urchin exoskeleton fragments, charcoal fragments, and burned *kukui* nutshells. Two human incisor fragments are present on the floor on the west side of the collapsed rubble. The incisors do not have roots and are potentially deciduous. A cavity in one is packed with charcoal. The southwest end of the P-5 passage is c. 20 m southwest of the human incisors. No cultural material is present at the terminal end of the chamber.

Feature Q is a large roughly oval-shaped enclosure that extends around the perimeter of the site and is open to the southeast. There is another entrance into the enclosure along the southwest side. The southeastern end of the enclosure extends partially outside the boundaries of the project area (see *Figure 8a*). It measures 92.0 m long (northwest by southeast) and 55.0 to 95.0 m wide. The walls of the feature are comprised of stacked cobbles and

small boulders in some areas and aligned boulders in others. The walls range in thickness from 0.5 to 0.8 m and from 0.3 to 1.0 m in height. No cultural remains were found in direct association with the wall though scattered marine shells (*Cypraea sp. and Cellana sp.*) and waterworn coral are present inside the enclosure.

Site 13441 is interpreted as a complex of permanent habitation features with an associated burial function. The examination of the site during the present project has resulted in the re-interpretation of many of the component features from agricultural to permanent habitation. Feature A is interpreted as the possible foundation for a men's house due to its large area (92.4 sq m), substantial construction and adjoining *lanai*. Eight additional features are interpreted as the foundations for roofed structures (Features B1, B2, C, D, J, K, N and O) based on their formal type and areas that range from 18.7 to 35.6 sq m. One feature (Feature H) is assigned a special purpose structure based on its substantial construction and small area (14.0 sq m). Features E1 through E4, F and I are interpreted as activity areas and Features G and M are assigned site furniture functions. Features L and Q are interpreted as functioning to define the boundaries of yards. The Feature P 1-3 and 5 lava tubes likely served as an associated sleeping and storage area based on the abundance of cultural remains present. The Feature P-4 tube also served as an ancillary feature to the permanent habitation of the site, though the presence of the human remains also indicates a burial function. The two teeth present at end of the Feature P-5 tube probably do not represent a burial because no other skeletal remains are present. Gourd fragments and a stone ring in the Feature P tube system indicate it also functioned as a water source.

Site 13441 is assessed as significant for its information content, good site type example, and for its cultural value due to the presence of burials. The site is unaltered and in fair to good condition.

**State No.:** 13450

**Site Type:** Complex (2)

**Functional Interpretation:** Transportation, Marker

**Topography:** Gently sloping a'a lava

**Elevation:** 512 ft

**Coordinates:** North end of Feature A - E=186693, N=2177086

**Vegetation:** Christmas berry, *alahe'e*, klu, grasses and vines

**Probable Age:** Prehistoric

**Overall Dimensions:** 18.5 m by 1.8 m

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 13450 was initially documented by Donham (1990:A-140) as a steppingstone trail located in an area of gently sloping a'a lava in the northeastern portion of the project area. The trail (Feature A) was relocated during the present project. A small cairn Feature B (*Figure 23*) was newly identified at the site. The Feature A trail is 18.5 m in length (north-northwest by south-southeast) and is a linear alignment of 17 flat pahoehoe slabs. These slabs vary in length from 0.29 to 0.54 m, in width from 0.22 to 0.49 m and in height from 0.05 to 0.1 m. No cultural remains were found in association with the trail.

The Feature B cairn is situated adjacent to the trail to the west, 5.3 m south-southeast of its northern end. The cairn is circular in shape at the base (0.67 m in diameter) with sides that taper inward to the top. The cairn is built of stacked cobbles and small boulders and is 0.5 m in height. No cultural remains were present.

The Feature A trail is interpreted as a path across the a'a lava based on its formal type and appearance. The trail is classified as a Type A trail as defined by Apple (1965) likely functioning as a single file foot trail constructed during pre-Contact times. The associated Feature B cairn likely marked the trail based on its appearance and proximity to Feature A. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 13452 (T-1654, 1849)

**Site Type:** Cart Path

**Functional Interpretation:** Transportation

**Topography:** Soil and outcrops sloping to southwest and northwest

**Elevation:** 455-495ft

**Coordinates:** North-northeast end - E=186672, N=2177016

**Vegetation:** Christmas berry, *haole koa*, *alahe'e*, grasses

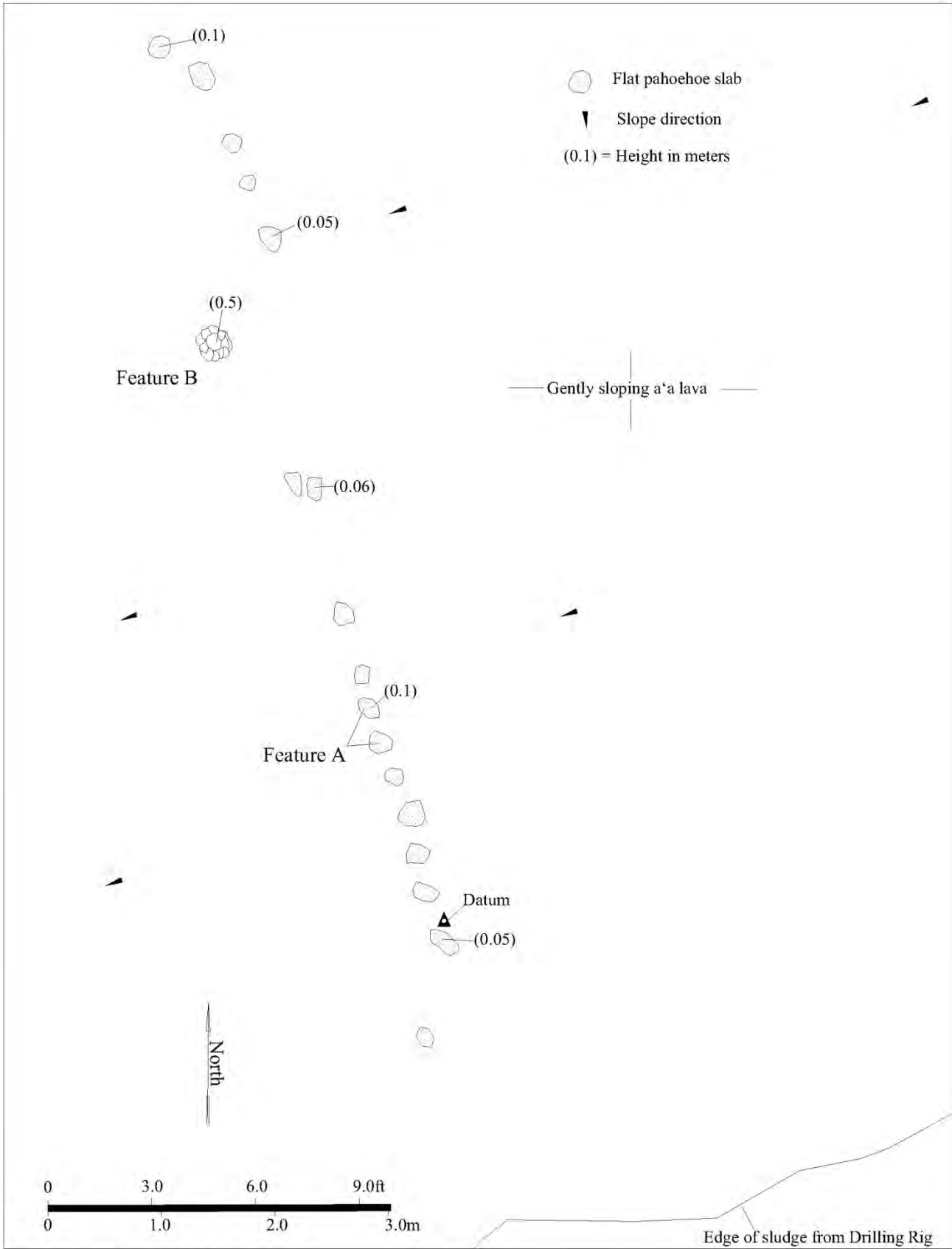


Figure 23. Site 13450 Plan Map

**Probable Age:** Historic

**Overall Dimensions:** 210.5 m by 2.9 m

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13452 is a section of cart path located in an area of sloping soil and outcrops in the northeastern portion of the project area. The site was initially recorded by Donham as a paved trail (1990:A-141). The site is two modified sections that have been built over uneven, difficult to traverse areas, connected by relatively smooth sloping soil and pahoehoe lava. The extent of the cart path is depicted in *Figure 8a*, as are the location of the two modified areas (Features A and B).

The Feature A section (recorded by Donham 1990) is located at the north-northeast end of the site. No evidence of the cart path was found to the north of Feature A. This section is 21.3 m long oriented in a north-northeast by south-southwest direction (*Figure 24*). The southern two-thirds is 12.6 m long and is a level terrace-like structure with a stacked and faced cobble and small boulder retaining wall extending along the eastern side. This wall is 0.4 to 0.6 m in height. The western side is bordered by a 1.8 m high bedrock outcrop. The surface is a cobble and pebble pavement with no cultural remains.

There is a 1.4 m wide gap of bare pahoehoe lava between the southern portion and the central portion of trail. The central portion is 2.7 m long and 1.7 m wide and is bordered around the northwest, southwest and southeast sides by aligned cobbles and small boulders. The surface is a level cobble and pebble pavement with no cultural remains. A 1.0 by 1.0 m test unit (TU-6) was excavated within this portion of the site to determine if a burial was present. This excavation revealed two layers over bedrock (see *Figure 24*). Layer I consisted of 0.05 to 0.1 m of tightly packed cobbles and pebbles with no cultural remains. Layer II consisted of 0.01 to 0.05 m of very dark grayish brown (10YR 3/2) silt with 20% gravel and pebble inclusions. No cultural remains were present in Layer II.

There is a 0.8 m wide gap of bare pahoehoe lava between the central and northern portions of the site. The north section is 3.8 m long and 2.6 m wide and is bordered along the northwestern side by an alignment of five small boulders. The surface is a level cobble and pebble pavement with no cultural remains present. The trail surface averages 2.5 m in width.

The Feature B section is located 132.5 m to the south-southwest of Feature B, connected by an unmodified curvilinear route of gently sloping soil and pahoehoe lava flows. This section is comprised by a low platform bordered by aligned small boulders that is 5.6 m long (northeast by southwest), 1.65 m wide and 0.1 to 0.25 m in height (*Figure 25*). The surface is a level cobble and pebble pavement with no cultural remains. The path surface is 1.25 m wide. An area of gently sloping soil and outcrops extends 48.5 m to the south-southwest of Feature B, terminating at an uneven a'a lava flow.

Site 13452 is interpreted as an historic transportation route that once extended through a portion of the project area. This is based on its formal type and appearance. As the southern end of the path terminates at an uneven a-a flow and no evidence of the path was present to the north of Feature A it is possible that the trail is unfinished. The site is classified as a Type D trail as defined by Apple (1965). According to Apple, this type of trail is a Type C trail wide enough for two horse travel that was modified to accommodate the use of wheeled vehicles and dates to the late nineteenth to early twentieth century. The site is unaltered and fair condition. It is assessed as significant for its information content.

**State No.:** 13459 (T-664)

**Site Type:** Complex (2)

**Functional Interpretation:** Temporary Habitation

**Topography** Large natural depression on side of slope to west and southwest

**Elevation:** 435ft

**Coordinates:** E=186971, N=2176149

**Vegetation:** Christmas berry, *haole koa*, *alahe'e*, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 6.8 m by 3.65 m

**Condition:** Good

**Integrity:** Unaltered

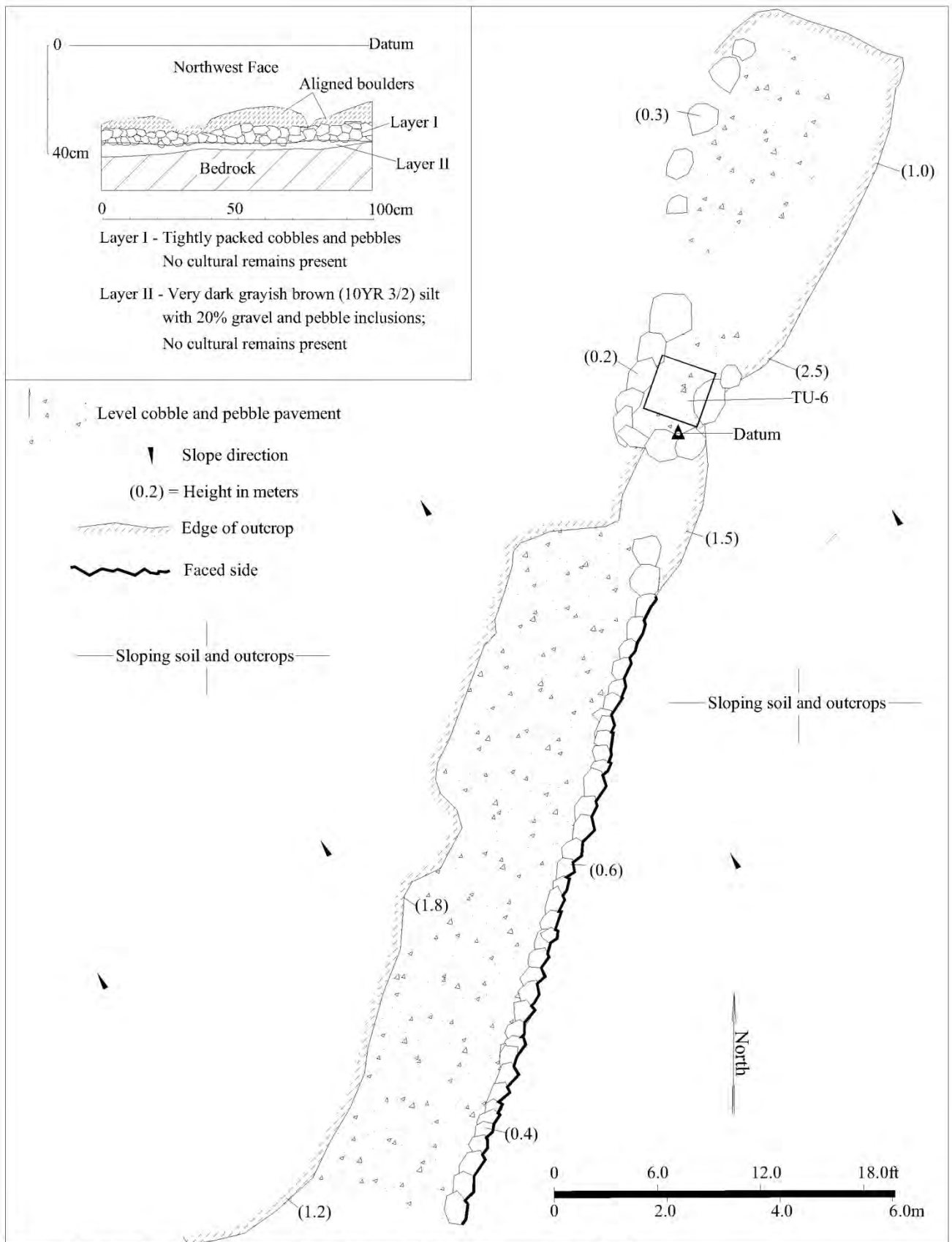


Figure 24. Site 13452, Feature A Plan Map and TU-6 Northwest Face Profile





**Figure 25. Site 13452 Feature B Cart Path, view to northeast**

**Description:** Site 13459 is a complex of two features located within a large natural depression (13.0 m long by 11.0 m wide) in the southeastern portion of the project area. The site was previously identified by Donham (1990:A-142-143) and was relocated during the present project area. The site is a lava blister (Feature A) and a modified outcrop (Feature B – *Figure 26*). The Feature A blister is accessed through a 5.2 m wide and 1.0 to 1.15 m high opening on the north side of the depression. This opens onto an oval-shaped chamber that is 6.8 m long (east-west) and 0.8 to 2.5 m wide. Roof fall occupies the western of the chamber. The floor of the central portion consists of level soil with scattered stones. Fragments of small mammal bone, waterworn coral and a *Cypraea sp.* shell were present on the soil. The ceiling heights in this portion of the chamber range from 0.6 to 0.9 m.

The eastern portion of the chamber has a bare lava floor and ceiling heights ranging from 0.4 to 0.6 m. Several *kukui* nut shells and charcoal were noted on the floor. Roof fall is present at the southeastern corner of the chamber.

Feature B is a modified outcrop located outside the entrance to the lava blister adjacent to the dripline. This feature is 2.1 m long (east-west), 0.73 to 1.1 m wide and 0.7 to 0.75 high, built of stacked cobbles and small boulders. There is a linear alignment flat slabs located to the west of Feature B, outside the entrance to Feature A that probably functioned as steps.

Feature A of Site 13459 is interpreted as a temporary habitation shelter based on formal type and associated cultural remains. Feature B likely served to restrict the entrance to Feature A providing shelter from the wind and steps to facilitate access. The site is unaltered and in good condition. It is assessed as significant for information content.

**State No.:** 13462 (T-245, 250, 251, 254)

**Site Type:** Complex (5)

**Functional Interpretation:** Permanent Habitation

**Topography:** Soil and outcrops sloping to west-southwest

**Elevation:** 405-420ft

**Coordinates:** E=186983, N=2176006

**Vegetation:** *Kukui*, *alahe'e*, Christmas berry, *klu*, airplant

**Probable Age:** Prehistoric

**Overall Dimensions:** 6.5.5 by 48.5 m

**Condition:** Fair

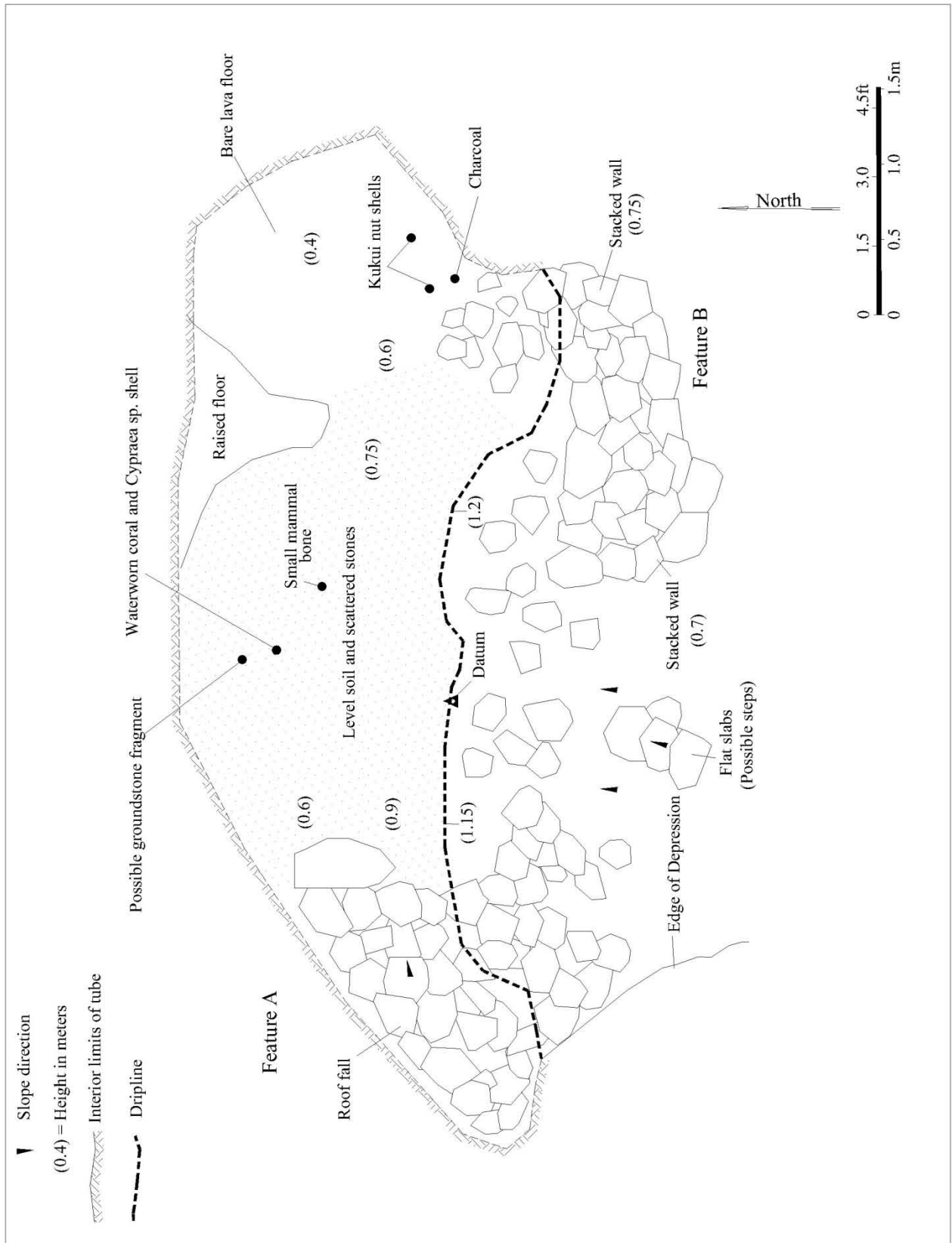


Figure 26. Site 13459 Plan Map

**Integrity:** Unaltered

**Description:** Site 13462 is a complex of five features located in the southeastern portion of the project area. The site was initially identified by Donham (1990:A-143) as a complex of four features. The resurvey resulted in the relocation of the four features and the identification of one new feature. The features as recorded during the current survey consist of four enclosures (Features A, B, D and E) and an L-shape (Feature C – *Figure 27*)

Feature A is an oval-shaped enclosure built against the northern side of a raised bedrock outcrop. It is 9.7 m long (east-northeast by west-southwest) and 3.2 to 6.6 m wide. The walls are built of stacked and faced cobbles and small boulders. The walls are 0.75 to 0.9 m thick and 0.35 to 1.0 m in height. A portion of the interior north side has collapsed. The interior of the enclosure consists of a level soil with scattered cobbles. There are several shallow pahoehoe excavations inside the structure. No cultural remains were present.

Feature B is an oval-shaped enclosure located 14.0 m southwest of Feature A. Donham's examination of this feature indicated that it was built around the base of a *kukui* nut tree; however, this tree is no longer present. The enclosure is 4.9 m long (northwest by southeast) and 3.2 m wide with no entrance into the interior. The northwest half of the structure is collapsed with the southeast end comprised of stacked and piled cobbles and small boulders. These walls are 0.65 to 0.9 m wide and 0.25 to 0.4 m in height. A portion of the exterior southwest side is faced. The interior consists of level soil with no cultural remains present.

Feature C is a roughly L-shaped wall located 10.5 m northeast of Feature A. It is 6.5 m long (north-northwest by south-southeast) and 3.3 m long. The west side is constructed of stacked and faced cobbles and small boulders and is 0.75 to 0.9 m thick and 0.35 to 1.1 m in height. The south wall consists of roughly stacked and aligned boulders. It is 0.4 to 0.6 m thick and 0.25 to 0.6 m in height. The interior of the L-shape is level pahoehoe outcrop with no cultural remains present.

Feature D is a large square enclosure located adjacent to Feature B to the southeast. It is 31.5 to 33.0 m long (northeast by southwest) and 32.0 m wide with a 2.0 m wide entrance into the interior at the south corner. The walls of the feature are built of stacked and faced cobbles and small boulders. The walls are 0.8 to 1.0 m thick and 0.5 to 1.15 m in height. Collapsed areas are present along all sides of the structure. The interior is shallow soil over bedrock with no cultural remains present.

Feature E is an oval-shaped, compartmentalized enclosure situated 5.0 m northwest of Feature B. It is 12.2 m long (northeast by southwest) and 5.0 to 5.5 m wide. It is divided into three compartments by low walls that extend across its short axis. The enclosure walls are built of stacked and piled cobbles and small boulders. The walls are 0.85 to 1.4 m thick and 0.1 to 0.5 m in height. There is a 0.65 m high vertical slab incorporated into the enclosure wall at the northeast end. The compartment floors are level soil with no cultural remains present.

Site 13462 is interpreted as a complex of permanent habitation features. Features A, B, C and E potentially functioned as the foundation for roofed structures based on formal types, substantial construction (faced sides) and area (Feature A = 47.5 sq m, Feature B = 15.6 sq m, Feature C = 21.4 sq m, Feature E = 67.1 sq m)., The large Feature D enclosure likely served as a yard in which a pole and thatched roofed structure once existed based on its substantial construction (faced sides) and large area (1,056.0 sq m). The site is unaltered and in fair condition. It is assessed as significant for its information content.

**State No.:** 13463 (T-1657)

**Site Type:** Complex (6)

**Functional Interpretation:** Ceremonial, Burial

**Topography:** A'a and pahoehoe lava flow sloping to southwest

**Elevation:** 460-495ft

**Vegetation:** Christmas berry, *Haole koa*, autograph tree

**Probable Age:** Prehistoric

**Overall Dimensions:** 64.5 m by 30 m wide

**Condition:** Fair to good

**Integrity:** Unaltered

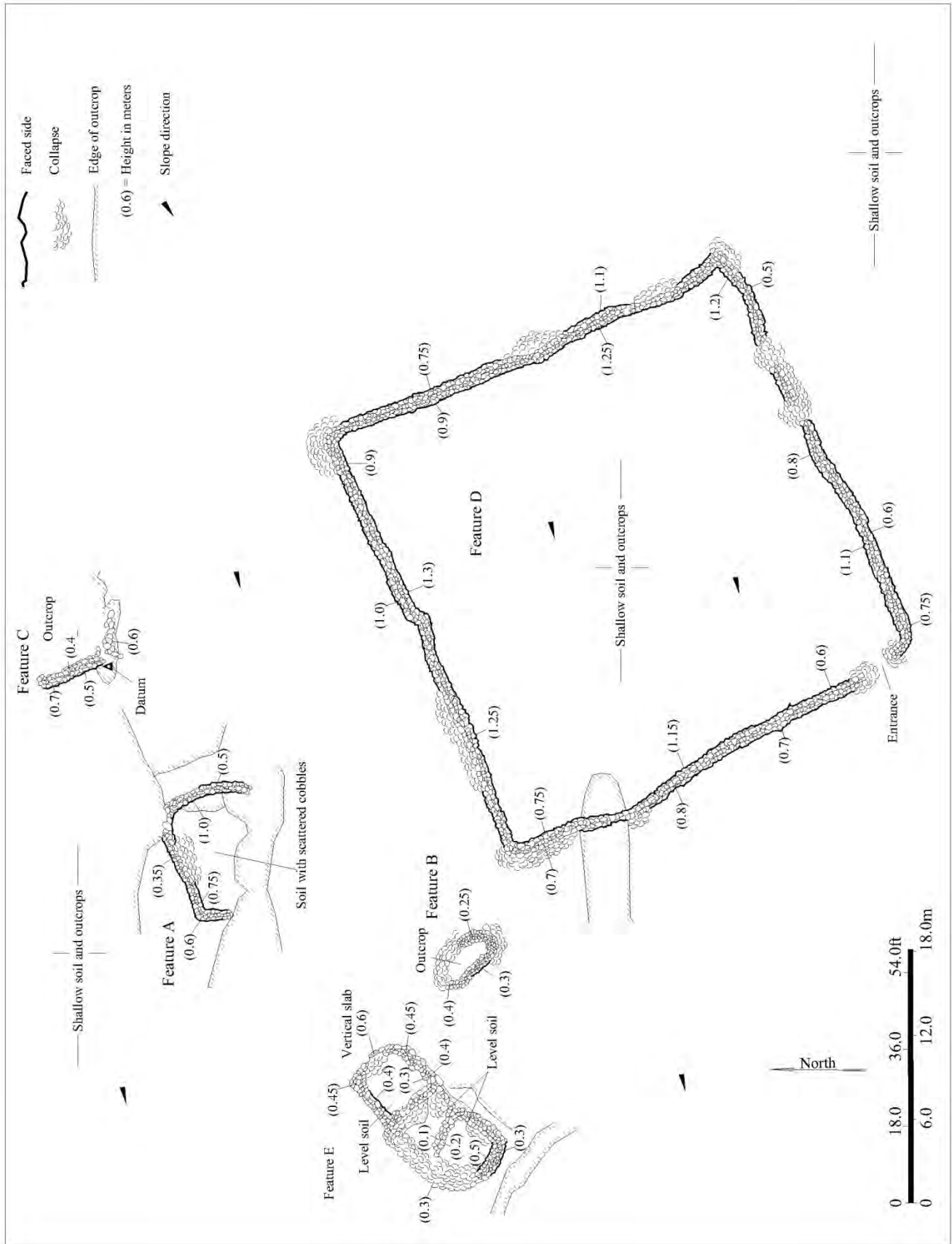


Figure 27. Site 13462 Plan Map

**Description:** Site 13463 is a complex of six features located in the northeastern portion of the project area. The site was initially documented by Donham (1990:A-145) as a complex of five features comprised of a platform (Feature A), two caves (Features B and C), a trail (Feature D) and a pavement (Feature E). No plan map depicting these five features was present in the Donham report.

The examination of the site during the present project resulted in the relocation of four of the five original features (Features A, C, D and E), and the identification of three new features (Features F, G and H). The Feature E pavement was re-classified as a terrace. The Feature B cave could not be positively relocated because of insufficient data in the Donham report; however, several lava tubes in the immediate area that likely include Feature B were documented (Sites 26901, 26902 and 28406 – see *Figure 8a*). The Feature C lava tube was relocated although it is 46.5 m to the northeast of Feature A, well beyond the 15.0 m distance threshold for site definition employed during the present study. The newly identified features consist of a platform (Feature F) and two small enclosures (Features G and H). Features A and D through H are depicted in *Figure 28*. The Feature C lava tube is illustrated in *Figure 29*.

Feature A is a rectangular walled platform with an adjoining terrace located in an area of sloping a'a lava. The feature has overall dimensions of 7.8 m long (northwest by southeast) by 5.9 m wide. The walled platform is 5.8 m long (northeast by southwest) by 4.6 m wide with stacked and faced walls extending around its perimeter. These walls are 0.85 to 2.6 m thick, 0.6 to 1.4 m high on the exterior side and 0.4 to 1.0 m on the interior side. There is a 1.0 m wide entrance in the wall along the southeast side. A vertical pahoehoe slab forms the west side of the entrance. The interior floor is a level cobble and pebble pavement with flat slabs. A fragment of branch coral is present on top of the west wall. These flat slabs lead to the southwest onto the surface of the adjoining terrace.

The terrace is 4.9 m long (northeast by southwest) and 3.2 m wide with a stacked and faced cobble and small boulder retaining wall along the southeast side (0.55 m high). The northeast and southwest sides are generally level with the surrounding ground surface. The surface is a level cobble and pebble pavement with flat slabs.

The Feature C lava tube is situated 46.5 m to the northeast of Feature A. The lava tube is 56.9 m long with an area of 115.2 sq m. The entrance is located on the southern side of a raised bedrock outcrop and is 2.2 m wide by 1.2 m in height. This opens onto a roughly linear chamber that is 27.9 m long (east-west) and 0.85 to 5.5 m wide. The floor throughout the tube is rough lava and the ceiling heights range from 0.4 to 1.5 m. The east end of this passage is inaccessible due to its low ceiling height (0.15 m). There are two concentrations of goat bones present in this chamber to the west of the entrance and a pile of roof fall to the east.

A passage extends to the south from the main chamber, extending in this direction for 6.6 m where it enters an irregularly-shaped room. The passage is 1.7 to 3.7 m wide and 0.5 m in height. There is a concentration of human remains (mandible fragment and unidentified bone fragments) and charcoal located along the west side of the passage.

The irregularly-shaped room is 9.4 m long (east-west) and 2.0 to 4.0 m wide with ceiling heights ranging from 0.2 to 1.1 m. Several fragments of charcoal are located in the center of the chamber. Two narrow inaccessible passages extend off the room to the west and southwest. The west tubule is 6.1 m long and the southwest passage is 6.9 m long. No cultural remains were present in either tube.

Feature D is a steppingstone trail segment located along the south side of the site. The trail measures 9.5 m long (east-west) and is a series of 12 flat pahoehoe slabs set into a rough cobble and pebble pavement. The slabs range in length from 0.32 to 0.6 m and in width from 0.13 to 0.38 m. The eastern end of the feature terminates at the southwest corner of Feature F. No cultural remains were present.

Feature E is a rectangular terrace situated to the southwest of Feature A. It is built against the western side of a raised bedrock outcrop and is 3.7 m long (northeast by southwest) by 2.9 m wide with a stacked cobble and small boulder retaining wall extending along the southwest and southeast side (0.4 to 0.65 m high). The southwest side is faced and several vertical slabs are incorporated into the southeast side. The surface is a level cobble and pebble pavement with no cultural remains present.

Feature F is an oval-shaped platform located at the southeast corner of the site. It is 3.1 m long (east-northeast by west-southwest) and 2.15 m wide. The west side is stacked and faced cobbles and small boulders with the remaining

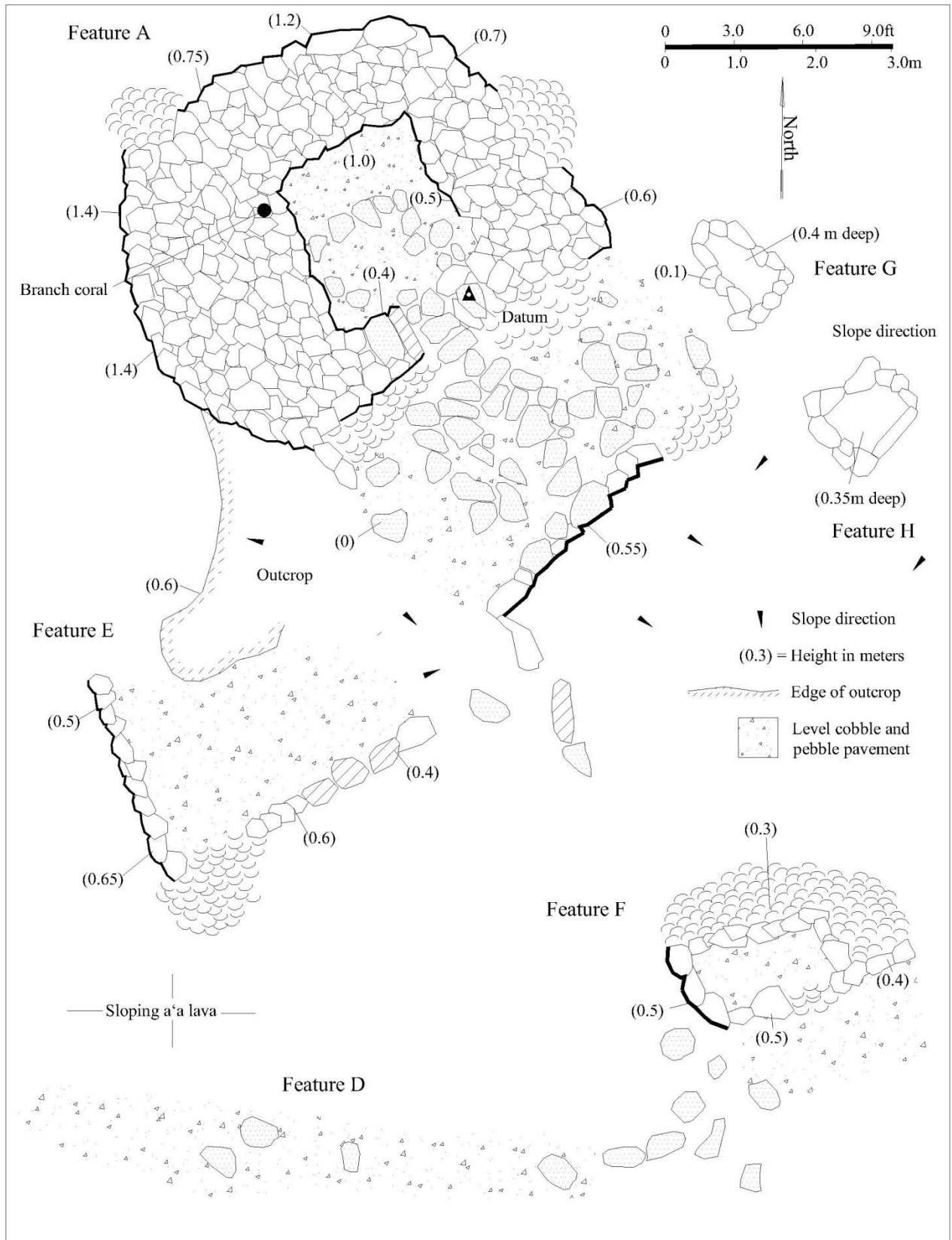


Figure 28. Site 13463 Plan Map



sides having collapsed outward. The sides range in height from 0.3 to 0.5 m and the surface is a level and cobble pavement with no cultural remains present. There is a rough cobble and pebble paved area adjacent to the platform to the south, measuring 3.5 by 1.0 m.

Features G and H consist of two small oval-shaped enclosures situated to the southeast of Feature A. Feature G is 1.5 m long (northwest by southeast) and 0.88 m wide. Feature H is 1.3 m long (northeast by southwest) and 0.95 m wide. The enclosures are formed by aligned cobbles that are 0.1 m in height. The interior floors are comprised of a lava and are 0.3 m in depth below the surrounding ground surface. No cultural remains were present.

Site 13463 is interpreted as a ceremonial complex with an associated burial feature. The Feature A walled platform is interpreted as a *heiau* or shrine based on its formal type, substantial construction (faced sides, paved surface, vertical slabs and the presence of the branch coral). The adjacent Feature G and H enclosures may have served to support idols based on their small size and appearance. Features E and F likely served as associated ceremonial features based on their proximity to Feature A. The Feature C lava tube is interpreted as a burial cave based on the presence of human remains. There is no evidence to indicate the tube was used for habitation. Site 13463 is unaltered and in fair to good condition. It is assessed as significant for information content and for its cultural value.

**State No.:** 13465 (T-623.3, 626, 630)

**Site Type:** Complex (3)

**Functional Interpretation:** Permanent Habitation, Possible Burial

**Topography:** West facing pahoehoe flow

**Elevation:** 385-400 ft

**Vegetation:** *Haole koa*, *alahe'e* and various grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 29.0 m by 15.0 m wide

**Condition:** Fair

**Integrity:** Unaltered

**Description:** Site 13465 is a complex of three features constructed on a pahoehoe lava flow in the southeastern portion of the project area. The site was originally documented by Donham (1990: A-146-148) as a complex of seven features. Three of these features (E-G) were determined to be non-cultural areas of weathered lava and the fourth (Feature D) is part of the Feature B enclosure. The three features recorded during the present project area consist of a paved platform (Feature A), an enclosure (Feature B) and a paved terrace (Feature C) located in an area 29.0 m long (northeast by southwest) and 15.0 m wide (*Figure 30*).

**Feature A** is in excellent condition and generally matches the 1990 PHRI description (*ibid.*: A-148):

Rectangular shape in plan, it is raised on all four sides and faced up to six courses high. Pahoehoe boulders are used for the perimeters, and small boulders and cobbles used as fill. The surface is [filled] up to the top of the perimeter stones. The east and west corners have collapsed. A portion of the surface near the center (3.10 by 1.28 m area) is paved with small cobbles and pebbles. The remainder of the surface exhibits the cobble and boulder fill, and is scattered with loose cobbles and boulders that appear to have been thrown on to the original surface. The area of smaller pavement appeared to represent a possible excavation into the platform.

The Feature A platform is 5.0 m long (northwest by southeast) by 4.2 m wide and varies in height from 0.95 to 1.37 m, encompassing c. 21.0 sq m. The perimeter is constructed of 2 to 7 courses of stacked boulders and cobbles and the exterior is entirely faced. The southeast corner has entirely collapsed and disorganized rubble is concentrated along the intact southwest corner.

**TU-1**, a 2.0 by 2.0 m test unit, was excavated in the south half of the platform during the PHRI inventory survey. Excavation documented a maximum of 66 cm of architectural fill overlying 6 cm of sediment accumulated on bedrock. No cultural material was recovered as a result of testing.

**Feature B** is a roughly rectangular enclosure with a gap between the walls at the southwest corner that is 2.0 m wide. The feature was originally documented by PHRI as a terrace with an upright boulder (PHRI Feature B)



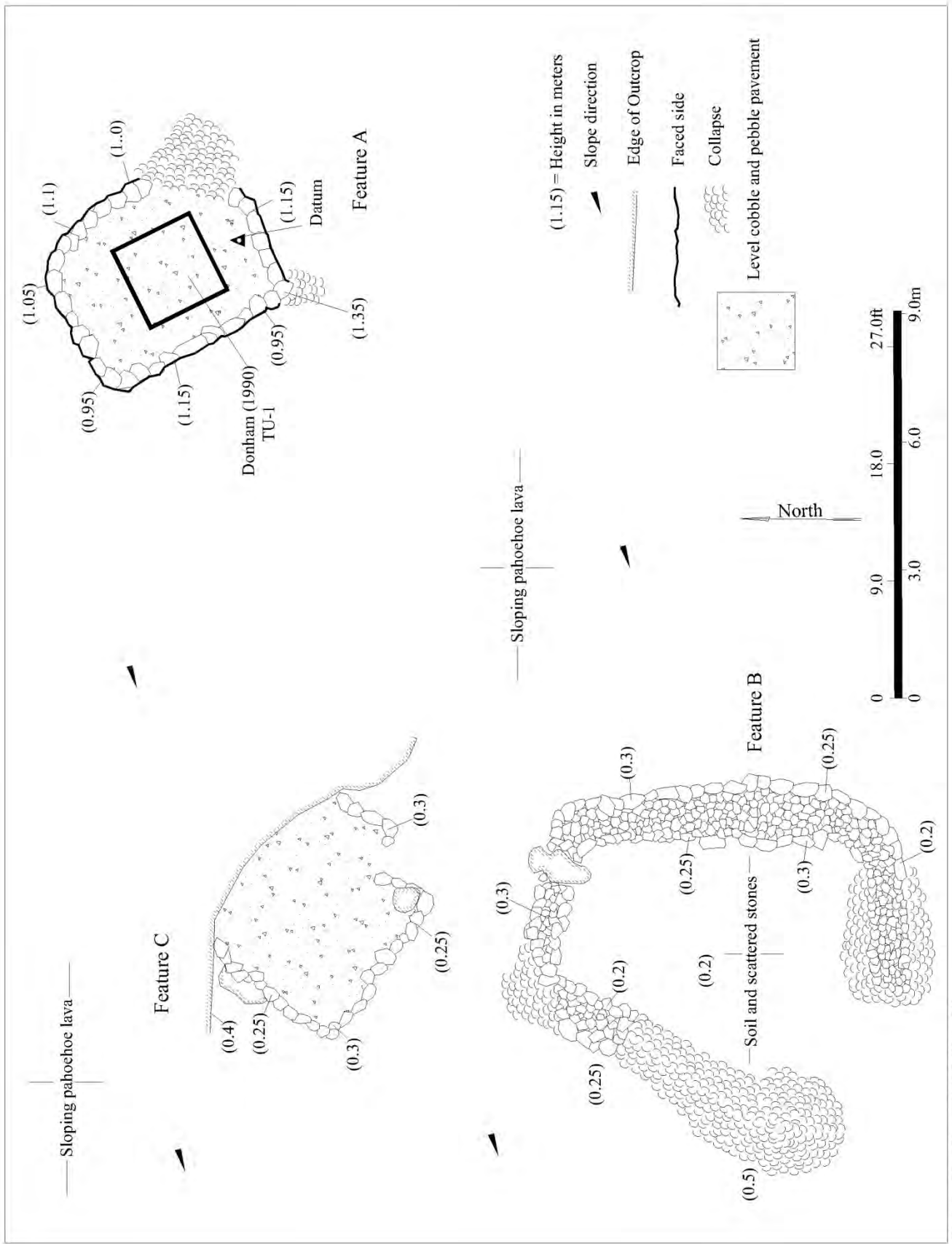


Figure 30. Site 13465 Plan Map

adjacent to a wall remnant (PHRI Feature D), representing the west and east sides of the enclosure. The enclosure was remapped during the current survey. The enclosure is 9.2 m long (northeast-southwest) and varies in width from 5.5 to 9.0 m, encompassing 62.5 sq m. The extant portions of the enclosure wall are no higher than 0.3 m, but parts of the collapsed southwest end of the enclosure wall are 0.5 m high. The enclosure is in poor condition and mainly consists of the basal course of the enclosure wall that was faced on the interior and exterior, with a core composed of rubble fill. The north and east sides of the enclosure are still well-defined on the interior and exterior, while the west side is mostly collapsed rubble, except for a small section of intact basal boulders covering an area 1.5 m long by 1.3 m wide. The southeastern end of the enclosure wall has collapsed.

**Feature C** is a roughly square paved terrace that was documented during the PHRI inventory as a wall remnant. The feature is an alignment of boulders and cobbles that define the perimeter of the west, south and east sides of the terrace. The terrace is 4.4 m long (northwest-southeast) by 4.4 to 5.3 m wide with a maximum of 0.3 m high. Its surface is paved with pahoehoe boulders, cobbles and pebbles, creating a level surface that is flush with the pahoehoe outcrop that forms the north side of the terrace. The terrace encompasses an area of c. 21.5 sq m.

Site 13465 is interpreted as a complex of permanent habitation structures. The Feature A platform and the Feature C terrace are interpreted as foundations of roofed permanent habitation structures based on formal type, substantial construction (faced walls and/or paved surfaces) and area (A= 21.0 sq m; C= 21.5 sq m). The Feature B enclosure is interpreted as a yard enclosing a roofed permanent habitation structure, based on its formal type and area (62.5 sq m). Feature C is also assigned a possible burial function based on the DLNR-SHPD review of the current report by Donham (**Appendix B – Log No.: 2010.2592, Doc No.: 1008TD13**). According to this review, “[b]ased on the appearance and dimensions of Feature C as presented in the report we request that the feature be classified as a habitation/possible burial until such time that its function be verified”. Site 13465 is unaltered and in fair condition. It is assessed significant for its information content and tentatively as significant for its cultural value due to the re-interpretation of Feature C.

**State No.:** 13471 (T-1170, 1172)

**Site Type:** Complex

**Functional Interpretation:** Permanent Habitation, Possible Ceremonial, Possible Burial

**Topography:** Pahoehoe lava sloping gently to southwest

**Elevation:** 368-375ft

**Vegetation:** Christmas berry, *haole koa*

**Probable Age:** Prehistoric

**Overall Dimensions:** 46.0 m by 15.0 m

**Condition:** Fair to good

**Integrity:** Unaltered

**Description:** Site 13471 is a complex of five features located in an area of sloping pahoehoe lava in the south-central portion of the project area. The site was initially identified by Donham (1990:A-150) as a complex of three features consisting of an upright (Feature A), a platform (Feature B) and a lava tube (Feature C). These features were relocated although Feature B was re-interpreted as a terrace. The examination of the site during the present project also identified two new features consisting of a lava blister (Feature D) and a platform (Feature E). The site encompasses an area 46.0 m long (east-west) and 15.0 m wide (*Figure 31*).

Feature A is comprised of a vertical slab supported by piled cobbles and small boulders at the base. The slab is 1.1 m long (east-west), 0.53 m wide and 1.25 m in height and is supported by several blocks of basalt at the base. No cultural remains were present.

Feature B is a rectangular-shaped terrace located adjacent to Feature A to the east. It is 6.0 m long (east-west) and 4.75 m wide, with a collapsed cobble and small boulder retaining wall along the west, south and southeast sides (0.35 to 0.75 m in height). The north and east sides are level with the sloping terrain. The surface is a level cobble and pebble pavement with no cultural remains present. Donham (1990) excavated a 1.0 by 1.0 m test unit (TU-1) into the center of the feature revealing a stone layer above a thin layer of soil. The stone layer ranged in thickness from 0.35 to 0.48 m and the soil averaged 0.04 m thick. No cultural remains were present and no profile of this unit is presented in the Donham (1990) report.

The Feature C lava tube is 12.8 m long with an area of 54.6 sq m. The entrance is a vertical opening that is 1.0 m in diameter and 0.5 m deep situated 8.0 m east-southeast of Feature B. This opens onto a linear chamber that is 12.8 m long (north-south) and from 1.2 to 4.0 m wide. The floor is bare lava and the ceiling heights range from 0.3 to 1.0. There are two areas of ashy soil with scattered cultural remains consisting of charcoal, small mammal bones,

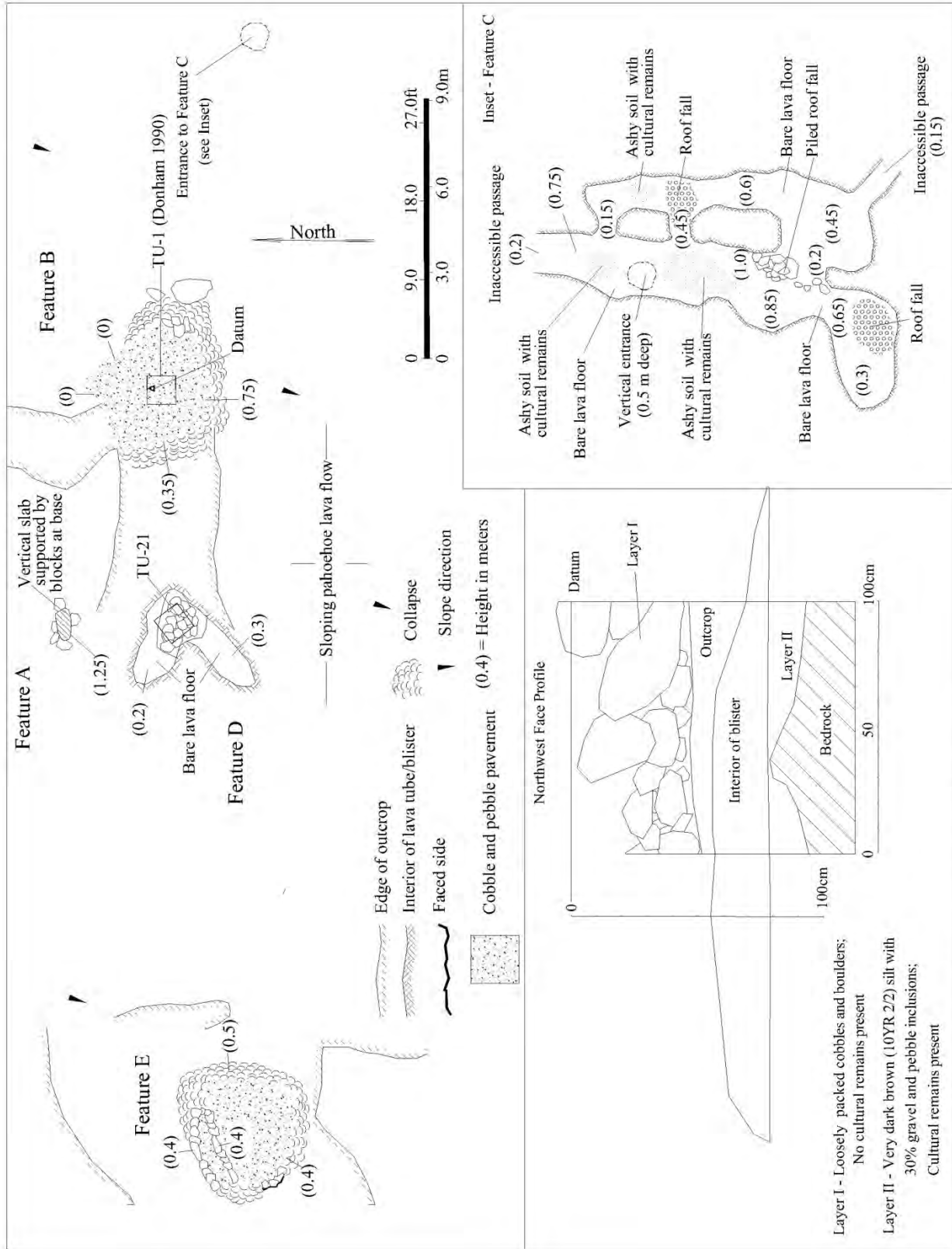


Figure 31. Site 13471 Plan Map and TU-21 Northwest Face Profile

*Cypraea sp.* and *Cellana sp.* shells, and burned and unburned *kukui* nut shells. There is scattered roof fall at the south end of this chamber and a pile of roof fall that appears to have been purposely constructed along the eastern side. There is an inaccessible passage at the north end of this chamber with a low (0.2 m high) ceiling.

There are three openings in the eastern wall of the main chamber that lead to a second chamber. These openings are 0.6 to 1.9 m wide and from 0.15 to 0.45 m high. The piled roof fall is located within the southern-most opening. The second room is linear and is 10.2 m long (north-south) by 1.0 to 2.9 m wide. The floor is bare lava and the ceiling heights range from 0.45 to 0.75 m. A concentration of ashy soil with charcoal is present at the northern end of the room and a pile of roof fall is located adjacent to the center opening. A narrow inaccessible passage (0.15 m high) extends to the southeast from the chamber.

Feature D is a small filled lava blister located adjacent to Feature A to the south. The surface portion is a pile of cobbles and small boulders that partially fill a blister. This pile is 2.4 m long (east-west), 1.5 m wide and 0.2 m in height above the surrounding outcrop. No cultural remains were present on the surface of the feature.

A 1.0 by 1.0 m test unit (TU-21) was excavated into the feature, revealing a stone layer (Layer I) and a low lava blister (see *Figure 31*). Layer I consisted of 0.25 to 0.5 m of loosely packed cobbles and small boulders with no cultural remains present. The removal of Layer I revealed an irregularly-shaped lava blister that is 4.5 m long (northeast by southwest), 1.0 to 3.4 m wide and 0.2 to 0.3 m in height. The floor in the blister is a level soil deposit with no cultural remains. The soil at the base of TU-21 was excavated as Layer II and consisted of 0.02 to 0.14 m of a very dark brown (10YR 2/2) silt with 30% gravel and pebble inclusions. Cultural remains from Layer II consisted of six pig bones (8.8g) and 35 unburned *kukui* nutshells (44.0g).

Feature E is an oval-shaped platform located 14.0 m west of Feature D. It is 4.9 m long (northeast by southwest) and 4.5 m wide. The majority of the sides are collapsed (0.4 m high) though a stacked and faced section is present along the west side (0.5 m high). The surface is a level cobble and pebble pavement. There is a raised wall present along the north side of the structure that is 1.0 m, wide and 0.4 m above the main surface. No cultural remains were present.

Site 13471 is interpreted as a complex of permanent habitation features. Features B and E likely served as foundations for roofed structures based on formal type, substantial construction (paved surfaces and faced side at Feature E) and area (Feature B = 28.5 sq m, Feature E = 22.05 sq m). Feature D may have served as a storage feature and Feature C potentially functioned as an associated sleeping or storage area. Feature A is interpreted as a possible ceremonial feature based on the upright stone. Feature E is also assigned a possible burial function based on the DLNR-SHPD review of the current report (see **Appendix B**). According to this review, “[b]ased on the appearance and dimensions of Feature E as presented in the report, and absence of portable remains we request that it be classified as a habitation/possible burial until such time that its function be verified”. Site 13471 is unaltered and is in fair to good condition. It is assessed as significant for its information content and potentially for its cultural value due to the re-classification of Feature E.

**State No.:** 13474 (T-609)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation, Burial

**Topography** Pahoe flow with a moderate slope to the west

**Elevation:** 345-355 ft

**Vegetation:** Christmas berry, *alahe'e*, *haole koa*, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 110.0 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 13474 consists of a lava tube located in the south-central portion of the project area. The site was initially identified by Donham (1990:A-152) although was not completely mapped or fully described. The tube has a single vertical entrance and a single main passage (*Figure 32*). The lava tube contains a subsistence tool fragment within the light zone of the entrance and a minimum of 11 human burials, at the west end. The estimated minimum number of individuals is based on the number of mandibles observed. Twelve clusters of human remains were documented, but the bones are highly fragmented and dispersed around the burial chamber. Human remains are exposed between c. 45.0 m to 67.5 m SSW of the entrance, in the widest portion of the tube.



The lava tube is 110.0 m long with an area of 835.5 sq m. The tube is accessible from a single vertical entry. The entrance is 2.2 m long (N-S) by 1.0 m wide and partially obscured by a Christmas berry tree growing from the tube floor out of the entry space. The entry requires a drop of 0.85 to 1.0 m to the lava tube floor below. The light zone around the entry extends 2.5 m to the south, where the entrance to a side chamber is located, c. 5.0 m north and c. 11.0 m south into the main passage. An additional 2.0 m beyond the south chamber and the north passage is within a dim but partially lit twilight zone. The twilight zone extends at least an additional 4.0 m south of the light zone in the south passage. All other portions of the lava tube are within the dark zone.

Beneath the east edge of the entry, organic debris and windblown soil obscure the floor surface, but inside the dripline, pebbles are evident, suggestive of paving, and piled or stacked boulder, cobbles and pebbles could represent the remains of a retaining wall now obscured by collapsed roof debris. A perforated *Cypraea* sp. shell, probably used as an octopus lure, is exposed on the collapsed rubble in the approximate center of the entrance, next to the PHRI site tag. Numerous goat bones and possibly some pig or dog bones are scattered in the light zone near the entrance. A short chamber intersects the main passage on the south side of the entrance and extends south for 11.5 m. The chamber is only accessible by crawling, but charcoal fragments were observed in the twilight zone of the chamber and two pieces of 5cm long unidentified organic material composed of small fibrous material were noted in the dark zone at the chamber constriction. The rear of the chamber was not accessible but was possible to map.

The portion of the lava tube north of the entrance is at least 20.0 m long, but dangerously unstable roof fall and a low ceiling prevented access beyond c. 12.0 meters north of the entry. No cultural material was observed north of the lava tube entrance.

The greater portion of the tube is southwest of the entrance, where the main passage extends c. 45.0 m southwest to the burial chamber and another c. 35.0 m west to inaccessible passages, effectively marking the end of the traversable portion of the lava tube. Within the twilight zone of the southern extension of the main passage, roof fall debris has been displaced from the center toward the sides to facilitate access. Charcoal, scattered goat bones, and *kukui* nutshells were observed on the floor within 50.0 m of the entrance. Two discrete shallow soil deposits were also observed on the bare lava floor, one of which is associated with *kukui* nutshells. A rock-ringed hearth c. 0.7 m in diameter contains charcoal fragments and is located just beyond the goat bones. A small waterworn boulder and a cluster of three cobble slabs are located on the northern and southern periphery of the hearth. A concentration of *kukui* nutshells is present on the south side of the hearth. The activity area represented by the hearth is c. 30.0 m southwest of the entrance and c. 13.0 m NNW of the human remains.

A cluster of goat bones marks the northeastern boundary of the portion of the lava tube used as a burial chamber. The burial chamber is oriented W-E, is only accessible by crawling, and contains at least 12 concentrations of human skeletal elements, identified as Burials 1-12 on the site map. Only 11 individuals could be identified from mandibles, including at least one juvenile. The human remains are disarticulated and in an advanced state of decay. Many skeletal elements are scattered around the chamber. Most of the human bone is exposed on the bare lava floor, but the bones representing Burial 1 are located in a crack in the floor and the bones representing Burial 7 are located in a wall crack near the ceiling. Two bone concentrations (Burials 5 and 12) are delineated by aligned boulders and cobbles. Charcoal fragments and a concentration of charcoal were observed on the chamber floor near the southwest end of the burial chamber and in a floor crack near the west end of the burial chamber. A length of cut wood (50 x 5 x 3 cm) that is weathered and split is present among the Burial 5 remains. A heavy concentration of wood splinters is present on the chamber floor on the south side of the floor-to-ceiling column that separates Burials 1-8 from Burials 9-12. On the north side of the floor-to-ceiling column is a shelf that contains several cobbles. The column creates two narrow passages to the extreme western end of the lava tube, and Burials 9-12 are located within 8.0 m of the southwest end of the column. Collapsed roof fall debris marks the western perimeter of the burial chamber. The ceiling of the lava tube is very low west of the burials and contains no cultural material.

Site 13474 is interpreted as a burial cave with limited evidence of use as a temporary habitation shelter based on its formal type and associated cultural material. The site is unaltered and in good condition though the human remains are poorly preserved. Overall the site is in fair condition and is assessed significant for information content and for its cultural value to the Hawaiian people.

**State No.:** 26896 (T-103, 104)  
**Site Type:** Lava Tube  
**Functional Interpretation:** Temporary Habitation, Water Catchment  
**Topography:** Soil and outcrops sloping to west  
**Elevation:** 539 ft  
**Coordinates:** E=186798, N=2177057  
**Vegetation:** *Haole koa*, *ilima*, Christmas berry  
**Probable Age:** Prehistoric  
**Overall Dimensions:** 68.7 m long  
**Condition:** Good  
**Integrity:** Unaltered

**Description:** Site 26896 is a lava tube with an entrance located along the north side of a pahoehoe outcrop in the northeastern portion of the project area. The tube has an overall length of 68.7 linear meters and an area of 114.6 sq m. The entrance is U-shaped and is 5.5 m wide (northeast by southwest), 1.4 m in height and is partially filled with roof fall (*Figure 33*). The entrance opens onto a linear chamber that extends 9.7 m to the south then angles to the south-southwest for 11.9 m. The tube then turns to the west for an additional 6.1 m where it terminates.

There is a small skylight opening 4.0 m south of the dripline. Roof fall is present below the skylight. The floor in this chamber is bare lava with ceiling heights ranging from 0.75 to 1.4 m. There are three concentrations of goat bones in this passage and with a fragment of charcoal. All of the goat bones probably are the result of non-cultural events.

A side passage extends to the west from the main chamber, 4.8 m south of the entrance. This narrow passage is 2.9 m long (east-west) and from 0.7 to 1.3 m wide, with a 0.6 m high ceiling. The floor in this passage slopes down to the west and a *kukui* nut shell is present at the west end. This passage opens onto an irregularly-shaped chamber that extends to the southwest for 15.5 m, where it splits into two tubes. This passage is 2.3 to 4.75 m wide and 0.6 to 1.25 m high, with a bare lava floor. A fragment of charcoal is present in the central portion of this chamber, with a concentration of charcoal and wood present further to the southwest.

The passage divides into two tubes at its southwest end. One tube extends to the west and the other to the south. The western passage extends 8.8 m west, then angles to the southwest for 7.9 m where it terminates. The passage is 2.6 to 6.9 m wide and 0.35 to 1.6 m in height. The floor is bare lava and there is a raised shelf along the northern side that is 0.6 m in height. A pig bone is present on the surface of the shelf and there is a concentration of marine shells and pig bones below the shelf on the floor of the tube. An area of roof fall is located to the south of the shelf and there are seven small rock rings on the lava floor to the north, west and southeast of the roof fall. A fragment of charcoal is present adjacent to the rings to the south.

The passage that extends to the south from the split begins as a 1.25 m wide chamber, then it widens to 4.1 m wide. This ceiling is very low (0.1 m) precluding access, although the passage continues. The floor is bare lava and no cultural remains were observed.

Site 26896 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The rock rings noted in the tube indicate that the site also was used to collect water. These rock rings served as stands for gourds or other water collection vessels placed to catch water dripping from the ceiling of the tube. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 26897 (T-106)  
**Site Type:** Lava Tube (2 Chambers)  
**Functional Interpretation:** Temporary Habitation  
**Topography:** Soil and outcrops sloping to west  
**Elevation:** 503-528 ft  
**Coordinates:** E=186782, N=2176999  
**Vegetation:** *Haole koa*, Christmas berry, grasses  
**Probable Age:** Prehistoric  
**Overall Dimensions:** 75.0 m long  
**Condition:** Good

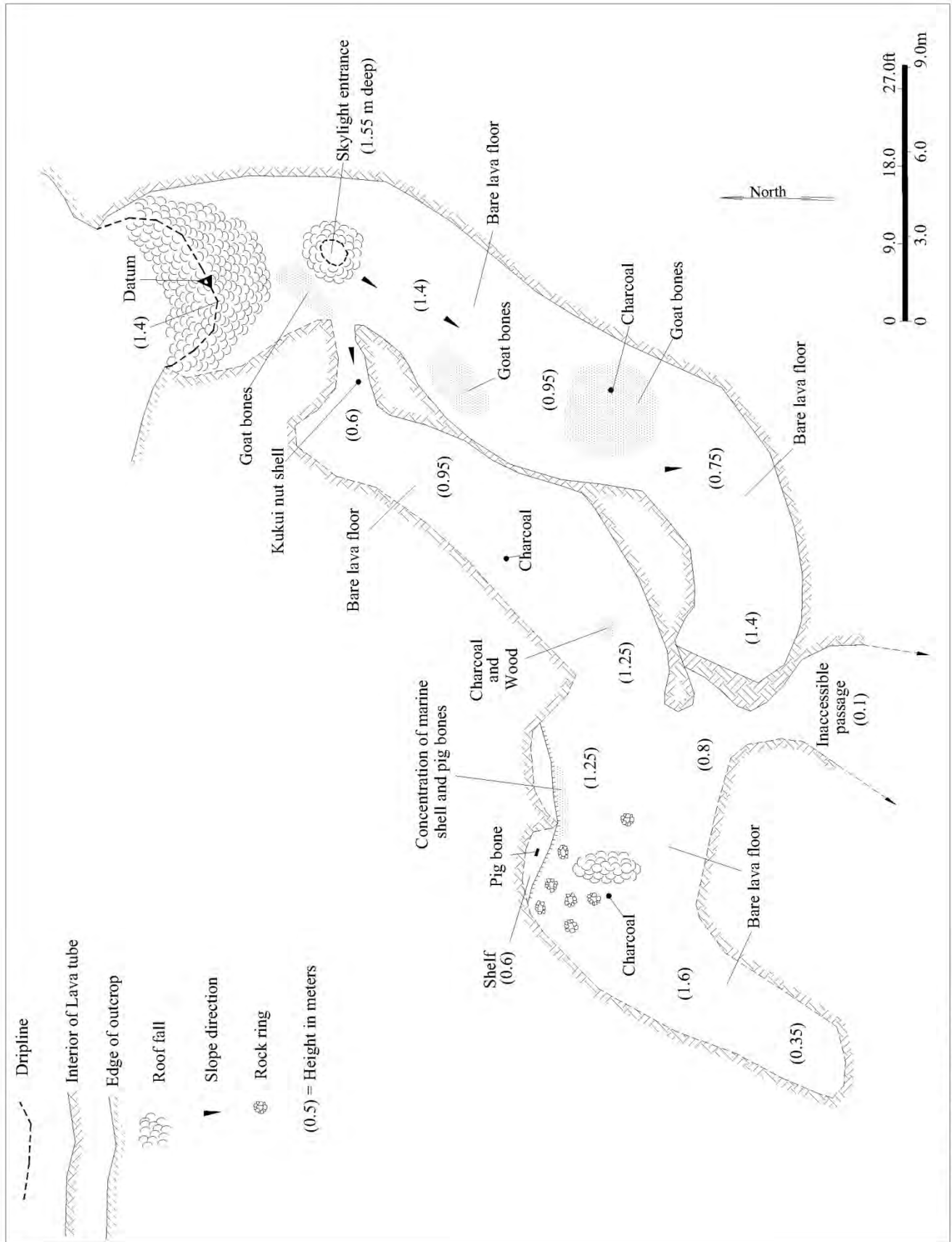


Figure 33. Site 26896 Plan Map



**Integrity:** Unaltered

**Description:** Site 26897 is a lava tube with two separate chambers (Features A and B) located in the northeastern portion of the project area. The Feature A tube has an overall length of 75.0 linear meters and an area of 467.7 sq m and Feature B is 46.5 m long with an area of 121.6 sq m. The main entrance to the site is through an oval-shaped sinkhole that is 7.1 m long (west-northwest by east-southeast), 4.7 m wide and 1.0 m in depth (*Figure 34*). The entrance to the Feature A chamber is located along the southeastern side of the sink. This entrance passage is 4.2 m long (north-northwest by south-southeast), 1.5 to 2.0 m wide and 0.45 to 0.5 m in height. There is an ashy soil deposit on the floor of this passage.

The entry passage opens onto a large, irregularly-shaped chamber that is 51.5 m in length (northeast by southwest) and from 4.7 to 11.5 m wide. There is a raised shelf (1.4 m in height) just south of the entry passage with a concentration of charcoal on it. The floor throughout the large chamber is bare lava with two piles of roof fall. The ceiling height ranges from 0.45 to 2.3 m. This chamber is bisected by two floor to ceiling columns, one to the south of the entry passage and one at the northeastern end. A concentration of bird bones is located on the south side of the southern column and goat bones are located amidst the scattered roof fall in the southwestern portion. The bird and goat bones were likely deposited by non-cultural events.

There is a secondary vertical entrance in this large chamber that is 3.0 m long (northwest by southeast), 2.5 m wide and 1.5 m deep below the surrounding ground surface. Two passages extend off this large chamber, one to the north and one at the northeastern end. The north passage is 7.75 m long, 1.6 to 2.2 m wide with a bare lava floor and no cultural remains. The tube continues to the north but its low ceiling (0.1 m) make it inaccessible. The passage at the northeast end of the large chamber is also inaccessible due to its low ceiling height (0.2 m). It appears to continue in this direction although no cultural remains were noted.

The entrance to the Feature B lava tube is through a 1.4 m wide by 0.7 m, opening on the western side of the main sinkhole. This opens onto a linear chamber that is 46.2 m in length (northeast by southwest) and from 2.7 to 6.3 m wide. The floor throughout this chamber is bare lava and slopes to the west and southwest near the entrance. The ceiling heights range from 0.4 m at the southwest end to 1.5 m in the center and there is an area of roof fall along the northwestern side of the tube. There is a small vertical entrance located 11.0 m southwest of the main Feature B entrance. This opening is 1.8 m long (northeast by southwest), 0.9 m wide and 1.5 m in depth below the surrounding ground surface. The tube is bisected by a floor to ceiling column 9.8 m to the southwest of the small entrance.

A concentration of charcoal is situated on the floor at the northeast end of the chamber, with several goat bones located to the southwest, along the northwestern wall. A small soil deposit (2.2 m long by 1.1 m wide) with bird bones and charcoal is located adjacent to the goat bones to the south. A concentration of marine shells and charcoal is located to the south of the small entrance and an area of charcoal is on the tube floor to the southwest of the column.

Site 26897 is interpreted as a temporary habitation shelter based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 26898 (T-109)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation

**Topography:** Soil and outcrops sloping to west

**Elevation:** 515-519 ft

**Coordinates:** E=186757, N=2177016

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 8.6 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 26898 is a small lava tube with two vertical entrances in the northeastern portion of the project area (*Figure 35*). The site has an overall length of 8.6 linear meters and an area of 17.2 sq m. The entrances are 1.3 to 1.6 m long by 1.0 to 1.05 m wide with dripline heights that range from 1.3 to 1.4 m. The interior of the tube is roughly linear in shape and is 7.65 m in length (northeast by southwest) and 0.45 to 2.5 m wide. The ceiling heights

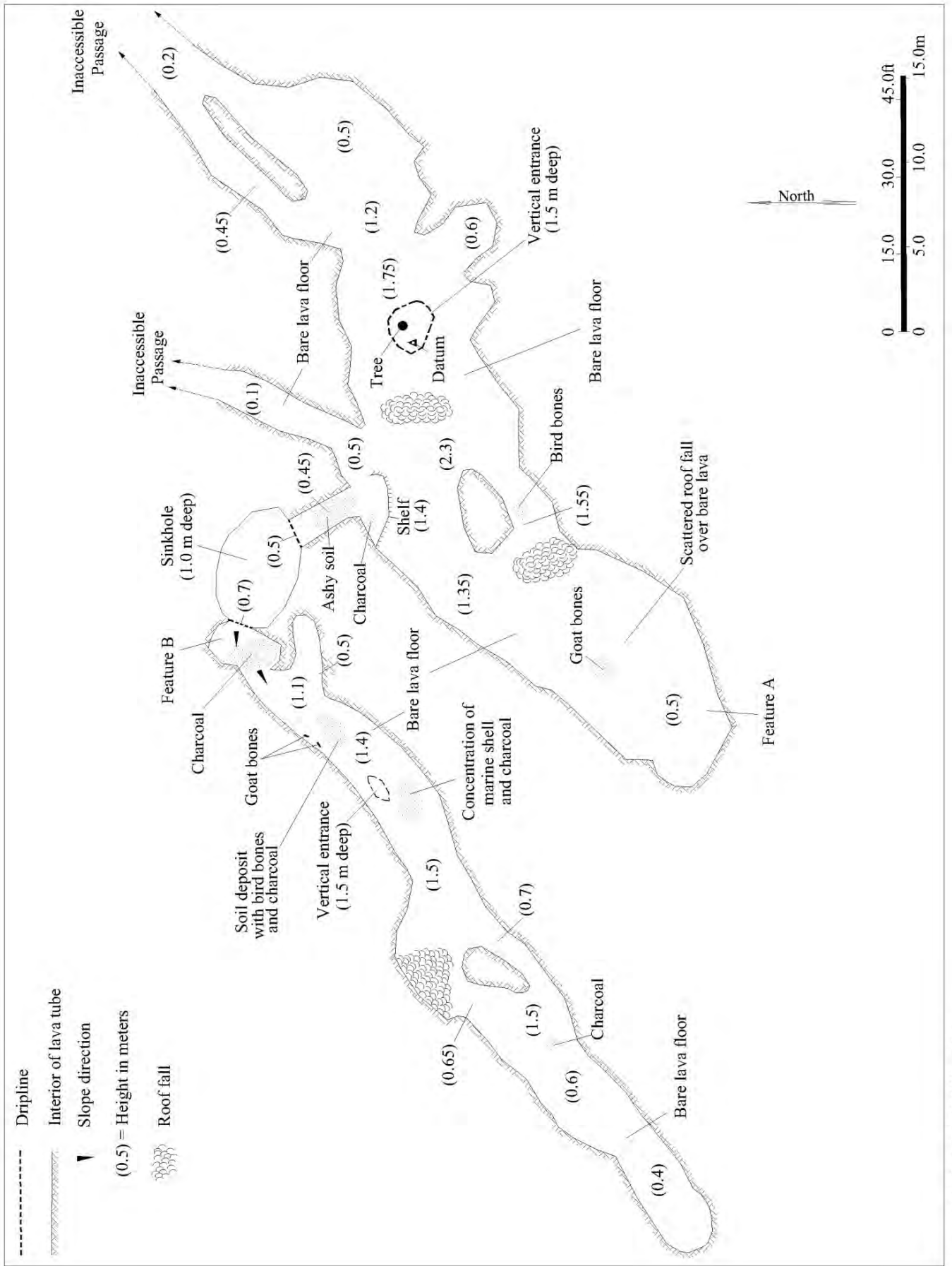


Figure 34. Site 26897 Plan Map

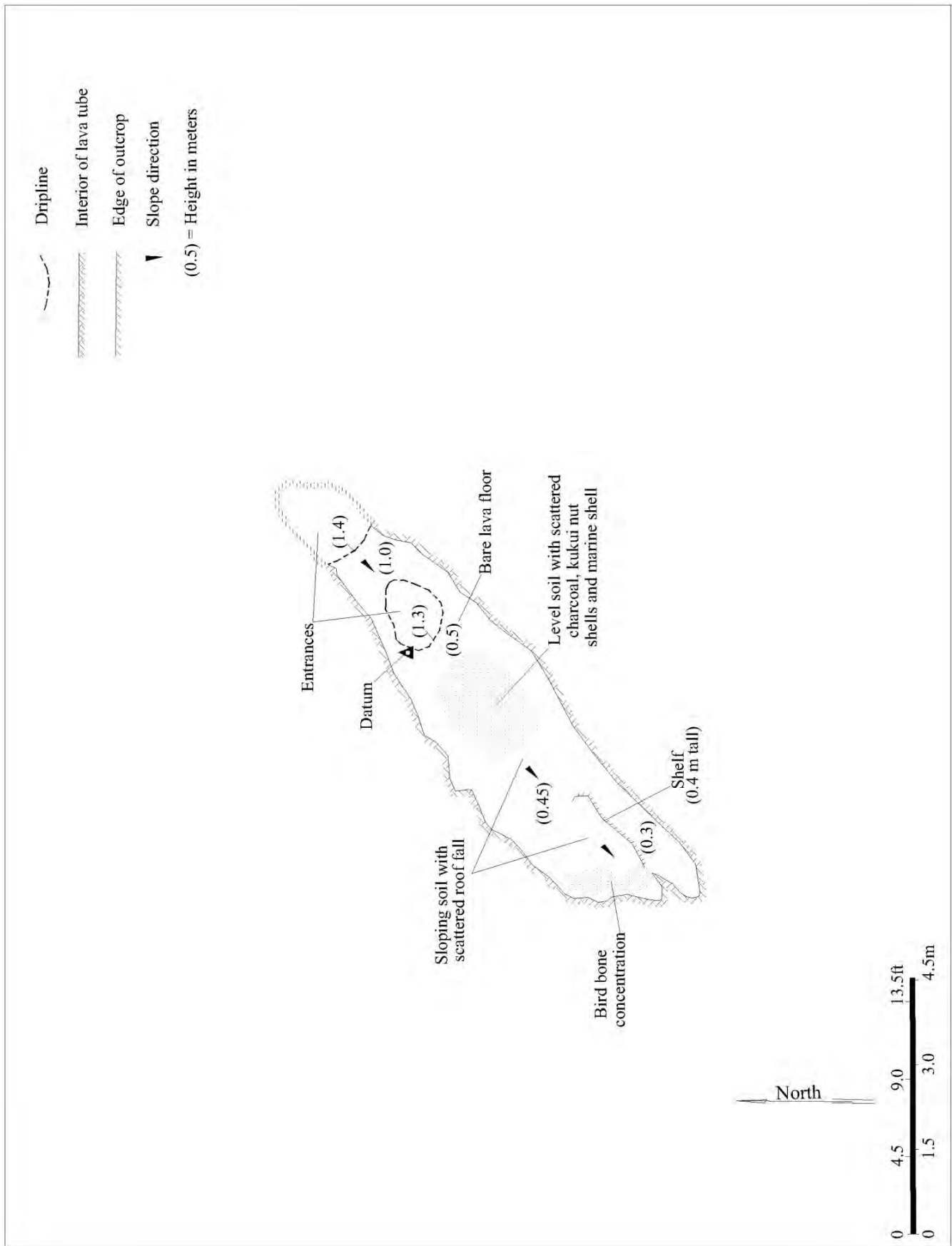


Figure 35\, Site 26898 Plan Map

range from 0.3 to 1.0 m. The floor of the tube slopes gently to moderately to the southwest and is bare lava in the northeastern portion and soil and scattered roof fall in the southwestern portion. A low (0.4 m high) raised shelf is present at the southwestern end of the tube.

There is an area of level soil, free of roof fall in the approximate center of the tube that is 1.8 m long (northeast by southwest) and 1.4 m wide. Charcoal, *kukui* nut shells and marine shells are present on this soil surface. There is a concentration of bones from a large, unidentified bird present at the southwestern end of the tube, to the north of the low shelf.

Site 26898 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 26899 (T-112, 430)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation

**Topography:** Soil and outcrops sloping to west

**Elevation:** 495-515 ft

**Coordinates:** E=186719, N=2177009

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 166.1 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 26899 is a complex lava tube located in the northeastern portion of the project area. The site has an overall length of 166.1 m and an area of 734.0 sq m. The main entrance to the tube is through a sinkhole that is 9.5 m long (northeast by southwest) and 2.7 to 3.2 m wide (*Figure 36*). Passages extend to the northeast and to the southwest from this sinkhole. The tube to the northeast extends in this direction for 4.0 m where it divides into three passages in an area of roof fall. One passage extends to the west, one to the north-northeast and one to the east-southeast. Concentrations of charcoal are present on the floor of the tube to the east, south and west of this roof fall.

The passage to the west extends in this direction for 22.5 m where it becomes inaccessible because of a dangerous, unstable ceiling. This chamber is 2.2 to 7.9 m wide with a bare lava floor and ceiling heights that range from 0.4 to 1.0 m. There is a floor to ceiling column at the eastern end of this passage and no cultural remains were observed.

The passage that extends to the north-northeast from the roof fall area continues in this direction for 9.5 m where it divides into two tubes. One tube extends to the north-northeast and one turns to the northeast. The tube to the north-northeast is 6.1 m long, 1.1 m wide and 0.25 m in height with a bare lava floor and no cultural remains. The northeast end of this chamber is inaccessible due to a low (0.1 m) ceiling. The tube to the northeast extends in this direction for 4.3 m then opens onto a large irregularly-shaped chamber that is 14.7 m long (east-west) and 3.0 to 8.9 m wide. The floor in this room is bare lava and the ceiling heights range from 0.8 to 1.7 m. This room is bisected by a floor to ceiling column in the eastern portion and there is a pile of roof fall located to the north. A narrow passage extends to the south from the southwest corner of this room, measuring 2.0 m long and 1.2 m wide. This passage becomes inaccessible due to a dangerous, unstable ceiling.

The passage that extends to the east-southeast from the roof fall area is 14.8 m long, 3.0 to 3.6 m wide and 1.0 to 1.5 m in height. The floor is bare lava and there is an area of roof fall in the center. This tube diverges into two passages at its southeast end with one extending to the southwest and one to the northeast. The southwest passage is 17.9 m long, 3.5 to 4.9 m wide and 0.6 to 1.05 m in height with a bare lava floor. The passage to the northeast is 9.4 m long, 1.8 to 5.6 m wide and 0.5 to 1.15 m in height. Several areas of roof fall are present in this chamber. A low inaccessible passage extends to the east-northeast from the eastern end of this chamber. No cultural remains were present within this portion of the site.

The passage to the southwest from the sinkhole entrance opens onto a large, irregularly-shaped chamber that is 11.3 to 31.5 m long (northeast by southwest) and 2.0 to 14.3 m wide. This large room has eight floor to ceiling columns. There is an oval-shaped vertical entrance (1.6 m deep) at the western end of this room that is 3.6 m long (northeast

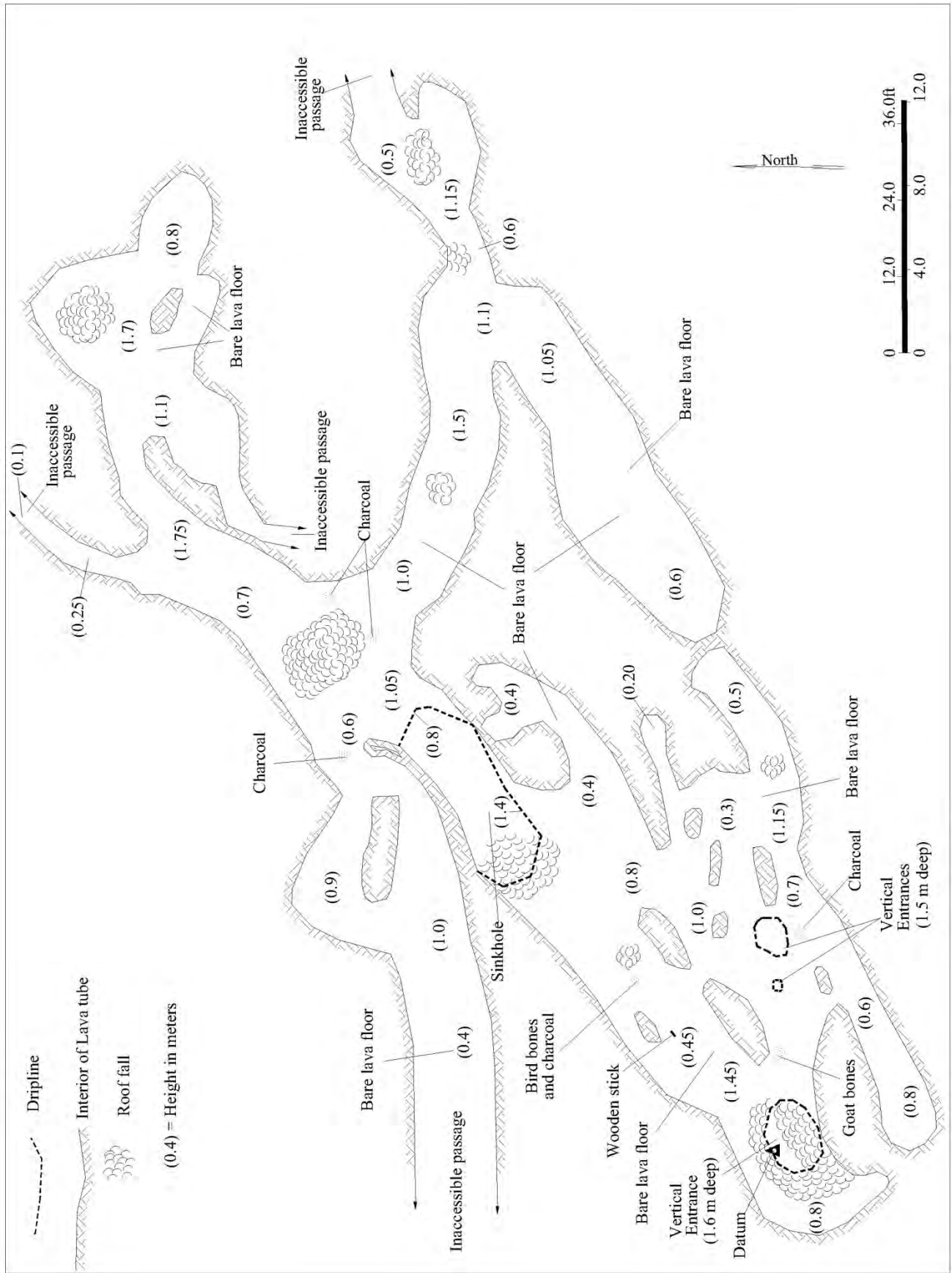


Figure 36. Site 26899 Plan Map

by southwest) and 2.6 m wide. Two smaller vertical entrances are located along the southern side of this room averaging 1.5 m in depth below the surrounding ground surface.

There is a concentration of bird bones and charcoal present on the floor of the tube along the northern side and a wooden stick located 3.1 m to the southwest. The stick is 0.5 m in length and 0.03 to 0.05 m in diameter. There is a concentration of charcoal present along the south side of the chamber and a concentration of goat bones located 5.0 m to the west.

Site 26899 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 26900 (T-115, 125)

**Site Type:** Lava Tube (2 Chambers)

**Functional Interpretation:** Temporary Habitation

**Topography:** Soil and outcrops sloping to west

**Elevation:** 465-485 ft

**Coordinates:** E=186650, N=2176957

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 133.5 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 26900 is a lava tube complex with separate chambers (Features A and B) located in the northeastern portion of the project area. The tube has an overall length of 133.5 linear meters and an area of 434.5 sq m. There are two entrances to the Feature A chamber. The main entrance is located along the eastern side of a raised pahoehoe outcrop. A secondary entrance is situated 4.7 m to the southwest on the south side of the same outcrop (Figure 37). The eastern entrance is 3.1 m wide and 1.1 m in height and the southern entrance is 1.0 m wide and 0.5 m in height. The entrances open onto a long, curvilinear chamber. The tube extends to the west from the main entrance for 16.4 m where it is bisected by a linear floor to ceiling column. This 12.6 m long column divides the chamber into two passages. Beyond the column, the tube angles to the north-northwest for 13.5 m and then angles to the northeast for 18.4 m where the tube is again bisected by a large floor to ceiling column. There is a secondary vertical entrance located along the west side of this column that is 1.75 m long (north-south), 1.0 m wide and 1.1 m in depth below the surrounding ground surface.

The tube continues to the west, past the north and south sides of the column for 18.5 m then angles to the northeast for 9.1 m where it becomes inaccessible due to roof fall blocking the passage. The Feature B tube (discussed below) is located on the northeastern side of this blockage.

The floor throughout most of the Feature A chamber is bare lava and the ceiling heights range from 0.4 to 2.1 m. There is a raised shelf along the south wall of the tube adjacent to the southern entrance. This shelf is 1.2 m in height above the main tube floor and is 12.2 m long (north-northeast by south-southwest), 1.4 to 1.7 m wide and 0.3 to 0.45 m wide. The floor of the shelf is bare lava and no cultural remains were present.

There is an area of shallow ashy soil located on the floor of the tube to the west of the eastern Feature A entrance. Charcoal and *kukui* nut shells are situated 10.5 m to the west of this soil, along the south side of the floor to ceiling column. There is a *kukui* nut shell present 2.2 m west of the column. A *kukui* nut, charcoal and a crab claw are situated c. 8.9 m to the northwest of the column.

There are two small floor to ceiling columns located at the western extent of the tube, with the northern-most column situated on a raised shelf. This shelf is 5.3 m wide (northeast by southwest) and 0.65 m in height. The shelf is the entrance to an irregularly-shaped room that is 13.1 m long (east-northeast by west-south-west) and from 1.2 to 3.6 m wide. The floor is bare lava and the ceiling heights range from 0.5 to 1.8 m. A fragment of charcoal is present on the surface. There are two low, narrow passages that extend 1.1 to 3.3 m to the north and northwest from this room.

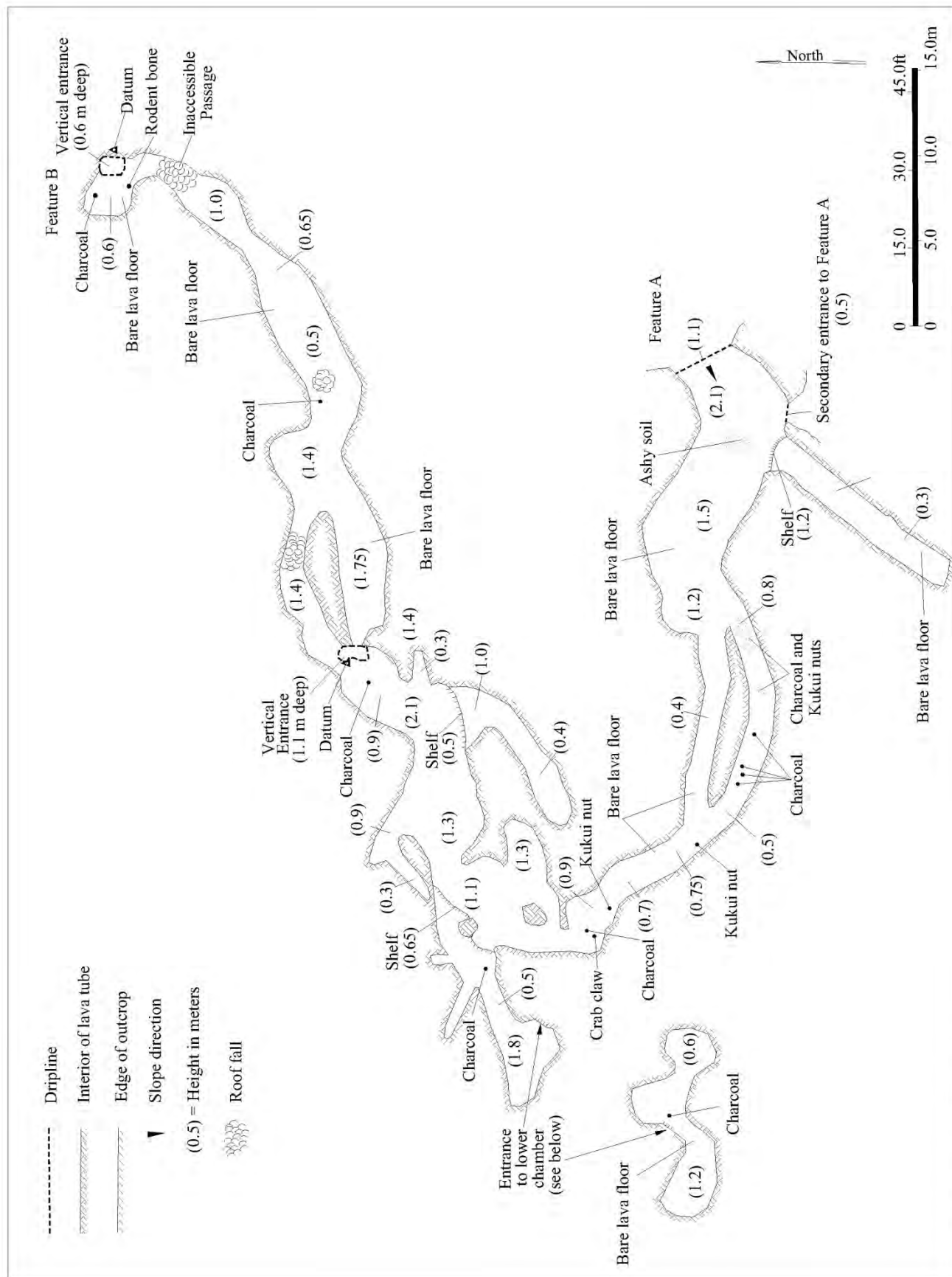


Figure 37. Site 26900 Plan Map

The entrance to a lower chamber is located along the southeastern side of the irregularly-shaped room. This entrance opens onto a chamber that is 10.9 m long (east-west) and from 1.0 to 3.3 m wide. The floor in this lower chamber is bare lava and the ceiling heights range from 0.6 to 1.2 m. Charcoal is present on the floor adjacent to the entrance.

Another raised shelf is present along the south side wall of Feature A, 10.0 m to the east from the small columns. This shelf is 3.7 m wide and 0.5 m in height and is the entrance to an L-shaped room that is 9.3 m long, 1.5 to 1.8 m wide and 0.4 to 1.0 m in height. The floor is bare lava and no cultural remains were present. A fragment of charcoal is located on the floor of the main tube to the north of this shelf and to the west of the secondary vertical entrance. Another fragment of charcoal is located on the floor 6.5 m west of the eastern end of the large floor to ceiling column in this area. An area of roof fall is located adjacent to the charcoal to the east.

The entrance to the Feature B chamber is 35.5 m north-northeast of the eastern Feature A entrance. This is an oval-shaped vertical opening that is 1.5 m long (north-south), 1.0 m wide and 0.6 m in depth. This opens onto an irregularly-shaped chamber that is 5.0 m long (north-northwest by south-southeast), 1.4 to 2.5 m wide with a ceiling height that averages 0.6 m. The floor is bare lava. A fragment of charcoal is present on the floor at the north end of the chamber and a rodent bone is located to the west of the entrance. The blocked inaccessible passage leading to Feature A is situated at the south end of the Feature B chamber.

Site 26900 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains within the interior. The site is unaltered, in good condition and is assessed as significant for its information content.

**State No.:** 26901 (T-128)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation, Water Catchment

**Topography:** Soil and outcrops sloping to west

**Elevation:** 468-476 ft

**Coordinates:** E=186630, N=2176962

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 87.6 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 26901 is a lava tube accessed through a vertical entrance at c. 468 ft elevation in the northeastern portion of the project area. The tube has an overall length of 87.6 linear meters and an area of 216.1 sq m. The entrance is circular and is 2.8 m long (north-northwest by south-southeast), 2.7 m wide and 1.7 m in depth below the surrounding ground surface (*Figure 38*). Passages extend to the east and west from the entrance. The passage to the east extends 7.8 m in this direction, where it splits into two chambers, one extending to the east-northeast and one to the east-southeast. The passage is 1.9 to 3.55 m wide with a bare lava floor and ceiling heights that range from 1.2 to 1.7 m. A burnt *kukui* nut shell is located to the east of the vertical entrance and a goat skeleton is adjacent to the entrance to the northeast.

The passage that extends to the east-northeast from the split is 5.0 m in length and 1.0 to 1.2 m wide. The floor is bare lava and the ceiling height averages 0.3 m. The passage to the east-southeast extends in this direction for 7.3 m where it becomes inaccessible due to a low ceiling height (0.2 m). This chamber is 1.0 to 2.0 m wide and 0.6 to 0.7 m in height with a bare lava floor. No cultural remains were present in either of these passages.

The portion of the lava tube that extends to the west from the vertical entrance continues in this direction for 7.4 m then angles to the north for 4.7 m. The tube then turns to the northeast and extends for 34.8 m where it terminates. This portion of the tube is 1.3 to 4.5 m wide with ceiling heights that range from 0.3 to 2.5 m. The floor throughout this chamber is bare lava.

There are four raised shelves in this passage. The first is located at the western end, located 1.6 m above the main floor of the tube. It is 3.8 m long (northeast by southwest) and 1.4 m wide and 0.15 m in height. The second shelf is situated along the north wall of the tube, 8.3 m to the northeast from the first. It is 0.4 m above the main floor and is 7.0 m wide (northeast by southwest) and 1.25 to 1.5 m deep. The ceiling height is 0.4 m in height. A low, narrow



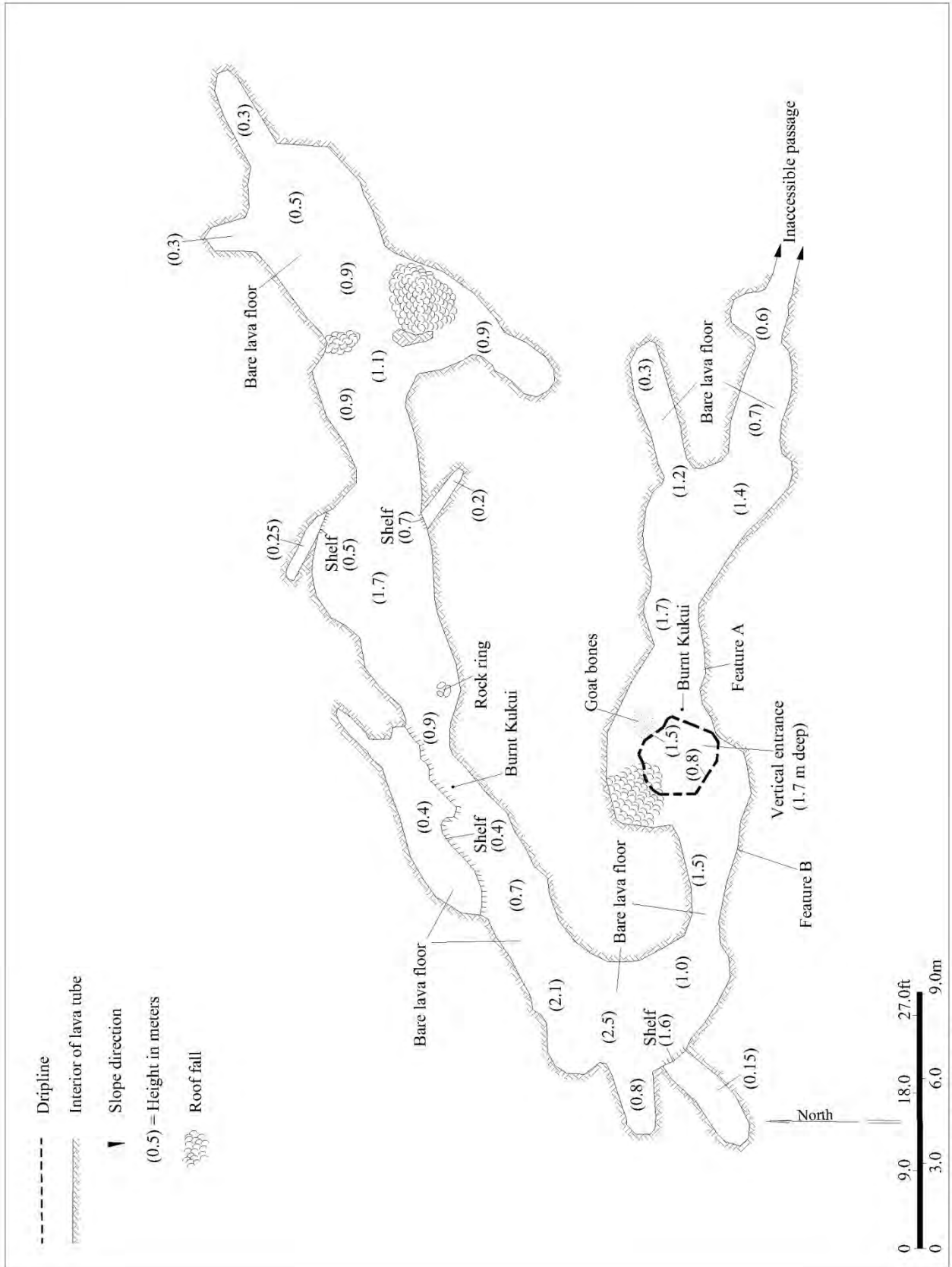


Figure 38. Site 26901 Plan Map

(0.4 m wide) passage extends 1.9 m to the northeast from the east end of the shelf. A burnt *kukui* nut shell is present on the floor of the main tube below this shelf and a small rock ring is located 3.3 m to the east of the *kukui* nut.

The third shelf is situated on the north wall of the tube, 7.4 m northeast of the second. The shelf is 0.5 m in height above the main floor and is 2.6 m long (northwest by southeast), 0.45 m wide and 0.25 m in height. The fourth shelf is located in the south side wall, on the opposite side of the tube from the third shelf. It is 0.7 m in height above the main floor and is 2.2 m long (northwest by southeast), 0.45 m wide and 0.2 m in height. No cultural remains were present on the surface of any of the shelves.

There is a floor to ceiling column located at the eastern end of this portion of the site, with an area of roof fall adjacent to it to the east. A second area of roof fall is located to the north of the column, against the north tube wall. A passage extends 5.4 m to the southwest from the column. It is 1.1 to 3.8 m wide and 0.9 m in height, with a bare lava floor and no cultural remains.

Site 26901 is interpreted as a temporary habitation shelter. This is based on its formal type and on the presence of the cultural remains. The rock ring in the tube indicates that the site was also used to collect water. The site is unaltered and in good condition. It is assessed as significant for its information content.

**State No.:** 26902 (T-134)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation, Burial

**Topography:** Soil and outcrops sloping to west

**Elevation:** 435-460 ft

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 230.0 m long

**Condition:** Good

**Integrity:** Unaltered

**Description:** Site 26902 is a large complex lava tube with two main sinkhole entrances in the northeastern portion of the project area (*Figure 39*). The site has an overall length of 230.0 m and an area of 990.0 sq m. The northernmost entrance is 3.4 m long (north-south) and 2.9 m wide and 1.7 m deep. Passages extend to the north-northeast and to the south-southwest from this entrance. The north-northeast passage opens onto a chamber contain a bare lava floor and no cultural remains.

The passage to the south-southwest from the northernmost sinkhole extends in this direction for 7.75 m, where the second sinkhole entrance is located. This passage is 3.4 to 3.9 m wide and 1.2 to 1.4 m in height, with a bare lava floor. Roof fall is present at the north end of this passage, with a goat skeleton located to the south.

The second sinkhole is 6.4 m long (west-northwest by east-southeast) and 5.9 m wide. The floor of the sinkhole is partially covered in roof fall with dripline heights ranging from 1.4 to 1.5 m. There is a concentration of goat bones to the west of this sink, and a small skylight entrance to the west of the bones. Passages extend to the west and southwest from the second sinkhole.

The passage to the southwest extends in this direction for 13.7 m where it splits into two passages, one extending to the south and one continuing to the southwest. This chamber is 1.4 to 7.5 m wide and 0.8 to 1.4 m in height with a bare lava floor. There are three concentrations of human remains located on the floor of this passage, located 4.4 m southwest of the sinkhole. The first concentration consists of a clavicle, several vertebrae and unidentified bone fragments. The second concentration is located 0.7 m to the west of the first. This contains a human tooth and several unidentified bone fragments. The third concentration is situated adjacent to the second to the north. This contains metatarsals, teeth, phalanges and a calcaneous. The remains likely represent the remains of a single individual.

There is a raised ledge along the eastern side of this passage, 5.0 m southwest of the human remains. It is 1.0 m in height above the floor of the tube and is irregularly-shaped. It is 6.3 m long (northeast by southwest) and 0.65 to 2.5 m wide, with a bare lava floor and no cultural remains present. The ceiling heights in this chamber average 0.3 m.

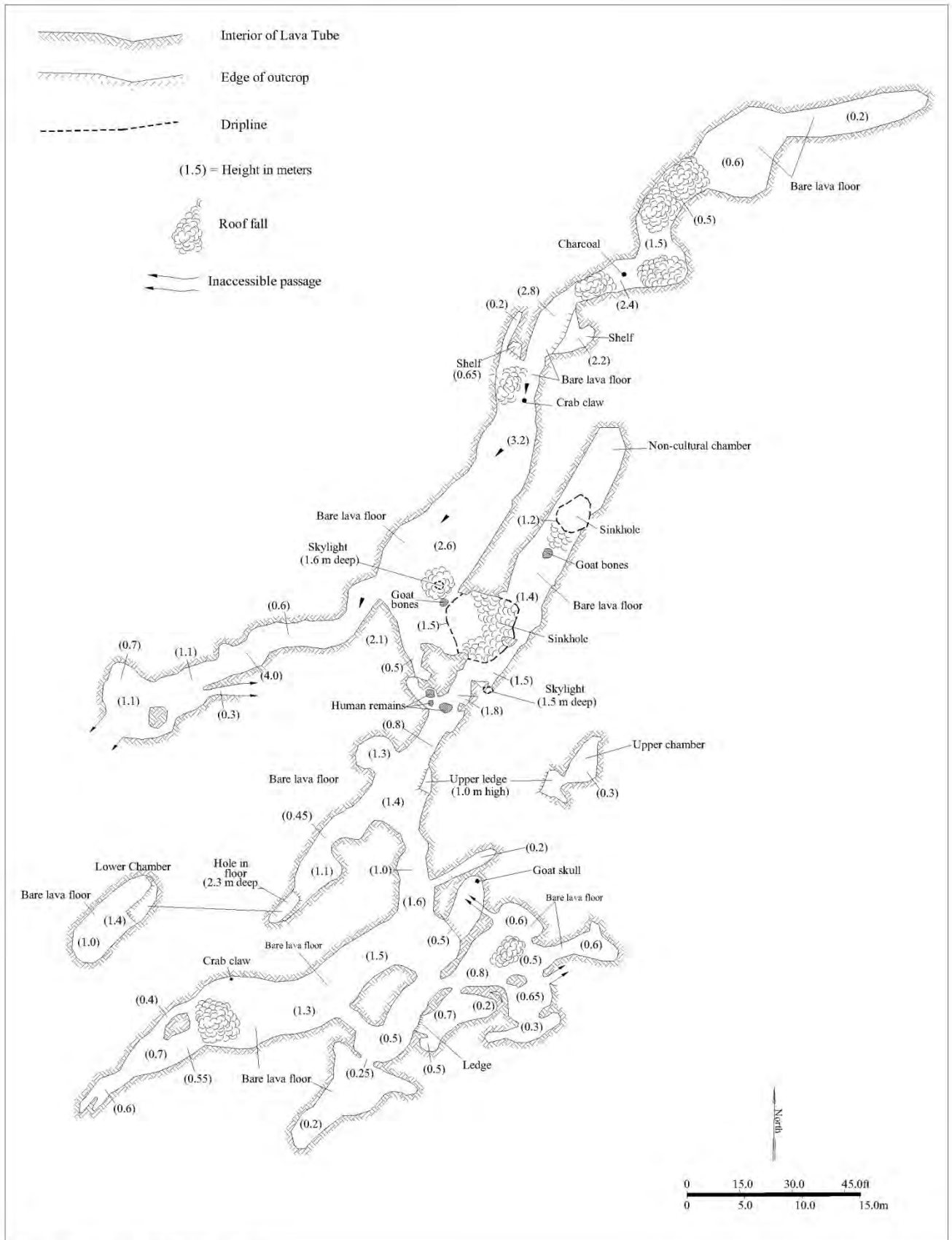


Figure 39. Site 26902 Plan Map

The passage that extends to the southwest from the split extends in this direction for 14.9 m, and is 1.2 to 2.9 m wide and 0.45 to 1.1 m in height. The floor is bare lava and no cultural remains are present. There is a hole at the southwest end of this chamber that is 3.3 m long (northeast by southwest), 1.1 m wide and 2.3 m deep. This hole opens onto a lower chamber that is 9.3 m in length (northeast by southwest), 3.3 m wide and 1.0 to 1.4 m in height. The floor consists of bare lava with no cultural remains.

The passage that extends to the south from this split continues in this direction for 8.7 m where it opens onto a large room. A low, narrow passage extends to the east-northeast from this chamber for 6.2 m where it terminates. This passage is 0.7 to 1.1 m wide with and 0.2 m in height. The large room is 12.0 m in length (northeast by southwest) and 8.7 m wide and is bisect by a floor to ceiling column. The floor is bare lava and the ceiling heights range from 0.5 to 1.5 m. Passages extend to the west, southwest and east from this room.

The passage to the west extends in this direction for 12.1 m where it is bisected by a floor to ceiling column. This chamber is 4.4 to 6.5 m wide and 1.3 m in height. There is an area of roof fall at the west end and a crab claw along the northern wall. The tube extends around the column to the north and south and continues to the southwest for 12.6 m where it terminates. This portion of the passage is 1.0 to 3.8 m wide and 0.4 to 0.7 m in height.

The passage to the southwest from the large room is accessed through a 1.0 m wide by 0.25 m high opening. This leads to an irregularly-shaped chamber that is 9.5 m long (northeast by southwest) and 1.75 to 8.4 m wide. The floor in this chamber is bare lava with no cultural remains and the ceiling heights average 0.2 m.

The passage to the east of the large room is irregularly-shaped and is 15.3 m long (east-west) and from 0.8 to 12.2 m wide. A narrow, inaccessible passage extends to the northwest and northeast from this irregularly-shaped chamber. A passage also extends to the south, opening onto a raised ledge that has a secondary opening above the floor of the large room. This chamber is 6.0 m long (north-south), 1.1 to 4.75 m wide and 0.2 to 0.7 m in height. The floor is bare lava and no cultural remains were present.

The passage that extends to the west from the second sinkhole entrance continues in this direction for 2.5 m where it divides into two chambers, one extending to the northeast and one to the southwest. The northeast passage continues for 28.9 m, then it angles to the east for 10.0 m. It then turns to the north for 5.2 m and turns to the east-northeast for an additional 23.4 m where it terminates. This passage is 1.2 to 7.8 m in width with ceiling heights that vary from 0.2 m at the northeastern end to 3.2 m at its highest point. The floor is bare lava with several areas of roof fall. Charcoal and a crab claw were present on the floor of the tube in this area.

Two raised shelves are present in this passage, one on the east side and one opposite it on the west side. These shelves range in length from 1.3 to 4.4 m, in width from 1.0 to 2.5 m and in height from 0.65 to 2.2 m.

The passage to the southwest from the split extends in this direction for 27.2 m where it becomes inaccessible at a low restricted passage. This chamber is 2.1 to 7.0 m wide and 0.6 to 4.0 m in height, with a floor to ceiling column located at the southwestern end. The floor is bare lava and no cultural remains were present. A second inaccessible passage extends an undetermined distance to the east from this chamber.

Site 26902 is interpreted as a temporary habitation shelter that was also utilized as a burial site. The temporary habitation function is indicated by its formal type and on the presence of the cultural remains. The burial function is evidenced by the human remains. The site is unaltered and in good condition. It is assessed as significant for its information content and its cultural value.

**State No.:** 26903 (T-141)

**Site Type:** Lava Tube

**Functional Interpretation:** Temporary Habitation

**Topography:** Soil and outcrops sloping to west

**Elevation:** 425-435 ft

**Coordinates:** E=186529, N=2176923

**Vegetation:** *Haole koa*, Christmas berry, grasses

**Probable Age:** Prehistoric

**Overall Dimensions:** 125.0 m long